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ILCA Board of Trustees Handbook

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ILCA - Board of Trustees Meeting - March 1977

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ILCA BOARD OF TRUSTEES RULES OF PROCEDURE 1983

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Board of Trustees

RULES OF PROCEDURE 1983

International Livestock Centre for Africa
Addis Ababa, Ethiopia

CONTENTS

Article I: Preamble, 1

Article II: Exercise of powers, 3

Article III: Board meetings, 5

Article IV: Officers, 6

Article V: Executive Committee, 7

Article VI: Programme Committee, 8

Article VII: Finance Committee, 10

Article VIII: Board and Committee documents, 11

Article IX: Finances, 12

Article X: Responsibilities of Board and Committee members, 13

ANNEX 1: Honoraria and benefits due to members of the Board and its Committees, 14

ANNEX 2: Extract from: TAC Quinquennial Review of the International Livestock Centre for Africa, 15

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ARTICLE I: PREAMBLE

Section 1

The Memorandum of Agreement that establishes the International Livestock Centre for Africa with headquarters in Ethiopia specifies the status and governance of the Centre as follows[1]:

7. STATUS OF THE CENTRE

The Centre shall operate as an autonomous, non-profit organization, international in character, governed by a Board selected as provided in Article 8 of this Agreement, and headed by a Director General selected as provided in Article 10 of this Agreement.

8. GOVERNANCE

1. The Centre shall be governed by a Board of twelve members, comprised and selected as follows:
   a. Two members designated by the Government of Ethiopia;
   b. Three members designated by the CGIAR;
   c. Six members-at-large with interests and qualifications relevant to the work of the Centre three of which, at least, shall be African nationals (with appropriate representation from different parts of tropical Africa) to be selected and appointed initially by the CGIAR and subsequently by the Board itself;
   d. The Director General of the Centre, *ex officio*.
2. Although the Memorandum of Agreement specifies Board membership at 12, the number may be adjusted from time to time, but not to exceed seventeen. Any changes in composition will be in accordance with the ratios described in 1.b and 1.c above.
3. The rotation of members of the Board shall be determined as follows:
   a. The term of office of the members designated by the Government shall be determined by the Government;
   b. All other members of the Board shall serve for terms fixed by the Board, but not in excess of three years with the right to be eligible for maximum of two terms;
   c. Vacancies among the members-at-large by reason of their retirement, death, incapacity or any other cause shall be filled by the Board;
   d. Any such vacancies among the three members nominated by the CGIAR shall be filled by the CGIAR;
   e. New appointees appointed to replace a serving member shall be appointed for the remainder of the term of the member.
4. The Board of Trustees of ILRAD shall be invited to send two of its members to attend as observers at the meetings of the Board of the Centre.

9. POWER OF THE BOARD

1. The Board shall:
   a. frame rules of procedure for its own working;
   b. elect a Chairman and a Vice Chairman from among its members;

[1] Memorandum of Agreement between the Empire of Ethiopia and the International Bank for Reconstruction and Development acting on behalf of the Consultative Group on International Agricultural Research for the establishment of an International Livestock Centre for Africa (ILCA), signed 16 July 1974, amended and ratified by exchange of letters 17 April and 13 June 1975, and updated by revised text signed _____

c. determine policy for the operation of the Centre;
d. select and appoint the Director General of the Centre for such a period or periods as it deems necessary and appropriate;
e. approve the programmes developed for the Centre by the Director General;
f. approve the appointment of senior staff members of the Centre on the recommendations of the Director General;
g. scrutinize and approve the budget estimates for the Centre;
h. take such actions as shall be necessary to conclude and realize the purpose of such formal relationships with ILRAD as may be determined from time to time by the CGIAR including, without limitation, dissolution or reconstitution of the Board or the Centre;
i. do and perform all other acts considered necessary, suitable and proper for the attainment of any or all of the purposes, activities and objectives of the Centre as enumerated in this Agreement.

10. DUTIES OF THE DIRECTOR GENERAL

1. The Centre shall be administered by a Director General appointed by the Board.
2. The Director General shall be responsible to the Board.
3. The Director General shall:
   a. implement the policies determined by the Board;
   b. follow the guidelines laid down by the Board for the functioning of the Centre;
   c. carry out the directions of the Board and abide by its decisions;
   d. under the overall policy guidance of the Board, be responsible for the operation and management of the Centre and for assuring that its programme and objectives are properly developed and carried out.

Section 2

In accordance with para 9.1 of the aforesaid Memorandum of Agreement, the Board of Trustees of the International Livestock Centre for Africa hereby establishes and promulgates rules of procedure for its own working as set out hereunder.

Section 3

In both the text set out above and the rules set out below,
"Centre" is the International Livestock Centre for Africa,
"Board" is the Board of Trustees of the Centre,
"CGIAR" is the Consultative Group on International Agricultural Research,
"ILRAD" is the International Laboratory for Research on Animal Diseases.

ARTICLE II: EXERCISE OF POWERS

Section 1 The Board accepts the powers and responsibilities set out in Article I above as inviolable though subject to elaboration or addition under the provision that the Board shall "do and perform all other acts considered necessary, suitable and proper for the attainment of any or all of the purposes, activities and objectives of the Centre".

Section 2 Elaboration or addition of powers and responsibilities shall be by recorded majority decision of the Board as provided for under Article III of these Rules.

Section 3 In execution of its responsibilities for determining policy for the operation of the Centre, the Board shall:

a. approve the organizational structure of the Centre on the recommendation of the Director General;
b. ensure the establishment of such administrative and technical services as are deemed necessary to the execution and administration of agreed policies and programmes;
c. ensure adequate control over the conduct of business and the execution of agreements to which the Centre is a party, having regard to the policies and objectives of the Centre and the needs of adequate financial control;
d. establish and maintain appropriate staff regulations and enable the Director General to translate these regulations into effective operational rules;
e. determine the extent to which the Centre should be developed from sources of funds external to the CGIAR and assist in generating the funds necessary for the execution of the programme of the Centre;
f. ensure that the programme of the Centre is subject to critical review and evaluation and assist the CGIAR in participating in or complementing these reviews;
g. assist the CGIAR in being informed on the activities of the Centre and the relevance of these activities to the objectives of the CGIAR;
h. delegate such powers as it deems appropriate to standing Executive, Programme and Finance Committees, and to *ad hoc* committees and to the Director General.

Section 4 Board approval of the appointment of senior staff by the Director General shall extend only to the post of Deputy Director General and Associate Director General.

Section 5 The procedure for the selection of new Board members shall be for the Chairman to remind serving Board members and to notify the CGIAR Secretariat and such members of the CGIAR as he deems appropriate of impending vacancies at least six months in advance of planned vacancies or as soon as possible in the event of unplanned vacancies, indicating any regional or disciplinary limitation that is placed on the vacancies and soliciting nominations.

Section 6

Regional membership of the Board shall be in accordance with paragraph 8 (1)c of the Memorandum, cited in Article I, Section 1 above, and disciplinary representation on the Board shall take into account the need for appropriate research, development and professional management experience.

Section 7

Nominations for new members shall be reviewed at ordinary annual meetings of the Board, and selection, having full regard for any limitations imposed, shall be by majority decision of the Board. The selection in respect of nominations received from the CGIAR Secretariat for vacancies to be filled by the CGIAR shall be notified to the CGIAR Secretariat and shall be subject to confirmation by the CGIAR. The selection in respect of other vacancies shall be conveyed directly to the selected member by the Chairman.

Section 8

Nominations shall be accompanied by curriculum vitae, which shall be made available to members in advance of the ordinary annual meeting at which selection is to be made.

ARTICLE III: BOARD MEETINGS

Section 1 An ordinary annual meeting of the Board shall be held in March or April each year, unless an alternate date is designated by the Board.

Section 2 An extraordinary meeting of the Board may be called by the Chairman or by any three members of the Board. The business of any extraordinary meetings shall be limited to the purpose specified in the notice of the meeting.

Section 3 The meetings of the Board shall be held at the headquarters of the Centre at Addis Ababa, or at such other places as the Board may decide as appropriate.

Section 4 The ordinary annual meeting of the Board shall be held on at least thirty (30) days written notice. Extraordinary meetings of the Board shall be held on at least ten (10) days cabled notice. Notices shall state the time and place of the meeting, and shall be signed by the Chairman or Director General.

Section 5 A majority of the Board, present in person, shall constitute a quorum for the transaction of business, except where it has been notified in advance that a higher quorum is required by the importance of the matters on the agenda.

Section 6 In the absence of the quorum as established in Section 5 above, those present shall adjourn the meeting and a new written notice shall be sent out.

Section 7 The following shall be the order of business at ordinary annual meetings of the Board:

Approval of minutes of previous meeting
Report of the Director General
Reports of Executive, Programme and Finance Committees
Unfinished business
New business
Election or renewal of officers
Date of next meeting(s).

The order of business at extraordinary meetings shall be in accordance with the agenda contained in the notice of the meeting.

Section 8 The Chairman, independently or on the advice of the Director General, may invite such advisers or observers to meetings of the Board as he may decide. The Chairman, the Director General, or at least two other members present at the meeting may cause any item on the agenda to be heard in closed session, in the absence of advisers or observers.

Section 9 Board meetings shall be conducted in accordance with recognized parliamentary rules of procedures. Decisions of the Board are taken by majority of the members present. For purposes of voting, each member present has one vote and the Chairman, if needed, has a second casting vote.

Section 10 A secretariat will be provided by the Centre, upon nomination by the Board, to assist in the conduct of meetings and recording of minutes. The languages of the meeting and of reports are English and French.

ARTICLE IV: OFFICERS

Section 1 The officers of the Board shall be the Chairman, the Vice Chairman, the Director General and such other officers as the Board shall see fit to designate.

Section 2 The Chairman and Vice Chairman of the Board, who shall be chosen from Board membership, shall be elected by majority vote for the duration of their current term as Board members and shall be subject to reconfirmation each year at the annual ordinary meeting of the Board. The Chairman, or in his absence or disability, the Vice Chairman, shall preside at all meetings of the Board and supervise all matters with which the Board is concerned. In the absence or disability of both the Chairman and Vice Chairman, the members of the Board shall designate from among their own number an acting Chairman.

Section 3 The Director General, or in his absence or disability, a Deputy Director General, shall directly manage and administer the affairs of the Centre in accordance with current Memoranda of Agreement and the policies and instructions of the Board. Specifically, the Director General will be responsible to:

a. develop, for annual review by the Board, a programme of activities which conforms to Board policy and which seeks to increase the efficiency of livestock production in Africa;
b. maintain a qualified staff, appropriate to the activities of the Centre, and provide for their efficient management;
c. develop and maintain effective liaison with the officials and governments of the countries served by the Centre, especially in the countries where the Centre works;
d. prepare and submit an annual report of the Centre's activities, including a financial statement and reference to administrative changes and scientific advances;
e. advise and, as requested, assist the Chairman in the preparation of agenda and documentation for Board meetings;
f. keep the Chairman informed in all matters of consequence that relate to the Centre.

Section 4 The other designated directors of the Centre shall assist the Director General in management and administration and in the furtherance of the work of the Centre. In the absence or disability of the Director General, the designated Deputy Director General shall assume full responsibilities for the duties described in Section 3 above.

ARTICLE V: EXECUTIVE COMMITTEE

Section 1 The Executive Committee of the Board shall comprise the Chairman, the Vice Chairman, the Director General and at least two other Board members, with provision that at least one member of the Committee shall be a Board member from the headquarters host country.

Section 2 The Executive Committee shall have the duty to ensure the implementation of policies and decisions laid down by the Board, to review material for Board consideration and otherwise to exercise powers and perform duties delegated by the Board.

Section 3 The Executive Committee shall meet at least once per year, upon call of its Chairman or upon request of Committee members or the Director General. Minutes of meetings of this Committee shall be circulated to all Board members. Committee decisions shall be subject to ratification by the Board unless specifically delegated in advance.

ARTICLE VI: PROGRAMME COMMITTEE

Section 1

The Programme Committee is responsible for advising the Board on all matters concerning programme planning and execution, including research, training and documentation activities. To this end, it shall:

a. offer views on plans and activities prepared and submitted to it by the Director General;
b. examine, upon the advice of the Director General, proposals for activities put forward to the Centre by third parties;
c. propose subjects for research and strategies for training and documentation;
d. consider annual progress in the work of the Centre and periodically review all major, long-term activities;
e. review annual programme and budget submissions and longer term plans prior to their consideration by the Board;
f. study any other matters brought to its attention by the Board;
g. submit to the Board an annual report commenting on the objectives and value of the various programmes and activities of the Centre, with reference to costs and benefits, staffing and the financial resources and facilities available.

Section 2

The Programme Committee shall consist of:

a. up to four members appointed by the Board from among its members for terms of up to three years, subject to annual renewal (other Board members having the right to attend Programme Committee meetings by giving advance notice of intent to attend);
b. an equal number of non-Board members appointed for a term of three years by the Board;
c. a Chairman will be selected from the Board members of the Committee;
d. the Director General, *ex officio;*
e. such advisers as consultants and observers representing donor agencies, cooperating institutions or governments, as the Chairman of the Programme Committee and Director General may jointly invite to attend meetings, including Centre staff appropriate to the items under consideration.

Section 3

The Programme Committee shall meet in full at least once a year, and shall designate subcommittees to review individual programme activities at other times. Although full meetings will normally be held in Addis Ababa, it may be desirable from time to time to hold meetings in other countries, particularly those in which ILCA is undertaking or proposing to undertake research or other work. The Chairman of the Programme Committee shall report a schedule of intended meetings and reviews at each annual ordinary meeting of the Board and shall be guided by the Board in the selection of the programme activities for review.

Section 4

Each full Committee meeting begins with the approval of the record of the previous meeting. The Director General should then report progress made in implementing previous decisions of the Board made on the recommendation of the Committee. Upon the request of the Committee Chairman, papers covering agenda items may be prepared by the Director General, his staff, a member of the Committee or an adviser, and shall be circulated to all members well before meetings are held. Minutes and reports of Committee meetings will be circulated to all those attending meetings (members and advisers) and to all members of the Board. Conclusions and recommendations will be transmitted formally to the Board by the Committee Chairman after which they will generally be circulated to staff.

ARTICLE VII: FINANCE COMMITTEE

Section 1

The Finance Committee is responsible for advising the Board on all matters relating to the Centre's finances. To this end, it shall:

a. offer views on budgets prepared and submitted to it by the Director General;
b. review audited annual financial statements, reports of auditors and management letters issued by the external auditors;
c. submit to the Board a report commenting on the budget and financial management activities of the Centre;
d. make periodic review of salary scales and related provisions;
e. study other matters brought to its attention by the Board.

Section 2

The Finance Committee shall consist of:

a. up to three members appointed annually by the Board from among its members according to perceived need, including always the Chairman of the Programme Committee;
b. such non-Board members as may be appointed by the Board on an annual basis;
c. a Chairman appointed by the Board from among the above Committee members;
d. the Director General, *ex officio;*
e. such advisers as the Chairman of the Finance Committee and the Director General may jointly invite to attend meetings of the Committee when their counsel is needed in relation to certain agenda items.

Section 3

The Finance Committee shall meet at least once per year, usually prior to the annual ordinary meeting of the Board. Meetings will usually be held at headquarters in Addis Ababa, but meetings may be arranged elsewhere for expediency of action or to review administration and finance in the Centre's regional offices.

Section 4

Each Committee meeting begins with the approval of the record of the previous meeting. The Director General should then report progress made in implementing previous decisions of the Board made on recommendations of the Committee. The subsequent agenda is established by the Committee Chairman, in consultation with the Director General and Chairman of the Board. Preparation of background papers and records of meetings are the responsibility of the Committee Chairman, unless delegated specifically to others. Minutes and reports of Committee meetings will be circulated to all those attending meetings (members and advisers) and to members of the Board. Conclusions and recommendations will be transmitted formally to the Board by the Committee Chairman.

ARTICLE VIII: BOARD AND COMMITTEE DOCUMENTS

Section 1 The secretariat provided for under Article III, Section 10 above shall have responsibility for interpretation, recording and translation of proceedings at annual meetings of the Board. The same services shall be available at extraordinary meetings of the Board and at Committee meetings if so requested thirty (30) days in advance of the meeting by the Chairman concerned.

Section 2 The secretariat in attendance at Board meetings (and, if requested, at Committee meetings) shall, under the direction of the Director General, prepare a draft record of the meeting – detailing date, venue, attendance, agenda, principal points of discussion and conclusions – and shall make the draft record available to the Chairman within forty five (45) days of the date of the meeting. As the Chairman may direct, with such amendments as he may propose, the draft record shall be circulated in part or in total to all those attending the meeting (members and observers) within sixty (60) days of the meeting.

Section 3 Upon confirmation of the record at the next meeting, incorporating such written or verbal amendment as the majority at the next meeting shall decide, the record of the previous meeting shall be signed in duplicate by the Chairman or Vice Chairman as a correct record and two signed copies deposited under lock and key in a place reserved for this purpose at the Centre headquarters. Annexed to signed records shall be complete sets of the background documents for the meeting concerned.

Section 4 Records of all Committee meetings, signed by the Chairman concerned, shall be deposited in duplicate together with complete sets of background documents, in the same place as are kept records of Board meetings.

Section 5 The signatory of any record shall, at the time of signature, indicate the circulation that the record concerned shall have and any restriction that is placed on its release outside this circulation list. Any request for sight of such a document from outside its indicated circulation shall be referred for decision by the Chairman of the Board.

Section 6 Unless specifically excluded from circulation outside Board membership, one copy of the approved record of each Board and Committee meeting shall be deposited with the CGIAR Secretariat.

ARTICLE IX: FINANCES

Section 1

Each programme and budget document prepared annually by the Director General shall have incorporated a budget item for the operation of the Board and its Committees. This item shall be based on such information as is provided to the Director General by the Board and Committee Chairman and shall be reviewed and approved by the Board at its annual ordinary meeting.

Section 2

The Director General shall notify the Chairman of the Board of quarterly expenditures under the budget item established for Board and Committee operations and shall draw the attention of the Chairman to any actual or likely overexpenditure. It shall be the responsibility of the Chairman to advise the Director General whether to accept overexpenditure under this head or to advise Board members and Committee Chairmen of any specific action required of them to reduce expenditure.

Section 3

Fees and other benefits due to Board and Committee members for services rendered to the Centre shall be established and reviewed periodically by the Board, and a current schedule shall be annexed to these Rules which shall be the basis by which the Director General authorises payments to Board and Committee members.

ARTICLE X: RESPONSIBILITIES OF BOARD AND COMMITTEE MEMBERS

Section 1 Acceptance of membership of the Board or one of its Committees implies acceptance of these Rules and of the need and obligation to act always according to the best interests of the Centre.

Section 2 The duties and responsibilities of the Board as a whole extend in all respects to individual members of the Board and its Committee. In particular it is expected that Board and Committee members shall seek every opportunity to act as emissaries of the Centre with donors and the governments served, and shall seek to establish, through these contacts, how the Centre may best serve livestock improvement in tropical Africa. It is further expected that Board and Committee members shall faithfully prepare for and attend meetings of the Board or its Committees and shall give of their best advice and experience at such meetings.

Section 3 The Chairman of the Board may delegate special responsibilities to members as circumstances require.

Section 4 In contacts with the staff of the Centre, communication shall normally be through the Director General.

Section 5 No Board or Committee member shall commit the Centre financially beyond the costs of attendance at Board or Committee meetings at the rates laid down in the schedule approved by the Board without prior approval of the Chairman of the Board.

ANNEX 1

HONORARIA AND BENEFITS DUE TO MEMBERS OF THE BOARD AND ITS COMMITTEES

1. Members of the Board and its Executive, Programme and Finance Committees shall be entitled to an honorarium for time spent participating in Board and Committee meetings. This honorarium shall be fixed from time to time by the Board. It shall be payable in respect of the days actually involved in Board and Committee meetings and in travel to them by the most direct air route.

The Chairman shall qualify for an honorarium in the case of extra time spent on ILCA affairs over and above Board and Committee meetings.

2. Board and Committee members shall be provided with first class travel to Board and Committee meetings and with per diems at the prevailing approved ILCA rates. They shall also be covered by ILCA health and travel insurance for the time periods covered by their honoraria.

ANNEX 2

Extract from:

TAC QUINQUENNIAL REVIEW OF THE INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

ADMINISTRATION, STRUCTURE AND BOARD/MANAGEMENT RELATIONSHIP

Para 159

It has not been easy for the Panel to get a good understanding of management policies and administration. There can be no other research institute within the CGIAR system with more natural, inherent and often financially costly difficulties than ILCA in devising appropriate management and operational principles and practices. Its work is not concentrated at its base at Addis Ababa; it in fact operates at seven research locations in five countries. There are indeed five host governments and the work in the zones embracing countries other than Ethiopia cannot simply be described as outreach activities marginal to the core work at Addis Ababa. Its network activities embrace, moreover, many more than five countries referred to above and these activities are likely to grow. It has (as do other institutes) cooperative agreements with other CGIAR institutes; in this case ILRAD, IITA and, in the making, ICRISAT. It is necessarily a bilingual organization; its staffing must reflect this and its documents must be produced in French and English.

Para 160

To these difficulties must be added, as significant background to the Panel's enquiries, a rather traumatic history. This history reflects not merely the political situation which threatened its permanence and certainly hampered the work of ILCA in the mid-seventies. To this can fairly be added two Director-Generals with very different management styles and each being involved in difficulties of governance with his Board and in varying degree with staff. The Panel found the morale of staff in the field often to be poor, and there is much evidence of inadequacy in relations of Centre Management and Zonal teams and in staffing and recruitment policies. These strains certainly affect the general standing of ILCA in the world of relevant scientific communities.

Para 161

All these elements in the background of ILCA's short history certainly increased the difficulties of the task of developing a new type of research programme itself rather more difficult in concept and locale than those undertaken in the crop research institutes.

Para 162

There is now a new Director-General who can profit from history and hopefully from this Report. While the Report is not written in historical vein and the Panel does not wish to limit management initiatives, the Panel believes there are some essential elements of Board, Management, Research Staff relations which must be recognized by both Board and Management. This chapter attempts, constructively, to restate these elements. In doing so we sometimes offer explicit, often implicitly, criticisms of what we have seen and found in the course of our visits and discussions. We begin with a note on the relations of Board, Management and Research Staff.

Board, Programme Committee and Management

Para 163

There have been evident strains in the relations of the ILCA Board and its Committees, especially Executive and Programme Committees, with the Director-General representing Management. For the reason given below this is always possible, but it should be obviated if at all possible. We believe a major factor in unrest has been the unsatisfactory relations of Board and Management. Accordingly we devote more space to this than might normally have been expected. The key concepts are as follows:

a. The Board is responsible for the policy for the operation of the Institute. (It is, in the case of CGIAR Institutes, responsible to donors as represented in the CGIAR. There are inherent constraints here as illustrated in (c) and (d) below).

b. The overall responsibility of the Board covers all activities, including the budget and its allocations to the programme, and for approving the programme of the Centre as developed and submitted by the Director-General.

c. There are two practical constraints in the freedom of both the Board and Management:

   i. The amount of money available which is principally provided through the CGIAR. Additional (special project) money often comes, however, on a bilateral basis from donors.

   ii. The views on research priorities expressed by TAC and endorsed by the CGIAR. This constraint may be less powerful in deciding the programme content than the overall financial limitations now being experienced.

d. The Board is not in a position to be its own executive agent. It appoints a Director (or Director-General) to exercise this function. Not always formally recognized is another facet of the latter's responsibility. He is normally to be regarded as the principal adviser and initiator of ideas to the Board and its Committees. As already indicated, he develops the programme for submission to the Board. He should present not only his ideas, but hopefully, also the joint ideas of himself and scientific colleagues on suitable research programmes and the staffing budget required.

Para 164

Let us look more closely at this last statement. It is the responsibility of the Director-General to submit a budget and justify the allocation of funds to the various "research projects". He submits the research programme separately, or as part of the budget. In approving the budget, the Board approves the programme or calls for a readjustment of the allocation within the total expenditures it is prepared to approve. The Board is advised by its Programme Committee which, however, cannot properly do its work without a considerable input also from the Director-General. Unless the relationship is sensible there is a danger of irrational decisions being made. The Board will have the views of its own Committee and the views of the Director-General. It will be happy, indeed, if both parties always agree. In the course of its work, the Programme Committee will properly have contact with Project Leaders and will

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form views which may not always be consistent with those of senior management. This is one area in which conflict of views can arise, a conflict which can only be resolved by open-minded discussions between the Board and the Director-General.

Para 165

One particular element of research management and direction becomes important in these circumstances. This is the protocol under which the research teams operate as already noted in Chapter VI of this Report. As stated in that Chapter, the protocol needs to set out its programme for a period of time (e.g. 3 to 5 years), the staffing appropriate and to be provided and the nature of reporting required. The protocol should not be subject to arbitrary alteration during the period provided; but it can, and should, be subject to performance review during the protocol period. It is in this respect that conflict between the Board's Programme Committee and the Director-General should be avoided or resolved by agreed discussion methods. The last thing a research team needs is competing overseers or "bosses". If a Board is not satisfied, it should not give arbitrary directions to the people in the programme, but should ask the Director-General and his senior colleagues to consider and report on the difficulties seen by the Board. Having said this, it is still important to recognize a proper role for the Programme Committee.

Para 166

Thus it is important to observe that, if the Board's Programme Committee includes members of calibre in the professions relevant to ILCA's projects – as indeed it does – there can be great gains from their interaction in the field with project staff and Team Leaders. Their comments will not only influence the Board, but should also be available to the Director-General and all staff concerned. They are not, however, a substitute for the discussions between Project Leaders and the Management or for the in-house reviews discussed elsewhere. Accordingly, the relationship between the Board and the Management has to be one of constructive discussion of observations made by the Programme Committee. The Panel met this uncertainty about Programme Committee suggestions in the field. Some scientists were unclear whether their responsibility was to management or directly to the Programme Committee. The Committee did not claim this authority; nor did management seem to take steps to deal with Committee suggestions or to remove doubts in the field.

Para 167

The Programme Committee was established to help the Board (of which the Director-General is a member) to develop research policy, identify research opportunities, advise the Board on priorities and review research programmes to ensure that quality is maintained. We find that the Programme Committee has not always been effective as it would wish in its assigned role. At least the Panel did not gain a clear impression whether management and staff were able to respond to suggestions made by the Programme Committee. Indeed often it seemed that staff did not see the Committee's reports: certainly some Team Leaders did not see them. The Panel was not able to determine whether the lack of effectiveness

was due to the operation of the Programme Committee, the attitude of management, inadequate discussions at the Board, or all three. The Panel does believe that a Programme Committee can, and should be, an important mechanism for research direction. However, it will not be effective unless there is recognition by the Director-General and the Board that the principal value of the Committee is to enable the Board to keep in touch with the needs for livestock research in Africa and with ILCA's own research activities. This would render the Board's discussions with the Director-General and senior staff better informed.

Para 168

The Panel believes that this function of the Programme Committee will be better performed if it participates in an annual internal review of research at which each Team Leader presents the accomplishments (or problems) of the programme for the past year and the objectives of the new year. For programmes nearing completion, or for which a major change of direction is under consideration and may be thought desirable, the Programme Committee could, through the Director-General, initiate an intensive review using their own talents and/or external professionals and/or one or more of the senior scientists which the Panel proposes for appointment at the Centre. This review would then be the subject of consideration by the Board, Director-General and senior people of the programme affected before a final decision is made and appropriate budgetary allocation determined by the Board.

Decentralization of Research: Dangers of Isolation

Para 169

This approach would be assisted by a proposal which would also meet another major need on which the Panel feels strongly. The Panel's discussions with Project Team Leaders and research people at Headquarters have highlighted the lack of adequate consultation between them. This is particularly true of those relatively isolated in zonal centres remote from Addis Ababa. The suggestion is that Team Leaders and the Programme Committee meet together every year for several days preceding the annual December meeting of the Programme Committee at which it prepares for the following April meeting of the Board. The Panel sees great advantages in this proposal which could also encompass contributions from senior scientific staff at Headquarters.

Para 170

One of the real advantages of the foregoing proposal is a reduction in the isolation of research groups from one another and from Headquarters contact which is inherent in the structure of ILCA. Because of its mandate, the work is appropriately allocated to climatic zones and, of necessity therefore, to different countries (see map, Annex IV). This inevitably leads to some problems which follow from isolation from Headquarters and between them.

Para 171

The Panel supports the decentralization of management and administration to the field stations. However, this requires clear understandings and consistent practice about powers which are delegated to research Team Leaders in the field; it also requires recog-

nition of, and therefore steps to combat, the dangers of isolation of the teams from the overall leadership of the Director-General and from colleagues in other zones. There are great advantages in delegating responsibility to Team Leaders; but for such a system to operate properly, there must be trust from Headquarters backed by fully adequate delegation of authority. Since the quality of local staff varies and Team Leaders likewise differ in their ability to supervise staff and budgets, sound, clear procedures must be developed by the central office. These must be straight-forward, direct and clear. Audit procedures must include management activities as well as just checking accounts. While the Panel recommends a clear and firm direction of field centres, it cautions that these audit procedures must be seen as helpful to the field stations and not a check on their ability to manage their own resources. The Panel cannot emphasize too strongly that administration is a service unit. It exists only to help the research units do the job for which ILCA was formed.

Para 172

One of the major disadvantages of decentralization is that it, of necessity, results in the Team Leader becoming the Chief Administrator in the field location, and in diverting much of his/her time from research to solving administration problems. The Panel realizes that this is inevitable. Host country representatives will want to deal with the top person in the country. Conflicts between research personnel and local administrators will eventually have to be solved by the Team Leader. In all these matters we can only suggest that Headquarters give as much support as possible in administration, but also in the direction of research on which more needs to be said.

Para 173

At the zonal level, given an agreed protocol of research covering the programme (see earlier comments in Chapter IV and again in Chapter V), the Team Leader must be allowed to direct the team's work. He must be consulted on his wishes for staff and not have perhaps unwanted appointments thrust upon him. Similarly, budget possibilities and limitations must be discussed with him. Systems work requires multidisciplinary teams, and their composition is a matter for agreement between the Director-General and the Team Leader. Likewise, the scope for disciplinary work has to be assessed and, at the appropriate time (see Chapter III), steps taken to launch it – whether within ILCA or another cooperating institute. On these matters there must be interaction between Headquarters and the Team Leader to ensure proper standards of research design, high standards in appointment and the fullest support as appropriate from disciplines available at Headquarters. Not less important, and with same purpose, is the provision for interaction between zonal activities – that is between scientists in any one discipline as well as between Team Leaders. On all these matters, as Chapter V has shown, the Panel was less than fully satisfied. *The Panel strongly recommends that the new Director-General restate policies and practices in these areas.* The Panel believes that the suggestion made earlier (para 169 in this Chapter for bringing Team Leaders together for several days each year) would help.

The Panel believes that the people representing specific disciplines in each team also need opportunities for contact with each other and with the group of senior scientists the Panel proposes for Headquarters. Occasional participation by senior people from the zonal teams as lecturers in special training courses for nationals of research organizations in countries within ILCA's "territory" would be helpful to the course and to themselves.

Para 174

The basic aim in devising the management structure is, or should be, the achievement of high quality research without which ILCA will fail to achieve its objectives. The Director-General is responsible to the Board for the management structure and for its efficient operation. The structure must inevitably reflect his style; our observations nevertheless are reminders about basic needs to be met. Secretive and arbitrary management decision-making is to be avoided at all costs. Fundamentally the research scientist must know where he stands and be fully supported within the agreed statement of his authority. He must be consulted on key decisions properly made by the Director-General but which will affect his ability to operate. All this is repeated to give stress to the recommendation that the new Director-General clearly state his approach to management (including research direction). Within this he must trust his scientists (subject to appropriate in-house reviews) and support them. The quality of the scientists will finally prove more important than the formal shape of administrative structures (see also Chapter VI, para 122 et seqq.).

Staff Recruitment

Para 175

The Panel was not able to give time to very detailed reviews of administrative personnel or of financial matters. The Panel has earlier in this Report reviewed the direct support services offered by Central Management to research activities throughout ILCA (see Chapter VI) but, partly because it was impossible, the Panel did not attempt staff or financial audits. The Panel does wish to comment on staff recruitment procedures, especially for research staff. On this the Panel observed the following:

a. Inadequate advertisement of vacant positions; the Panel believes that international advertisement should be done in professional scientific journals, scientific societies, universities and research organizations.
b. Staff appointments seem too often to have been made on a haphazard basis with little regard for scientific competence, past training or suitability for the post. In some cases, internal transfers or assignments have been made, apparently to provide a position for someone not found suitable for another post.
c. The staff does not have confidence in the past system of handling personnel matters. They see the process as secretive and capricious, without much regard for the person as an individual who needs to feel wanted. Favouritism is seen by some as an underlying factor in some personnel decisions.

d. The reward system is not fully understood, especially among scientific staff.

e. Classification of staff into professional and support categories is not viewed by the staff as always objective and rational. From its admittedly limited observations, the Panel tends to agree.

f. The Panel believes that the lack of stringency in criteria and procedures in staff recruitment have contributed to the generally weak scientific staff situation at ILCA and inappropriate balance between youth and experience. The Panel believes that the Management and Board should take immediate steps to prepare an understandable list of procedures for staff recruitment, and that these be widely circulated to staff.

g. Job descriptions for most positions are not precisely written, and job titles are too general to be useful in understanding the role and function of the position. It is urged that these be more specific.

h. Staff promotion procedures need to be clarified. The staff does not have confidence that the procedures are fair. The Panel recommends that the procedures be set out clearly and made available to staff. The procedures should include opportunity for a staff member who may consider he is being treated unfairly to initiate his own request for promotion.

i. ILCA staff are mainly young and operate over a wide geographical area, often in isolation. Management should investigate the possibility of study leave or study visits for its research staff to keep them in contact with the international scientific community.

j. The Panel observed that ILCA has not used peer review as a means of achieving scientific and professional quality. The Panel recommends that peer review should be included as a key procedure in staff promotion and in evaluation of staff publications.

k. ILCA has not given due weight to the importance of scientific publications. The Panel urges that publications in refereed scientific journals should be one of the major measures of progress towards promotion. In recommending this, the Panel does not mean to diminish the role a scientist might play in writing systems studies or other internal publications that are important to ILCA's programme.

l. The question of geographical balance versus scientific ability was raised with the Panel. The Panel believes that scientific quality must be the first and foremost criterion in staff recruitment. However, it does appear that some national groups seem to be over-represented on the staff. The Panel recommends that ILCA, in its future efforts to upgrade its staff, should re-examine the balance in scientific quality and that language competence should weigh heavily, given equal scientific qualifications.

m. ILCA should investigate the possibility of making French language training available for its staff and their families. There can be no question of the need for ILCA to operate as a bilingual institution.

n. The Panel does not consider that it is necessary for all staff members to work in interdisciplinary teams; indeed too much emphasis in this regard may tend to hinder good component research. Also, it would hinder the interest of first-rate scientists in joining the ILCA teams. What is important is that the interdisciplinary team can identify significant problems, and that the component researchers can focus their work so that it will fit into the system as it is or as it may be improved.

Para 176

Financial arrangements. As earlier indicated, the Panel did not attempt a financial audit. The Panel was aware that the Board was wrestling with the results of inadequate and, indeed, inefficient management in this area. The Panel's leader discussed these matters with the Chairman and some members of the Board. He became aware that a major re-organization had taken place. It was too early to assess the results, but he wishes to express confidence that the financial and admistrative management at the Centre has now been effectively strengthened. It is naturally for the Board and the Director-General to ensure the continuance of this necessary improvement.

Para 177

Overall staff structure. The staff structure of ILCA has changed relatively often over time. One major change took place in 1977 when ILCA shifted from being organized around disciplinary departments to a structure reflecting the division between systems studies (the zonal programmes), special studies (e.g. trypanotolerance) and monitoring. Later on further changes took place which reflected internal tensions and/or an inability to define clearly the proper role of ILCA. The Panel does not want to limit the necessary flexibility the new Director-General will require to meet the challenges brought to ILCA by recent and future events, which include this review and its interpretation by TAC and the CGIAR. The Panel will therefore not make proposals for a staff structure but will observe that it should be functional – as already remarked by the Board and TAC missions – and also be clear and well understood by the staff.

Relations with other International Centres

a. Other CG Centres

Para 178

The Panel recognizes that there are problems in working out mutual relationships with another international agricultural research centre, but the Panel suggests that the following must be met if successful cooperation is to be achieved: (1) there must be a mutual need for the work, i.e. there must be benefit in the relationship for both parties, (2) both institutions must bring special skills to the partnership, and (3) both partners will have to give some of their resources, and perhaps a bit of operational freedom, to make the relationship work.

Para 179

The Panel welcomed the growth of cooperative relations between ILCA, IITA and ICRISAT. Similarly the Panel noted the strong and effective collaboration with ILRAD in the trypanotolerant work, but sees no need for a change in the structural relationship between the two Centres.

b. Other International Institutes

Para 180

ILCA programmes have much to gain from maintaining strong links with specialized departments in overseas institutes, e.g. Texas A&M University and the Winrock Foundation for herd and systems computer simulation models. There are other such links that could be formed in other areas. The trypanotolerance studies, initiated in collaboration with FAO and UNEP, could further strengthen their links with multilateral and bilateral aid projects involved with trypanosomiasis and trypanotolerance, e.g. IEMVT/GTZ project at Bobo Dioulasso, Upper Volta. Some programmes may benefit through contacts with organizations such as FAO/UNDP which are supporting national research centres in Africa. The Panel encourages this type of contact and cooperation where programme needs dictate.

RECOMMENDATIONS REGARDING ADMINISTRATION AND STRUCTURE

Recommendation 43: The Panel recommends that the Board and the Director General reach agreement on the principles outlined in this Chapter governing their relative functions and relationships.

Recommendation 44: The Panel recommends that the Director-General, given this understanding, exercise a more positive leadership in the research programme and the setting of the intellectual tone for the organization.

Recommendation 45: The Panel recommends that the Director-General develop a more open administration. The Panel does not want to limit the new Director-General in his management style, but he should be encouraged to be open and straightforward with the staff and be willing to share both his successes and his mistakes with them.

Recommendation 46: The Panel recommends that a reward system should be made visible and be known to all the staff. It should be tied directly to performance. Procedures should be published and followed by management. Promotions should include peer review of accomplishments.

Recommendation 47: The Panel recommends that clear operational procedures be established and manuals published for the operation of field centres. These should be designed to help rather than control the centres.

Recommendation 48: The Panel recommends that budgets be built from the bottom up, with Team Leaders submitting proposals requesting funds for their specific research areas.

Recommendation 49: The Panel recommends that all scientific and key positions in administration and research support activities be advertised internationally and that selection be based on qualifications and merit. Only then should national origin be a criterion to obtain balances.

Recommendation 50: The Panel recommends that a policy of study leave or visits be established for the research staff.

Recommendation 51: The Panel recommends that scientists be encouraged to publish in technically reviewed journals.

Recommendation 52: The Panel recommends that ILCA establish appropriate language courses at Headquarters for staff and families.

Recommendation 53: The Panel recommends that ILCA continue to develop strong cooperation with ILRAD, IITA, ICRISAT and other International Centres.

ILCA BOARD OF TRUSTEES RULES OF PROCEDURE 1983

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HANDBOOK

FOR

THE ILCA BOARD OF TRUSTEES

TABLE OF CONTENTS

	Page
PREFACE	
1. THE CGIAR SYSTEM	1
- Evolution of the CGIAR System	1
- The Centre Concept	1
- Goal and Objectives of the CGIAR System	3
- Components of the CGIAR System	4
- The Centres in the CGIAR System	5
- The CGIAR	11
- Technical Advisory Committee (TAC)	13
- TAC Secretariat	13
- The Boards of Trustees	13
- CGIAR Secretariat	14
- Group of Centre Directors	15
- CGIAR Directory	15
- Acronyms Related to the CGIAR	15
2. ILCA BACKGROUND	17
- ILCA's mandate	17
- ILCA's operational goals	17
- ILCA's strategy	18
- Fundamental choices	18
- Prioritisation criteria	18
- Research thrusts	19
- Training	22
- Information	22
- Mechanisms for programme review	23
- Strategy	23
- Planning Meetings	23
- Biennial Meetings	23
- Annual Programme Review	24
- Research protocols	24
- Programme Committee	24
- Annual reporting	24
- Internal organisation	24
- Background	24
- Administrative units for research	25
- Other departments	27
- Physical locations	27
- Resources	28
- Sites	28
- Buildings	28
- Facilities	29
- Funding	29
- Personnel	30
- Cooperative activities	31
- Methods	31
- General links	31
- Farming	32
- National programmes	32
- Other IARCs	32
- Other organisations	33
- Biographical sketches of senior management of ILCA	34
- Senior staff of ILCA	37

3. DOCUMENTS OF GOVERNANCE OF ILCA..... 39
- Agreement between the government of Ethiopia and ILCA (Articles 1 to 17)..... 40
- Rules of Procedure of the ILCA Board of Trustees (Articles I to XI)..... 50

4. THE BOARD OF TRUSTEES..... 67
- Names and addresses of current members..... 67
- Biographical sketches of current members..... 70
- Members of the ILCA Board of Trustees from 1973 to present. 76
- Roles, relationships and responsibilities of Trustees of international centres..... 77
- Responsibilities of the Chairperson..... 78
- Operational procedures for the Programme Committee..... 78
- Operational procedures for the Audit Committee..... 80
- Operational procedures for the Nominating Committee..... 81
- Board Secretary..... 82
- Board Records..... 82
- Honoraria and benefits due to members of the Board and its committees..... 82
- Committee assignments for 1987..... 83

5. REFERENCE DOCUMENTS
- Roles, relationships and responsibilities of Trustees of international agricultural research centres (CGIAR, December 1984)
- CGIAR Directory

PREFACE

This handbook is given to each member of the ILCA Board of Trustees. It contains essential information on the CGIAR system, on ILCA, and on the ILCA Board of Trustees, and it includes copies of the legal documents by which ILCA was created and is being governed.

The Handbook is meant to serve two purposes. First, it may assist new Board members to become familiar with the CGIAR system, with the background of ILCA and with Board responsibilities and procedures. Second, it provides ILCA Board members with a means to readily locate and retrieve the type of information that a Board member needs to refer to regularly in carrying out his/her Board duties. The Handbook is continually up-dated, and copies of all updates are made available to the Board members.

Board members are invited to freely add to this handbook other documents of importance to them. This will ensure that individual Board members can keep in one place the information they need to have ready access to in the course of discharging their duties as ILCA Board members.

1. THE CGIAR SYSTEM

Evolution of the CGIAR system

The Consultative Group on International Agricultural Research (CGIAR) was established in 1971 to continue and extend support for a network of International Agricultural Research Centres (IARCs). The basic objective was then, and remains, to increase the quantity and quality of food production in the developing countries through:

- Developing new technology with potential for immediate application through national programmes; and
- Strengthening national agricultural research programmes;

Recognized as a basic principle is a consultative and collaborative approach with national programmes and governments.

The Centre Concept

The Centre concept grew out of technical assistance programs financed and managed by the Ford and Rockfeller Foundations in the 1940s and 1950s and was based on ideas developed by F.F. Hill and J.G. Harrar of the two foundations. Their experience led them to believe that tropical agriculture was different from temperate agriculture requiring technology designed especially for it rather than transferred with little or no modification from the temperate regions; that the technology needed to meet the urgent need for food did not exist; that farmers in developing countries would adopt appropriate new technology; and that the necessary scientific infrastructure and resources in developing countries did not exist nor could be developed sufficiently quickly to produce the new technology within the timeframe available.

They proposed the establishment of research centres that would be independent, autonomous and highly efficient research institutions generating urgently needed technology and training that could not be done by national programmes.

The Centre concept includes the following:

i) Global perspective of mandates and programmes with a clear focus on problems requiring international solutions;

ii) A concentration of resources on limited areas to give a critical mass providing opportunity for real scientific pressure on important problems;

iii) Continuity of funding;

iv) An independent and autonomous Centre responsible to a Board to protect the mandate and operations from political pressure and provide flexibility for rapid response to evolving needs and opportunities;

v) Programme and activities undertaken only when the Centre has a comparative advantage. That is, the Centre should complement rather than compete with national programmes;

vi) Programmes primarily commodity focused with multidisciplinary commodity teams concentrating on research, training and information;

vii) A strategy of collaboration with national programmes with emphasis on network development.

On this basis the Ford and Rockefeller Foundations set about establishing IRRI. Shortly thereafter the idea that a network of International Centres would be needed was accepted by decision makers in both foundations. At the time IRRI started operations CIMMYT, CIAT, and IITA were already at least conceptually on the drawing board, being mentioned in correspondence relating to future planning. The two foundations and the original staff of these four centres recognized that they were embarking on a strategy for agricultural development that did not sit comfortably with that supported and pursued previously. Others had committed themselves to a strategy and broadly based community development, including rural credit and rural infrastructure. These services were recognized as necessary for agricultural development, but not sufficient. Missing was the research from which genuinely improved technology would be forthcoming. It was the latter void that the international agricultural research centres were designed to occupy, as complements to, and institutions that would help to strengthen, national agricultural research activities.

IRRI was initiated in 1959 as a completely new international effort focused on the problem of how to achieve high yields of rice in the tropics. The Rockefeller Foundation made IRRI's first senior researchers members of its field staff, and the Ford Foundation made substantial grants to construct IRRI's buildings and to provide facilities. By early 1962 it was operating. Later, members of the staff were employed directly by IRRI.

CIMMYT was established by an agreement between the Rockefeller Foundation and the Mexican Government in October 1963. It absorbed some of the staff and facilities and much of the research based of the Mexican Agricultural Program of the Rockefeller Foundation, which had been operating since 1944. CIAT was formed in a somewhat similar way by agreement between the Rockefeller Foundation and the Colombians and, in fact, took some time to become operational after it was established by a Nigerian governmental decree in July 1967 because of the civil war which erupted in Nigeria after the decision to locate the Centre there had been made.

CIP had been created under Peruvian Law in 1970 and was in the early stages of operating when the CGIAR was formed in 1971. Two years later the CGIAR agreed to support CIP. ICRISAT was established and began operating under CGIAR sponsorship in 1972, ILRAD in 1973 and CIAT in 1975. The IBPGR and ILCA were launched in 1975. ICARDA was developed in 1976, to a limited extent carrying on the work of the Arid Land Agricultural Development programme earlier sponsored by the Ford Foundation. IFPRI began operations in the same year, but it did so outside the CGIAR system, with support from several donors who were interested in seeing such a centre. It was not until 1979 that IFPRI joined the system. ISNAR was established in 1980, specifically to help to develop national agricultural research programs. In 1971 the CGIAR began supporting part of the research activities of WARDA.

An important element in the original concept was the time factor. When the first centres were established there was a growing global concern about the widening gap between the food needs of burgeoning populations of developing countries and their domestic output. It was recognized that

research capabilities in developing countries would grow and increasingly contribute to the total research effort but, faced with the reality of the world food problem, it was essential to take immediate action, and to concentrate the effort in order to obtain quick results. It was also a part of the philosophy that if, after 25 years or so, the national programmes became so strong that the Centres were no longer needed, then the investment would still have been worthwhile, and the Centres could be transformed into national or intergovernmental organizations.

As a consequence of the Second Review of the CGIAR System the consensus emerged that the Centres would be needed to support national programs for a long period in the future. The functions and activities are expected to change as national programmes build in strength, but the Centres are recognized as having a continuing place in the global agricultural research effort.

Goal and objectives of the CGIAR system

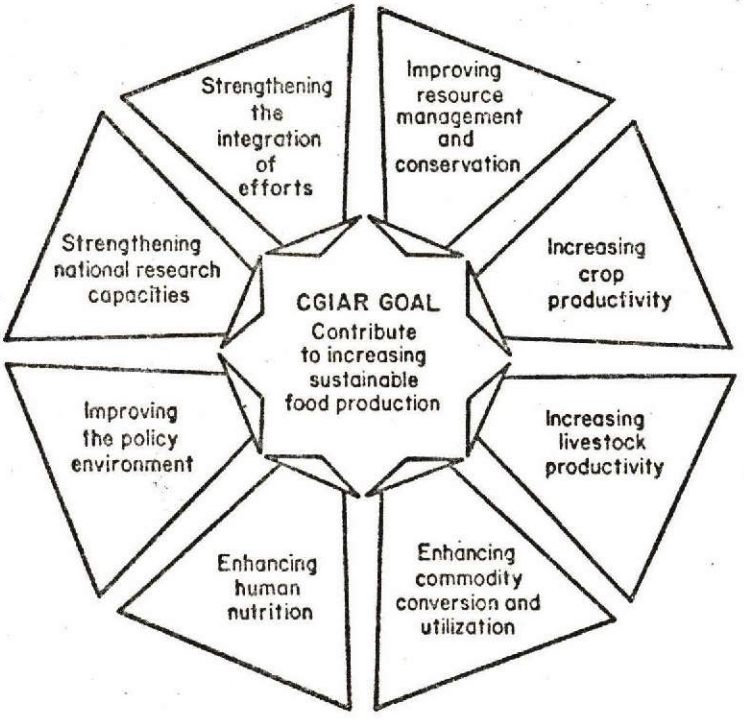
In 1985 TAC suggested that the long-term goal for the CGIAR System might be stated as: "Through international agricultural research and related activities to contribute to increasing sustainable food production in developing countries in such a way that the nutritional level and economic well-being of low income people are improved."

The above goal statement specifies:

- developing, not developed countries;
- research and related activities, not development or technical assistance activities;
- technology for long-term sustainable production, not technologies that sacrifice ecological stability for short-term gains in productivity;
- improved nutrition and economic well-being of low-income people not solely through increased food production, but also through improved food quality, greater equity in distribution, more stable food supplies, and increased purchasing power.

The associated objectives are given in Figure 1.1.

Figure 1.1. The goal and objectives of the CGIAR



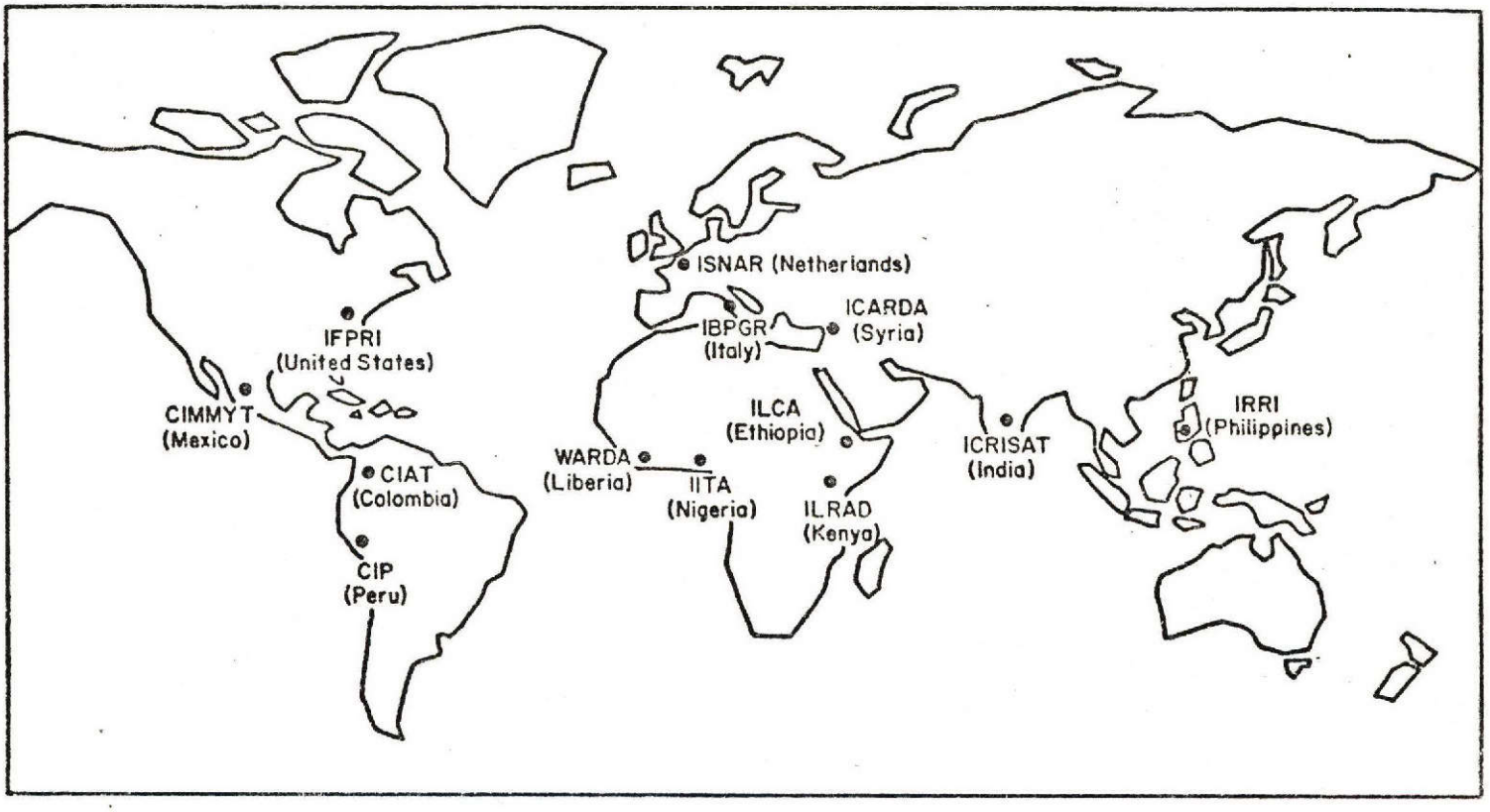
Components of the CGIAR system

The 12 Centres (WARDA excluded) are independent, autonomous institutions each governed by a Board of Trustees. However, they have evolved from a loose federation of four Centres in 1971 to a system of 13 entities with integrated objectives.

The components of the CGIAR System are described in the following sections and are:

The Centres
The Consultative Group on International Agricultural Research (CGIAR)
The Technical Advisory Committee (TAC)
The TAC Secretariat
The Boards of Trustees
The CGIAR Secretariat
The Group of Directors General

Figure 1.2. Location of CGIAR supported centres



Centre mandates and programmes

The formal and operation mandate of each centre is shown in Table 1.1

Table 1.1 Formal and operational mandate of CGIAR centres

CENTRE	FORMAL MANDATE		OPERATIONAL MANDATE	
Location (Year established)	Commodity/ Activity	Region/Agro-ecological zone	Commodity/ Activity	Region/Agro-ecological zone
CIAT Cali, Colombia (1968)	Food crops Animal products	Tropical lowlands with emphasis in	Phaseolus beans, Cassava	World
			Rice	Latin America
			Tropical Pastures	Latin America lowland trop.

CENTRE	FORMAL MANDATE		OPERATIONAL MANDATE	
Location (Year established)	Commodity/ Activity	Region/Agro-ecological zone	Commodity/ Activity	Region/Agro-ecological zone
CIMMYT Mexico City, Mexico, (1966)	Wheat, Maize	World	Wheat, Maize	World
	Sorghum, Rice Other food crops	Undefined	Triticale Barley	Regional
CIP Lima, Peru (1971)	Potato, other root crops	World	Potato	World
IBPGR Rome, Italy (1974)	Promote activities to further collection, conversation, evolution and utili-- of germplasm	World	Same as formal mandate	World
ICARDA Aleppo, Syria (1976)	Farming systems	Dry sub-tropical or temperate climate primarily Near East, North Africa and Mediterranean	Farming systems, Barley, Lentils, Faba Beans, Wheat, Chick-pea (concentrating on non-irrigated agriculture)	Same as formal mandate
	Barley, Lentils, Faba beans	World		
	Wheat, Chickpeas	Non-Africa/ Near East		
ICRISAT Hyderabad, India (1972)	Farming systems	Low rainfall unirrigated seasonally dry and semi-arid tropics	Farming systems	Semi-arid tropics (Asia, Africa)
	Sorghum, Millet Pigeonpea, Chick-pea, Groundnut	World	Sorghum, Millet, Pigeonpea, Chickpea, Groundnut	World

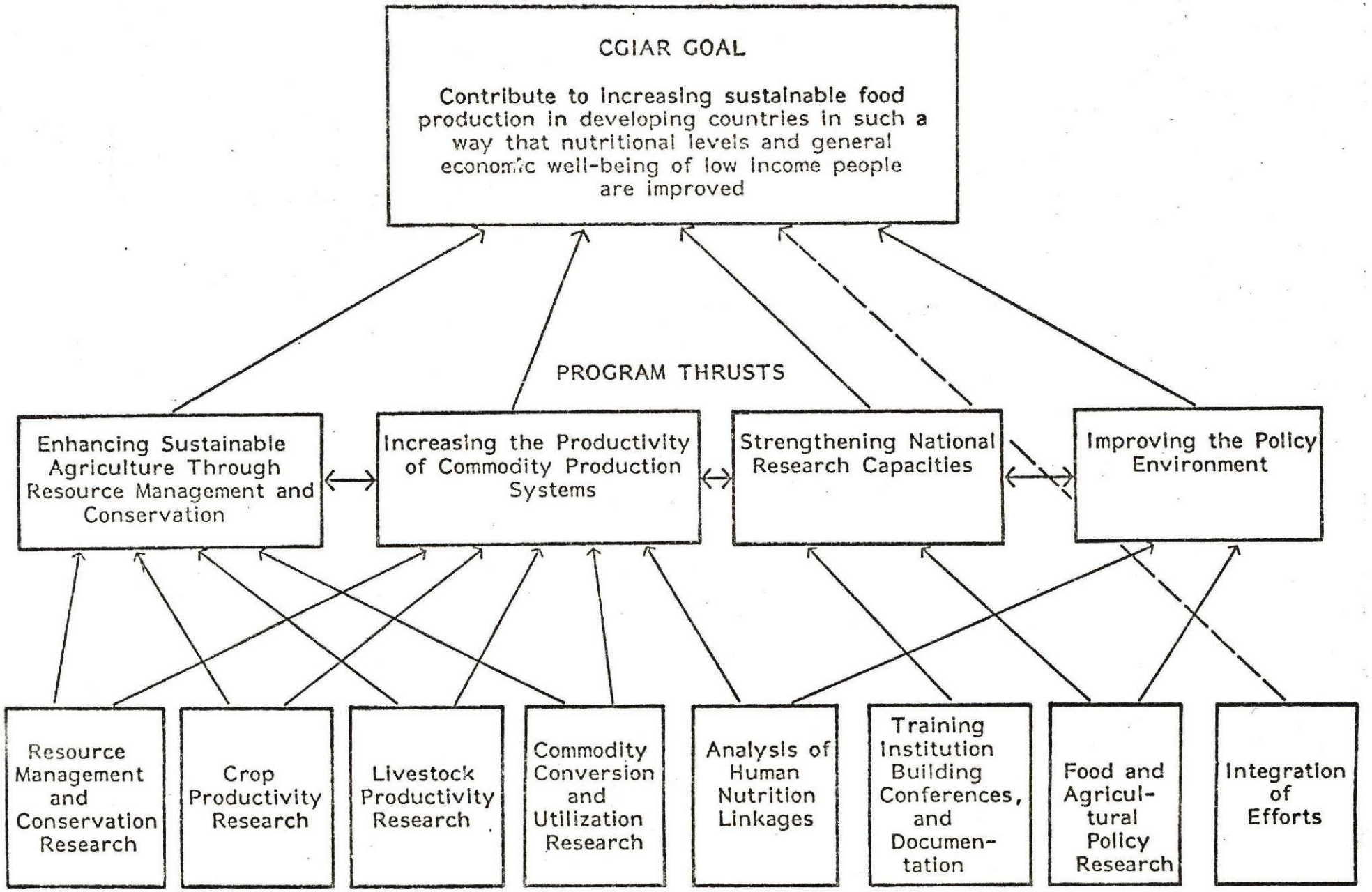
CENTRE FORMAL MANDATE OPERATIONAL MANDATE

Location (Year established)	Commodity/ Activity	Region/Agro-ecological zone	Commodity/ Activity	Region/Agro-ecological zone
IFPRI Washington D.C., USA, (1975)	Identify & analyze national & international strategies & policies for reducing hunger and malnutrition	World with primary emphasis on low-income countries and groups	Same as formal mandate	World
IITA Ibadan, Nigeria (1967)	Tropical Food Crops	World Tropical	Farming Rice, Maize Cassava, Cocoyams, Soybean Sweet Potato, Yam, Cowpea	Humid & Sub-humid Tropics Africa World
ILCA Addis Ababa, Ethiopia (1973)	Livestock production systems	Tropical Africa	Livestock production systems	Sub-Saharan Africa
ILRAD Nairobi, Kenya (1973)	Trypanosomiasis Theileriasis Other diseases		Trypano-somiasis Theileriasis	
IRRI Los Banos, Philippines (1960)	Rice	World with emphasis on Asia	Rice	World with emphasis on Asia
ISNAR The Hague, Netherlands (1980)	Strengthen national agricultural research systems	World	Same as formal mandate	World
WARDA Monrovia, Liberia (1971)	Rice	West Africa	Rice	West Africa

The CGIAR centres are thought of by some as consisting of a set of institutes like CIMMYT or IRRI focusing on one or two crops. Of the thirteen centres only eight, however, are primarily devoted to plant breeding research designed to improve crop yield potential, and all but three of those centres carry out plant breeding work on more than one crop. Four centres have mandates relating to identified ecological regions and nine have some variant of a farming systems research programme. Two centres are exclusively devoted to livestock research primarily designed to benefit African farmers (LCA and ILRAD), and two others have major research programmes aimed at improving pastures or forage crops on which livestock depend (CIAT and ICARDA). One centre was created by the governments of some 15 African nations as a development agency and has since expanded its program to include research programmes supported by the CGIAR (WARDA). One crop-oriented centre has no laboratories or fields but is concerned solely with facilitating the collection, evaluation, conservation and preservation of plant genetic resources (IBPGR). Two centres are not biological research organizations, but rather provide advice and research analyses, especially to governments of developing countries, on how to build agricultural research systems (ISNAR), and on agricultural policies (IFPRI).

The evolving programme structure of the CGIAR is shown in Figure 1.3.

Figure 1.3. The evolving programme structure of the CGIAR



Categories of research

The following definitions of different categories of research were suggested in the Second Review of the System and are useful as baselines in discussions of research in the Centres.

i) BASIC RESEARCH - designed to generate new understanding (e.g. how the partitioning of assimilates is influenced by plant height);

ii) STRATEGIC RESEARCH - designed for the solution of specific research problems but the product of which is far from being an immediately applicable technology (e.g. a technique for detecting dwarfing genes in wheat seedlings);

iii) APPLIED RESEARCH - designed to create new technology (e.g. breeding new varieties of dwarf wheat that can respond to high levels of nitrogen without lodging);

iv) ADAPTIVE RESEARCH - designed to adjust technology to the specific needs of a particular set of environmental conditions (e.g. incorporating dwarf wheats into farming systems in a designated, perhaps unirrigated area).

Budgets of Centres

Table 1.2. shows the core budgets of the CGIAR supported centres for 1983 to 1986.

CGIAR Core Funding by Centre (in US$ million)

	1983	1984	1985	1986 (estimate)
ILCA	11.8	12.6	13.6	14.4
CIAT	21.1	23.5	20.7	21.4
CIMMYT	17.5	20.7	19.7	21.9
CIP	10.1	9.7	10.1	10.9
IBPGR	3.6	4.0	4.2	4.5
ICARDA	19.7	21.0	18.2	18.1
ICRISAT	20.9	21.0	19.8	21.2
IFPRI	3.8	4.3	4.4	4.3
IITA	19.9	20.9	20.5	22.0
ILRAD	8.0	9.3	9.1	10.4
IRRI	20.3	19.7	21.1	21.6
ISNAR	3.0	3.3	3.7	3.8
WARDA	2.7	2.0	2.5	2.1
TOTAL	162.4	172.0	167.8	176.6

Donor contributions

Each donor member decides for itself how much it will provide each year in contributions to the CGIAR system. It also decides which institutions it will support. Donors and their annual contributions are listed in Table 1.3.

The CGIAR

The Consultative Group on International Agricultural Research (CGIAR) includes the "Co-sponsors", "Continuing Members or Donors" and "Fixed-Term Members".

i) Co-sponsors. The CGIAR was set up in 1971 at the initiative of the World Bank and the UNDP. These two organizations and FAO are considered the Co-sponsors. They retain some special responsibilities. The FAO provides the staff for the TAC Secretariat, and the World Bank does the same for the CGIAR Secretariat. They act as a nominating committee in recommending for the Group's approval candidates for membership on TAC.

The World Bank provides the Chairman for the Group. In addition to presiding at meetings of the Group, the Chairman overseas the work of the CGIAR Secretariat, plays an important part in the work of the Co-sponsors and actively pursues the interests of the Group in such things as obtaining increased resources, publicizing the System and helping to solve unusual problems that arise.

ii) Continuing Members. Continuing members, alternatively known as "Donors", are the official representatives of countries, international organizations and private foundations that contribute funds to support one or more Centers (usually at least US $500,000 annually).

iii) Fixed-Term Members (representing developing countries): The Group includes two members from each of the five FAO regions named for a fixed term. These along with the increasing number of developing country donors provide a direct input of developing country views to discussions of the Group.

Meetings

The Group meets once each year for International Centres Week (ICW) in Washington and holds a mid-year meeting if required. The Director General (or Director) and Board Chairperson of each centre are invited to participate in ICW meetings. The Group approves budgets for the system, holds a pledging session to estimate funds available for the coming year, deals with reports from TAC and reports on external reviews of centres and other matter of concern to the Group.

Table 1.3. Donor contributions to centre programmes, 1972-85 (in US$ million).

Donor	1972-76	1977-81	1982	1983	1984	1985	1983	1984	1985
Australia	4.00	13.28	3.77	4.06	4.00	4.18	4.11	4.03	4.27
Belgium	3.48	13.70	1.85	1.88	1.71	2.01	2.46	2.31	2.66
Brazil	-	-	-	-	1.00	-	-	1.00	-
Canada	17.37	36.14	8.29	9.94	10.03	9.70	10.74	11.58	12.74
China	-	-	-	-	0.50	0.50	-	0.50	0.50
Denmark	1.71	4.69	0.96	0.95	1.24	1.12	0.95	1.24	1.26
Finland	-	-	-	-	0.50	0.06	-	0.50	0.60
France	1.05	3.14	0.90	1.01	0.88	1.23	1.10	0.94	1.39
Germany, Fed. Rep.	13.25	39.60	7.84	7.89	6.62	6.15	8.68	7.39	8.14
India	-	0.50	0.50	0.50	0.50	0.49	0.50	0.50	0.49
Iran	1.98	3.00	-	-	-	-	-	-	-
Ireland	-	0.38	0.21	0.34	0.41	0.40	0.34	0.41	0.40
Italy	0.10	1.90	1.59	6.10	6.62	6.49	6.10	6.62	6.78
Japan	2.49	26.25	8.85	9.13	9.72	11.09	9.48	10.46	12.05
Mexico	-	1.45	0.10	0.15	1.22	0.37	0.15	1.44	0.47
Netherlands	4.11	11.54	3.24	3.58	3.28	3.89	4.12	3.79	4.53
New Zealand	0.11	0.14	0.02	0.02	0.02	0.01	0.02	0.02	0.01
Nigeria	1.30	5.36	1.13	1.00	1.00	0.85	1.40	1.60	1.29
Norway	3.33	9.27	1.87	2.19	1.92	2.27	2.19	1.92	2.27
Philippines	-	0.65	0.45	0.35	0.32	0.23	0.35	0.32	0.23
Saudi Arabia	1.00	1.00	-	1.50	1.50	-	1.50	1.50	-
Spain	-	0.50	0.46	0.52	0.52	0.50	0.52	0.52	0.50
Sweden	7.19	14.80	3.18	3.05	3.07	3.02	3.05	3.07	3.02
Switzerland	1.87	9.47	2.76	4.89	6.70	5.17	5.91	8.21	7.80
United Kingdom	9.02	27.51	6.34	5.92	5.66	6.32	5.98	5.74	6.33
United States	41.60	128.09	40.79	44.55	45.25	45.16	55.02	56.85	60.19
Country Subtotal	114.98	351.82	95.11	109.52	114.23	111.74	124.67	132.46	137.90
Ford	16.79	6.20	0.81	1.31	0.99	0.90	1.75	1.37	1.68
Kellog	1.32	0.63	-	0.63	0.43	-	0.69	0.41	-
Kresge	0.75	-	-	-	-	-	-	-	-
Leverhulme	-	1.08	0.65	0.75	0.81	0.60	0.75	0.81	0.60
Rockefeller	17.10	6.67	0.80	0.50	0.50	0.80	0.54	0.55	0.99
Foundation Subtotal	35.96	14.58	2.26	3.19	2.64	2.30	3.72	3.14	3.27
ADB	0.30	1.20	-	-	-	-	0.17	0.45	0.64
AFDB	-	0.15	0.02	-	-	-	-	-	-
AFESD	-	1.12	0.24	0.23	0.23	0.34	0.23	0.23	0.34
EC	-	17.38	4.72	5.16	4.72	6.58	6.25	6.01	7.95
IDB	11.15	32.19	8.10	8.16	8.73	8.17	8.16	8.73	8.17
IDRC	3.95	5.68	1.20	1.80	1.01	1.30	2.45	2.78	3.12
IFAD	-	11.05	5.94	8.37	7.02	3.15	10.31	8.67	5.26
OPEC	-	1.90	3.58	2.25	2.19	1.00	2.25	2.19	1.05
UNDP	7.42	21.59	6.19	6.86	8.06	7.49	7.16	9.12	8.85
UNEP	0.94	0.49	0.18	0.13	0.03	-	0.17	0.03	0.02
WORLD BANK(IBRD)	16.15	53.33	16.30	19.00	24.30	28.10	19.50	24.68	28.87
International Donor Subtotal	39.91	146.08	46.47	51.96	56.29	56.13	56.65	62.88	64.27
Other Donors	-	-	-	-	-	-	3.29	4.60	4.27
TOTAL	190.85	512.48	143.84	164.67	173.16	170.17	188.23	203.08	209.81

Technical Advisory Committee (TAC)

The Technical Advisory Committee provides the Group with technical advice. TAC is composed of its chairman plus 14 distinguished international experts from developing and developed countries who serve for up to six years (see CGIAR Directory, Section 6). Members are appointed by the Group on the recommendation of the Co-sponsors. TAC reports to the Group. Its main functions are:

- to advise the Consultative Group on priorities in agricultural research;
- to recommend to the Group what new areas of research should be brought under its auspices;
- to monitor and review, from a technical and scientific point of view, major programme changes proposed by a centre before they are incorporated into the centre's approved programme; and
- to be responsible for the implementation of the Group's policy that periodic external assessment be made of the relevance, scientific quality, and effectiveness of the programmes of each centre funded by the Group, and of the continuing need for its activities.

In more recent times, TAC has assumed a strong role in the annual review of the programmes and budgets of the Centres. This was not originally seen as a TAC function, but as financial stringency set in, TAC found that it could not divorce its long-term programme interest from what was happening on the budgetary front.

TAC meets two or three times per year. The Chairperson of the Committee of Board Chairs is invited to participate in open sessions of TAC meetings. Subcommittees are formed to consider specific topics, and outside experts frequently called upon, notably for external reviews of Centres and special studies. Except for the Chairman, TAC is a part-time activity for its members, most of whom hold full-time responsibilities at universities or research institutions.

TAC Secretariat

TAC is served by a full-time Secretariat based at FAO in Rome. The Executive Secretary of TAC is appointed by the Director General of FAO. The staff of the Secretariat is provided by FAO. The cost of TAC operations is shared by the three Co-sponsors. The TAC Secretariat and the budget of TAC are administered by FAO. The TAC Secretariat performs, in support of TAC, such tasks as identification and analysis of scientific policy issues, recruitment of experts for external review teams, and documentation and administration of TAC meetings and other TAC operations.

The Boards of Trustees

Each of the 12 Centres (WARDA has a special arrangement) is an independent and autonomous institution governed by a Board of Trustees. The Board is responsible for making certain that the Centre is efficient and effective in managing the programmes under its mandate and the resources provided by the donors. Responsibilities of the boards are described in the section on the Board of Trustees.

Board Chairs of each of the 12 Centres meet once or twice annually as a Committee of Board Chairs (CBC).

The purposes are to:

1. Exchange experiences and information among Boards on issues of mutual concern to improve Board performance;

2. Provide a forum for exchange of views from the Board perspective with TAC and the CGIAR Secretariat;

3. Elect a Chairman to represent the Board Chairs and take their views to meetings of TAC, the Group of Centre Directors and the CGIAR.

The CGIAR Secretariat

The CGIAR Secretariat serves as the staff arm of the Consultative Group for dealing with all matters except those in the mandate of TAC. The Group operates on goodwill and good faith, but its effectiveness depends upon a large measure of common understanding and coordination of effort. The Secretariat, in close liaison with the Chairman of the Group and the Chairman and Secretariat of TAC, facilitates coordination and maintains communication among all elements of the system.

One of the most important functions of the Secretariat is to oversee the financial affairs of the Group. Included in this is the preparation and periodic updating of a long-term financial plan for the Group's approval, matching requirements to the likely availability of funds as it may be affected by donors' response to the goals set by the plan itself. For the nearer term, estimates of the level of funding in the year ahead are made and translated, in consultation with TAC, into guidelines to the Centres for the preparation of their annual budget submissions. Review of these submissions is a joint responsibility of TAC and the Secretariat.

Facilitating the making of policy is another major feature of the CGIAR Secretariat. It does not itself make policy, but it is responsible for identifying policy issues, analyzing them, setting out the options for action, and bringing them forward to the Group for its decision.

The Secretariat also offers its good offices to help centres in various ways. Its staff can provide advice in matters within their competence (management, budgetary and technical matters) or the Secretariat may help centres in a number of unique ways.

For administrative purposes the Secretariat is a department of the World Bank, which appoints its staff and pays all the costs of its operation. It reports administratively to the Chairman, of the Group who selects the Executive Director of the Secretariat following wide consultation with members of the Group. Staff members are listed in the CGIAR Directory (Section 5 of this Handbook).

Group of Centre Directors

The Directors General (or Directors) of the 13 Centres in the CGIAR system together form the so-called "Group of Centre Directors". They normally meet twice each year, once in conjunction with the June meeting of TAC, and once in connection with International Centres' Week (ICW) in October. A joint meeting with the Group of Board Chairs has also been instituted.

The purposes of the Centre Directors meetings are to:

1. Deal with matters pertaining to international staff conditions to ensure as much comparability as possible and to make joint arrangements for payrolling, and insurance and retirement benefits;

2. Discuss division of labour with regard to programme/commodity responsibilities to ensure maximum complementarity and inter-centre cooperation;

3. Discuss financial and budgeting issues in order to take a unified stance vis-a-vis issues identified by the CGIAR Secretariat and TAC.

4. Discuss System-wide issues and develop unified Centre positions to report to the TAC and the CGIAR.

In recent years, the Group of Centre Directors has paid increasingly more attention to the latter two points.

CGIAR Directory

A copy of the latest version of the CGIAR Directory is provided in Section 5 of this Handbook.

Acronyms related to the CGIAR

AFDB	African Development Bank
ADB	Asian Development Bank
AFEDD	Arab Fund for Economic Social Development
CIAT	Centro Internacional de Agricultura Tropica
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
CIP	Centre Internacional de la Papa
EC	Commission of the European Communities
FAO	Food and Agriculture Organization of the United Nations
IBPGR	International Board for Plant Genetic Resources
IBRD	International Bank for Reconstruction and Development (World Bank)
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDB	Inter-American Development Bank
IDRC	Inernational Development Research Centre
IFAD	International Fund for Agricultural Development
IFARD	International Federation for Agricultural Research in Developing Countries
IFPRI	International Food Policy Research Institute

IITA	International Institute of Tropical Agriculture
ILCA	International Livestock Centre for Africa
ILRAD	International Laboratory for Research on Animal Diseases
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
NARS	National agricultural research service
OPEC	OPEC Fund for International Development
SAREC	Swedish Agency for Research Cooperation with Developing Countries
TAC	Technical Advisory Committee
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WARDA	West Africa Rice Development Association

2. ILCA BACKGROUND

ILCA's mandate

ILCA's Memorandum of Agreement, signed in 1974 with the Government of Ethiopia, states that ILCA's purpose is

"..... to assist national efforts which aim to effect a change in the production and marketing systems in tropical Africa so as to increase the sustained yield and output of livestock products and improve the quality of life of the people in this region".

More specifically, ILCA's terms of reference, also set out at that time, are to:

- Retrieve, assemble and make available in both English and French relevant information on animal production in tropical Africa.
- Establish multidisciplinary research teams to study existing animal production systems, develop new or modified methods of production and define priorities for other research.
- Support, supplement and cooperate with national and regional research stations or programmes in developing a fully coordinated research programme related to the urgent needs of livestock development.
- Develop the capacity to undertake research programmes in specific aspects of livestock production appropriate to an international centre.
- Organise or assist in organising seminars, technical conferences and training courses for national staff engaged in livestock research, extension, planning and production, in order particularly to increase regional competence in the interdisciplinary systems approach to livestock research and development.
- Make available statistical support, information or advice to national, regional or international authorities in the various fields relating to animal production in which the Centre is actively engaged.
- Engage in such other activities as may be found necessary to further the Centre's objectives.

ILCA's operational goals

ILCA's ultimate goal is to fulfill the Centre's formal mandate. As the wording of the mandate indicates, ILCA is not to pursue this goal by its own efforts alone since, like all the centres in the CGIAR system, it was established specifically to support national initiatives. However, a number of intermediate goals have been defined in terms of those areas which ILCA can be expected to influence directly. These intermediate, or operational, goals are:

- to strengthen the ability of national agricultural research services (NARSs) to carry out technical and policy research in livestock-related fields and thus to develop their own technical solutions to production problems and to promote livestock development;

- to develop, through ILCA's own research and that of other organisations, technical packages for increasing livestock production and the contribution of livestock to agricultural production and income;

- to contribute to scientific knowledge in a way conducive to solutions to livestock production problems; such knowledge may relate to the understanding of production constraints and opportunities, or to research methods and techniques.

ILCA's strategy

Recognising the Centre's limited financial resources and the number and complexity of factors affecting livestock production in Africa, ILCA's strategy is to choose a limited number of factors in order, through a programme of research, training and information, to make improvements for the benefit of African farmers and the consumers of livestock products.

Fundamental choices

ILCA's operational mandate differs from the formal one in being more sharply defined, and subject to revision over time as goals are achieved or new research priorities arise. A centre of ILCA's size cannot simultaneously address all the livestock production problems of a continent the size of Africa. To be effective, ILCA has chosen specific areas of focus.

The Centre has made fundamental choices of species, commodity, zone and production system that are not made for us in our formal mandate. The need to do this arises because of the number and complexity of issues affecting livestock production in Africa. The Centre has also derived a set of criteria against which project proposals can be assessed in order to determine whether or not they rate as priority areas for research by ILCA as distinct from other organisations.

Within its broad formal mandate, ILCA has elected to concentrate on the three major species of ruminant livestock (cattle, sheep and goats), to work predominantly on smallholders as the major target group, to focus its efforts on zones that have a relatively high potential (semi-arid, sub-humid, humid and highlands) and to restrict its work to the four major commodities/functions: milk, meat, traction and manure.

Prioritisation criteria

The criteria that ILCA has developed for screening individual projects and activities are as follows:

Nature of problem

Is the problem a researchable one? If so, where does it lie in the research spectrum, and how widely applicable will the research results be?

Special advantage

In the light of its past experience and current resources, does ILCA have an advantage over other institutes that might work on a given topic?

Availability of partners

Can we find organisations, within or outside ILCA's mandate region, that are both able and willing to work with us so as to increase the scope of our research on a given topic and to broaden its impact?

Critical mass

Can ILCA command the scientific staff and facilities needed to tackle a given research problem?

Probable impact

Is the research likely to have a sizeable impact commen- surate with one or more of ILCA's goals, as set out at the head of this chapter?

Stability and sustainability

Will the research contribute to an improved production system that is at once sustainable ecologically and stable in terms of economic return?

These criteria prove useful for assessing ILCA's current activities as well as screening new research proposals: The choice of research topics on which ILCA works is likely to change over time, but the criteria for selecting them will remain largely the same.

In line with recent guidelines from the CGIAR, activities fulfilling the criteria can, for budgeting purposes, be subdivided into those regarded as essential and those seen as desirable.

Research thrusts

In March 1987, ILCA defined six major research thrusts, as follows:

Thrust 1: Small Ruminant Meat

The objective of the Small Ruminant Meat Thrust is to improve the output and efficiency of small ruminant meat production in mixed smallholder/ livestock farming systems. This objective is to be met by:

- characterising the current productivity and genetic potential of small ruminant breeds in order to identify opportunities for breed improvement;
- developing sustainable fodder production and feeding systems appropriate to various environments;
- improving management skills so as to reduce reproductive wastage and disease risk, and increase productivity;
- assessing the economic benefits of improved management, including the combined effects of improved nutrition and veterinary measures.

Thrust 2: Cattle Milk and Meat

The objective of the Cattle Milk and Meat Thrust is to improve the sustained output and yield of cattle milk and meat produced in mixed smallholder systems. This objective is to be met by:

- assessing the current productivity and future potential of indigenous breeds and their crosses, and providing advice on their introduction and management;

- integrating forage production into current farming systems in such a way as to increase the sustainability of grain crop production at the same time as providing a cheap, high-quality diet to cattle that will last through the dry season;

- combatting or circumventing major disease problems, especially those currently preventing production in the higher potential areas;

- developing dual-purpose management and feeding systems for dairy cows, so as to create smallholder milk production systems that are at once economically viable and ecologically sustainable;

- developing appropriate calf rearing and herd replacement systems, and fattening systems for store cattle and draught oxen;

- encouraging the development of milk collection and marketing systems, and ensuring that milk and meat pricing and input supply policies are conducive to increased production.

Thrust 3: Animal Traction

The objective of the Animal Traction Thrust is to increase and improve the use of draught animal power at the smallholder level so as to raise production and income, improve labour efficiency and promote integrated crop/livestock farming systems that will allow sustained agricultural production without ecological degradation. This objective is to be met by:

- identifying constraints to the enhanced use of animal power and, if possible, devising measures for overcoming these constraints;

- improving the nutrition of draught animals through better use of on-farm feed resources, thereby increasing their working efficiency, especially at the onset of the planting period;

- designing improved, low-cost animal-powered implements that will increase the efficiency of existing field operations, permit present areas to be more intensely cropped and allow expanded areas to be brought into cultivation;

- developing draught animal technologies that will allow diversified operations outside cultivation periods.

Thrust 4: Animal Feed Resources

The objective of the Animal Feed Resources Thrust is to develop suitable forages to improve livestock and crop production in mixed crop/livestock farming systems, and to improve the efficiency with which existing feed resources are utilised. This objective is to be met by:

- screening and providing seeds of promising forage germplasm for testing in ILCA/NARS collaborative research programmes;

- determining and improving the nutritive value and utilisation of natural feed resources, forage crops, multi-purpose fodder trees, crop residues and agro-industrial byproducts in order to develop effective feeding systems and make appropriate recommendations to extension services/producers;

- integrating forage legumes with cropping systems, in such a way as to improve plant nutrition and soil fertility/

- stability at the same time as producing more animal feed, thereby strengthening the positive interactions between crop and livestock production.

Thrust 5: Trypanotolerance

The objective of the Trypanotolerance Thrust is to contribute to improved livestock production in tsetse-infested Africa through a better understanding of the factors affecting the performance of trypanotolerant animals and the effectiveness of control measures. This objective is to be met by:

- determining the current productivity of trypanotolerant breeds under different levels of tsetse challenge and in different management systems;

- examining the nature of genetic and acquired resistance/tolerance to trypanosomiasis;

- assessing the environmental factors affecting susceptibility to trypanosomiasis;

- assessing the cost, efficiency and environmental effects of control measures.

Thrust 6: Livestock Policy and Resource Assessment

The objective of the Policy and Resource Assessment Thrust is to help improve policy making and resource assessment in the livestock subsector of sub-Saharan Africa. This objective is to be met by:

- helping policy makers become fully aware of the importance of policy and resource issues and of the means for improving the way in which they tackle them;

- doing research on specific issues in policy and resource assessment;

- providing a forum in which other people tackling these issues can exchange experiences and acquire skills or techniques from each other and from ILCA;

- training in policy analysis and resource assessment.

Training

ILCA's role in training is to meet the following objectives, in order of priority:

1. To ensure that NARSs collaborating with ILCA have the special skills needed to carry out the research.

2. To ensure that other NARSs also have adequately trained manpower in special skills related to ILCA's six major research thrusts.

3. To ensure that NARSs are able to assimilate and transfer newly generated technology.

The following criteria for the selection of specific training activities have been evolved:

1. The subject matter of any training activity should be directly related to the topics covered by ILCA's research thrusts, or to certain other areas of ILCA's formal mandate in which ILCA either has skills or in which it is considered vital to import skills into sub-Saharan Africa's livestock sector from the developed world.

2. Training activities will be demand-led to the extent of responding to the main manpower training needs expressed by the NARSs, within the areas outlined in 1.

3. Training activities undertaken directly by ILCA will be limited to subject areas in which the Centre has both critical mass and a special advantage over other training institutes. Training needs that do not meet these requirements will be met through contracts with other institutes.

4. Training activities will focus primarily on two areas: research methods and technology transfer.

Information

ILCA's documentation centre has provided a range of services free-of-charge to national livestock scientists, including SDI, specialised bibliographies, current titles, microfiches and photocopies of articles on request; series of network newsletters have been published, designed to link scientists working on similar topics in different countries and provide them with a publishing outlet; national collections of non-conventional literature have been made available on microfiche; African scientists have been encouraged to use our computer facilities to analyse their results for publication by ILCA as research reports.

In the future these services will be continued in order to provide a pan-African documentation service. Services in areas directly related to ILCA's six research thrusts are also emphasised, such that the major recipients are national scientists in collaborating NARSs. However, ILCA also supplies information to scientists in non-collaborating NARSs, and in some subject areas not directly covered by our research thrusts.

The ILCA Newletter and the ILCA Bulletin are available to all livestock scientists in Africa as media for reporting on research results and news. The Centre also publishes a range of publication series to report exclusively on ILCA's own work, including the Annual Report and Research Reports, publishes conference proceedings, specialised bibliographies and microfiche indexes, and prints a number of research network newsletters. Major ILCA publications are published in both English and French, depending on the needs of the target audiences.

Mechanisms for programme review

Strategy

The first sections of this chapter summarise the strategy of ILCA that was formulated jointly by management and the Board of Trustees during the period November 1986 to March 1987. ILCA was requested to prepare a revised strategy statement of this kind by the Technical Advisory Committee of the CGIAR, and it is expected that the current strategy will guide ILCA's activities over the next 15-year period. However, in the event of TAC requesting a further revision of the Centre's strategy in the future, this would again be prepared by management and Board, and submitted to TAC for approval. The TAC-accepted strategy is subsequently presented by TAC to International Centres' Week in Washington.

ILCA's current strategy provides guidelines against which the Centre's management can develop specific activities in research, training and information.

Planning Meetings

It is ILCA's practice to organise Planning Meetings at regular intervals to guide the work of each research thrust. This involves bringing together specialists whose expertise is relevant to a particular thrust to discuss and agree on the major activities the thrust should address. Such specialists are from both developed and developing countries, with scientists from national research services in sub-Saharan Africa playing a major role. Members of the Programme Committee of ILCA's Board of Trustees are also invited to attend Planning Meetings. Planning Meetings are usually held every 2 years for each thrust and provide the guidelines for research activities in the intervening period.

Biennial Meetings

Every 2 years, ILCA brings together leaders of livestock research, development and training in sub-Saharan Africa to discuss the Centre's activities and the continent's needs with senior ILCA staff and management. These meetings provide a forum for an interchange of views on the Centre's activities and so complement the Planning Meetings. Biennial

Meetings are particularly helpful in guiding the Centre's training and information activities which are not subject to Planning Meetings.

Annual Programme Reviews

Each year, usually in early October, ILCA holds its Annual Programme Review meeting, which is attended by both Board members and senior ILCA staff. At these review meetings, thrust coordinators present sets of research protocols proposed for a thrust for the following year. Such protocols are developed by thrust coordinators in collaboration with the Director of Research, with division and section heads and with research site leaders. Protocols are accepted, modified or rejected by the review meeting. Approved protocols then enter the budget planning process so that by the start of the calendar year each approved protocol can be assigned a budget.

Research protocols

No research is conducted at ILCA without forming part of an approved protocol. Protocols provide the budget planning base for the Centre, enabling budget reporting to be organised according to research thrust, division/section or activity. The last is particularly important as the CGIAR/TAC budget reporting system is based on a set of CG System-wide activities that do not necessarily coincide with ILCA's own organisation of activities. Each protocol at ILCA includes details of specific research activities, numbers of manyears by discipline, publications scheduled to arise from the research, and budget.

Programme Committee

The Programme Committee of the Board of Trustees works closely with ILCA management in defining the Centre's strategy. The Committee also participates in Planning Meetings and the Annual Programme Reviews and provides overall policy guidelines governing the Centre's programme of activities. It is the responsibility of the Centre's management to ensure that approved policies are implemented.

Annual reporting

The Centre publishes each year an Annual Report in both French and English. In future it is planned that this publication will be complemented by a Research Highlights publication. These publications are prepared from the results from one year in time for presentation to donors at International Centres' Week in the following year.

Internal organisation

Background

The internal organisation of the Research Department at ILCA at the beginning of 1986 included central units which were based variously on disciplines (Livestock Economics, Nutrition, Forage Legume Agronomy), animal species (Small Ruminants and Camel), objectives (Animal

Reproduction and Health and Livestock Production and Trypanotolerance) or zonal priorities (Range Science). The zonal programmes consisted of work areas related to, but not confined to, the research programmes of the central units. Biometrics and computing were not part of the Research Directorate.

This organisational structure had, during 1986, given way to a more formal discipline-based organisation of the research programme under the Director

of Research and with both the central research units and zonal programmes being included in the Research Department (Figure 1).

Figure 2.1. Organisation of the Research Department, 1986.

The Research Department consisted of three central research divisions (Animal Science, Plant Science and Livestock Economy), a Research Support Division and, as before, zonal programmes in the East African rangelands, the highlands, the humid zone, the subhumid zone and in the arid and semi-arid zones.

The heads of the three research divisions, together with the team leaders of the multidisciplinary teams in the zonal programmes, provided disciplinary and administrative support for the research programme. Each of the research divisions consisted of several sections.

Administrative units for research

In ILCA's present strategy, as a further coordination between central units and zonal research, and in order to ensure effective implementation of the research programme, a matrix type of organisational structure has been imposed in which the specific research thrusts are superimposed on discipline-based research at ILCA headquarters as well as on research at zonal sites. This has required some realignment of the administrative units outlined in Figure 2.1. The realignment of sections within divisions, to conform to the present strategy, is outlined in Figure 2.2.

Figure 2.2. Organisation of the Research Department, June 1987.

The Animal Science Division reflects an emphasis on component research on animal production in general, as distinct from the previous emphasis on animal production in trypanotolerant livestock. Animal breeding relates to those aspects of breeding associated with animal management, such as the emphasis on breeds of trypanotolerant cattle and small ruminants. Similarly, research on camels is now excluded from the research programme but dairying is included, reflecting the emphasis on milk production and milk processing.

The Plant Science Division includes the previous Forage Agronomy Section and the Soil and Plant Nutrition Section. Pastoral Ecology is merged partly into Forage Agronomy and partly into Genebank Resources within the Research Support Division.

Within the Livestock Economy Division, a distinction is made between macro-economics (Livestock Policy) and micro-economics (Production Economy). Additionally, Resource Assessment and Management Studies, previously within various zonal programmes and within the Aerial Survey and Range Science Sections at headquarters, are now included in the Livestock Economy Division to give improved coordination of activities.

Research services associated with the Experiment Stations at Debre Zeit and Debre Berhan in Ethiopia, the Nutrition and Soils Laboratories, the Genebank Resources and the Computer Science and Biometrics services comprise the Research Support Division. This is an attempt to make support services more accessible to all ILCA units and to emphasise the general nature of these services. The measurement of success for the Research Support Division is based on the quality of the services provided and on the incorporation of these services into the research programme.

Zonal research sites include Debre Zeit and Debre Berhan in Ethiopia (highlands), Ibadan in Nigeria (humid zone), Kaduna in Nigeria (subhumid zone) and Bamako in Mali (semi-arid and subhumid zones).

The research and support divisions and the zonal research sites form ILCA's cost centres for budgetary purposes. Moreover, heads of divisions and research site leaders are the administrative supervisors of research staff, reporting directly to the Director of Research at headquarters. Where, however, the administrative supervisor is not the thrust coordinator, the initiation of the research programme is subject to the judgement of the thrust coordinator. Similarly, while a zonal research site leader is the administrative head of the station, and will be closely involved in the planning and evaluation of the research programme, the responsibility for the research programme and its coordination at the various sites, is that of the thrust coordinator.

Whereas the discipline-based divisions and sections are responsible for the quality of the work of individual staff, administration, budgets and the balance of the workload, the coherence of the research direction and programme delivery are the major functions and responsibilities of the thrust coordinators.

Other departments

The Training and Information Department at ILCA comprises three divisions: training, documentation and publications. ILCA also has departments of Outreach, Administration and Finance at its headquarters.

Physical locations

The locations of ILCA's research sites and facilities are representative of the major agro-ecological zones of sub-Saharan Africa, and are in areas with high concentrations of ruminant livestock. Ethiopia, a country considered 'neutral' from an anglophone/francophone point of view, and the host country of several international organisations, with good international communications and the highest ruminant livestock population of all African countries, was chosen as the base for ILCA's headquarters which are located on the outskirts of Addis Ababa.

Nigeria, with the second highest livestock population in the subcontinent and with large areas representative of the humid and subhumid zones, is the site of two of ILCA's major field programmes. Mali, with large livestock populations and with both subhumid and semi-arid areas, hosts a third field programme also giving the Centre a base in francophone West Africa. ILCA's highlands research is located in Ethiopia, because the country includes most of the highland area of Africa. The East African rangelands work was formerly developed in both the southern rangelands of Ethiopia and on group ranches in the Kajiado District of Kenya.

ILCA has two major research stations in Ethiopia and conducts research at a range of sites in collaboration with various Ethiopian institutions. These include sites in the Rift Valley, the southern rangelands and the highlands.

Trypanotolerance Network is based at ILRAD's headquarters in Nairobi, Kenya. ILCA's humid zone research team is based at IITA's headquarters site in Ibadan, Nigeria. The team conducts research at a number of sites

in southwest and southeast Nigeria. The subhumid zone team is located in Kaduna and conducts research and testing at four major sites in central Nigeria. ILCA's semi-arid zone team operates from Bamako and Niono in central Mali and conducts research at a wide range of sites in the central and southern parts of the country. One of the staff members of this team works at ICRISAT's Sahelian Centre in Niamey, Niger. A limited number of studies have been carried out at sites in the area surrounding Niamey.

Through its networks ILCA collaborates with national agricultural research services (NARSs) in a number of other countries in sub-Saharan Africa. The Trypanotolerance Network includes collaborative research at 1 site in Ethiopia, 2 sites in Gabon, 3 sites in Gambia (as well as having a staff member working at the International Trypantolerance Centre in Banjul), 2 sites in Ivory Coast, 1 site in Kenya, 1 site in Senegal, 2 sites in Tanzania, 2 sites in Togo and 3 sites in Zaire. ILCA is also involved in field activities in Botswana and Zimbabwe, and maintains collaborative links through the ARNAB Network in Senegal and the Small Ruminant and Camel Network in Rwanda.

Resources

Sites

ILCA leases land from the Ethiopian Government at three sites: 10 ha on the outskirts of Addis Ababa where the headquarters facilities are located; a 160-ha research site near Debre Zeit, 50 km southeast of Addis Ababa; and a 280-ha research site near Debre Berhan, 120 km northeast of Addis Ababa. The Centre has exclusive use of such land and permission to construct facilities on it.

The Centre also has a collaborative agreement with the Ethiopian Government for the use of training facilities at Soddo in the Ethiopian Rift Valley. Other sites in Ethiopia where ILCA conducts research are operated by the Ministry of Agriculture, the Institute of Agricultural Research or the Ministry of State Farms. Similar arrangements for collaborative research exist in Benin, Botswana, Gambia, Kenya, Mali, Niger, Nigeria, Rwanda, Senegal and Zimbabwe.

Buildings

Most of ILCA's construction work has been concentrated at the headquarters in Addis Ababa, where apart from separate office buildings, other permanent and semi-permanent buildings have been constructed for a variety of uses, including 23 houses for staff and Postdoctoral Associates, hostel accommodation for up to 60 visitors/trainees, an animal barn and a forage germplasm cold store. Other buildings have been constructed at the Debre Zeit and Debre Berhan research stations.

Elsewhere in Africa, ILCA has constructed a number of buildings to facilitate its work. The Centre has an office, a research building and houses in Niono, Mali; an office and two houses on IITA's compound in Ibadan, Nigeria; pre-fabricated offices on ILRAD's compound in Nairobi, Kenya; and basic research structures at a range of sites in sub-Saharan Africa. The majority of other buildings used by ILCA are in the form of rented or loaned accommodation.

Facilities

Major facilities at ILCA's headquarters in Addis Ababa include laboratories for animal nutrition, reproduction and health work and soil science, a forage germplasm genebank, central computer unit, telephone, telex and radio communication links, and specialised documentation, publication and photographic equipment.

Facilities at other sites in Africa are primarily in the form of basic office facilities and essential laboratory equipment. For example, there are 15 microcomputers used by ILCA outside Ethiopia, including 8 in Nairobi, Kenya, 3 in Kaduna, Nigeria, 2 in Ibadan, Nigeria, 2 in Niono, Mali and 2 at the International Trypanotolerance Centre in Gambia. ILCA owns and operates two aircraft (one based in Ethiopia and one in Mali) which are used primarily for aerial survey work. The Centre also owns a range of transport vehicles distributed over all major sites.

Funding

Calculated as percentages of total core expenditure, ILCA's mean expenditures on research, training and information over the 1982-1986 period were 63.8%, 6.6% and 10.0% respectively. The corresponding 5-year means for all 13 CGIAR-supported centres were 61.2%, 8.0% and 6.0% respectively. ILCA's 5-year mean expenditure on research is between that of CIMMYT (65.6%) and ICRISAT (60.6%), being fourth highest after WARDA (81.0%), IFPRI(66.6%) and CIMMYT. The proportion of funding allocated to training at ILCA is the seventh highest of all centres, while the proportion of funding allocated by ILCA to information is the highest of all centres.

Following the recommendations of the 1981 QQR there has been a dramatic change in the balance between ILCA's research expenditures at headquarters and at field sites over the past 5 years. In 1982, central research accounted for 19.3% of total core funds and field sites research for 45.9%; in 1986 the respective figures were 36.4% for central research (which includes research networks) and 26.7% for field site research.

The ratio between staff costs and non-staff costs at ILCA has remained fairly constant at 1.17:1.00, the actual core expenditures for these two categories being US$ 5.31 million and 4.65 million respectively in 1982 and US$ 7.60 million and 6.31 million respectively in 1986.

Net funding for ILCA in 1986 was US$ 14.89 million, plus an additional US$ 2.00 million received under special project funding. The 1986 ratio of expenditure between ILCA's research, training and information activities was approximately 60:10:10, and the remaining 20% was used for Board, administration and finance operations and outreach activities (Table 2.1). The ratio of expenditure for headquarters compared to field operations is currently 70:30.

The projected net funding requirement for 1987 is US$ 16.5 million (in 1987 US$), an amount that does not include provision for real growth in senior man-years or operating costs over the 1986 estimate, only a 10% inflation element. Special Project funding is projected to be US$ 1.842 million in 1987.

Table 2.1. Core expenditures at ILCA, 1986.

Item	Expenditure (US$ '000)
Research	
Direction	194
Central research units	2791
Central support units	1345
Networks	730
Field programmes	3711
(Total)	(8771)
Training and Information	1989
Outreach	342
Board, EMR/EPR and management	836
Operations	
Finance	424
Administration	448
General operations	1103
(Total)	(1975)
Capital	1087
Earned income	-110
Net expenditure	14 890

Personnel

The changing ratio of funding for central research and field sites in part reflects the ratio of staffing. In 1982, 54% of all professional staff were stationed at headquarters and 46% at field sites, in 1986, 68% were at headquarters and 32% at field sites. The strengthening (in qualitative and quantitative terms) of staff at headquarters is in line with the recommendations of the 1981 QQR.

In 1986 staff of ILCA comprised 55 internationally recruited professionals, 26 national professionals, 9 Postdoctoral Associates and Research Associates and a total of 514 support staff, 384 of the last being at headquarters. Thirty of the international staff hold Ph.D. degrees, 15 hold M.Sc. degrees and 10 hold B.Sc. degrees. Among the local professionals there are 2 Ph.Ds, 11 M.Scs, 6 B.Scs and 5 Diplomas.

When ILCA started, social scientists were a particularly important disciplinary group in studying and understanding the livestock systems of sub-Saharan Africa. Since the Centre has developed its component research, greater numbers of biological and animal scientists have been employed at both field sites in central research units. ILCA's professional staff (both international and local) in 1986 included 20 biological scientists, 12 animal scientists, 13 social scientists, 3 programmers and 1 biometrician.

Cooperative activities

Methods

ILCA's research and information networks have provided close links between the Centre and many livestock researchers and their institutions in sub-Saharan Africa. These links have been strengthened through the distribution of ILCA publications. Other close links are the result of the collaborative nature of ILCA's zonal research programmes, which have also worked closely with farmers and pastoralists. Strong links have been developed with a number of other IARCs and with a range of institutions in the developed world through both special projects and training activities. The Centre has also developed a number of close links with non-governmental organisations, particularly in the host country.

General links

Table 2 gives the number of addresses in both sub-Saharan Africa and the rest of the world to which the ILCA Newsletter is currently sent. Other major ILCA publications are distributed to a similar variety of recipients, albeit to fewer numbers.

Table 2.2. Number of addresses by category and region to which the ILCA Newsletter is currently sent (March 1987).

Region	Research inst.	Univ.	Other training	Libra-ries	Mass media	Devel. instit.	Other	Total
Sub-Saharan Africa								
Total	910	421	91	311	298	1159	536	3726
West	375	175	18	111	79	363	171	1292
Central	62	17	6	22	29	88	58	282
East	342	147	43	129	143	537	236	1577
Southern	131	82	24	49	47	171	71	575
Anglophone	561	358	72	218	206	784	333	2532
Francophone	338	62	19	91	83	365	188	1146
Others	11	1	0	2	9	10	15	48
Rest of world								
Total	440	306	16	269	139	158	553	1881

The selective dissemination of information service provided by the Documentation Division is currently received monthly by 555 researchers in sub-Saharan Africa and the library's 'current titles' service is received by 100 African libraries.

Farming

ILCA's links with African farmers and pastoralists are particularly strong in Ethiopia, Nigeria, Mali and Kenya, countries where field sites are located. When ILCA first began its research work, field teams focused on describing and analysing existing livestock systems, which involved interviews and discussions with farmers and pastoralists. Many of these clients are now assisting ILCA's research by testing, and adopting, ILCA technologies, particularly in the highlands and southern rangelands of Ethiopia and in the humid and subhumid zones of Nigeria. Such links have been strengthened through field days.

National programmes

Much of the research and testing work of ILCA's zonal field teams has been carried out in close collaboration with national agricultural and livestock research organisations in Ethiopia, Nigeria, Mali and Kenya. ILCA's central research units have also developed close links with national organisations in Ethiopia, and, through the coordination of networks, with several other countries.

Separate collaborative projects between ILCA and national institutes have been developed in countries where no ILCA field team is based. Such links are facilitated by Memoranda of Agreement jointly signed by ILCA and the appropriate governments.

Particularly strong links between ILCA and national organisations are the result of a range of training activities. About 550 national personnel involved in livestock research and development in sub-Saharan Africa have attended ILCA training courses, and 140 individuals have spent from 2 weeks to 2 years working and studying at ILCA as part of the individual training programme. A further 2500 individuals have attended regional conferences and workshops organised by ILCA. Training activities have also helped to form close links between ILCA and a number of African universities.

Other IARCs

ILCA's Trypanotolerance Network (and the former Kenyan team of the East African Rangelands Programme) have had particularly close links with ILRAD, by sharing its facilities and by cooperating in research. The Trypanotolerance Network has been jointly coordinated by ILCA and ILRAD. ILCA's humid zone team in Ibadan, Nigeria, has worked closely with IITA on alley farming and on research on tree legume germplasm. At the Sahelian Centre in Niamey, Niger, a staff member of the semi-arid zone team has cooperated with ICRISAT staff in studies on the role of animal traction in Niger's farming systems.

ILCA and CIAT have collaborated on a joint tropical pastures project and ILCA has made facilities available to CIAT staff working in eastern and southern Africa. Some crop varieties distributed by CIP, ICARDA and CIMMYT have been tested by ILCA's Highlands Programme. ILCA has recently hosted an ICRISAT regional meeting and the two centres have been collaborating on the Vertisol project in the Ethiopian highlands. IBPGR has provided funding and other assistance for the development of forage germplasm collection and storage at ILCA.

ILCA has hosted and participated in an IFPRI meeting on the nutritional impact of changing from subsistence to cash production and in an IFPRI/UN workshop on human nutrition. ILCA staff have taught in regional CIMMYT courses on farming systems research, and recently hosted a CIMMYT course on data collection and analysis techniques. Others have participated in ISNAR review missions in Somalia and Zimbabwe.

Other organisations

Regional: ILCA has signed Memoranda of Understanding with the Organisation of African Unity (OAU, based in Addis Ababa) and with the Comite Inter-etats de Lutte contre la Secheresse au Sahel (CILSS). Memoranda are under negotiation with the Institut de Recherche Agronomique et Zootechnique (IRAZ, working in Burundi, Rwanda and Zaire) and with the UN's Economic Commission for Africa (ECA, based in Addis Ababa). ILCA maintains working relations with the Preferential Trade Agreement group of eastern and southern African countries (PTA) and with the Southern African Development Coordination Conference (SADCC).

Developed world institutions: Collaborative research projects have been conducted between ILCA and many institutions in the developed world. ILCA staff have acted as consultants for the World Bank and UNDP to evaluate livestock research activities in Rwanda, Burundi and Cameroon. ILCA and FAO have collaborated on dairy technology and trypanotolerance research, and have jointly made a study of animal traction in sub-Saharan Africa. ILCA and the Farming Systems Support Project at Florida State University held a joint workshop on 'On-farm Work with Livestock' in June 1985. The joint supervision of a number of Graduate Associate students working at ILCA has also resulted in close contacts between ILCA research units and university scientists from developed countries.

Non-governmental organisations: Following the 1984/85 drought, ILCA developed close links with a number of non-governmental organisations concerned with development aid. Principal among these are OXFAM-America and Caritas (Switzerland and Belgium), who have supported some of the work of the highlands team, and CARE-Ethiopia, who have collaborated with ILCA in research and development work in the southern rangelands.

Biographical sketches of senior management staff of ILCA

John Walsh (Director General)

(see Chapter 4 under Board of Trustees))

Kurt Peters (Director of Research)

Kurt Peters, a West German national, joined ILCA in 1985 as Director of Operations and was appointed Director of Research in January 1986.

Kurt was educated at the Technical University of Berlin where he gained a Dipl.Ing.Agr. in animal breeding and husbandry in 1970 and a Dr.Agr. in tropical animal production in 1974. He worked as Team Leader and Animal Scientist on a GTZ project in Kwala Lumpur, Malaysia from 1974 to 1977 and on his return to West Germany in 1977 was appointed as Animal Scientist at the Institut fur Tier Produktion at the Technical University of Berlin. He then became Professor at the Institut fur Tierzucht und Genetik at the University of Gottingen from 1981 to 1985 before joining ILCA.

He has been responsible for the planning and implementation of research on animal production systems in Malaysia, India, Turkey and Egypt and has taught university courses on animal ecology in the tropics, livestock systems, cattle production, small ruminant production, pig production, poultry production and unconventional livestock.

Bob Scholtens (Director of Training and Information)

Bob Scholtens, an American, joined ILCA in 1984 as Director of Training. He also developed ILCA's animal reproduction and health work before assuming his present duties in January 1986.

Bob was educated at Michigan State University where he gained a B.S. and D.V.M. in veterinary medecine in 1959, at the University of Illinois where he gained an M.S. in parasitology in 1961 and at the London School of Hygiene and Tropical Medecine where he was awarded a D.A.P.E. in parasitology and entomology in 1966.

From 1961 to 1976 he worked for the Center for Disease Control of the US Public Health Service, becoming Director of the Vector Biology Division. He conducted research on the control of tropical diseases transmitted by vectors. From 1976 to 1984 he worked in the Department of Pathobiology at the University of Tennessee where he was appointed as Professor. At the University he was also responsible for the clinical laboratory and for research in parasitology, entomology and epidemiology.

Moustapha Sall (Director of Outreach)

Moustapha Sall, a Senegalese, joined ILCA in 1975 and has held the posts of Director of International Liaison and Director of Outreach.

Moustapha was educated at the Ecole Nationale Veterinaire in Toulouse (Diplome), the Faculte de Medecine et de Pharmacie at the University of Toulouse (Diplome d'Etat de Docteur Veterinaire) and the Institut d'Elevage et de Medecine Veterinaire des Pays Tropicaux at Maisons-Alfort (Diploma in Animal Health).

He has worked as Veterinary Inspector in Senegal, interim Director of the Centre de Recherches Zootechniques de Dahra-Djoloff, Head of Division at the Direction de l'Elevage et des

Industries Animales du Senegal and interim Director of livestock and A.I. in Senegal. He was appointed as Deputy Director of the Bureau Interafricain des Ressources Animales (OAU/STRC/IBAR) in Nairobi in 1968.

John Trail (Deputy Director of Research for Animal Science)

John Trail, a British national, joined ILCA in 1976 and has worked as Head of the Livesock Productivity and Trypanotolerance Group based in Nairobi.

John was educated at the University of Edinburgh where he gained an N.D.A. and B.Sc. in agriculture (1957), a Diploma in animal genetics (1963) and a Ph.D. in animal breeding (1969).

He worked as Animal Geneticist for the Ministry of Animal Industry, Game and Fisheries in Uganda from 1964 to 1969 before being appointed Senior Animal Production Research Officer with FAO in 1970. In 1974 he became the Coordinator of Range and Animal Production Research at FAO.

John Tothill (Deputy Director of Research - Plant Science)

John Tothill, an Australian, joiuned ILCA in 1984 as Head of the Forage Legume Agronomy Group. He became Deputy Director of Research in 1986.

John was educated at Lincoln College at the University of New Zealand (B.Agr.Sc. 1953) and at the University of California (Ph.D. in botany/ecology in 1961). He then worked for CSIRO in Queensland, Australia from 1962 as Principal Research Scientist until joining ILCA. His research with CSIRO involved the ecology and productivity of improved and native pastures in NE Australia, autoecological and phenological studies and nutrient cycling.

Stephen Sandford (Deputy Director of Research - Economics)

Stephen Sandford, a British national, joined ILCA in 1982 as Head of the Livestock Policy Unit. He became Deputy Director of Research in 1976.

Stephen was educated at Oxford University where he gained a BA in classical languages and politics, philosophy and economics in 1960, a postgraduate diploma in agricultural economics in 1965 and a B.Litt. in agricultural economics in 1966.

From 1971 to 1975 he worked as Senior Economist and Project Officer (British Technical Assistance Officer) with the Livestock and Meat Board of the Ethiopian Government, where he was in charge of the Project office of the Board. In 1975 he joined the Overseas Development Institute in London as Research Officer and a member of the Agricultural Administration Unit. His research was primarily in pastoral development.

Koen Geerts (Head of Administration)

Koen Geerts, a Belgian, joined ILCA in 1979 as Administrative and Finance Officer in the ILCA Mali field programme. He was appointed Head of Administration in 1982.

Koen was educated at the University of Brussels where he gained a Master of Law degree in 1975, majoring in international law and economic and business law.

Before joining ILCA he worked as Associate Expert on the UN/OTC Project of Administrative Reform in Mali, where he worked in collaboration with the Office of the President of the Republic and the Ministry of Labour and Social Affairs. While in Mali, he was also part-time lecturer in public administration at the University of Bamako.

Richard Stewart (Deputy Director of Training and Information)

Richard Stewart, a British national, joined ILCA in 1983 as Science Writer. He has worked as Head of Audio-Visuals and Mapping and was appointed Head of Publications in 1986.

Richard was educated at the University of Sheffield, UK (B.Sc. in Chemistry in 1974) and at Wye College, University of London (Ph.D. in agricultural chemistry/membrane transport in 1977).

He worked as Lecturer in biological chemistry at the University of Essex before joining the International Center for Agricultural Research in the Dry Areas (ICARDA) in Syria in 1979 as Science Writer. He was consultant to ICARDA's Nile Valley Faba Bean Project immediately before joining ILCA.

Senior staff of ILCA

Name	Position	Nationality
Walsh, John	Director General	Irish
Peters, Kurt	Director of Research	W German
Central research:		
Trail, John	Deputy Director of Research (Animal Science)	British
Bourzat, Daniel	Animal Scientist	French
D'Ieteren, Guy	Veterinarian	Belgian
Kasali, Babs	Head of Animal Reproduction and Health Section	Nigerian
Little, Doug	Head of Nutrition Section	Australian
Mattoni, Mario	Veterinarian	Italian
Mukassa, Eddie	Animal Scientist	Ugandan
Reed, Jess	Animal Nutritionist	American
Said, Abdullah	Animal Nutritionist	Kenyan
Wilson, Trevor	Head of Small Ruminant and Camel Group	British
Tothill, John	Deputy Director of Research (Plant Science)	Australian
Haque, Ihsanul	Soil Scientist	Indian
Hanson, Jean	Genebank Specialist	British
Kahurananga, James	Plant Ecologist	Ugandan
Lazier, John	Forage Agronomist	Canadian
Russell-Smith, Tony	Forage Agronomist	British
Sandford, Stephen	Deputy Director of Research (Livestock Economics)	British
Addis Anteneh	Economist	Ethiopian
McIntire, John	Economist	American
Field Research Sites:		
Jutzi, Samuel	Highlands Team Leader	Swiss
Reynolds, Len	Humid Zone Team Leader	British
Atta-Krah, Akwasi	Agronomist	Ghanaian
Francis, Paul	Agro-economist	British
von Kaufmann, Ralph	Subhumid Zone Team Leader	British
Mohamed-Saleem	Forage Agronomist	Sri Lankan
Diallo, Kader	Semi-arid Zone Team Leader	Senegalese
Bartholemew, Paul	Forage Agronomist	British
Dicko, Maimouna	Animal Nutritionist	Malian
Hiernaux, Pierre	Ecologist	French
Soumare, Samba	Sociologist	Malian
Tall, Agibou	Administrative Officer	Malian
Traore, Adama	Veterinarian	Malian

Coppock, Layne	Ethiopian Rangelands Team Leader	American
Solomon Bekure	Kenyan Rangelands Team Leader	Ethiopian
de Leeuw, Pieter	Ecologist	Dutch
Nicholson, Mark	Animal Scientist	British

Training and Information:

Scholtens, Bob	Director of Training and Information	American
Beckerman, Seth	Editor/Writer	American
Leymarie, Annie	Translator/Editor	French
Micheal Hailu	Head of Documentation	Ethiopian
Neate, Paul	Science Writer	British
Niang, Daouda	Translator/Editor	Senegalese
Stewart, Richard	Deputy Director T and I/ Head of Publications	British

Outreach:

Sall, Mustapha	Director of Outreach	Senegalese
Amde Wondafrash	National Liaison Officer	Ethiopian

Administration:

Geerts, Koen	Head of Administration	Belgian
Johri, B.K.	Personnel Manager	Indian
Leone, Franco	Maintenance Engineer	Italian
Thersby, John	Warden	British

Finance:

Belayhun Wondimu	Chief Accountant	Ethiopian
Emmanuel Tesfamariam	Budget Officer	Ethiopian

3. DOCUMENTS OF GOVERNANCE OF ILCA

At the second meeting of the CGIAR in Washington in December, 1971, livestock in Africa was identified as a topic which should be examined by the group. A sub-group of CGIAR members having particular interest in this topic met and decided to commission a task force to explore the feasibility of establishing an African livestock research centre. This task force recommended the creation of an international livestock Centre for Africa, a recommendation which was subsequently endorsed by the TAC and approved by the CGIAR. The World Bank was designated as the implementing agency.

A letter of understanding dated October 7, 1973 was signed between the Empire of Ethiopia and the World Bank, acting on behalf of the CGIAR, for establishing the headquarters of the Centre in Ethiopia was followed by constitution of the Board of Trustees and the appointment of the first Director General. A formal memorandum of agreement between these two parties for establishment of the Centre in Ethiopia and setting forth the conditions and understandings for the Centre's operation was concluded on July 16, 1974. This agreement was amended and ratified by exchanges of letters of 17th April and 13th June, 1975 and was updated by a revised text signed on 24th December, 1982. Further revisions of 16 February, 1984 provided for an increase in the size of the Board from 12 to 14 members.

In 1976, ILCA signed a 99-year least with the Ethiopian Government for its headquarters site of 10 ha. This area was expanded to 34 ha in a supplementary lease dated January 24, 1981.

In the following pages are reproduced:

1. The agreement between the Provisional Military Government of Socialist Ethiopia and the International Livestock Centre for Africa dated December 24th 1982 (but modified to accommodate the change in Board numbers and composition agreed by subsequent exchanges of letters).

2. The Rules of Procedure of the Board of Trustees.

AGREEMENT*

BETWEEN

THE PROVISIONAL MILITARY GOVERNMENT OF SOCIALIST ETHIOPIA
(hereinafter referred to as the "Government") on the one part

AND

THE INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA
(hereinafter referred to as the "Centre") on the other part

Whereas, on the basis of previous study, discussion and decision by the Consultative Group on International Agricultural Research concerning the need for research on livestock in Africa; and

Whereas, for the purpose of carrying out such research a Memorandum of Understanding has been signed by the members of the Consultative Group on International Agricultural Research to establish an International Livestock Centre for Africa with Headquarters in Ethiopia and an International Laboratory for Research on Animal Diseases with Headquarters in Kenya; and

Whereas, pursuant to such decision and agreement the International Livestock Centre for Africa has been established in Ethiopia by a Memorandum of Agreement concluded on the 16th of July 1974 between the Government of Ethiopia and the International Bank for Reconstruction and Development acting on behalf of the Consultative Group on International Agricultural Research; and

Whereas, it is desirable that the said Memorandum of Agreement should now be replaced by a new Agreement;

The parties hereto agree as follows:

ARTICLE 1
DEFINITION

In this Agreement unless the context otherwise requires:

1. "Board" means the Board of Trustees of the Centre;
2. "Centre" means the International Livestock Centre for Africa;
3. "CGIAR" means the Consultative Group on International Agricultural Research;
4. "Director General" means the Director General of the Centre
5. "Government" means the Provisional Military Government of Socialist Ethiopia;
6. "Headquarters" means the buildings and structures or portions thereof which at any given moment are occupied by the Centre at its principal site in Ethiopia;
7. "ILRAD" means the International Laboratory for Research on Animal diseases;
8. "Staff" means officers and employees of the Centre with the exception of those who are assigned to work on hourly or piece rate basis.

*Incorporating changes in Board size and composition agreed to by subsequent exchanges of letters.

ARTICLE 2
ESTABLISHMENT AND NAME

The Centre called: "International Livestock Centre for Africa" has been established in Ethiopia by a Memorandum of Agreement concluded on behalf of the Government of Ethiopia and the International Bank for Reconstruction and Development acting on behalf of the Consultative Group on International Agricultural Research;

This Agreement, together with the amendments has been ratified by an exchange of letters between the Ministry of Agriculture and the Resident Representative of the World Bank in Ethiopia on April 17, 1975.

The Centre shall operate in accordance with the provisions of this Agreement.

ARTICLE 3
PURPOSES

1. The purposes of the Centre shall be to assist national efforts which aim to change production and marketing systems in tropical Africa so as to increase the total yield and output of livestock products and improve the quality of life of the people in this region. Hence the Centre shall serve:

   a. as an international centre for research to promote the development and demonstration of improved livestock production systems, optimizing the use of human and natural resources in AFrica;

   b. as a focal point for training activities which will increase regional competence in a systems approach to livestock production and development;

   c. as a multidisciplinary documentation centre working in both French and English, for the livestock industry of Africa;

2. In carrying forward its programme, the Centre will develop close links with national and regional organizations undertaking research and training activities in the same or closely related fields of interest.

ARTICLE 5
ACTIVITIES

1. The activities of the Centre will serve to identify means of increasing efficiency of the major animal production systems of tropical Africa and to assist the governments and authorities responsible for achieving new levels of productivity.

2. In particular, the Centre will engage in the following types of activities:

   a. retrieve, assemble and make available in both English and French all relevant information on animal production in tropical Africa;

b. engage a multidisciplinary research staff to study existing animal production systems (including breeding, feeding, management and related health aspects of husbandry, the improvement of range and pastures, and the social and economic factors affecting the livestock industry including processing and marketing), develop new or amended systems of production, and define priorities for other research;

c. Support, supplement and cooperate with existing national and regional research stations or programmes in developing a fully co-ordinated programme of production and rangeland research which is related appropriately to the urgent needs of livestock development;

d. develop the capacity to undertake research programmes in specific aspects of livestock production which are appropriate to an international centre, it being understood that such programmes will require carefully justification with particular emphasis given to their timing and to their international application;

e. organize, or assist in organizing, seminars, technical conferences and training courses for persons engaged in livestock research, extension, planning and production in order particularly to increase regional competence in the interdisciplinary "systems" approach to livestock research and development;

f. make available statistical support, information or advice to national, regional, or international authorities in the various fields relating to animal production in which the Centre is actively engaged;

g. engage in such other activities as may be found necessary in furtherance of the objectives of the Centre.

ARTICLE 6
POWERS OF THE CENTRE

In furtherance of these purposes and activities, the Centre shall possess full juridical personality and the capacity to:

1. Acquire or obtain from any governmental authority, national, municipal or local, foreign or domestic, or otherwise, or from any company, cooperation, association, person or other entity, such charters, franchises, licenses, rights, privileges, assistance (financial or otherwise) and concessions as are conductive to and necessary for the attainment of the purposes of the Centre;

2. Receive and acquire from any person, firm or entity, by donation, grant, exchange, devise, bequest, purchase or lease, either absolutely or in trust, contributions, consisting of such property, real or personal, including funds and valuable effects or things, as may be useful or necessary to carry out the purposes and objectives of the Centre, and to hold, own, operate, use or dispose of said property or valuable things;

3. Do, manage, and perform all acts and things as are necessary, expedient, suitable or proper for the furtherance or accomplishment of the purposes and the attainment of any of the objectives herein stated, or which shall appear, at any time, as conducive to and useful for the activities of the Centre, including the capacity to institute legal proceedings;

4. Construct, erect or maintain any buildings required for the purpose of accommodating its Head Officer or Branch Offices.

ARTICLE 7
STATUS OF THE CENTRE

The Centre shall operate as an autonomous, non-profit organization, international in character, governed by a Board selected as provided in Article 8 of this Agreement, and headed by a Director General selected as provided in Article 10 of this Agreement.

ARTICLE 8
GOVERNANCE

1. The Centre shall be governed by a Board of fourteen members, comprised and selected as follows:
   a. two members designated by the Government;
   b. four members designated by the CGIAR;
   c. seven members-at-large with interests and qualifications relevant to the work of the Centre to be selected and appointed initially by the CGIAR and subsequently by the Board itself;
   d. the Director General of the Centre - ex-officio.

2. At least 3 of the members in categories b and c above shall be African nationals.

3. The rotation of the members of the Board shall be determined as follows:

   a. the term of office of the members designated by the Government shall be determined by the Government;

   b. all other members of the Board shall serve for terms fixed by the Board, but not in excess of three years with the right to be eligible to succeed themselves for a maximum of two terms;

   c. vacancies among the members-at-large by reason of their retirement, death, incapacity or any other cause shall be filled by the Board;

   d. any such vacancies among the four members nominated by the CGIAR shall be filled by persons selected from a list of CGIAR nominees;

   e. new appointees to replace a serving member shall be appointed for the remainder of the term of the member.

4. The Board of Trustees of ILRAD shall be invited to send two of its members to attend as observers the meetings of the Board of the Centre.

ARTICLE 9
POWER OF THE BOARD

The Board shall:

1. Frame rules of procedures for its own working;
2. Elect a Chairperson and a Vice Chairperson from among its members;
3. Determine policy for the operation of the Centre;
4. Select and appoint the Director General of the Centre for such period or periods as it deems necessary and appropriate;
5. Approve the programmes developed for the Centre by the Director General;
6. Approve the appointment of senior staff members of the Centre on the recommendations of the Director General;
7. Scrutinize and approve the budget estimates for the Centre;
8. Take such actions as shall be necessary to conclude and realize the purposes of such formal relationships with ILRAD as may be determined from time to time by the CGIAR including, without limitation, dissolution or reconstitution of the Board of the Centre;
9. Do and perform all other acts considered necessary, suitable and proper for the attainment of any or all of the purposes, activities and objectives of the Centre as enumerated in this agreement.

ARTICLE 10
DUTIES OF THE DIRECTOR GENERAL

1. The Centre shall be administered by a Director General appointed by the Board.
2. The Director General shall be responsible to the Board.
3. The Director General shall;
   a. implement the policies determined by the Board;
   b. follow the guidelines laid down by the Board for the functioning of the centre;
   c. carry out the directions of the Board and abide by its decisions;
   d. under the overall policy guidance of the Board, be responsible for the operation and management of the Centre and for assuring that its programmes and objectives are properly developed and carried out.

ARTICLE 11
COOPERATION WITH ILRAD

1. In realizing its purpose and carrying out its activities, the Centre shall closely cooperate with ILRAD.
2. If and when the CGIAR determines that it would be appropriate to modify the cooperation between the Centre and ILRAD under a formal relationship, the CGIAR will determine the terms and conditions under which that relationship with the directives of the CGIAR.
3. The Board of the Centre shall take all such other actions as shall be necessary to conclude and realize the purposes of such normal relationship in accordance with the directives of the CGIAR.

ARTICLE 12
FINANCING

For the achievement of the purposes hereof:

1. Financial support for the Centre shall be provided by the members of the CGIAR, which shall consider annually the budgetary requirements of the Centre as approved by the Centre's Board;

2. The Centre shall also be authorized to receive contributions from other sources;

3. Without being restricted by financial controls, regulations or moratoria the Centre may;
   a. receive and hold funds and currencies of all kinds and operate bank accounts in any currency;
   b. transfer its funds and currencies from Ethiopia to another country or vice-versa.

ARTICLE 13
PARTICULAR COVENANTS

1. The Government hereby agrees to accord to the Centre and its staff the following rights, privileges and immunities;

   a. Assurances of authority for the Board to establish employment policies and conditions for the Centre's Staff on an international basis, without discrimination as to nationality or origin or any consideration other than qualifications and experience, as may be necessary to assure availability of well-qualified staff and high quality of performance;

   b. assurance of procedures for expeditious clearance for entry into Ethiopia of staff, trainees, scholars, and visitors concerned with the Centre's programmes;

   c. Authorization for the unrestricted movement of such biological materials into and out of Ethiopia as may be needed by the Centre or for its programme in any part of the World consistent with the quarantine inspection laws and regulations of Ethiopia to avoid the introduction or export of serious pests or diseases, it being understood that the Government agrees to assure prompt and expeditious inspection of all materials;

   d. freedom for publication and dissemination by the Centre of research results;

   e. the Centre, its property and assets, wherever located and by whomsoever held, to enjoy immunity from every form of legal process except insofar as in any particular case it has expressly waived its immunity, it being understood that no waiver of immunity shall extend to any measure of execution;

   f. the premises of the Centre to be inviolable and the property, assets and archives of the Centre, wherever located and by whomsoever held, to be immune from search, requisition, confiscation, expropriation and any other form of interference, whether by executive, administrative, judicial or legislative

action with the understanding that the Centre shall not permit its premises to become a refuge from justice for persons who are avoiding arrest under any law of Ethiopia, or who are attempting to avoid service of legal process issued by the competent Ethiopian authorities;

g. to the extent necessary to carry out the operations provided for in this Agreement and subject to the provisions of this Agreement, all property funds and assets of the Centre to be free from restrictions, regulations, controls and moratoria of any nature;

h. the official communications of the Centre to enjoy treatment not less favourable than that accorded by the Government to the official communications of any other comparable international institution.

2. All trustees and staff of the Centre shall:

a. be immune from legal process with respect to acts performed by them in the exercise of their official functions except when the Director General or the Chairperson of the Board waives this immunity.

b. be exempt from taxation in respect of the salaries or emoluments paid and other benefits accorded to them by the Centre;

c. together with their spouses and relatives dependent on them, be accorded the same immunities from immigration restrictions, alien registration requirements and national services obligations, the same treatment in respect of travelling facilities and the same repatriation facilities in time of international crises as are accorded by the Government to officials of comparable rank of international institutions operating in Ethiopia;

d. be accorded the same facilities as regards foreign currency or exchange as are accorded by the Government to officials of comparable rank of international institutions operating in Ethiopia;

e. have the right to import and export free from customs duties and other taxes their personal effects, including (but without being limited thereto) furniture, household goods and appliances such as radio and television receiving sets, record-players, tape-recorders, stoves, refrigerators, etcetera; and one privately-owned automobile, at the time of first taking up their post in Ethiopia or within six months thereof provided, however, that all customs duties and other taxes chargeable thereon shall become due and shall first be paid in accordance with the laws and regulations in force in Ethiopia if disposed of locally to persons other than those enjoying similar exemptions;

3. No Ethiopian national or permanent foreign residents of Ethiopia or any other persons locally hired by the Centre shall be accorded any of the exemptions, immunities and facilities stated in subparagraphs (b) through (e) of the preceding paragraph (2).

4. The Centre, its assets and other property shall be:

a. exempt from all direct taxes, it being understood that the Centre will not claim exemption from taxes which are, in fact, no more than charges for public utility services;

b. exempt from customs duties and all other taxes in respect of any equipment, motor vehicles, materials and supplies, including furniture and utensils, imported solely for the official use of the Centre, it being understood that all such duties and taxes chargeable thereon shall become due and shall first be paid in accordance with the relevant laws and regulations then in force in Ethiopia if disposed of locally to persons other than those enjoying similar exemptions;

c. exempt from duties, other taxes, prohibitions and restrictions on imports and exports in respect of its publications.

5. The Centre, and its contractors, shall be exempt from customs duties, taxes or any other charges in respect of materials, equipment, goods and supplies brought into or taken out of Ethiopia and used solely for the constructions and maintenance of the Centre's installations.

6. The Government shall:
   a. make available to the Centre on long-term lease, at a nominal rental of one Ethiopian Birr annually, a tract of land not less than 30 hectares at or near Addis Ababa which shall be suitable for the purpose of the Centre's headquarters, including land for offices, service buildings and for other appropriate facilities;

   b. make available to the Centre on a long-term lease, at a nominal rental of one Ethiopian Birr annually, one or more tracts of land of size and location to be agreed upon between the parties to this Agreement and being suitable for the research purposes of the Centre.

7. In exercising the privileges, immunities and rights specified in the above provisions, the Centre shall take account of all representations made to it by the Government when it considers that these can be complied without prejudice to the interests and purposes of the Centre as set out in this Agreement.

8. The Centre shall cooperate at all times with the appropriate authorities of the Government to facilitate the proper administration of justice, and observance of police regulations, and the control of any abuse of privileges, immunities, rights and facilities provided under this Agreement.

ARTICLE 14
MISCELLANEOUS PROVISIONS

1. Whenever this Agreement imposes obligations on the appropriate Ethiopian authorities, the ultimate responsibility for the fulfillment of such obligations shall rest with the Government.

2. This Agreement shall be interpreted in the light of its primary purpose to enable the Centre to discharge its responsibilities and to fulfill its obligations fully and efficiently.

3. Any dispute between the parties to this Agreement concerning the interpretation or application of this Agreement or of any supplementary agreement, shall be settled by negotiation or other agreed mode of settlement.

4. Consultations with respect to modifications of this Agreement shall be entered into at the request of the Government of the Centre and any such modification shall be by mutual consent.

5. The Government and the Centre may enter into such supplementary agreements as may be necessary to fulfill the purposes of this Agreement.

ARTICLE 15
TERMINATION

1. Should it be necessary to terminate this Agreement for any reason, the rights, obligations and physical assets of the Centre, other than land, shall be distributed to an institution or institutions agreed by the Government and the Board in consultation with the CGIAR and having purposes similar to those of the Centre.

2. Disposition of any land held by or on behalf of the Centre shall be governed by the terms of the lease agreement for such land, the title of which shall always remain with the Government.

ARTICLE 16
REPLACES AND SAVINGS

1. The Memorandum of Agreement concluded on the 16th of July 1974 together with the amendment made on April 17, 1975 between the Ministry of Agriculture representing the Government of Ethiopia, and the International Bank for Reconstruction and Development acting on behalf of the CGIAR which has hitherto been in force is hereby repealed and replaced with effect from the date of entry into force of this Agreement.

2. The lease agreements and other arrangements already in force under the authority of the Memorandum of Agreement of the 16th July 1974 shall be considered to have been made hereunder and shall remain in effect mutatis mutandis.

ARTICLE 17
ENTRY INTO FORCE

This Agreement shall be signed and shall enter into force on the date of signature.

Done in duplicate in the English language at Addis Ababa, Ethiopia, on December 24, 1982.

For the Provisional Military Government of Socialist Ethiopia	For the International Livestock Centre for Africa
(Signed)	(Signed)
Tekola Dejene With the Rank of Minister Senior Deputy Secretary General National Revolutionary Development Campaign and Central Supreme Planning Council	P.J. Brumby Director General International Livestock Centre for Africa

THE AGREEMENT ABOVE HAS BEEN MODIFIED TO ACCOMMODATE THE CHANGES IN BOARD NUMBERS AND COMPOSITION AGREED BY SUBSEQUENT EXCHANGES OF LETTERS

Rules of procedure of the ILCA Board of Trustees

Article I:	Preamble
Article II:	Exercise of powers
Article III:	Board meetings
Article IV:	Officers
Article V:	Executive Committee
Article VI:	Programme Committee
Article VII:	Finance Committee
Article VIII:	Nominating Committee
Article IX:	Board and Committee documents
Article X:	Finances
Article XI:	Responsibilities of Board and Committee members

Section 1

The Memorandum of Agreement that established the International Livestock Centre for Africa with headquarters in Ethiopia specifies the status and governance of the Centre as follows:

7. STATUS OF THE CENTRE

The Centre shall operate as an autonomous, non-profit organization, international in character, governed by a Board selected as provided in Article 8 or this Agreement, and headed by a Director General selected as provided in Article 10 of this Agreement.

8. GOVERNANCE

1. The Centre shall be governed by a Board of 14 members, comprised and selected as follows:
   a. Two members designated by the Government of Ethiopia;
   b. Four members designated by the CGIAR;
   c. Seven members-at-large with interests and qualifications relevant to the work of the Centre.
   d. The Director General of the Centre, ex-officio.

   At least three of the members from categories 1b and 1c shall be African nationals.

2. Although the original Memorandum of Agreement specified Board membership at 12*, it was stated that the number may be adjusted from time to time, but not to exceed 17. Any changes in composition should be such that one third of the elected members were CGIAR nominees and two thirds members at large.

3. The rotation of members of the Board shall be determined as follows:
   a. The term of office of the members designated by the Government shall be determined by the Government;
   b. The Director General shall be a Board member so long as he holds office;
   c. All other members of the Board shall serve for terms fixed by the Board, but not in excess of three years with the right to be eligible for maximum of two full terms. For purposes of counting a term of service shall be deemed to expire at the end of the third annual meeting following a Trustees' appointment to the Board;
   d. Vacancies among the members-at-large by reason of their retirement, death, incapacity or any other cause shall be filled by the Board;
   e. Any such vacancies among the four members nominated by the CGIAR shall be filled by CGIAR nominees;

*Currently 14

f. New appointees appointed to replace a serving member shall be appointed for the remainder of the unexpired term of the member. In case such an appointment is for an unexpired term of one year or less the appointee shall be eligible for re-appointment for up to two full terms subsequently. If it is for more than one year he will be eligible for re-appointment for only one additional term.

g. A prospective appointee will normally be invited to attend an Annual Meeting of the Board as an observer. His election by the Board will take place at this Board meeting. His term of service will begin at the end of this Board meeting and will extend (three) years thereafter unless re-elected for a second three year term at that time.

4. The Board of Trustees of ILRAD shall be invited to send two of its members to attend as observers at the open meetings of the Board of the Centre.

9. POWER OF THE BOARD

1. The Board shall:
   a. frame rules of procedure for its own working;
   b. elect a Chairperson and a Vice Chairperson from among its members;
   c. determine policy for the operation of the Centre;
   d. select and appoint the Director General of the Centre for such a period or periods as it deems necessary and appropriate;
   e. approve the appointment of senior officers of the rank of assistant, associate, or deputy director general as may be authorised by the Board;
   f. approve the schedule of senior staff positions to be appointed to the staff of the Centre;
   g. approve the programmes developed for the Centre by the Director General;
   h. scrutinize and approve the budget estimates for the Centre;
   i. take such actions as shall be necessary to conclude and realize the purpose of such formal relationships with ILRAD as may be determined from time to time by the CGIAR including, without limitation, dissolution or reconstitution of the Board or the Centre;
   j. do and perform all other acts considered necessary, suitable and proper for the attainment of any or all the purposes, activities and objectives of the Centre as enumerated in this Agreement.

10. DUTIES OF THE DIRECTOR GENERAL

1. The Centre shall be administered by a Director General appointed by the Board.

2. The Director General shall:
   a. implement the policies determined by the Board;
   b. follow the guidelines laid down by the Board for the functioning of the Centre;
   c. carry out the directions of the Board and abide by its decisions;
   d. under the overall policy guidance of the Board, be responsible for the operation and management of the Centre, the selection of staff, for assuring that its programme and objectives are properly developed and carried out and for establishing and maintaining an effective liaison with the Board.

Section 2

In accordance with para. 9.1 of the aforesaid Memorandum of Agreement, the Board of Trustees of the International Livestock Centre for Africa hereby establishes and promulgates rules of procedure for its own working as set out hereunder.

Section 3

In both the text set out above and the rules set out below,

"Centre" is the Board of Trustees of the Centre,

"Board" is the Board of Trustees of the Centre,

"CGIAR" is the Consultative Group on International Agricultural Research,

"ILRAD" is the International Laboratory for Research on Animal Diseases.

ARTICLE II. EXERCISE OF POWERS

Section 1

The Board accepts the powers and responsibilities set out in Article I above as inviolable though subject to elaboration or additions under the provision that the Board shall "do and perform all other acts considered necessary, suitable and proper for the attainment of any or all of the purposes, activities and objectives of the Centre".

Section 2

Elaboration or addition of powers and responsibilities shall be by recorded majority decision of the Board as provided for under Article III of these Rules.

Section 3

In execution of its responsibilities for determining policy for the operation of the Centre, the Board shall:

a. approve the organizational structure of the Centre on the recommendation of the Director General;
b. ensure the establishment of such administrative and technical services as are deemed necessary to the execution and administration of agreed policies and programmes;
c. ensure adequate control over the conduct of business and the execution of agreements to which the Centre is a party, having regard to the policies and objectives of the Centre and the needs of adequate financial control;
d. establish and maintain appropriate staff regulations and enable the Director General to translate these regulations into effective operational rules;
e. determine the extent to which the Centre should be developed from sources of funds external to the CGIAR and assist in generating the funds necessary for the execution of the programme of the Centre;
f. ensure that the programme of the Centre is subject to critical review and evaluation and assist the CGIAR in participating in or complementing these reviews;
h. delegate such powers as it deems appropriate to standing Executive, Programme, Audit and Nominating Committees, and to ad hoc committees and to the Director General.

Section 4

The procedure for the selection of new Board members shall be for the Chairperson of the Nominating Committee to remind serving Board members and to notify the CGIAR Secretariat and such members of the CGIAR as he deems appropriate of impending vacancies at lease six months in advance of planned vacancies or as soon as possible in the event of unplanned vacancies, indicating the desirable qualifications for persons filling the vacancies and soliciting nominations.

Section 5

Regional membership of the Board shall be in accordance with paragraph 8 (1)c of the Memorandum, cited in Article 1, Section 1 above, and disciplinary representation on the Board shall take into account the

need for appropriate research, development and professional management experience.

Section 6

Nominations for new members shall be reviewed by the Nominating Committee whose recommendations shall be tabled at ordinary annual meetings of the Board, and selection, having full regard for any limitations imposed, shall be by majority decision of the Board. The selection in respect of nominations received from the CGIAR shall be notified to the CGIAR Secretariat and shall be subject to confirmation by the CGIAR. The selection in respect of other vacancies shall be conveyed directly to the selected member by the Chairperson of the Board.

Section 7

Nominations shall be accompanied by curriculum vitae, which shall be made available to members in advance of the ordinary annual meeting at which section is to be made.

ARTICLE III: BOARD MEETINGS

Section 1

The Board shall meet at least once a year at a date or dates determined by the Board.

Section 2

An extraordinary meeting of the Board may be called by the Chairperson or by any three members of the Board. The business of any extraordinary meeting shall be limited to the purpose specified in the notice of the meeting (unless more than half of the members of the Board are present in person, in which case other items may be added to the agenda).

Section 3

The meetings of the Board shall be held at the headquarters of the Centre at Addis Ababa, or at such other places as the Board may decide as appropriate.

Section 4

Meetings of the Board shall be held on at least thirty (30) days written notice. Extraordinary meetings of the Board shall be held on at least ten (10) days cabled notice. Notices shall state the time and place of the meeting, and shall be signed by the Chairperson or Director General.

Section 5

A majority of the Board, present in person, shall constitute a quorum for the transaction of business.

Section 6

In the absence of the quorum as established in Section 5 above, those present shall adjourn the meeting and a new written notice shall be sent out.

Section 7

The order of business at ordinary annual meetings shall be established by the Chairperson of the Board after consultation with the Director General.

Section 8

The Chairperson, independently or on the advice of the Director General, may invite such advisers or observers to meetings of the Board as he may decide. The Chairperson, the Director General, or at least two other members present at the meeting may cause any item on the agenda to be heard in closed session, in the absence of advisers or observers.

Section 9

Board meetings shall be conducted in accordance with recognized parliamentary rules of procedures. Decisions of the Board are taken by majority of the members present. For purposes of voting, each member

present has one vote and the Chairperson, if needed, has a second casting vote.

Section 10

The Board in consultation with the Director General will appoint a professional staff member as secretary to the Board to assist in the timely preparation of documents, the conduct of meetings and recording of minutes. The languages of the meeting and of reports are English and French.

ARTICLE IV: OFFICERS

Section 1

The officers of the Board shall be the Chairperson, the Vice Chairperson, the Director General and such other officers as the Board shall see fit to designate.

Section 2

The Chairperson and Vice Chairperson of the Board, who shall be chosen from Board membership, shall be elected annually by majority vote at the annual ordinary meeting of the Board (except that their period of office as Chairperson or Vice Chairperson shall have a maximum duration of four years). The Chairperson, or in his absence of disability, the Vice Chairperson, shall preside at all meetings of the Board and supervise all matters with which the Board is concerned. In the absence of disability of both the Chairperson and Vice Chairperson, the members of the Board shall designate from among their own number an acting Chairperson.

Section 3

The Director General, or in his absence or disability, a staff member designated by him, shall directly manage and administer the affairs of the Centre in accordance with current memoranda of Agreement and the policies and instructions of the Board. Specifically, the Director General will be responsible to:

a. develop, for annual review by the Board, a programme of activities which conforms to Board policy and which seeks to increase the efficiency of livestock production in Africa;
b. recruit and maintain a qualified staff, appropriate to the activities of the Centre, and provide for their efficient management;
c. develop and maintain effective liaison with the officials and governments of the countries served by the Centre, especially in the countries where the Centre works;
d. prepare and submit an annual report of the Centre's activities, including a financial statement and reference to administrative changes and scientific advances;
e. advise and, as requested, assist the Chairperson in the preparation of agenda and documentation for Board meetings;
f. keep the Chairperson informed in all matters of consequence that relate to the Centre.

Section 4

The other designated directors of the Centre shall assist the Director General in management and administration and in the furtherance of the work of the Centre. The Director General shall designate a line of hierarchy of senior management so that in his absence or disability the appropriate person shall assume responsibility for the Director General's duties.

ARTICLE V: EXECUTIVE COMMITTEE

Section 1

The Executive Committee shall conduct business on behalf of the Board, when it is neither practical nor efficient for the full Board to meet, or when items have been referred to it by the Board. It will serve in an advisory role to the full Board in matters relating to budget and finance. It will identify issues that should be brought to the attention of the Board and its committees and may serve to assist in setting agendas for the full Board. It shall otherwise not have separate functions or distinct duties and responsibilities.

Section 2

The Executive Committee shall comprise of the Chairperson, the Vice Chairperson, the Director General and the Chairpersons of the Nominating Committee, Programme Committee and Audit Committee, with the provision that at least one member of the Committee shall be a Board member from the Headquarters host country.

Section 3

The Chairperson of the Board shall serve as Chairperson of this committee and a professional staff member designated by the Committee will serve as its Secretary and record the minutes. Normally the same person will serve as Secretary to both the Board and its Executive Committee.

Section 4

The Executive Committee shall have the duty of making recommendations to the Board regarding salary scales and related terms of work. It shall also make an annual assessment of the Director General's performance, discuss it with him and determine his salary.

Section 5

The Executive Committee shall meet at least twice per year, upon call of its Chairperson or upon request of at least two Committee members or of the Director General. Minutes of meetings of this Committee shall be circulated to all Board members. Committee decision shall be subject to ratifications by the Board unless specifically delegated in advance.

ARTICLE VI: PROGRAMME COMMITTEE

Section 1

The Programme Committee is an advisory committee to the Board of Trustees. Its functions and operational norms are set by the Board in the light of the responsibilities and mandate of the Board itself.

The terms of reference of the Programme Committee are to provide advice to the Board of Trustees on:

a. the suitability of ILCA's mandate;
b. the appropriateness of ILCA's research, training and information strategy
c. the degree of which ILCA's research, training and information activity is meeting the goals of ILCA and the goals and needs of the client national systems/agencies;
d. changes in programme orientation proposed by ILCA with respect to strategy;
e. effect of programme proposals whether additions, deletions or reassignments on budget submissions;
f. any other matters of programme relevance referred to it by the Board.

Section 2

The Programme Committee shall consist of:

a. up to seven members appointed by the Board from among its members, subject to annual renewal;
b. a Chairperson who will be selected by the Board as a whole
c. the Chairperson of the Board, ex-officio;
d. the Director General, ex-officio;
e. such advisers invited on the basis of their special competence, and observers representing donor agencies, cooperating institutions or governments, as the Chairperson of the Programme Committee and Director General may jointly invite to attend meetings, including Centre staff appropriate to the items under consideration;

Section 3

a. The Programme Committee shall meet in full at least once a year. Although full meetings will normally be held in Addis Ababa, it may be desirable from time to time to hold meetings in other countries, particularly those in which ILCA is undertaking or proposing to undertake research or other work.

b. The Programme Committee shall largely use the annual in-house reviews, the biennial meetings with NARS and the planning conference for its reviews.

c. The Chairperson of the Programme Committee shall report a schedule of intended meetings at each annual ordinary meeting of the Board.

ARTICLE VII: AUDIT COMMITTEE

Section 1

The Audit Committee is responsible for advising the Board on all matters relating to the Centre's finances. To this end, it shall:

a. provide assistance to the Board of Trustees in fulfilling its judiciary responsibilities relating to the accounting, investments, internal controls and reporting practices of the Centre;
b. maintain, through regular confidential meetings, the Board and the external auditors and the internal auditors;
c. ensure that the accounts and financial statements are properly audited by an independent public accountant and annually recommend the selection of the public accounting firm as the Centre's auditor;
e. ensure the integrity and cooperation of the approved policies and objectives.

Section 2

The Audit Committee shall consist of;

a. The Chairperson of the Board, ex-officio.
b. up to three other members appointed annually by the Board from among its members according to perceived need.
c. A Chairperson appointed by the Board from among the members mentioned in point b. above.
d. such advisers as the Chairperson of the Audit Committee may invite to attend meetings of the Committee when their counsel is needed in relation to certain agenda items.

The Chief Financial Officer shall serve as Secretary to the Audit Committee.

Section 3.

The Audit Committee shall meet at least once per year, usually prior to the annual ordinary meeting of the Board. Meetings will usually be held at headquarters in Addis Ababa, but meetings may be arranged elsewhere for expediency of action or to review administration and finance in the Centre's regional offices.

ARTICLE VIII: NOMINATING COMMITTEE

Section 1

The Nominating Committee is responsible for making recommendation to the Board with regard to filling vacancies on the Board and for bringing to the Board nomination for Chairperson and Vice Chairperson.

Section 2

The Nominating Committee shall comprise the Chairperson of the Board, ex-officio and at least three members of the Board nominated annually by the Board Chairperson and confirmed by the full Board. The Board Secretary will serve as Secretary to the Committee and be responsible for its minutes and records.

Section 3

The Committee shall meet at least once a year, normally immediately prior to the Annual Meeting of the Board and shall:

a. ensure the maintenance of a data base of possible future candidates in the Board files by the Board Secretary;
b. compile a list of candidates for consideration; and
c. review this list and a subsequent short list with the Executive Committee before establishing the names to advance to the full Board.

ARTICLE IX: BOARD AND COMMITTEE DOCUMENTS

Section 1

The secretariat provided for under Article III, Section 10 above shall have responsibility for interpretation, recording and translation of proceedings at annual meetings of the Board. The same services shall be available at extraordinary meetings of the Board and at Committee meetings if so requested thirty (30) days in advance of the meeting by the Chairperson concerned.

Section 2

The secretariat in attendance at Board meetings (and, if requested, at Committee meetings) shall, under the direction of the Director General, prepare a draft record of the meeting - detailing date, venue, attendance, agenda, principal points of discussion and conclusions - and shall make the draft record available to the Chairperson within forty five (45) days of the date of the meeting. As the Chairperson may direct, with such amendments as he may propose, the draft record shall be circulated in part or in total to all Board members within sixty (60) days of the meeting.

Section 3

Upon confirmation of the record at the next meeting, incorporating such written or verbal amendment as the majority at the next meeting shall decide, the record of the previous meeting shall be signed in duplicate by the Chairperson or Vice Chairperson as a correct record and two signed copies deposited under lock and key in a place reserved for this purpose at the Centre headquarters. Annexed to signed records shall be complete set of the background documents for the meeting concerned.

Section 4

Records of all Committee meetings, signed by the Chairperson concerned, shall be deposited in duplicate together with complete sets of background documents, in the same place as are kept records of Board meetings.

Section 5

The signatory of any record shall, at the time of signature, indicate the circulation that the record concerned shall have and any restriction that is placed on its release outside this circulation list. Any request for sight of such a document from outside its indicated circulation shall be referred for decision by the Chairperson of the Board.

Section 6

Unless specifically excluded from circulation outside Board membership, one copy of the approved record of each Board and Committee meeting shall be deposited with the CGIAR Secretariat.

ARTICLE X: FINANCES

Section 1

Each programme and budget document prepared annually by the Director General shall have incorporated a budget item for the operation of the Board and its Committees. This item shall be based on such information as is provided to the Director General by the Board and Committee Chairperson and shall be reviewed and approved by the Board at its annual ordinary meeting.

Section 2

The Director General shall notify the Chairperson of the Board of quarterly expenditure under the budget item established for Board and Committee operations and shall draw the attention of the Chairperson to any actual or likely overexpenditure. It shall be the responsibility of the Chairperson to advise the Director General whether to accept overexpenditure under this head or to advise Board members and Committee Chairpersons of any specific action required of them to reduce expenditure.

Section 3

Fees and other benefits due to Board and Committee members for services rendered to the Centre shall be established and reviewed periodically by the Board, and a current schedule shall be annexed to these Rules which shall be the basis by which the Director General authorises payments to Board and Committee members.

ARTICLE XI: RESPONSIBILITIES OF BOARD AND COMMITTEE

Section 1

Acceptance of membership of the Board or one of its Committees implies acceptance of these Rules and of the need and obligation to act always according to the best interests of the Centre.

Section 2

The duties and responsibilities of the Board as a whole extend in all respects to individual members of the Board and its Committee. In particular it is expected that Board and Committee members shall seek every opportunity to act as emissaries of the Centre with donors and the governments served, and shall seek to establish, through these contact, how the Centre may best serve livestock improvement in tropical Africa. It is further expected that Board and Committee members shall faithfully prepare for and attend meetings of the Board or its Committees and shall give of their best advice and experience at such meetings.

Section 3

The Chairperson of the Board may delegate special responsibilities to members as circumstances require.

Section 4

In contacts with the staff of the Centre, communications shall normally be through the Director General.

Section 5

No Board or Committee member shall commit the Centre financially beyond the costs of attendance at Board of Committee meetings at the rates laid down in the schedule approved by the Board without prior approval of the Chairperson of the Board.

ANNEX 1 HONORARIA AND BENEFITS DUE TO MEMBERS OF THE BOARD AND ITS COMMITTEES

1. Members of the Board and its Executive, Programme and Fiance Committees shall be entitled to an honorarium for time spent participating in Board and Committee meetings. This honorarium shall be fixed from time to time by the Board. It shall be payable in respect of the days actually involved in Board and Committee meetings and in travel to them by the most direct air route.

   The Chairperson shall qualify for an honorarium in the case of extra time spend on ILCA affairs over and above Board and Committee meetings.

2. Board and Committee members shall be provided with up to first class travel to Board and Committee meetings and with per diems at the prevailing approved ILCA rates. They shall also be covered by ILCA health and travel insurance for the time periods covered by their honoraria.

4. THE ILCA BOARD OF TRUSTEES

Names and addresses of current ILCA Board members

Name	Appointment Function	Telephone Telex	Address
NESTEL, BARRY	At large	Tel. 0737-61400 Tlx. 896691	38 Hatchlands Road Redhill Surrey RH1 6AT ENGLAND
WALSH, JOHN	Ex-Officio (DG)	Tel. 182510 Tlx. 21207	ILCA Addis P.O. Box 5689 ADDIS ABABA
AKLILU AFEWORK	Host Country Rep.	Tel. A.A.12-89-70 Tlx. 215531	Commissioner, Production Sector, National Committe for Central Planning P.O. Box 1037 ADDIS ABABA
GIZAW NEGUSSIE	Host Country Rep.	Tel. A.A.15-01-10 Tlx.	Vice Minister Ministry of Agriculture P.O. Box 1232 ADDIS ABABA
CHIGARU, PHILIP	At large	Tel. 704531 (Harare) Tlx. 2455 AGRIC ZW	Director Department of Research and Special Services Ministry of Lands, Agriculture & R. P.O. Box 8108 Harare, ZIMBABWE

Name	Appointment Function	Telephone Telex	Address
DAVID-WEST KELSEY	At large	Tel. Lagos 682254 Tlx. 22302	Director Livestock Department Federal Ministry of Agriculture & Water Res. P.M.B. 12613 Lagos, NIGERIA
STEPPLER, HOWARD	At large	Tel. 514-457-2000 Tlx. 05-821788	Macdonald College Dept. of Plant Science 21111 Lakeshore Road St. Anne de Bellevue Quebec CANADA H9X ICO
YC, JEAN	At large	Tel. 45-35-59-95 Tlx. SEDESOC 641755F c/o N. MORVAN	62 Rue Claude Bernard 75005 Paris FRANCE
THIONGANE, PAPA	At large	Tel. Dakar 21-90-28 Tlx. 3117 ISRA SC	ISRA Laboratorie de l'Elevage - Hann Dakar, SENEGAL
SORBO, GUNNAR	CG Nominee	Tel. 05-213305/6 Tlx. 2421/441023	Director Centre for Development Studies STROMGATEN 54 N-5000 Bergen NORWAY
ROGNONI, GUISSEPE	CG Nominee	Tel. 02293649 Tlx. 320484 PPD Mi	Universita Milano Via Celoria 10 20133 Milano ITALY

Name	Appointment Function	Telephone Telex	Address
CUMMINGS, RALPH	CG Nominee	Tel. 919-833-1863 Tlx. 579369 NCSU SOILS RAL	812 Rosemont Avenue Raleigh, N.C. 27607 U.S.A.
KYOMO, MARTIN	At large	Tel. 52381-4 Tlx. 2752 SACCAR	SACCAR Private Bag 00108 Gaberone BOTSWANA
VACANT			

Biographical sketches of current Board Members

BARRY NESTEL

Barry Nestel is an independent consultant with a special interest in research management and evaluation. He holds a first degree in veterinary medicine and a Ph.D. in agricultural economics, both from London University. He began his professional career in Jamaica, initially as a government veterinary officer and later as a livestock research officer working with a group of private sugar and mining companies, where he worked mainly on the economic aspects of pasture and husbandry development in beef cattle herds. In 1964 he joined FAO working in a development project in Colombia involving livestock credit in an area of small coffee farms. Later he transferred to Rome and worked in the central planning unit on a task that involved studies of livestock development prospects in over 60 tropical countries, nearly all of which were visited during the course of the studies.

In 1970 Dr. Nestel joined IDRC in Ottawa as an associate director of its agricultural programme with particular responsibility for livestock and pastures, tropical root crops and integrated rural development. This posting brought him into close contact with a number of the CGIAR Centres which had projects supported by IDRC and involved the management of IDRC projects in over 30 countries.

In 1972 he was a member of the CGIAR task force that recommended the creation of ILCA and in 1973 he served as executive officer for the establishment of the Centre. Later that year he transferred to IDRC's Latin American office in Bogota and in 1976 returned to the United Kingdom from where he has continued to work as a consultant in tropical agriculture. He has also been involved in the development of commercial salmon farming in Scotland, serving as managing director of a large salmon farming company from 1977 to 1983 and as chairman of the Scottish Salmon Growers Association in 1982 and 1983.

JOHN WALSH

John Walsh has been ILCA's Director General since December 1986. He is an Irish citizen

Until he joined ILCA, John Walsh was the Head of the Dairy Husbandry Department at the Moorepark Research Centre in County Cork, Ireland.

Dr. Walsh holds a Ph.D. degree from Reading University for work carried out at the National Institute for Research in Dairying at Shinfield and an M.B.A. degree from the National University of Ireland. He has served as a visiting research professor at Michigan State University and is currently a part-time lecturer in both crop production and management research at University College Cork.

Dr. Walsh is the author of a number of publications covering a wide range of topics in the fields of animal health and husbandry, dairy science and farm and research management. He has been extensively involved in the development of milk production and processing in the Sudan since 1971 and has also carried out overseas consultancies in Ethiopia, Thailand, Libya, China and Saudi Arabia.

AKLILU AFEWORK

Aklilu Afework is currently a Commissioner in the office of the National Committee for Central Planning in Ethiopia. He is in charge of the Productio Section, covering the Agriculture, Industry, Mining, Energy and Water Resource Development sectors. He has been a representative of the Host Government on the ILCA Board since 1979.

He holds a Bachelor degree in Economics and Public Administration from Addis Ababa University, and a Masters degree in Development Economics from Williams College, Massachusetts, USA (1973).

Ato Aklilu started his career in the Ministry of Education, and then joined the Planning Commission Office until 1979. He then became the Head of the Agriculture Department of the National Revolutionary Development Campaign and Central Planning Office until 1981.

Before taking up his part as Commissioner, he was the Head of the Economic and Social Reconstruction Department of the Red Star Campaign in Eritrea.

GIZAW NEGUSSIE

Gizaw Negussie is the Vice Minister for Livestock and Fisheries in the Ministry of Agriculture of the Government of Ethiopia. He gained a B.Sc. in animal science from the Agricultural University at Alemaya in Ethiopia in 1968 and an M.Sc. in agricultural economics at New Mexico State University in 1976.

Ato Gizaw began his professional career in government service and during the period 1968 to 1977 served as a research officer, production manager of Arbamench State Farm; and as loan officer, then branch manager and finally head of the cooperative division of the Agricultural and Industrial Development Bank. In 1978 he became head of the agricultural extension and cooperative division of the Agricultural Department of the Office of the National Committee for Central Planning.

In 1981 Ato Gizaw was appointed project coordinator of the Minimal Package Project and Head of the Planning and Programming Department of the Ministry of Agriculture and in November 1984 was promoted to become Vice Minister for Livestock and Fisheries. He is the author of a number of publications in both Amharic and English dealing mainly with agricultural credit and cooperatives.

PHILIP CHIGARU

Philip Chigaru is a citizen of Zimbabwe and gained his B.Sc. degree in Agriculture in 1971 from the University of London and his Ph.D. from the University of Aberdeen (1976). His Ph.D. was obtained in the field of animal nutrition and dealt with the effects of undernutrition in lactating beef cows.

Between 1976 and 1981 Dr. Chigaru was Lecturer in Animal Nutrition at the University of Zimbabwe where he undertook research on the effects of various nutritional regimes on the growth and development of beef cattle at Henderson Research Station. Opportunities for improving the productivity of pigs under smallholder conditions were also studied during

this time. In 1981 he was appointed Director of the Department of Research and Specialist Services, Ministry of Agriculture in Zimbabwe.

Dr. Chigaru is Chairman of the Governing Council of the University of Zimbabwe and a member of the National Scientific Council. On the international front he has served as a member of the CGIAR External Program Review Team for the International Service for National Agricultural Research (ISNAR) and is currently on the International Advisory Council of the Australian Centre for International Agricultural Research (ACIAR) and the advisory council for the World Food Prize sponsored by the US General Foods Corporation.

KELSEY DAVID-WEST

Kelsey David-West is Director of the Nigerian Federal Livestock Department. He was born at Buguma in Nigeria where he attended primary, secondary and post secondary schools. In 1985, he was awarded a scholarship by the Federal Government of Nigeria to study veterinary medicine at Ontario Veterinary College, University of Toronto. He graduated in 1964 with a D.V.M. In the same year he was registered as a member of the Royal College of Veterinary Surgeons in London. He has undertaken specialised courses in Meat Hygiene, Dairy Development and Agricultural Planning.

He worked as Veterinary Education Officer at the Nigerian School of Animal Health and Husbandry from 1964-1965. In 1965 he was Research Officer in the Virus Laboratory specialising in Newcastle Disease and Rinderpest viruses. He was involved in the diagnostic and sero-monitoring aspect of the Pan African Rinderpest Campaign (J.P. 15).

From 1966 to 1970 he was in charge of the Eastern Nigeria Regional Laboratory and from 1970 to 1972 the Principal Veterinary Officer of Rivers State. In 1972 he joined the Federal Civil Service and became Director of the Federal Livestock Department in 1979. He has national responsibility for advice on policy and development programmes and regulatory functions on disease control.

Dr. David-West serves on the Boards and Governing Councils of a number of national educational and research institutes. He is the Nigerian Delegate to the O.I.E. and the Vice President of the African Commission of the O.I.E., and has served as a member of FAO Consultative Groups on Dairy Development in developing countries and as an FAO expert on the developmental aspects of Trypanosomiasis control.

RALPH W. CUMMINGS

Ralph Cummings is an American national who gained a B.S. in agriculture from North Carolina State University and a Ph.D. in Soil Science from Ohio State University.

He has served on the faculty of Cornell University for six years and at N.C. State University for eighteen years. At the latter, he held posts as Professor and Head of the Agronomy Department, Director of Agricultural Research, and Administrative Dean for Research. He has worked in overseas programs for N.C. State University, the Rockefeller Foundation, the Ford Foundation, and the Consultative Group on International Agricultural Research. He has been Director of three international agricultural

research institutes, namely the International Rice Research Institute in the Philippines, the International Crops Research Institute for the Semi-Arid Tropics in India, and the International Irrigation Management Institute in Sri Lanka. While in India with the Rockefeller Foundation, he served as Dean of Post Graduate Studies at the Indian Agricultural Research Institute and was Chairman of the Agricultural Universities Commission of the Government of India. He served for over five years as chairman of the Technical Advisory Committee of the Consultative Group on International Agricultural Research. He has taken part in numerous study and advisory missions in various parts of the world. He is currently Emeritus Professor at N.C. State University, a senior consultant with the World Bank, a trustee of the International Council for Research in Agroforestry, (ICRAF), the Asian Institute for Rural Development (AIRD), and the International Livestock Centre for Africa (ILCA). He holds honorary doctorates from the N.C. State University and from three universities abroad, and has received a number of awards and special recognitions for his international public service. He is a Fellow of the American Society of Agronomy and of the American Academy of Arts and Sciences. He is listed in Who's Who in America, North Carolina Lives, and Who's Who in the World.

GIUSEPPE ROGNONI

Professor Rognoni, an Italian national, gained a degree in veterinary medicine in 1945 and completed postgraduate studies in practical hygiene at the University of Paria in 1947.

From 1952 to 1961 Professor Rognoni was Director of the Institute of Animal Genetics at the Universita Cattolica del Sacro Cuore. In 1962 he became Professor of Genetics at the Faculty of Veterinary Medicine at the University of Milan and since 1969 has been Professor of Animal Genetics and General Zootechnics at the in Milan.

From 1976 to 1982 he was Director of the Italian National Research Council Project on the conservation of animal genetic resources. He has been Observer for the Italian Government to the ILCA Board of Trustees since 1981 and the ILRAD Board of Trustees since 1983. Since 1984 he has been Dean of the Faculty of Veterinary Medicine at the University of Milan.

MARTIN KYOMO

Martin Kyomo is since 1985 the Director of the Southern African Centre for Cooperation in Agricultural Research (SACCAR) in Gaberone, Botswana. He is a national of Tanzania, holds a Master degree in animal breeding (1966 - Colorado State University) and a Ph.D. from the University of Dar-es-salaam.

Prior to becoming the Director of SACCAR, Martin Kyomo was a Chief Research Officer in Tanzania. He then became professor in animal production at the at the University of Dar-es-salaam (1970) and then Dean of the Faculty of AGriculture, Forestry and Veterinary Services at the same University.

In 1984 he became Deputy Vice Chancellor at the Sokoine University of Agriculture in Morogoro, Tanzania. Martin Kyomo undertook missions as a consultant to several international organisations. He is also the author of several research publications.

GUNNAR M. SORBO

Dr. Sorbo has been a member of the Board since 1983. He is Director of the Centre for Development Studies at the University of Bergen. By profession, Sorbo is a social anthropologist. Prior to taking up his present position, he was working at the Department of Social Anthropology, University of Bergen, where he taught and carried out research, based mainly on field work in the Sudan. Since 1976, Sorbo has also been directing two major research projects in Sudan and Kenya. He is an author of numerous articles and reports on irrigated agriculture, pastoralism and applied anthropology and has served as a consultant for many international organizations. Besides serving on the ILCA Board, Sorbo is also a member of the Board of Governors for the Norwegian Agency for International Development.

HOWARD A. STEPPLER

Dr. Steppler is Emeritus Professor of Agronomy at Macdonald College of McGill University, Montreal, Canada. Following service in the Canadian army during World War II he joined the Faculty of Agriculture at McGill in 1949 where he remained for thirty-five years, as chairman of the Agronomy Department for seventeen years and then as chairman of the Department of Plant Science - combined agronomy, horticulture, plant pathology and genetics for eight years. Dr. Steppler was a visiting Professor of Agriculture at University of West Indies in 1964. He was member of the Board of Trustees of CIAT for six years (1972-78), and first Chairman of their Program Committee for four years. He was a member of Board of Trustees of ISNAR for four years (1980-84) and member of its Program Committee and chairman of the committee for two years. He was member of Board of Trustees of the Agricultural Development Council - New York - for eight years 1977-85 and member of its Executive Committee for five years. In 1980-81 he served as interim Director General of the International Council for Research in Agroforestry - ICRAF. In 1984-85 he served as founding Director of SACCAR - the Southern African Centre for Coordination of Agricultural Research located in Botswana and serving the nine countries of SADCC. He has been chairman of the Board of Trustees of ICRAF since 1985 and member of the advisory committee on Post Harvest Storage and Processing - a SADCC program located in Harare.

PAPA IBRAHIMA THIONGANE

Papa Thiongane is currently Technical Advisor to the Ministry of Rural Development in Senegal. He holds a degree in veterinary medicine from the University of Lyon (France) obtained in 1965. He specialised in animal sciences (Zootechnic) and presented his doctor's thesis in 1967.

In 1968 Papa Thiongane joined the Research Centre for Animal Sciences of DAHRA-DJOLOFF where he became director and remained until 1978. That same year he became deputy director general of ISRA (Institut Senegalais de Recherches Agricoles). In 1980 he was promoted to the position of director general of ISRA, responsible for a total of 1,500 staff members and 10 different research stations.

During his professional career, Papa Thiongane specialised mainly in research and animal production and animal health, as well as in research management. He is the author of about 20 research publications. Papa Thiongane has undertaken several missions in Africa, America and Asia.

JEAN STEPHAN TYC

Jean Tyc is a Swiss national, and a member of the ILCA Board of Trustees sinc 1983.

By profession, Jean Tye is an economist (University of Geneva). After two years at the EEC (1957-1958), he joined a parastatal French study bureau (Societe d'Etudes pour le Developpement Economique et Social - SEDES). His entire professional career has been spent with this study bureau.

Since 1960 he focused his experience on the area of livestock development and the utilisation of livestock products in Africa. He created and directed until 1980 a multi-disciplinary team specialised in all aspects of African animal production. This research was carried out for national governments, in collaboration with bilateral and multilateral development agencies.

Jean Tyc has a very impressive field research experience. From 1976 to 1980 he was director of the overseas activities of SEDES. On his request he was transferred from 1980 to 1986 to Ivory Coast to become principal advisor of the Regional Direction of SODEPRA Nord (Societe d'Etat Ivoirieune pour le Developpement de la Production Animale). In 1985 he played a major role in the planning of the Ivory Coast Livestock Sector until the year 2000.

MEMBERS OF THE ILCA BOARD OF TRUSTEES
1973 - 1986

Name	Country	Period
DR. DAGNATCHE YIRGU	ETHIOPIA	1974-1976
DR. TEKALIGNE GADAMU	ETHIOPIA	1974-1975
DR. J. PAGOT	FRANCE	1974-1976
DR. BUKAR SHAIB	NIGERIA	1974-1976
DR. M. MEHSAH	BENIN	1974-1980
DR. HODGSON	USA	1974-1979
DR. TRIBE	AUSTRALIA	1974-1979
DR. BEMBELLO	NIGERIA	1974-1980
DR. N. TRAORE	MALI	1974-1979
DR. W. SHAEFERE KEHNERT	GERMANY	1974-1980
DR. KNUDSEN	NORWAY	1974-1978
MR. D. PRATT	ENGLAND	1974-1981
DR. ASRAT FELLEKE	ETHIOPIA	1976
DR. BEYENE CHICHAYBELU	ETHIOPIA	1976-1981
DR. GHIRMA TADEGE	ETHIOPIA	1977-1978
PROF. R. GERMAIN	GELGIUM	1977-1982
DR. A. PROVOST	FRANCE	1978-1983
DR. AKLILU AFEWORK	ETHIOPIA	1979- --
DR. A. THORNE	ENGLAND	1979-1981
DR. F. BARTH	NORWAY	1979-1981
PROF. R. MCDOWELL	USA	1980-1985
DR. HAMADJODA	NIGERIA	1980-1982
DR. Z. COULIBALY	MALI	1981-1986
DR. K. MEYN	GERMANY	1981-1986
DR. ASSEFA W.GIORGIS	ETHIOPIA	1982-1985
DR. P. BRUMBY	NEW ZEALAND	1982-1986
DR. B. NESTEL	ENGLAND	1982-1987
DR. K. DIALLO	SENEGAL	1983-1985
DR. G. SORBO	NORWAY	1983-1988
DR. K. DAVID-WEST	NIGERIA	1983-1988
DR. J. TYO	SWITZERLAND	1983-1988
DR. P. CHIGARU	ZIMBABWE	1983-1988
DR. G. ROGNONI	ITALY	1984-1989
DR. H. STEPPLER	CANADA	1984-1989
DR. P. THIONGANE	SENEGAL	1986-1988
DR. R. CUMMINGS	USA	1986-1988
DR. GIZAW NEGUSSIE	ETHIOPIA	1986- --
DR. J. WALSH	IRELAND	1987- --

Roles, relationships and responsibilities of Trustees of
The international agricultural research centres*

The Board of Trustees, according to Article 9 of the Memorandum of Agreement, is responsible for all of ILCA's affairs. In discharging this responsibility the Board undertakes the following functions* to ensure that:

i) The Centre has objectives, direction and programmes that are cogniscent with its character and with the goals and purposes of the CGIAR system of which it is a part.
ii) The Centre is managed effectively in harmony with agreed-upon objectives, programmes and budgets, and in accordance with legal and regulatory requirements.
iii) The resources provided in the Centres by donors are efficiently and judiciously employed.
iv) The Centre is staffed with high calibre people.
v) The future health of the Centre and of the system of which it is a part not be jeopardized by exposing its financial resources, staff and credibility to impudent risks.

The Board will confine its activities to the policy level. It will participate in the development and approval of long/medium term plans; approve programme objectives, strategy and budgets; monitor programme progress; approve general personnel policies including scales or salaries and benefits; approve and monitor financial and investment policies; appoint (or dismiss) the Director General and advise the Director General regarding senior staff appointments, and other operating policies.

It is the responsibility of the Director General to implement the Board approved plans, programmes and policies, to advise the Board on programme progress, and on issues related to Board responsibilities that the Board should be aware of and/or deal with, and to administer the Centre.

The Board has a primary trusteeship responsibility for the Centre but it recognizes in addition a responsibility to exercise this trusteeship in harmony with the goals and policies of the whole CGIAR System.

The Board uses the "Roles, Relationships and Responsibilities of Trustees of International Agricultural Research Centres" as its guidelines in Board Operations.

*from Roles and Relationships and Responsibilities of Trustees of International Agricultural Research Centres. CGIAR. December 1984. (A copy of this document is in Section 5 of this Handbook).

Responsibilities of the Chairperson

The Chairperson, who is chosen from the board membership, is elected by a majority vote for a term specified in the Centre's by-laws. The Chairperson presides at all meetings of the Board and supervises all matters with which the Board is concerned. The Chairperson is responsible for providing leadership to the Board in determining the policies under which the Director General will operate the Centre. The role of the Chairperson is concerned with both internal or domestic matters, and external or matters outside the Centre. Some of the domestic action includes: working in close collaboration with management on implementation of Board decisions; working with the Director General and staff to think through and prepare agendas for the meetings of the Board's committees and the Board; and, in general, serving as a bridge between the Trustees and staff. The Chairperson also serves Board needs in a number of ways, such as: ensuring Trustees are kept abreast of deliberations of the CGIAR, the work of its secretariat and the TAC; issuing invitations to new Board members and being responsible for their orientation.

For external matters, the Chairperson may represent the Centre as appropriate. Participation in CGIAR meetings is an important responsibility with the Chairperson joining the Director General in representing the Centre. The Chairperson is also expected to participate in the meetings of the Committee of Board Chairs which provides a forum to deal with common concerns. The Chairperson is expected to assist the Director General in developing and maintaining relations with donors, the CGIAR and TAC. Participation of the Chairperson in external activities is to help assure continuing donor confidence and interest, and facilitate communication and understanding among those concerned with the CGIAR system.

Operational procedures for the Programme Committee

1. Terms of Reference

A. Internal review

The main activity of the Programme Committee is its participation in the annual Internal Review and the preparation of a report for consideration by the Board. Present procedures are that selected programmes are chosen every year for in-depth review, while all other programs receive somewhat less attention. Programme Committee members may want to keep in mind the following questions as suggestive of the policy issues on which they should develop informed judgments:

1. What are the ultimate socioeconomic problems (production, nutrition etc.) to which the research is directed? Why are they important problems?

2. What are the main research results produced since the last comprehensive review?

3. What is known of the relation of these results to the socioeconomic problems to which the research is directed?

4. What are the more immediate technical research problems that prompted the programme? How have these changed since the last comprehensive review? Why are they important?

5. Is the research strategy appropriate in relation to the selected research problems? Does it maximize the potential complementarity of ILCA's work with that being developed by other institutions inside and outside the CGIAR system?

6. Is the research programme correctly balanced in relation to geographic regions, alternative beneficiaries and types of activities?

7. Is the programme of good scientific quality? Are there areas of research that could be scientifically strengthened?

8. What is the expected time horizon of the major programme components?

9. Which problems will receive priority attention in the next three years? Are new activities under consideration? If so, is ILCA the best institution for the work? What is being done on the subject by national programs and other institutions worldwide, especially other international Centres?

10. Has the programme developed appropriate working and scientific relationships with beneficiary countries? Are these countries taking advantage of available research results and really benefiting form them?

B. **Procedures for the preparation of the Programme Committee Report on the Internal Review**

The Programme Committee's Report is prepared for consideration and endorsement by the Board. In this way, it serves several purposes, viz.:

a. to inform the Board on programme development;
b. to make suggestions and recommendations to management; and
c. to put before the Board specific decisions that are required in relations to programme matters.

This process requires close collaboration and interchange of ideas with management and staff. In order to achieve this, the following procedures have been agreed upon:

1. Management will provide Programme Committee members with relevant documentation as soon as possible before the Internal Programme Review.

2. The Programme Committee will meet during the Internal Review in order to reach an agreement in relation to the general tone of the report, main policy issues identified and tentative recommendations.

3. The full Committee will meet at the end of the review process with the Director General and the Deputy Directors in order to discuss the general lines of the report and provide them with an opportunity for reacting and clarifying major points.

4. On this basis the Chairperson of the Programme Committee will prepare a draft report and send it to Program Committee members and to the Director General for their comments. The Director General will consult with appropriate staff as he sees necessary. Programme Leaders will be specifically asked to correct any factual errors.

5. With these inputs the Chairperson of the Programme Committee will draft a second version for consideration of the Executive Committee as an input to its budgetary deliberations.

6. After the Executive Committee meeting, the Chairperson of the Programme Committee will prepare a final version for consideration of the Board.

C. Monitoring Special Projects

The Programme Committee monitors the role of special projects vis-a-vis the core programme of the Centre.

Special projects that substitute for core activities already approved by the Board, but for which no core resources are available, or are clearly within the mandate of ILCA and complement core activities, can be approved by the Director General without further Programme Committee or Board action. Copies of all formal requests, however, should be forwarded to all members of the Programme Committee and the Chairperson of the Board. In the case of special projects for activities which do not meet the above criteria the Director General may initiate actions leading to the formulation of a project with the proviso that the Programme Committee members and the Chairperson of the Board be informed of the nature and scope of the proposed special project at the time that the Director General initiates ILCA internal action to have a formal project proposal drawn up. The Programme Committee must indicate its concurrence before a formal request to a potential donor is made.

Operational procedures for the Audit Committee

The main activities of the Audit Committee take place prior to the Annual General Meeting of the Board when the Committee will need to hold meetings with the Director General, the Chief Financial Officer and the external and internal auditors. These meetings will need to cover the following tasks:

1. Review of results for previous year with the chief Financial Officer.

2. Explanation of significant changes from preceding year.

3. Consideration of the adequacy of disclosure.

4. Consideration of the effect of any changes in accounting policy.

5. Consideration of the internal and external auditors' reports and of management's responses.

6. Report on any problem areas on sensitive matters raised in the auditors' reports.

7. Review of proposed audit objectives and plan for current year.

8. Review of internal audit objectives and plan for current year.

9. Review Centre's use of external auditor firm for non-audit services to determine effect on independence.

10. Discussion with external auditors, with no Centre employees present, of the competence and cooperation of the Centre's accounting and audit staff, and of the soundness of their policies and practices.

11. Discussion with the internal auditor on the competence of, and relationship with, external auditors.

12. Report by Chief Financial Officer and Director General on relationship with external auditors and their recommendation on their retention or replacement.

13. Discussion and decision by Committee alone on its recommendation to Board on choice of external auditors for next fiscal year.

14. Review investments in detail with those responsible for their preparation.

15. Conduct or have conducted any special reviews as the Board of Trustees may direct.

16. Review of any legal problems.

To facilitate the action of the Audit Committee and in recognition of its chairperson will be provided on a monthly basis with such current ILCA financial information as may be mutually decided upon by them and the Director General.

Operational procedures for the Nominating Committee

The Nominating Committee will normally meet immediately prior to the Annual Meeting of the Board. During the year, however, its work will be carried out by correspondence with other members of the Board, the CGIAR system and any other contacts in order to compile, maintain and update a comprehensive database of possible Board members.

The Board Secretary will write to all persons whose names are to be included in the database to ascertain whether or not they wish to be considered for Board membership and to obtain from them an up-to-date curriculum vitae. In his letter, the Secretary will also inform prospective Board members that, should they be elected onto the Board,

they are to serve in their personal capacities and that their prime responsibility would be to make ILCA a more effective institution.

When a vacancy on the Board is to occur, the Nominating Committee will draw up a short list and present it to the Executive Committee for approval approximately 12 months before the vacancy occurs. The candidates on the short list will then be invited to the Centre to attend, as observers, committee sessions, in-house reviews or other appropriate events in order to introduce them to the Centre and its work. This will allow prospective Board members the opportunity to understand the nature and magnitude of the responsibilities they would assume should they be elected to the Board. Simultaneously, Board members present during such visits would also be able to assess the candidates before election takes place at the next Annual Board meeting.

Board Secretary

The Secretary of the ILCA Board of Trustees is a senior professional staff member of ILCA. The Secretary is appointed by the full Board of Trustees for a period of two years, renewable for additional two-year terms. Upon expiry of the term, the Director General, in consultation with the Chairperson of the Board, recommends for Board approval a candidate for the position.

The Secretary is responsible for maintaining the full set of official documents pertaining to the Board, including the official records of the meetings of the Board of Trustees and the Executive Committee.

The Secretary, in coordination with the Chairperson and the Director General, notifies Board members of the meetings of the Board and its committees; and assists all committee Chairpersons and Board members in logistics arrangements.

Board Records

The Secretary of the Board in collaboration with the Director General is responsible for maintaining a full set of records pertaining to the Board of Trustees, including minutes, agendas and all supporting documents for Board and Committee meetings.

Attached is a compilation of resolutions passed and decisions taken by the ILCA Board of Trustees. The Secretary can provide copies of all minutes and pertinent support documents upon request.

Honoraria and benefits due to members of the Board and its committees

1. Board members are entitled to an honorarium of US$220 per day for each day of Board business as well as authorised travel days within the limits outlined below. Board business involves activities approved by the Board's chairperson.

2. Travel will be by business class or first class at the Board member's discretion.

3. Board members will travel to and from ILCA or to another place where their presence is required by the most direct or economical routing, and within the following maximum travel times:

- Within Africa and between Europe and Africa or vice-versa: One day and one night each way.

- From North or South America to Africa or vice-versa: Two days and one night each way.

- From Australasia to Africa or vice-versa: Three days and two nights each way.

4. Per diem is payable at standard ILCA staff rates.

5. No spouse travel is provided.

Note: 1. Attendance at workshops or seminars organised by ILCA which the Board member attends at ILCA's invitation and expense does not constitute Board business.

2. Where Board members do not take the most direct routing for personal reasons any additional travel or per diem costs are the Board member's own responsibility.

Committee assignments for 1987

PROGRAMME COMMITTEE

Chair	:	David-West
Members	:	Sorbo
		Steppler
		Thiongane
		Rognoni
		Tyc
		Walsh

NOMINATION COMMITTEE

Chair	:	Chigaru
Members	:	Aklilu
		Nestel

AUDIT COMMITTEE

Chair	:	Cummings
Members	:	Gizaw
		Walsh

EXECUTIVE COMMITTEE

Chair	:	Nestel
Vice Chair	:	Aklilu
Members	:	David-West
		Chigaru
		Cummings
		Walsh

ILCA BOARD OF TRUSTEES HANDBOOK

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ILCA

BOARD OF TRUSTEES MEETING

ADDIS ABABA, ETHIOPIA

16-19 MAR. 1977

WORLD BANK

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ILCA BOARD OF TRUSTEES MEETING

16 - 19 March, 1977

Addis Ababa, Ethiopia

AGENDA AND BACKGROUND PAPERS

The Agenda will be found
under Item 2.

Item 1 Welcome and Introduction

ILCA BOARD OF TRUSTEES MEETING

16 - 19 March, 1977

Addis Ababa, Ethiopia

PROVISIONAL AGENDA

Note This meeting is structured around a visit of a TAC Sub-Committee under the Chairmanship of Sir John Crawford, which is expected to spend about three days at ILCA from 16 to 19 March. The Sub-Committee will review the state of progress of ILCA, and subsequently will report its findings and its recommendations for the future of ILCA to the TAC and hence to the CGIAR. The meeting is preceeded by an Executive Committee meeting on the morning of 16 March, which all Board members (but not guests) are welcome to attend.

SESSION 1 (14.30 Wednesday 16 March)

Open Meeting of Board

1. Welcome and Introduction of Guests (Chairman)
2. Adoption of Agenda (Chairman)
3. Review and Adoption of Minutes of Previous Meetings (Chairman):
   1976 Board Meeting (10 - 12 March 1976)
   Executive Committee Meeting (28 November - 1 December 1976)
   Special Board Meeting (2 - 3 December 1976)
   Executive Committee Meeting (29 January 1977).
4. Matters Arising
   (a) Change of Chairmanship
   (b) CGIAR Review Committee Report
   (c) Vanderbur Report
   (d) INFIC
   (e) Other Matters

SESSION 2 (09.00 Thursday 17 March)

Open Meeting of Board and TAC Sub-Committee

5. Welcome to TAC Sub-Committee (Chairman)
6. Presentation of Report of Program Committee (Resident Board Representative) (adoption to be deferred to item 14).

7. Report on Centre Activities (Resident Board Representative)
   (a) Staffing
   (b) Organisation
   (c) Capital Works
   (d) Documentation
   (e) Field Programs
   (f) Training

8. Report on Financial Status (Finance Officer)

9. Presentation of Program and Budget 1978 (Resident Board Representative) (adoption to be deferred to item 15)

(Afternoon of 17 March and morning of 18 March are reserved for meetings between TAC Sub-Committee and ILCA staff and for other business).

SESSION 3 (14.30 Friday 18 March)

Closed Meeting of Board and TAC Sub-Committee

10. Review of Report of Program Committee (Chairman and Resident Board Representative)

11. Review of Other Centre Activities (as required)

12. Review of Program and Budget 1978 (Chairman and Resident Board Representative)

13. Review of Progress in Identification of Director and Deputy Director (Search Committee Chairman).

SESSION 4 (09.00 Saturday 19 March)

Open Meeting of Board

14. Adoption of Report of Program Committee (Chairman)

15. Adoption of Program and Budget 1978 (Chairman)

16. Unfinished Business

17. Any Other Business

18. Schedule of Meetings 1977 - 1978

Item 3 Review and Adoption of Minutes of Previous Meetings

The minutes of the following meetings are attached, in order:

1. 1976 Board Meeting (10 - 12 March 1976)
2. Executive Committee Meeting (28 November - 1 December 1976)
3. Special Board Meeting (2 - 3 December 1976)
4. Executive Committee Meeting (29 January 1977)

International Livestock Centre for Africa

Meeting of the Board of Trustees

Addis Ababa, Ethiopia

10 - 12 March 1976

MINUTES

Present:	R. Hodgson	Chairman
	D. Tribe	Chairman, of the Programme Committee
	J. Pagot	Director
	H.E. Dr. Asrat*	Member
	H. Bembello	Member
	R. Germain	Member
	K. Knutsson	Member
	D. Pratt	Member
	W. Schaefer-Kehnert +	Member
	J. Henson**	ILRAD
	D. Ritchie	CGIAR
	J. Fransen***	IBRD, Consultant to Programme Committee
	G. Beck***	USAID " "
	H. Nsubuga***	Member, Programme Committee
	H. Ruthenberg***	Member, Programme Committee
	C. Spedding***	Member, Programme Committee
	K. Turk***	Member, Programme Committee

* Not for all sessions

** Visitor, representing ILRAD

*** Attended open sessions of the Board only.

+ The Minister of Planning, a member of the Board, was not in attendance

Board of Trustees, 10-12 March 1976

AGENDA (Revised)

1. Introduction
2. Review and adoption of the record of the 1975 Board meeting
3. Report on the conclusion of the project development period
4. Report on Centers' Week activities
5. Report from ILRAD
6. Report on ILCA local activities
   (a) Administrative organization and activities
   (b) Current staffing situation
   (c) Lease for Shola land
   (d) Acquisition of land for field station and lease
   (e) Housing for staff
7. Review of the status of the construction programme
8. Review of the staff regulations
9. Review of travel, per diem and consultants' allowances
10. Policy on staff travel to outside meetings (deferred to the meeting of the Executive Committee)
11. Establishment of tenure rotation for Board members
12. Report of the Programme Committee
    (a) General
    (b) Headquarters
    (c) Co-operative Programmes
    (d) Feed Composition and Nomenclature Programme
13. Report on the documentation programme
14. Report on the training programme
15. Consideration of the appointment of a special consultant to the Board to further develop the "Articles of Association" concept to include administrative procedures and Staff - Director - Board - Consultative Group and Donor relationships
16. Analysis of budget requests for 1977
17. Network of animal genetic resources
18. Policy on audits
19. Problem of handling different currencies, banking locations, interest, etc.
20. Winrock International Livestock Research and Training Project
21. Need for legal services
22. Need for Board Executive Secretary (to be considered under Mr. Vanderbur's consultation)
23. Other business

Agenda, continued

24. Plans for future Executive Committee and Board meetings

25. Report to open meetings of invited donors, Ethiopian officials, international organization officials, and embassy representatives

Additional Item (I) Proposed UNEP feasibility study of the proposed transnational project on the management of livestock and rangelands to combat desertification in the Sudano-Sahelian region

Additional Item (2) CILSS/UNSO/FAO Consultation on the role of forestry in a rehabilitation programme for the Sahel.

Item 1 Introduction

In his opening statement, Dr. Hodgson, Chairman of the Board, conveyed the regret of Dr. Moise Mensah, Vice Chairman of the Board, who was unable to attend the present meeting. He also stated that Dr. Bukar Shaib had informed him with regret that he was no longer able to serve on the Board of Trustees of ILCA.

The Chairman continued by outlining progress in staff recruitment, temporary accomodation, ILCA relations with the host government, the ILCA headquarters construction programme, the research and documentation programmes, and the over-all present and future financing situation.

At the invitation of the Chairman, Mr. A. Smith of Norman and Dawbarn stated that ILCA's building programme had now reached the stage at which Tenders were being sought from contractors; five firms had been placed on a shortlist, and it was expected that the final choice would be made at the end of April or the beginning of May 1976. Work on site was expected to begin in September 1976, at the end of the long rains.

In reply to questions posed by members of the Board, Mr. Smith said that it was not expected that ILCA would be able to move into the new buildings before the end of the full 90-week building period. The laboratory buildings in particular would require the full amount of time allocated. The water supply to the site was excellent, since the main city pipelines ran very close and a new resevoir was being constructed in the vicinity. Dr. Pagot said that a square metre cost estimate would be made for USAID prior to the completion of the full Bill of Quantities.

Dr. G. Beck, of USAID, expressed his personal appreciation of the Board's invitation to him to attend its open session as an observer, and also the appreciation of USAID, which while not wishing formal representation on the Boards of the international institutes, welcomed the opportunity to see their decision-making processes at close hand. Dr. Beck then outlined the recent amendment to the Title 12 Act of the United States Government relating to AID Programmes under which a new Board had been given more wide-ranging powers, in particular for allocating long-term grants to clusters of land-grant universities. He hoped that the

.../

new legislation would result in increased involvement by United States university communities with international centres and national institutions in the developing countries.

Dr. J. Fransen, of IBRD, in a brief introduction thanked the Board for inviting him to attend its open session. He welcomed the opportunity to have a closer association with ILCA.

Mr. D. Ritchie, a member of the C.G. secretariat, gave a brief description of the evolution of the Consultative Group over the past five years and stated that a study was being carried out of the functioning and interrelationships of the Consultative Group, its members, its secretariat, the Technical Advisory Committee and the Board and Directors of the international institutes.

Turning to the funding of the institutes, Mr. Ritchie said that there had been an increase in donations of 50 per cent in 1976 over 1975, but he added that rate of growth was unlikely to continue: it would probably fall to approximately 20 per cent in the next financial year. That of course had serious implications for all the centres.

The agenda was adopted. The Board agreed to discuss it in a revised order to facilitate the attendance of guests and of Team Leaders for the open session discussions; the open sessions were concerned mainly with the ILCA programme and took place on the first and part of the second day. Discussion of items 10 and 22 and an additional item on cooperation with universities in the developed countries was deferred.

Item 2 Review and adoption of the record of the 1975 Board meeting

ACTION: The minutes of the April 1975 meeting were approved without amendment. The Chairman requested that the decisions that had been made at that meeting should be recorded in the manual of decisions of ILCA's Board of Trustees and Executive Committee.

.../

Item 3 Report on the conclusion of the project development period

It was noted that the project development period had ended officially on 31 October 1975.

Dr. Pagot expressed his appreciation of the help that had been given to ILCA by members of the World Bank, the donor countries and agencies, in particular the IDRC, and the Government of Ethiopia. Dr. Fransen congratulated the Board and staff of ILCA on the final report of ILCA. Mr. Pratt expressed the appreciation of the Board for the work of the Director and staff of ILCA.

ACTION : The Board endorsed the Final Report.

Item 4 Report on Centers' Week activities

The Chairman said that although there had been insufficient members present for a quorum at the meeting of the Executive Committee, some essential business had been carried out and was reflected in the report of the Chairman to the Board. The presence of some Board members in Washington during Centers' Week had considerably strengthened the presentation of ILCA to the Consultative Group and donors, and that had represented an important step in the gaining of ILCA's independence.

ACTION : The report of the Chairman on the meeting of the Executive Committee of July 1975 was approved.

Item 5 Report from ILRAD

At the invitation of the Chairman, Dr. J. Henson, Director of ILRAD, gave a brief description of ILRAD's aims and its programmes to date.

ILRAD's mandate was narrower than that of ILCA, being concerned principally with research into trypanosomiasis and theileriosis.

There were at present 14 members of the scientific staff in Nairobi; that number was expected to increase to 18 by the end of

1976, and ultimately to 45. One third of the Centre's staff were categorised as core staff, and two thirds as "transient", of whom half were post-doctoral research workers and half visiting scientists.

ILRAD at present had temporary facilities at Kabete and Kenyatta National Hospital. The Centre had called for tenders for the construction of its main facilities, and it was hoped that a contract would be signed within a week. Some ancillary facilities had already been constructed and were in use.

ILRAD had begun its educational programme, which included post-doctoral research, and research carried out by post-graduate research workers who would receive a formal degree from a university and carry out part of their research at ILRAD. At present there were two graduate research workers participating in the training programme who expected to receive higher degrees from the universities of Nairobi and Utrecht. The Centre expected to expand the programme in the near future.

Dr. Henson expressed the hope that there would be fruitful cooperation between ILRAD and ILCA; he was at present having discussions with Dr. Pagot concerning a possible joint programme on trypanosomiasis, which would be linked with ILCA's proposed project on research in the humid tropics.

ILRAD itself had a co-operative project under way in the Gambia on research into mechanisms of trypanotolerance comparing the Ndama and Zebu breeds.

A brochure would soon be published which would outline ILRAD's orientation and proposed programmes.

The Chairman thanked Dr. Henson for his informative report.

No formal action was taken

Item 6 Report on local ILCA activities

(a) Administrative organisation and activities

In introducing the background paper to the item, Mr. Gene Vanderbur, Senior Administrative Officer, made the following points: the recruitment of local staff was progressing well; the problem of multi-entry visas had been solved; United Nations certificates had been obtained for internationally recruited staff members, through UNDP in New York; the initial audit had been completed and the audit for the year ending 31 December 1975 would be completed by 31 March 1976; with the signing of the amendments to the Memorandum of Agreement, duty free problems had now been solved; standard administrative and accounting procedures had been established.

One problem had arisen: present accomodation was entirely satisfactory except that the lift in the building of which ILCA occupied the seventh and tenth floors was extremely unsatisfactory. Dr. Asrat Feleke expressed his willingness to assist ILCA if it was decided that new accomodation should be sought.

In conclusion, the aim of the administration was to cut down the amount of time that had to be spent by scientific staff on purely administrative matters and Mr. Vanderbur felt that considerable progress had been made.

Dr. Temple thanked Mr. Vanderbur and his staff on behalf of all the Heads of Teams for their invaluable assistance.

After a short discussion it was agreed that the question of the replacement of Mr. Vanderbur, who would soon be leaving his post as Senior Administrative Officer, would be left to the discretion of the Director.

ACTION : The Board approved the report on the administrative organisation and activities, and expressed its support for the Director in his search for a replacement for Mr. G. Vanderbur.

(b) Current staffing situation

After a short review by Dr. Pagot of staff recruited to date and the over-all recruitment schedule, the members discussed the procedure for the recruitment of senior scientific staff, and the role of the Board itself in such recruitment.

It was generally agreed that the Board had full responsibility for the appointment of the Director and responsibility, in liaison with the Director, for the appointment of Heads of Teams. The responsibility of the Board was laid out in the Memorandum of Agreement (paragraph 8f) as follows: "The Board of Trustees shall ... approve the appointment of senior staff members of the Centre on the recommendations of the Director".

The discussion turned on the following two points:

i) the definition of senior staff members in paragraph 8 (f) of the Memorandum of Agreement; and

ii) possible formal and informal relationships between the Board, the Director and the Heads of Teams which should be considered in order to ensure recruitment of the best possible personnel.

It was noted that, in respect of the appointment of Heads of Teams, the directives of the Board had been largely followed, and it was agreed that the previous procedure should continue to be followed.

In respect of senior scientists, as defined on page A 11 of the Staff Regulations, certain Board members felt that considerable attention should be given to publications of applicants for senior scientific positions and the reception of such publications by the international scientific community. For the recruitment of more junior scientific staff the Director had found that candidates rarely had extensive lists of publications to their names, and therefore training was normally given more emphasis.

It was pointed out that the suggested recruitment process for senior staff might considerably lengthen the recruitment period if it was necessary to seek advice on a very comprehensive basis from Board members and outside consultants. However, it was felt that the members of the Board would welcome being consulted, especially in their specialist fields, by Heads of Teams and the Director, if required.

For all scientific appointments it was considered extremely important that the views of Heads of Teams should be given due weight and that since ILCA now had a balanced group of well-qualified and experienced staff it would be necessary to seek the advice of outside consultants only if the Director and staff wished it. Members of the Board did not fall into the category of outside consultants; the staff would continue to welcome their suggestions.

The Board agreed that it was important that particular attention should be paid to the recruitment of African personnel.

In addition, the Chairman, in liaison with the Director, agreed to undertake to keep the members informed of progress made in recruitment.

In order to agree upon a specific proposal in respect of the relationship to the Director of both the Board and Heads of Teams in staff recruitment, it was agreed that a drafting committee, with the following members: Drs. Tribe, Hodgson, Knutsson, Schaefer-Kehnert, and Mr. Vanderbur, should be established to formulate a proposition to the Board.

The sub-committee drew up a proposal which was approved after discussion and amendement.

ACTION : The Board approved the following resolution:

"In relation to the appointment of senior staff members, the Board proposes to exercise its responsibilities (paragraph 8 (f), Memorandum of Agreement) in the following way.

The Board believes that it should seek both to support the Director and protect him from unfair criticism. At the same time it has a responsibility to the CGIAR to ensure that at all times the best available scientists are appointed.

Therefore the Board asks the Director to circulate an annual report which will include a list of senior staff members (together with a brief curriculum vitae of each) who have been appointed since the last Board meeting.

This report should summarize the recruitment procedures that have been adopted (e.g. advertising and referee procedures, numbers of applicants, and reasons for selection).

This report should also include a list of retirements, resignations and dismissals.

In the case of the appointment or dismissal of Heads of Teams the Director is requested to seek the prior approval of the Board, through the Chairman.

The Board accepts the definition of "senior staff" given on page A-11 of the Staff Regulations and expects that the appointment or dismissal of scientists will continue to be made by the Director after consultation with the appropriate Heads of Teams.

The acceptance by the Board of the Director's annual report on senior staff recruitment will automatically confer the Board's formal approval which is required by the Memorandum of Agreement.

Members of the Board would welcome the opportunity of individually advising the Director upon appointments which fall within their individual areas of expertise."

(c) Lease for Shola land

A 99-year lease had been signed by the Director and the Minister of Public Works and Housing on 2 January 1976. The lease had previously been submitted to a lawyer in Washington D.C. who had reviewed and approved it; as ILCA was the first international organization in Addis Ababa to be given land, the terms of the lease were important in that they represented a legal precedent.

No formal action was taken

(d) Acquisition of land for field station and lease

160 hectares of land near Debre Zeit has been allocated to ILCA for its field station. According to the terms of the rural land reform decree in Ethiopia, it was not possible formally to own rural

land; however, ILCA had reached agreement with the farmers' association which controlled the area and ILCA has a legally binding long-term "Certificate of Use" for the land.

Contour mapping was at present being carried out, and some fencing had been erected, primarily to establish the boundaries.

ACTION : The Board approved the report on the Debre Zeit field station agreement and formally requested the Chairman to thank the Government of Ethiopia on behalf of the Board for its generosity and co-operation.

(e) Housing for staff

In presenting his report, Mr. G. Vanderbur, Senior Administrative Officer, stated that a problem had arisen in finding adequate housing for new staff members since the Ethiopian Government had issued a decree nationalizing urban property. To date it had been possible, though it had become increasingly difficult, to find accomodation for new staff members. The situation, however, promised to deteriorate and he did not foresee that ILCA would be able to guarantee housing for new staff members in the future; other international organizations were experiencing similar difficulties, some in fact having large numbers of staff permanently living in hotels in the city.

It was felt to be imperative that necessary action should be taken as soon as possible to help alleviate the situation. A letter outlining the problem and a possible solution had been sent to Mr. M. Lejeune, Executive Secretary of the Consultative Group.

It was proposed that ILCA should make a request to the donors in the 1977 budget for supplementary funding to finance the building of housing additional to the 8 units already approved for the ILCA site, to bring the total number of ILCA constructed houses to 24, the number proposed in the Tribe Report. It was not thought advisable to build the additional housing on the main ILCA site, and it had been established that land would be available for the construction of such houses in different parts of the town.

It was noted that the financial situation of the C.G. had to be taken into consideration and it was thought that ILCA could not make a special case on the lines of the IITA loan approved for the increase

of salaries of local staff. However, ILCA's construction costs were relatively low; ILCA could make a budget request for the additional housing and the proportion of the capital budget to be spent on housing would still be within the 10 to 15 per cent range normal for the international centres. It was also noted that an increased capital outlay in the near future would result in a reduced outlay on rent in the long term. It was not intended that housing should be provided by ILCA for all internationally recruited staff: that was not necessary, and might also become expensive in terms of maintenance.

Alternatives to a budget request were offered; Dr. Pagot spoke tentatively of the possibility of ILCA applying for a loan to an Ethiopian bank. However, it was noted that there could be little hope that the Government would build new housing or be in a position to release existing housing to the international community in the forseeable future.

There was no formal action taken. Action was taken concerning the funding of additional housing under Item 7.

Item 7 Review of the status of the construction programme

The Director gave a brief description of progress on the construction programme since the last meeting; a short-list of construction firms had now been drawn up, and a final choice of firm was expected to be made at the end of April.

The tender list consisted of two local firms, one Swedish, one principally Italian and one French. The building plans were now being checked by the Heads of Teams involved, for practical details. In respect of construction of the access road, it now appeared that the Municipality of Addis Ababa would participate in the construction of the foundations of the road.

The Board briefly resumed their discussion of the need for additional housing for ILCA personnel from item 6 (e) before taking a decision.

ACTION : The Board approved the report on the progress of the construction programme.

In addition, the Board authorized the Director to secure agreement in principle from the donors through the C.G. for 16 housing units in addition to the 8 proposed for the ILCA Headquarters site. The Board authorised the Director to submit a budget request for funding in 1977 for the construction of those added housing units. In the event of refusal by the donors to allow the funding requested, the Board authorized the Director to request permission from the donors to seek other funding sources.

Item 8 Review of the staff regulations

Mr. D. Pratt reviewed the discussion of the sub-committee which had met to assess proposed amendments to the staff regulations. The sub-committee had been able to recommend the proposed amendments with only minor revisions.

ACTION : The Board approved the following revision to the staff regulations, as amended by the sub-committee and subsequently discussed by the Board:

Paragraph 1.1314 now reads:

" ... Their salaries and salary advantages and allowances on employment and security benefits will be fixed in accordance with individual employment agreements, with due consideration of the laws of the host country and consistent with agreements, memoranda, contracts etc. made with the government of the host country.

Paragraph 1.133:

Omit final line, "ILCA has to ask FAO the modification of indexes."

Paragraph 1.135 now reads:-

Other personnel. The Director shall determine the salary rates and the terms and conditions of employment applicable to personnel specially engaged for conferences or meetings, short term engaged personnel, or personnel effected to a mission or to a project site, and to personnel locally recruited for service in established ILCA associated centers.

Paragraph 1.171 now reads:

"As staff members are entitled, as may be provided in the terms of their employment, according to ..."

Paragraph 1.181 now reads:

"As may be provided in the terms of the staff member's employment; ILCA will provide either a decent housing or a housing allowance; the number of ..."

Paragraph 1.191 now reads:

"On travel outside the country of employment, staff member will be reimbursed for hotel accomodations and receive a lump sum of US dollars 25 per day for their expenses where justified. Dependents shall be eligible for 50 per cent of the lump sum rate.

Within Ethiopia, a per diem of Ethiopian dollars 25 per day inclusive of hotel, will be made for professional staff, with a reduced rate for support staff. Special per diem rates of actual reimbursement of expenses will be provided where justified, whether in Ethiopia or other Host Countries.

Per diem will be paid for the day of departure on mission but will normally not be paid for the return day of mission."

Paragraph 2.12 now reads:

"Official holidays to be observed shall be the same as officially observed by the United Nations Organization for the country of assignment, plus three days at the discretionary option of management."

Paragraph 2.511 now reads:

Rate of Accrual Annual leave shall accrue at the rate of two and one half working days per calendar month for employees employed through IIE and at the rate of one and three quarter working days per calendar month for locally employed staff and/or staff in the Clerical and Other Support category, while the staff member is in full pay status. It shall not accrue when the staff member is receiving compensation, under Regulation 2.64 equal to his full salary and allowances. Annual leave is inclusive for all types of compassionate leave, mourning leave, leave for a national holiday not granted as an official ILCA holiday, etc.

An allowance of 5 calendar days per 30 calendar days of mission is allowed to compensate for absence from home.

Paragraph 2.6212 now reads:

"...rate of 24 working days per year.

In the situation of locally employed staff in Ethiopia who have completed their period of probation, the entitlement shall not be less than the following, all other provisions regarding sick leave being unchanged including provision that entitlement to sick leave shall terminate on the date of the termination of appointments:

i) the first one month with full pay;
ii) the next two months with half-pay.

Paragraph 2.632 now reads:

"... in accordance with Regulations 2.631 (i) and (ii) above.

In the situation of locally employed staff in Ethiopia with less that 11 months of continuous service at the anticipated time of confinement the minimum leave benefits shall be as follows:

i) leave for check-ups upon certification by a medical doctor;

ii) 45 consecutive days of paid maternity leave commencing after delivery;

iii) pre-natal leave with pay to be granted in accordance with doctor's certificate;

iv) where maternity leave has been used, and a medical doctor certifies the employee to be sick, sick leave may be utilized as entitled under the provision for sick leave."

Paragraph 2.7331 now reads:

"... normal mode for all official travel.
Economy airfare shall be the normal class of ticket, or lesser fare, such as youth fare for dependents, whenever feasible. For long and tiring travel the Director may approve, normally in advance, first class travel."

Paragraph 3.221 now reads:

"... on propositions by the Director.
The Director may, in exceptional circumstances, temporarily amend the regulations pending action of the Board of Trustees at the next Board meeting provided the Chairman of the Board has given his written agreement.

The Board also approved the following note proposed by the sub-committee concerning other possible amendments to the staff regulations:

"In considering these changes to Staff Regulations, the sub-committee noted that no action had yet been taken on establishing a Staff Council (regulation 2.81) or an Appeals Committee (regulation 3.11). Action in implementing a pension fund for locally employed clerical and support staff is also pending, and dependency allowances shall be further investigated. It is anticipated that proposals in these connections will be submitted to the next Board meeting, along with suggestions for improving the text of the Regulations so as to increase their clarity and effectiveness."

Item 9 Review of travel, per diem and consultants allowances

The sub-committee under Mr. Pratt proposed two minor additions to the terms proposed in the background paper on this item. It was suggested that Board members who had to make a night stop-over because of the distance of Addis Ababa from their home, should be paid US$50 per night stop to cover all expenses. In addition it was suggested that on request special arrangements could be approved for board members who undertook specific tasks in addition to their normal Board duties.

ACTION : The Board approved the terms of travel, per diem and consultancy allowances as proposed in the background paper and amended by the sub-committee, as follows:

"Board members

1. Class of Travel

First class travel is regular class for Board members, except for economy class if the length of trip is less than four hours. For travel in Africa or to reach special locations, taxi-planes may be used only if the pilot's license is an International and Public Transport class and the planes used have a valid certificate of airworthiness.

2. Per diem

Board members receive US$25 per day and reimbursement of hotel accomodation expenses during official Board and Committee meetings and all meetings for ILCA's interest, and for travel time fixed by reference to staff policy, except where travel time exceeds one day to or from such meetings when US$50 is payable for each day that include a legitimate night stop (this sum to cover hotel and all incidentals).

3. Allowance

An allowance for incidental expenses will be made in the amount of US$300 per annum in the place of an honorarium.

4. Procedure for other activities

A Board member may not start any operation, travel, seminar, etc. that may be charged to ILCA without a formal authorisation of the Board of Trustees Chairman who may ask for the decision of the Executive Committee or Board of Trustees and in every case the ILCA Director will be informed prior to any decision. The decision will fix the details of authorised expenses and the procedure for payment or reimbursement.

Special arrangements may be made for Board members given special tasks or responsibilities.

Consultants

1. Class of travel

Fixed by reference to staff policy, with consideration for individual circumstance.

2. Per diem

Fixed by reference to staff policy.

3. Honorarium

Fixed by reference to salaries of a scientist of same level of knowledge and experience.

Consultancies may be negotiated on special contract, i.e. through IIE."

Item 10 Policy on staff travel to outside meetings

Discussion of this item was deferred to the meeting of the Executive Committee.

Item II Establishment of tenure rotation for Board members

Dr. Tribe noted that the first phase of Board tenure dated from January 1974, hence a four-year tenure would end in December 31, 1977. He noted that the discussion of rotation of tenure concerned only the members chosen by the Board and those nominated by the Consultative Group; the C.G. was concerned only with the choice of members and not with their terms of tenure. The two members nominated by the Government of Ethiopia should serve as long as the Government wished.

The Board requested the Director to discuss informally with the relevant Government officials the desirability of 2 representative of the Government who would be in a position to attend ILCA's Board of Trustees meetings.

Dr. Tribe noted that the first phase of four years corresponded to ILCA's construction and programme development phase. He suggested that it would be appropriate for Dr. Pagot to continue as Director until the end of the phase: in so doing he would see the completion of the Headquarters buildings and the initial development of ILCA programmes. He suggested that Dr. Pagot's contract should be extended for 16 months, with a further period of 3 or 4 months during which he would assist the new Director in takingup his position, in particular in travelling and making contacts. During such a period he would have consultant status.

There was some discussion as to whether it would not be more appropriate, since Dr. Pagot's contract ran from September 1, to extend his contract to August 31 1978, followed by a consultancy of several months to approximately the end of 1978. It was finally decided that the question of the extension of Dr. Pagot's contract by one year or 16 months should be left open in order to allow maximum flexibility in the hand-over to the n ew Director.

In light of the timing of the replacement of Dr. Pagot, it would appear appropriate for the new Board to be assembled in time to take responsibility for the appointment of the new Director. This would involve, probably, seeking and nominating potential candidates for the post of Director during the second half of 1977 and early 1978, in order that a Director could be appointed at the 1978 Board of Trustees meeting. It was thought that a nominating committee should be set up to report to the Board meeting in 1978 so a decision could be made at that time.

There was a short discussion as to whether it was necessary and desirable for the rotation of present Board members to be established at the present meeting or at the 1977 meeting. Dr. Tribe said that he envisaged serving as Chairman of the Programme Committee for one more year only; Dr. Hodgson said that if it was desired he would agree to serve as Chairman of the Board until December 31, 1978 and hoped that a new Chairman would be nominated at the 1978 meeting.

It was finally agreed that it would be best to hold the lottery for tenure at the present meeting in order to allow more time for replacements to be sought, nominated, contacted and selected in time to serve at the latest at the 1978 Board meeting. It was thought that the Executive Committee, at its November/December 1976 meeting, should make a preliminary gathering of nominations to be submitted to the Board meeting in 1977.

It was agreed that a replacement for Dr. Bukar Shaib, who should be an African and from an English-speaking country, would be sought as a first priority for 1977. It was also noted that Mr. M. Mensah probably would not serve beyond his present tenure and that a French-speaking African should be sought to replace him. It was then agreed that a lottery should be held among the Board members; three would serve for one more year, three for two more years, and three for three more years. In all cases the period would run from January 1, 1977.

ACTION : The Board moved that the sub-committee consisting of Dr. Hodgson, Dr. Tribe and Dr. Schaefer-Kehnert, which had previously negotiated Dr. Pagot's contract with him, should meet Dr. Pagot to offer him an extension to his contract. It was left to the discretion of the sub-committee to discuss with Dr. Pagot the length of the extension and the exact duration of the consultancy period.*

The result of the tenure lottery was as follows:

To serve for:

One extra year : Mr. M. Mensah
Dr. D. Tribe
Dr. W. Schaefer-Kehnert

Two extra years: (the replacement of) Dr. Bukar Shaib
Dr. K. Knuttson
Dr. R. Hodgson

Three extra years: Mr. D. Pratt
Dr. H. Bembello
Dr. R. Germain

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*The Subcommittee met with Director Pagot and discussed contract arrangements with him. The agreement reached along the lines described above, was stated in a letter from the Chairman to the Director under date of March, 23, 1976.

Item 12 Report of the Programme Committee

(a) General
(b) Headquarters
(c) Co-operative Programmes

The report of the Programme Committee meeting (attached as annex 1) relates to the Committee's discussions on all but the last five items of the Programme Committee agenda; it was agreed by the Programme Committee and the Board that those last items should be discussed as part of the agenda of the Board of Trustees and they are included in this report under items 12 d (INFIC); 13 (Documentation); 14 (Training); 17 (IBAGR); and additional item (UNEP).

ACTION : The Board formally approved the report of the Programme Committee.

Item 12d Feed Composition and Nomenclature Programme

The International Network of Feed Information Centres had grown up from the work of Lorin Harris in the United States. Up to the present time the international network had been funded on an ad hoc basis. The government of the Federal Republic of Germany had provided funds, channeled through ILCA, for the work of the University of Hohenheim and FAO.

A meeting is to be held in Ottawa in July 1976, and ILCA would be represented at that meeting and at subsequent meetings to be held at the University of Utah.

The Board discussed several issues which both it and the ILCA staff felt should be brought up and clarified at the meeting in Ottawa. The major points were: future funding of the INFIC programme; the place of the work to be carried out in Africa in the over-all INFIC programme; the role of participating bodies, particularly FAO; and the exact nature of ILCA's potential participation and responsibilities.

As a result of a mission in which Dr. Shenkute had participated to pre-selected national laboratories, it was felt that a major need was to provide guidance and possibly co-ordination and training for national laboratories, in order to encourage them to participate in the programme and to establish uniform procedures for the collection and processing of data. The Board members were in agreement that ILCA could fulfil this function as part of its training activities. In particular, a seminar could be held for the training of technicians from national laboratories after the meeting in Utah. It was also agreed that ILCA would provide an input of data from its own programmes following the established analytic procedure.

The Board discussed at some length the desirability of ILCA becoming the clearing house for data collected by African national centres; there was some doubt as to whether there was a need for such a clearing house actually situated in Africa and whether ILCA could and should fulfil that role.

ACTION : The Board approved the following resolution:
"that ILCA lends its support in principle to the INFIC system and is prepared to organise a seminar in order to bring together African scientists working in this field: a) to discuss the aims and operations of the INFIC programme; and
b) to encourage African participation in it.

ILCA will also make available to INFIC the results of all feed analyses which are carried out as part of its research programmes.

However, at its present stage of development, ILCA feels unable to assume formal responsibility as the African coordinator for INFIC, without first receiving a clear statement setting out the extent of this commitment, including its duration and estimates of cost and staff involvement.

Therefore, we invite the Director to prepare such a statement for consideration at our next meeting.

In the meantime, the Director is authorised to continue ILCA's present commitments in relation to INFIC but is asked not to extend them, except for the organization of the seminar."

Item 13 Report on the documentation programme

Dr. M. Sall, head of the Documentation Team, presented a report on the activities of the Team. In its work of collecting, processing and distributing documentation material, ILCA had two main pre-occupations, to provide documents for ILCA staff and to fit into the world-wide Agris II system. Over the past years, in addition to continuing its activities in gathering documentation on the nine areas laid down by the Board at a previous meeting, and maintaining its contacts with the other centres of documentation engaged in ILCA's fields of activities which had agreed to co-operate with ILCA at the March 1974 meeting in Rome, members of the Documentation Team had visited Kenya and Senegal on missions to microfiche documents from national research centres. The team was to make further missions to Kenya and other African countries which had invited ILCA to microfiche the documentation of their national centres.

The Documentation Team had made contacts with African countries requesting documentation from them and offering information available on ILCA's microfiches.

In respect of the international Agris II system, members of the ILCA team had been to meetings at Ankara in June 1975 and Rome in November 1975, and to the National Documentation Centre in Rabat, Morocco in order to discuss problems encountered in the establishment and administration of a documentation centre according to the Agris II system. The Agris system of keywords had not yet been fully developed, particularly in the field of livestock and animal production. However, it was anticipated that by mid-1976 a vocabulary of 1,200 keywords would have been compiled through the co-ordination of IEMVT. The keywords would be easily adapted to computerization, and would be translated into English, French, German and Spanish.

The Chairman thanked Dr. Sall for his report and expressed his appreciation of the positive work that had been carried out by the Documentation Team.

ACTION : The Board approved the report on the activities of the Documentation Team.

Item 14 Report on the training programme

Dr. Pagot briefly introduced the background paper on "Meetings, conferences and training".

In respect of the "systems approach" workshop, scheduled for January 1977, Dr. Tribe felt that it might be more practical to invite just one representative of a particular "systems approach" rather than participants representing various schools of thought on this approach. He suggested that Dr. C. Spedding's work was particularly relevant to ILCA. Dr. Pagot replied that he particularly wished to have a seminar in which all points of view were represented and a full discussion held.

It was noted that, in accordance with the discussion and decision concerning the INFIC programme, a workshop would be held, probably after the Utah meeting in 1976, for representatives of national research institutions, on the collection and processing of animal feed composition data.

There was a general feeling that ILCA could now begin to formulate its training programme. Dr. Pagot said that so far it had been necessary to concentrate on future research programmes, without which a training programme was not possible. Furthermore without proper facilities it was not feasible to offer post-graduate training to young scientists, he had been particularly concerned not to disappoint them with inadequate facilities at ILCA.

The Board confidently expected to approve the appointment of a Head of the Training Team, and it was felt by the members that the appropriate moment had come to consider the training programme in its broad outlines. The Board discussed the possiblity of formulating a general strategy for training, which would be worked out in detail by the new Head of Training.

Dr. Pagot introduced Dr. Thomas Sutherland of the United States, whom he proposed for the position of Head of the Training Team. ILCA had heard of him through the Chairman of the Board and through Dr. Temple, Head of the Animal Science Team. At present he was a university teacher with the University of Colorado, where he was very highly thought of. He was fluent in French; he would be available in July or August 1976; and ILCA would negotiate his contract with the University of Colorado so that he would receive his salary from his university and continue with his present retirement plan.

It was generally agreed that with Dr. Sutherland as Head of Team it would be appropriate for him to have two senior African assistants, one French-speaking and one English-speaking, and both with a multidisciplinary background in line with ILCA's research objectives. Although some members had particular candidates to put forward, it was left to the discretion of the Director and the Head of the Training Team to recruit staff to the Training Team to represent all areas of tropical Africa and both ILCA's working languages.

The Board also discussed at this point the question of the title and definition of the two "environment" teams as they now existed. After a short discussion, the concensus of the Board was to agree to authorise the Director to use his discretion in the most flexible disposal of staff between the two teams.

ACTION : The Board approved the appointment of Dr. Thomas Sutherland as Head of the Training Team.

The Board approved a resolution concerning a strategy paper for training, as proposed by Dr. Schaefer-Kehnert:

"With respect to ILCA's Training Programme, the Board requests the Director and his staff to prepare a strategy paper for presentation to the next Board meeting, setting out:

a) the specific objectives of the programme in accordance with the general purposes of ILCA's training responsibilities as spelled out in the Memorandum of Agreement (paragraph 3 (b));

b) the scope of the programme in relation to its financial and manpower resources;
c) the content of the programme and the target group it is catering for, and
d) the phasing of the programme in a tentative time schedule."

Item 15 Consideration of the appointment of a special consultant to the Board to further develop the "Articles of Association" concept to include administrative procedures and staff - Director - Board - Consultative Group and Donor relationships

Dr. Tribe, chairman of the sub-committee which had met to discuss the matter, said that Mr. Vanderbur would be mandated to work for not more than 90 days as consultant to ILCA; he would be based in Washington and would visit some or all of the Centres and liaise with the C.G. and Board members. It was expected that the Executive Committee might wish to discuss his preliminary study, which would then be submitted to the next meeting of the Board of Trustees. It was noted that Mr. Vanderbur's report might be of interest to the C.G., which was making a study of its own internal organisation for consideration in the autumn of 1976

ACTION : The Board approved the terms of the consultancy of Mr. Gene Vanderbur as follows:

"The International Livestock Center for Africa primarily established its initial Board of Trustees procedures and relationships from the internal efforts of the Board, the Chairman, and the Director. Much continuing assistance that other Centers and Institutes had from their supporting Foundations was not available to I.L.C.A. Although it is felt that the result has been successful, there is a general feeling that we now need to scrutinize our methods, and structure ourselves more formally.

The basic need is seen to be in two related parts:

1) What is the relationship of the Board of Trustees to the Consultative Group on International Agricultural Research to TAC and to the I.L.C.A. Director and Staff; how does it organize itself internally and utilize its own resources most effectively?

The particular point was raised by Mr. Ritchie concerning the Board's responsibilities in terms of budget and finance.

2) That formal guidelines be established for the Board of Trustees.

The Chairman has drafted Articles of Association. However it is his belief that this is not all of what we should have to most effectively accomplish our mission.

The guidelines, in a sense similar to the formalization of staff regulations, would include the following purposes:
- To provide and formalize standard procedures;
- to provide for separate assignments within the Board, with procedures and respons bilities;
- to provide continuity of the established standards and procedures over time as changes in personnel necessarily occur;
- for the guidance of new Board Members.

In short, we believe there is a need to study how the I.L.C.A. Board does its business.

The Secretariat of the Consultative Group has been informally queried concerning the interest in undertaking this study, and they have expressed encouragement, a willingness to cooperate, and on interest in the potential results.

The Committee proposes that a study be made by a special consultant of the procedures of several other Centers, that the C.G.I.A.R., the I.L.C.A. Board members themselves, and other bodies as appropriate be consulted, and that the consultant, working under the direction of and in cooperation with the Chairman of Board, further develop the Articles of Association and recommend guidelines concerning the functional structuring of the I.L.C.A. Board of Trustees.

The Committee further recommends that the special consultant be the present Senior Administrative Officer, who shall be asked to continue his employee status for a period of not more than ninety days beyond his normal employment expiration date to do this work.

The primary work site would be in proximity to the residence of the Chairman. The work would primarily be done in the final quarter of 1976, the latter to allow the present Senior Administrative Officer to take leave and return his family to their permanent residence. It is further recommended that travel be approved to several other Centers and Institutes, eg, I.C.R.I.S.A.T, I.R.R.I., and accompanying the Chairman, C.I.A.T. and C.I.M.M.Y.T."

Committee Members:

Dr. Hodgson, Dr. Tribe, Dr. Pagot
Mr. Ritchie, Mr. Thomas, Mr. Vanderbur

Item 16 Analysis of budget requests for 1977

Mr. A. Thomas, Finance Officer, prefaced his introduction of the background documents for this item by expressing his strong support for the establishment of a finance committee to discuss budgets before submission to future Board of Trustees meetings.

He drew the attention of the Board in particular to the papers "Comments on estimated expenditure for 1976; budget request for 1977 and projections up to the end of 1980", "Summary of capital costs 1976 to 1980" and the first draft and revision of the "Budget request for 1977". In respect of capital costs, a major part of the request for 1977 covered the Headquarters construction programme. It was expected that the final cost estimate would be known by Norman and Dawbarn by 15 July 1976; it was hoped that it would be possible to trim the 1977 capital budget request slightly.

In respect of operational costs for 1976, Mr. Thomas stated that the estimated expenditure for 1976 of US$3,754,000 would be increased to US$3,842,000 because of the addition of the cost of living allowance, post adjustments and additional personnel insurance. In addition, the budgeted operational costs for 1977, which had been US$6,440,000, would probably be augmented to US$6,738,000. It was noted that the level of both a supplementary budget request for 1976 and the budget request for 1977 would largely depend on the recruitment rate, and of course the extent to which the approved budget request for 1976 paralleled actual spending.

Certain points were raised by members; it was noted that there had been some carry-forward of money from 1975 to 1976, largely due to an expenditure short-fall on the capital budget and a slightly slower recruitment rate in 1975 than had been budgeted for, in addition to donations received at the end of 1975. It was also noted that there would generally be no transfer of funds between the operation budget and the capital budget. It was not anticipated that ILCA would overspend in 1976; rather there was a possibility that the total allowance as it now stood would not be fully utilized.

However, Dr. Pagot stated that the approved 1976 budget request did not include the funds necessary to begin implementation of the Ethiopia arid and semi-arid lands programme or the Nigeria programme.

During the Programme Committee meeting preceding the present Board meeting, the Nigeria programme had been renamed and redesignated as the high-potential area programme. This latter programme involved at least two possible sites, one in Nigeria, and another in Ethiopia centred on an expanded Debre Zeit station. It was noted that the Programme Committee had urged in its report, which had been approved by the Board under item 12, that both the Ethiopia arid and semi-arid lands and the high-potential area programmes should proceed. The Ethiopia arid and semi-arid lands project was in an advanced stage of preparation and work could begin immediately. In respect of the high-potential area programme, in 1976 funds had been provided only for the drawing up of the terms of reference and budget of the programme.

In respect of the orginal Ethiopia and Nigeria programmes, it was noted that at the October 1975 meeting of the C.G. the sum of US$540,000 contained in the revised budget request for 1976 had been frozen. It had been stated at that time that those programmes could be implemented on the following conditions:

1. that a definition of each programme be drawn up;
2. that the ILCA Board of Trustees at its next meeting approve the programmes as submitted, and
3. that the C.G. had the funds available to finance these projects in 1976.

Concerning the high-potential programme, it was thought that, since recent events in Nigeria had effectively delayed the drawing up of the programme in that country, there were sufficient funds allowed in the present approved 1976 budget to cover the initial stages of programme development in Nigeria and at Debre Zeit. In respect of the arid and semi-arid lands project in Ethiopia, however, more money than had been allocated would be required if the programme was to be carried out according to the schedule approved by the Board.

A discussion then followed as to the need to make a supplementary budget request to fund the Ethiopia arid and semi-aird land programme and increased activity for the Debre Zeit project in 1976, and the way in which the request should be made. It was suggested that an ad hoc finance committee should meet, possibly in Washington, before the meeting of the C.G. in July 1976, to discuss the terms of such

a supplementary request. Mr. Ritchie of the C.G. secretariat stated that it might be possible for an IBRD financial adviser to visit ILCA to discuss its 1976 supplementary budget request.

ACTION : The Board approved the Establishment of a permanent Finance Committee whose membership would be defined at the meeting of the Executive Committee in November/December 1976.

Following its earlier approval of the report sumitted by the Programme Committee, including a programme in Ethiopia and a high-potential areas programme, the Board approved the budget documents submitted to the present Board meeting (which did not specifically include funding for the above programmes in 1976) and authorized the Director and Finance Officer to discuss the question of a supplementary budget request for 1976 with a financial adviser from IBRD, and left the final decision on the question to their discretion. If it was not possible for IBRD to provide such an adviser, the Board authorized an ad hoc finance committee, to consist probably of the Chairman and the Vice-Chairman of the Board and Dr. Schaefer-Kehnert, together with the Director and Finance Officer, to meet and decide on the matter before the meeting of the C.G. in July 1976.

The Chairman would keep members informed of progress in this matter through correspondence.

Item 17 Network of animal genetic resources

The proposed Board on Animal Genetic Resources would be an extension of the FAO pilot project on the conservation of animal genetic resources, as recommended at the World Food Conference of 1974. Such a Board would have a co-ordination and evaluation role; it was not expected that funding would be required from ILCA. It is possible that, if this activity is authorized, ILCA may wish to, or will have, activity in its research programme having a bearing on African animal genetic resources that will relate to the FAO project.

It was generally felt that ILCA should exercise caution if and when the Board was established, until its terms of reference were known.

ACTION : The Board recommended that the Director should retain the interest of ILCA in the concept of an International Board for Animal Genetic Resources.

Item 18 Policy on Audits

There was a brief discussion of this item.

ACTION : The Board approved the report on audits, and considered that the audit made each year is adequate for its pruposes.

Item 19 Problem of handling different currencies, banking location, interest, etc.

There was a brief discussion of this item.

ACTION : The Board approved the background report and adopted the resolution submitted under the item for agreements with banks and signing rights (attached as annex 2).

Item 20 Winrock International Livestock Research and Training Project

There was a short discussion of this item.

ACTION : The Board authorized the Director to assist the Winrock International Livestock Research and Training Project subject to the terms of the background paper submitted to the Board, that is, through the exchange of visits of personnel, and in the future, in the training of personnel.

Item 21 Need for Legal services

It was noted that, in respect of legal assistance, two alternatives existed. ILCA could engage a lawyer on a monthly retainer basis and pay supplementary bills for specific consultations. Or it could engage the services of a lawyer as needed on an ad hoc basis, as had been done with the United States attorney retained to advise on the lease for the ILCA Headquarters site.

ACTION : The Board authorized the Director to utilize legal services on an ad hoc consultancy basis as and when required.

Item 22 Need for Board Executive Secretary

This item was not discussed. It will be considered by Mr. Vanderbur in his consultancy study.

Item 23 Other business

The Director said that he had been approached by the Organisation of African Unity, which wished to negotiate an agreement to give ILCA the status of adviser to OAU; similar agreements had already been reached by OAU with UNDP and UNESCO and other international bodies in Addis Ababa.

ACTION : The Board authorised the Director to continue negotiations with OAU and requested him to submit a draft agreement on the matter to the next meeting of the Board of Trustees.

Item 24 Plans for future Executive Committee and Board meetings

It was generally agreed that a meeting of the Executive Committee should be held at the end of 1976. Membership of the Committee was recalled and it was thought that the most appropriate membership for the coming meeting would be the Chairman and Vice-Chairman of the Board of Trustees, the Chairman of the Programme Committee and the Director of ILCA. The Executive Committee which had been convened in July 1975 had not had a quorum; to guard against

that for the coming meeting, it was suggested that in the event that one of the above could not attend, one or two names should be held in reserve to ensure a quorum. Dr. Schaefer-Kehnert and Mr. Pratt agreed that their names should be placed on the reserve list.

There was a short discussion on the date and place of the 1977 Board of Trustees meeting. It was generally felt that sufficient time should be allowed for the Programme Committee, then the Finance Committee, then the Board of Trustees to meet.

ACTION : It was agreed that a meeting of the Executive Committee should be held on 29 and 30 November and 1 December 1976, in Addis Ababa. It was further decided that meetings of the Programme Committee, the Finance Committee, and the Board of Trustees should be held in Bamako, Mali between 21 February and 6 March 1977; the exact timing of the Bamako meetings would depend on airline schedules.

Item 25 Report to open meetings of invited donors, Ethiopian Officials, international organization officials, and embassy representatives

Attached as annex 3 are the report and brochure provided to the representatives of donor countries and organizations and embassy representatives.

Additional Item (I) Proposed UNEP feasibility study of the proposed transnational project on the management of livestock and rangelands to combat desertification in the Sudano-Sahelian region

In respect of this proposed project, UNEP had invited ILCA to participate on two levels. Dr. Pagot had been invited to represent ILCA in a team of experts who would meet in Nairobi to discuss with concerned Government representatives and the UNEP secretariat the proposed structure of a feasibility study leading up transnational project to combat desertification in the Sudano-Sahelian region.

ILCA had also been requested to review known documentation material on the subject.

The Director said that ILCA had provisionally expressed its willingness to carry out a review of documentation material presently existing, but it was not felt that it was appropriate for ILCA to become involved in a feasibility study.

It was generally felt by members of the Board that ILCA should approach the project with caution in respect of ILCA involvement. At present the terms of reference and delegation of responsibilities among institutions and organizations participating in the project were not sufficiently well defined, nor was it clear that the project would not overlap with other projects being implemented or planned.

ACTION : On the basis of the Directors report, the Board recommended that the Director should exercise discretion in any commitment of ILCA to the project.

It was agreed that ILCA should be represented at the meeting in Nairobi.

Additional Item (II) CILSS/UNSO/FAO Consultation on the role of forestry in a rehabilitation programme for the Sahel

A meeting is to be held in Dakar from 26 April to 1 May, and Dr. H. Le Houérou will attend on behalf of ILCA.

ACTION : After a brief discussion, the Board approved Dr. Le Houérou's report on the consultation.

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LIST OF ANNEXES

Annex I Report of the Programme Committee

Annex II Resolution on agreements with banks and signing rights (Item 19)

Annex III Report on ILCA and ILCA brochure (Item 25).

ILCA Board of Trustees

Report of the Program Committee Meeting held in Addis Ababa, March 8th and 9th, 1976

Agenda: see Attachment A
Attendance: see Attachment B

Proceedings

1. After the Chairman of the Board of Trustees had welcomed everyone, the Committee Chairman opened the meeting by suggesting that the Program Committee had the following responsibilities:

- to recommend to the Board a balanced program of research priorities designed to "increase the total yield and output of livestock products and improve the quality of life of the people" in sub-Saharan Africa;
- to assist the Director and his staff by offering advice on the conduct of their research;
- to recommend to the Board whether or not ILCA should participate in the various activities which are suggested to the Director from time to time by other organizations;
- and to make known ILCA's research program to the international scientific community and to those who support ILCA's work as either cooperators or donors.

2. The Director, Dr. J. Pagot, then presented a report on ILCA's activities during the last year in which he drew particular attention to the progress that had been made with staff recruitment, research program formulation, documentation, and the building program.

3. A paper, which had been prepared jointly by the Director and the Heads of Teams on the strategy for ILCA's research on animal production systems (Attachment C) was introduced by Dr. H. Jahnke who listed the following particular points which were discussed at length:

- the extent to which ILCA programs should be concentrated in, or extended over, particular ecological zones in sub-Saharan Africa and the priorities which would best represent a balanced program;
- the extent to which ILCA programs should be concentrated on particular species or forms of production;
- the definition and development of a multi-disciplinary methodology;
- the extent to which ILCA's program of systems research should involve monitoring and modelling studies, and the degree of complexity which these studies should appropriately involve.

4. The cooperative programs, which together constitute ILCA's total research program, were then introduced by the Team Leaders listed in Attachment A and the background papers on each program, which had been prepared jointly by the Director and the Heads of Teams (Attachments D to H), were discussed.

5. Because of the shortage of time the last 5 items on the agenda were not discussed.

6. Recommendations to the Board

In the light of the papers presented to the Committee and the discussions held with the Director and his Heads of Team, the Program Committee wishes to make the following recommendations to the Board of Trustees.

(a) the Committee was most impressed with the amount and quality of work already accomplished by the Director and his staff and offers its warm congratulations on their achievements and on the extent to which an ILCA team spirit has been established in such a short time.

(b) Recognising its recommendations of 1975 to include in its priority areas of research programs concerned with arid and semi-arid zones, the Committee supports in principle the proposals for the following collaborative programs: a) Research program into systems of animal production in the Sahelo-Sudanian zones of West Africa (Mali); b) Monitoring livestock development in Kenya; c) Monitoring and research on rangeland development project in Ethiopia; d) Animal production in high potential zones (Nigeria and Ethiopia : Debre Zeit. The Committee recognises that three of these programs are in arid pastoral zones where the application of results will be difficult and time-consuming. Therefore the Committee now looks forward to the allocation of an appropriate proportion of ILCA's resources in order to develop cooperative and core programmes concerned with animal production systems (meat and milk production for various species) in zones of higher potential.

(c) The concept of working jointly with national institutions and, through such cooperation, making efforts to increase national capacities for research is strongly endorsed.

(d) The Committee emphasises the unique importance of the Kenya program but recognises the difficulties which need to be overcome before it can be implemented. It urges the Board to support the Director in his efforts to overcome these difficulties and secure an appropriate Memorandum of Agreement.

(e) At the same time as it endorses the programs listed in (b) above, the Committee recommends that the Director and staff give careful consideration to the suggestions made by Committee members as these programs are being implemented.

(f) For this reason the Committee welcomed the general proposals to work in more humid regions of West and East Africa and hoped that it would be possible to centre one program in the high potential areas of Nigeria and another in the highlands of Ethiopia, including the research on ILCA's station at Debre Zeit.

(g) Similarly the Committee was interested to learn of the suggested investigations of the mechanisms of trypano-tolerance in cattle, sheep and goats and endorsed the general strategy proposed by the Director as part of ILCA's total effort in studying production systems in the humid tropics. It looks forward to receiving more details from the Director and staff at its next meeting and, in the meantime, asks the Director to advance his plans in the light of his future discussions with FAO, ILRAD and other organisations.

(h) The Committee wishes to emphasise to the Board that the ILCA program involves long-term research that is inevitably complex and difficult. As has been stressed many times before, false hopes of returning far-reaching results in the short-term need to be discouraged. However, the Committee believes that opportunities for short-term work which would yield results which could have immediate application should be exploited, and it urges the Director and his staff to undertake such investigations when possible as part of their programs.

(i) The Committee feels bound to warn the Board, the Director and his staff that the financial resources for international agricultural research are limited and only sober optimism for the future can be justified. Therefore it is of the greatest importance that all ILCA programs are designed and executed with precise and limited objectives in mind. Priorities need to be carefully determined and available resources must be concentrated upon those investigations, or parts of programs, which experience shows are yielding the most useful results. The Committee reaffirmed its view that no research proposal should be accepted unless it was in accord with ILCA's special terms of reference and that, unless such a proposal fell within the priorities agreed by the Board, it should not be undertaken even if it was within ILCA's research framework.

(j) In expressing its pleasure that all ILCA programs have been designed, and will be executed, in close collaboration with national research institutions, the Committee also encourages the Director and staff

to develop collaborative activities with ILRAD and other international centres. ILCA should also seek to support associated research which is staffed and financed by research organisations and univeristies in Africa and elsewhere.

(k) In endorsing the cooperative programs which are all concerned with the inter-disciplinary study of animal production systems for specific ecological zones, the Committee reaffirms that the important needs for marketing research and for integrated studies of certain cropping systems with livestock production are necessarily embraced by the phrase "animal production systems".

(l) Finally, the Committee wishes to thank the Director and the staff for the cooperative and frank way in which they have presented and discussed their proposals and programs. The Committee looks forward to a continuous and close collaboration with the Director and staff and, to this end, proposes that, between formal meetings, Committee members would welcome correspondence on scientific aspects of ILCA's research and would also do their best to make themselves available for consultations, missions or conferences if such were considered appropriate. In order to help the Committee, it was agreed to ask the Director and staff to consider the possibility of including the following points when preparing research proposals for future meetings:

- The inclusion of a brief review of past and on-going research related to any particular program;

- a general indication of the sort of benefits which may be expected from the research and an estimated time schedule for the study and its expected benefits;

- the problems, specific objectives and initial hypotheses, however tentative they may be, should be clearly stated in order to help clarify the purpose and indicate the merit of suggested programs.

(m) In order to facilitate communication and participation throughout the ILCA staff, the Committee asks the Board to have copies of this report made freely available to all members of staff.

ATTACHMENT A

Introduced by	Attachment	Program	Programme
Prof. Tribe		Welcome Address	Allocution de Bienvenue
Dr. J. Pagot		Introduction and report for last year	Exposé introductif et rappott d'activité
Dr. Jahnke	C.	Strategy paper	Stratégie du CIPEA
		Cooperative Program	
DR. Tacher	D.	Research Program into systems of animal production in the sahelo-sudanian zones of West Africa	Programme de Recherche sur les systèmes de production animale dans les zones sahélo-soudaniennes de l'Afrique de l'Ouest
Dr. de Haan	E.	Monitoring livestock development in Kenya	Suivi permanent du projet de développement de l'élevage au Kenya.
Dr. Shenkute	F.	Monitoring and research on rangeland development project in Ethiopia	Suivi permanent et recherches sur le projet de développement des parcours et de l'élevage en Ethiopie
Dr. Tacher		Nigeria Program	Programme Nigéria
Dr. Temple	G.	Animal Production in Humid Tropics	Production animale en Zones Tropicales
Dr. Shenkute	H.	Debre-Zeit	Debre-Zeit
Dr. Le Houérou		FAO-CILS/UNEP Program	Programmes FAO-CILS/UNEP
Dr. Shenkute		INFIC	RICAB
Dr. Temple		International Board for Animal Genetic Resources	Conseil International pour les Ressources génétiques animales
Dr. Sall		Documentation	Documentation
Dr. Pagot		Conference Training	Conférence-Formation

ATTACHMENT B

Composition of the Program Committee/
Composition du Comite du Programme :

President/Chairman:	Dr. D. Tribe
Membres/Members:	Dr. R. Hodgson
	Dr. J. Pagot
	Mr. D. Pratt
	Dr. W. Schaefer-Kehnert
	Dr. Ngolo Traore (Mali)
	Dr. H. Nsubuga (Uganda)
	Dr. H. Ruthenberg (West Germany)
	Dr. C. Spedding (U.K.)
	Dr. K. Turk (U.S.A.)
Other Board Members:	Dr. R. Germain
	Dr. K. E. Knutsson
	Dr. Bembello
Consultants:	Dr. G. Beck (U.S.A.)
	Dr. J. Fransen (IBRD)
Plus Team Leaders and Senior Staff:	Dr. G. Tacher
	Dr. H. Le Houerou
	Dr. M. Sall
	Dr. R. Temple
	Dr. H. Jahnke
	Dr. G. Haaland
	Mr. A. Thomas
	Dr. R. McCown
	Mr. G. Vanderbur
	Dr. Maiga
	Dr. Shenkute
	Dr. De Haan

INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

Meeting of Executive Committee of the Board of Trustees
at Hilton Hotel, Addis Ababa
09:15 hours Tuesday, 30 November 1976

Members present:

Dr. R. E. Hodgson, Chairman of the Board of Trustees
Mr. M. Mensah, Vice-Chairman of the Board of Trustees
Mr. D. J. Pratt, Board member
Dr. W. Schaefer-Kehnert, Board member
Dr. D. E. Tribe, Chairman of the Programme Committee of the Board of Trustees
Dr. J. R. Pagot, Director (ex officio)

Also present non-members:

Mrs. T. Gaillard, Interpreter (for part of the time)
Mr. A. W. Thomas, Senior Administrative Officer
Mr. G. F. Vanderbur, Consultant

Opening the meeting

Dr. Hodgson welcomed the committee members and said that telegrams had been sent to Dr. A. Bembello, Dr. K. Knutsson and Dr. R. Germain asking them to attend a Special Meeting of the Board which he had convened for Wednesday afternoon 1 December and Thursday 2 December 1976 to deal with urgent and important problems which confronted the Executive Committee members when they arrived in Addis Ababa on 28 November.

Agenda

It was agreed to proceed as far as possible with the tentative agenda previously circulated by Dr. Hodgson to the Executive Committee members, namely:

1. Remarks - Chairman
2. Presentation of Report on Organization Study - Vanderbur Report
3. Selection of Individual to Fill Vacancy on Board
4. Consideration of Future Positions on the Board
5. Report of Program Committee - Tribe
6. Report of Center Activities - Pagot and Staff
7. Discussion and Action on Center Policies and Procedures

    a. Consideration of Appointment of Deputy Director
    b. Recruitment and Employment Policies and Procedures
    c. Administrative Procedures
    d. Policy on Special Project Funds
    e. Review of Organization Structure
    f. Documentation Review

g. Policy on Center Use of Consultants
h. Review of Staff Meetings and Activities
i. Publication Policy
j. Review of Travel Policies
k. Review of 1977-78 Budget Plans
l. Other Items

8. Meeting with ILCA Staff
9. Review of ILCA Meeting at TAC
10. Discussion and Action on Organization Study (Item 2)
11. Review of C.G. Study Report
12. Other Items
13. Plans for 1977 Board Meeting

2. Presentation of Report on Organizational Study

Mr. Vanderbur commented briefly on the background to his report, saying that he had visited five other centres, that the draft articles of Association and the draft Procedural Guidelines were drawn up for agricultural research centres generally and that he had read most of available literature on the subject such as TAC reports, the CGIAR Review Committee report, etc.

It was agreed that the discussion on the Vanderbur Report should take place later since the Executive Committee members needed more time to examine the details.

3. Selection of individual to fill vacancy on Board

The vacancy arose because of the resignation of Dr. Boukar Shaib of Nigeria. After some discussion it was re-affirmed that an anglo-phone African scientist should be invited to fill the vacancy.

After discussion, it was resolved to recommend to the Board that one of the following individuals should be asked to become a member of the Board of Trustees for a 2-year period beginning 1 January 1977:

Firstly: B.S. Oloruntoba
Permanent Secretary
Federal Ministry of Agriculture
and Rural Development, Nigeria

Secondly: H. Nsubuga (Uganda)
Assoc. Professor of Animal Production
Makerere University
Uganda

Motion proposed by Mr. Mensah, seconded by Dr. Tribe and carried unanimously.

4. Consideration of future positions on Board

This matter arose principally because of the impending expiry of the terms of office of Board members, Mr. Mensah, Dr. Schaefer-Kehnert and Dr. Tribe. Mr. Mensah commented that ILCA was still in the building phase and it was essential to have the continuation of existing members who would see the final implementation of the building plans.

It was resolved to recommend to the Board that Mr. Mensah and Dr. Schaefer-Kehnert should be re-appointed for a second 3-year term of office with effect from 1 January 1978.

Motion proposed by Mr. Pratt, seconded by Dr. Tribe and carried unanimously.

It was then agreed to suggest to the CGIAR that they should reappoint Dr. Tribe for a second 3-year term with effect from 1 January, 1978.

Then followed a discussion about the Chairmanship of the Board. Dr. Hodgson had expressed previously, and confirmed again, that for personal reasons he wished to retire from this office and take a less active part in the affairs of ILCA.

It was resolved to recommend to the Board that at the Board meeting to be held in March, Dr. Hodgson should resign as Chairman and become Vice-Chairman and that Mr. Mensah should resign as Vice-Chairman and become Chairman.

Motion proposed by Dr. Tribe, seconded by Mr. Pratt and carried unanimously.

5. Report of Program Committee

Dr. Tribe said that the Program Committee had nothing to report at the present time but commented that he felt that there should be a greater involvement of the Program Committee members in the various projects. This was a matter which he would raise again in the Program Committee debates. Dr. Schaefer-Kehnert said that the task of the Program Committee members is changing as the whole program gets more detailed and more advanced. Individual members should have more opportunity for discussions with the director and staff.

6. Report of Centre activities

No staff members were present. Dr. Pagot summarised the following items:

i Progress of the centre construction at Shola, Addis Ababa
ii Relations with architect consultants
iii Buildings and field work at Debre Zeit
iv Proposed Trypanosomiasis project for Bobo Diulasso, Upper Volta
v Funds from France for work in Bobo Diulasso
vi Nigerian programme

There was considerable discussion about the program at Debre Zeit and questions were raised about the small allocation of resources for work in high potential areas. The Director was reminded of the report and recommendations of the Program Committee which the Board had accepted in March 1975.

Concern also arose over the rapid advancement of the trypanosymiases project including a blood grouping laboratory at Bobo Diulasso, and the following motion was passed.

The Director was asked to continue discussions with FAO, ILRAD and other agencies in order to prepare a detailed proposal for ILCA's possible programme in the humid tropics with particular reference to trypanotolerance. This proposal should be formulated along the lines requested in the Programme Committee Report of March 1976. Until the Programme Committee has considered the proposal and reported on it to the Board no further commitments or definite arrangements should be made. When continuing his discussions, the Director should ensure that no financial or other commitments are made.

At 18:00 hours the meeting was adjourned until the next day Wednesday, 1 December 1976 when it was agreed that agenda items 5, 7, 8, 9, 11, 12 and 13 should be postponed and that Mr. G. F. Vanderbur should lead the discussion on his Report on Organizational Study.

10. Discussion and action on Organizational Study

Progress was made at intervals on Wednesday 1 December and Thursday 2 December in reviewing the report and it was agreed that Dr. Tribe should incorporate the various amendments and suggestions of the Executive Committee in a revised version of the report. During January he would circulate the revised paper for comment to the members of the Executive Committee. A final paper would then be prepared and submitted to the Board meeting in March 1977.

INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

Special Meeting of the Board of Trustees at Africa Hall, Addis Ababa

15:55 hours, Wednesday, 1 Dec. 1976

Members Present:	Dr. R. E. Hodgson, Chairman Mr. M. Mensah, Vice-Chairman Dr. A. Bembello Dr. K. Knutsson Mr. D. J. Pratt Dr. W. Schaefer-Kehnert Dr. D. E. Tribe Dr. J. R. Pagot (ex officio)
Members Absent:	Dr. R. Germain Two Representatives of the Ethiopian Government Appointee for vacant position of Dr. Boukar Shaib
Also present, non-members	Mrs. T. Gaillard, Interpreter Mr. A. W. Thomas, Senior Administrative Officer (recorder) Mr. G. F. Vanderbur, Consultant

Agenda

Dr. Hodgson announced that the item on the agenda was the status of the Director, and it was agreed that, to suit the convenience of Dr. Pagot, all business of the Special Meeting should be adjourned until 09:00 hours the next day, Thursday, 2 December 1976.

INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

Special Meeting of the Board of Trustees at Africa Hall, Addis Ababa

09:25 hours, Thursday, 2 December 1976

Members present:	Dr. R. E. Hodgson, Chairman Mr. M. Mensah, Vice-Chairman Dr. A. Bembello Dr. Girma Tadege Dr. K. Knutsson Mr. D. J. Pratt Dr. W. Schaefer-Kehnert Dr. D. E. Tribe Dr. J. R. Pagot (ex-officio)
Members absent:	Dr. R. Germain One Representative of the Ethiopian Government Appointed for vacant position of Dr. Boukar Shaib
Also present, non members:	Mrs. T. Gaillard, Interpreter Mr. A. W. Thomas (Senior Administrative Officer - Recorder)

1. The Status of the Director, Dr. J. R. Pagot

Dr. Hodgson reported that when he and other Executive Committee members arrived in Addis Ababa on 28 November, 1976, they had found a very difficult situation, involving a confrontation between the senior staff and the Director. In view of this, and at the request of Dr. Pagot, it had been decided unanimously to call a Special Meeting of the Board. Dr. Germain had been contacted by phone but was unable to attend because he was on a Belgian Government mission in the Ivory Coast. Dr. Hodgson then invited Dr. Pagot to make a statement.

Dr. Pagot's statement is as follows, with an English translation at the end.

Monsieur le Président,

J'ai constaté lors des discussions que nous avons eues l'autre jour, les grandes divergences qui existent entre mes conceptions sur la conduite des programmes, et celles exprimées, tant par les membres du personnel que par le Comité des programmes. Il existe cependant au sein du Conseil un désir unanime de voir le C.I.P.E.A. réussir. Mon départ permettra de rétablir l'unanimité sur la conception des moyens à employer pour y parvenir. En conséquence, j'ai l'honneur de vous remettre ma démission.

A chacun de ses diners, Mr. Mc NAMARA a insisté sur l'absolue nécessité pour les Instituts Internationaux de travailler pour les petits fermiers : "for the poorest, among the poorest". Or, il a été écrit par ceux qui ont accepté de créer le C.I.P.E.A. que jusqu'à présent toutes les méthodes avaient échoué qui visaient à faire progresser les plus pauvres.

Ainsi, fallait-il inventer de nouvelles méthodes, retourner aux sources, démonter le mécanisme de l'appauvrissement, aller sur le terrain pour mettre au point les outils de l'étude. Notre Président du Conseil d'Administration m'a chaudement encouragé dans cette voie et les résultats spectaculaires que vous me demandiez, les voilà : c'est une simple carte d'utilisation des sols établie par un ingénieur agronome éthiopien, avec un PhD américain, Ato EPHRAIM Bekele, qui, lui, malgré les conditions difficiles de son travail a, sans le savoir, trouvé une des clefs du problème. j'espère que vous me laisserez l'honneur de l'aider à publier ce travail et d'en tirer les conclusions.

Il montre à l'évidence que les cartes dressées par les méthodes conventionnelles sont en contradiction avec les conclusions des paysans. qui, eux, récoltent sans investissements.

Là, il faut inventer une méthodologie. Or, pour le faire il faut accepter de redevenir l'humble chercheur qui s'émerveille chaque matin au lever du soleil et voudrait bien savoir comment cela marche. Les Drs. HAALAND, SHANKUTE et TACHER ont spécialement bien saisi ce problème.

A l'extérieur il n'y a qu'à voir l'intérêt que portent les paysans, leurs responsables communaux et les autorités gouvernementales aux travaux du C.I.P.E.A. pour avoir des lueurs d'espoir. La voie est indiquée, le C.I.P.E.A. devra suivre ou seront réjouis ceux qui avant sa naissance souhaitaient son échec.

En ce qui concerne la trypano-tolérence, vous avez décidé de ralentir le développement d'une recherche qui aura, dans ses conclusions, un retentissement mondial.

Lorsqu'au T.A.C. la question de la lutte contre la trypanosomiase s'est posée, j'ai été un ferme partisan de la création de l'I.L.R.A.D; les procès-verbaux de cet organisme en portent témoignage. J'y indiquais qu'en plus de la voie traditionnelle de la recherche d'un vaccin, il y avait celle plus originale de l'élucidation du phénomène dit de la trypano-tolérence, constatée par l'existence de millions de vaches de moutons et de chèvres dans les zones infestées par les glossines, le succès des opérations de transfert d'animaux de Guinée au Zaire, de Côte-d'Ivoire en R.C.A. et d'autres faits d'observation vieux de 70 ans.

Le travail d'immunologie était et doit demeurer du domaine de l'I.L.R.A.D. avec beaucoup plus de moyens qu'il n'en a.

Dès le début, la trypano-tolérence a été niée et maintenant on redécouvre, que les Zébus et les N'Dama ont des réactions différentes à l'infection trypanosomique

expérimentale, ce qui s'explique par les mécanismes classiques de l'immunité d'infection, et on retrouve l'évidence que les N'Dama se guérissent plus vite que les Zébus ...

Cette seule "redécouverte" doit inciter à faire avancer le programme d'identification des zones de dispersion des races trypanotolérentes, seul capable d'accélerer l'application des découvertes de l'I.L.R.A.D., car en matière de parasitologie seuls les vaccins vivants sont efficaces, et lorsqu'en plus on a des animaux qui peuvent supporter allègrement des vaccins peu attenués, alors se réalise le rêve de SADUN dont nous avions discuté il y a près de 15 ans à Vienne et quelques mois avant sa mort lorsque nous nous étions réparti les tâches.

J'ajouterai que lorsque PASTEUR a découvert les vaccins, lorsque FLEMMING a découvert les propriétés de la penicilline, ils n'avaient pas réuni un comité.

Vous m'avez choisi pour ma connaissance des problèmes africains. Lorsque ceux à qui aujourd'hui vous cédez auront parcouru le chemin que j'indique, et qu'ils devront suivre s'ils veulent le succés, ils comprendront alors pourquoi ils ont été bien accueillis à Jijigga ; il y récoltaient le prestige de quinze ans de travail fait par les vétérinaires et les agronomes éthiopiens et expatriés, travaillant la main dans la main parmi les plus pauvres.

La seule réponse que je puisse faire à la lettre qui vous a été envoyée, c'est de rappeler à leurs auteurs ce mot de Talleyrand :
"Tous ce qui est exagéré est insignifiant".

Le C.I.P.E.A. n'aurait pu voir le jour sans l'action du Groupe Consultatif sur la recherche internationale agricole, idée de Monsieur Mc NAMARA à la matérialisation de laquelle j'ai participé. Qu'il me soit permis de remercier Sir John

CRAWFORD qui m'honora de son amitié, tous les représentants des Gouvernements donateurs dont le nombre croissait chaque année et qui dispensaient leurs encouragements moraux et financiers. Les représentants de la Banque Mondiale à Addis Abeba et Washington, du P.N.U.D. à Addis Abéba et New York, qui firent en sorte que le C.I.P.E.A. soit accueilli au sein de la famille des Nations Unies, méritent une mention particulière.

Ici à Addis Abéba après un accueil chaleureux nous avons constamment reçu une aide inconditionnelle des autorités gouvernementales, municipales et des Directeurs des Organismes Publics et parapublics éthiopiens. Votre présence ici, Monsieur le Représentant du Ministre, me permet de vous exprimer mes remerciements - surtout pour avoir autorisé certains de vos chercheurs - parmi les meilleurs à rejoindre le C.I.P.E.A.

Comment - pour finir - ne pas citer les gouvernements des pays qui les premiers comprirent la philosophie des "programme associés" vocable devenu classique dans les centres internationaux - à savoir - le Mali, l'Ethiopie, le Kenya et tout récemment le Nigéria - citer ceux qui souhaiteraient coopérer sur de telles bases ferait des jaloux.

Vous me permettrez d'évoquer maintenant les pionniers du C.I.P.E.A. D'abord les noms de deux de mes anciens élèves - celui du Dr. ALMAZ, vétérinaire éthiopien, qui offrit ses dernières forces au service du C.I.P.E.A. - celui du Dr. DIARRA, vétérinaire malien mort des suites d'un accident sur la route de Ségou. Quel symbole ! nos premiers morts sont africains.

Qu'il me soit permis aussi d'exprimer ma gratitude à ceux qui parfois sans contrat avec des visas de touriste rejoignirent le C.I.P.E.A. - lorsqu'il n'était encore qu'une idée dans une chambre d'hôtel :

- Madame ALLEN, efficace, dévouée et discrète ;
- Mademoiselle VLACHOS, avec sa juvénile ardeur ;
- le Dr. TACHER qui m'apportait avec ses connaissances de la science économique son expérience et le réseau de ses amitiés africaines.
- Monsieur Mc. AULEY, lien avec les U.S.A. ;
- le Docteur SALL qui avec Mademoiselle DANEL puis Mademoiselle BOURGOGNON et Madame REH tissèrent les premières mailles d'un réseau d'information qui va sauver de la destruction et de l'oubli des connaissances inestimables sur l'élevage en Afrique.

J'arrêterai là mon énumération en parlant de la majorité silencieuse du C.I.P.E.A. et en particulier des jeunes qui sont venus au C.I.P.E.A. pour y accomplir une mission, travailler à l'amélioration du sort des plus humbles et participer au développement de l'Afrique au bénéfice des Africains.

Je formulerai le souhait que votre choix d'un nouveau directeur se porte sur un homme qui puisse continuer éfficacement cette oeuvre à laquelle je me suis voué depuis si longtemps et qui m'a apporté tant de satisfactions, la moindre n'étant pas l'amitié de ceux qui partagent mon idéal - parmi lesquels les africains ne sont pas les moins nombreux.

Qu'ainsi le C.I.P.E.A. devienne, comme cela lui a été fixé, le lien et le lieu de communication entre des mondes linguistiques que les péripéties de l'histoire ont séparés, et aide l'Afrique à retrouver son équilibre avec son unité.

Mr. Chairman:

The discussions we held the other day have enabled me to ascertain the breadth of the divergencies between my ideas on how to conduct programmes and the ideas expressed both by the members of the staff and the Programme Committee. However, the Board unanimously hopes that ILCA will succeed. My departure will make it possible for there once again to be unanimity on the methods to be employed to attain success. Hence, I have the honour to tender my resignation herewith.

At each of Mr. McNamara's dinners, he stressed the vital necessity for international institutes to work for the small farmers, "for the poorest, among the poorest". It has been written by those who saw fit to create ILCA that up to the present all the methods aimed at helping the poor to emerge have failed.

That is why it proved necessary to invent a new method, to return to the original sources, dismantle the machinery of impoverishment and go out into the field to perfect the tools to serve studies. The Chairman of the Board of Trustees heartily encouraged me to do this. Let me present the spectacular results you have requested of me: a mere soil use map drawn up by an Ethiopian agricultural engineer with a U.S. Ph.D. Ato Ephraim Bekele, who, notwithstanding the trying conditions in which he has to work, and without realising it, has come up with one of the keys to the problem. I hope that you will grant me the honour of helping him to get it published and derive the conclusions. He evidences that maps drawn up using the conventional methods clearly run counter to the conclusions established by the farmers, who have nevertheless been producing without investments.

At this stage, a methodology has to be invented. In order to do this, one must accept to become once more the humble research worker, who as dawn breaks each morning, marvels at the rising sun and would really like to know how it works. Drs. Haaland, Shenkute and Tacher have grasped the problem particularly well.

Outside ILCA, the keen interest displayed by the farmers, their community leaders and the governmental authorities provides us with rays of hope.

The path has been plotted and ILCA must follow it, or else provide reason for rejoicing among those who, already during the inception stage, hoped ILCA would be stillborn.

As concerns trypano-tolerance, you have decided to slow down the development of research whose conclusions would have worldwide repercussions.

When the TAC meeting discussed the problem of trypanosomiasis control, I was staunchly in favour of creating ILRAD, as is recorded in the TAC minutes. I told the meeting that in addition to traditional research aimed at developing a vaccine, there was a more original type of research designed to clarify the phenomenon called "trypano-tolerance", which we know exists since millions of cows, sheep and goats live in the glossina-infested areas, since animals have been successfully transferred through programmes bringing them from Guinea to Zaire, from Ivory Coast to C.A.R. and since observations made for more than seventy years have so indicated.

Work on immunology has been, and should continue to be carried out by ILRAD - with far more support that it has received hitherto.

At first, the very concept of trypano-tolerance was rejected. Yet now it is rediscovered that the Zebus and the N'Damas react differently to experimental trypanosomiac infection, a fact which is explained by the standard mechanics of immunity to infection, and proof has once again been found that N'Damas recover more quickly than Zebus.

This "re-discovery" alone should have encouraged you to speed up our programme on identifying areas occupied by trypano-tolerant breeds, an essential pre-condition to accelerating the application of ILRAD discoveries because, in the field of parasitology, live vaccines are the only effective ones. When, moreover, we have animals that can bear slightly unattenuated vaccines unscathed, that will be the day when Sadun's dream - discussed nearly 15 years ago in Vienna and again shortly before his death when we divided up the tasks among ourselves - will come true.

Let me add that when Pasteur discovered vaccines, when Flemming discovered the properties of penicillin, they did not convene a committee.

You chose me because of my knowledge of African problems. When those to whom you are giving in today have trekked the path I indicated and which, despite themselves, they have to follow if they wish to succeed, then they will understand the reason for their warm welcome at Jijiga: they have harvested the prestige of fifteen years of work completed by Ethiopian and foreign veterinarians and agronomists working hand in hand amongst the poor.

The only answer I can give to the letter which was sent to you is to remind its authors of what Talleyrand said, "Everything that is exaggerated becomes insignificant". I tried to communicate a love of Africa to them, and I failed.

ILCA would never have been born without the actions undertaken by the Consultative Group on International Agricultural Research, an idea of Mr. McNamara and one which I helped to make fact. I would like to express my gratitude to Sir John Crowford who honoured me with his friendship and all the representatives of the donor governments whose numbers grew each year and who provided both moral and financial encouragement.

The representatives of the World Bank in Addis Ababa and in Washington, the respresentatives of UNDP in Addis Ababa and in New York who made it possible for ILCA to be welcomed in the United Nations family merit special mention.

Here in Addis Ababa, following an initial warm welcome, we have continued to enjoy unconditional assistance from the governmental and municipal authorities and the Directors of Ethiopian public and semi-public organisations. Since you are here as a representative of the Minister, I would like to express my gratitude to you, especially for having authorised some of your very best research workers to join ILCA.

In ending how could I avoid mentioning the Governments which were amongst the first to understand the philosophy underlying the "cooperative programmes", a term which has become classic in international centres, namely Mali, Ethiopia, Kenya and most recently Nigeria. To mention those that are anxious to enter into this system of cooperation would be but to provoke jealousy!

Now please allow me say a word about the ILCA pioneers. First of all, let me name two of my former students, Dr. Almaz, an Ethiopian veterinarian whose last efforts were devoted to ILCA, and Dr. Diarra the Malian veterinarian who met with a fatal accident on the road to Segou. How symbolic that the first to die at ILCA were Africans.

Let me also express my thanks to those who first joined ILCA on a tourist visa, sometimes even without a contract when ILCA was nothing more than an idea in a hotel room. There was Mrs. Allen, the picture of efficiency, devotion and discretion, Miss Vlachos, with her youthful enthusiasm, Dr. Tecker who brought with him a knowledge of economic sciences, experience and a network of African friends, Mr. McAuley and his ties with the United States, Dr. Sall who, together with Miss Daniel and later Miss Bourgogneon and Mrs Teh, span the first threads of an information network which will save invaluable knowledge of livestock production in Africa from destruction and oblivion.

I will stop my list here by mentioning of the silent majority of ILCA and the young people who have come to carry out a mission at ILCA to work at improving the lot of the most humble of people and to participate in developing Africa for the benefit of the Africans.

I hope that for the post of Director you will select a person who can carry forward efficiently this undertaking to which I have dedicated myself for so long and which has given me so much satisfaction, including, in pride of place, the friendship of those who share my ideals, many of whom are Africans.

May ILCA become, as it was supposed to, a place and link for communication between the linguistic world which the vicissitudes of history have separated and thus help Africa to establish equilibrium through unity.

Dr. Pagot's statement was greeted by warm and sympathetic applause from all present. Dr. Hodgson then invited Dr. Pagot to withdraw while the Board discussed its course of action.

After discussion, it was resolved that the resignation of the Director, Dr. Pagot, should be accepted with immediate effect, that the Chairman of the Board should immediately advise Dr. Pagot of this decision, and that a sub-committee consisting of Dr. Hodgson, Mr. Mensah and Mr. Thomas should negotiate an appropriate termination settlement with Dr. Pagot. Motion proposed by Dr. Hodgson, seconded by Dr. Knutsson and carried unanimously except for the abstention of the Ethiopian Representative. Dr. Girma explained that he was only recently delegated the representative on the Board by the Ministry of Agriculture and Land Reform and Settlement. Although he was very interested in the scientific programmes of ILCA he had no knowledge or opinion about the management difficulties of Dr. Pagot and thus was not in a position to make a judgement or vote on the matter.

At 11-30 hours:

Dr. Pagot was then invited back into the Special Meeting and Dr. Hodgson made the following statement:

Understanding the circumstances which have led Dr. Pagot to tender his resignation as Director of ILCA, the Board regretfully accepts his situation and releases him from his responsibilities as Director with immediate effect. The Chairman of the Board now takes full control of the administration of ILCA and for the appropriate measures to ensure an effective transfer of administration. In doing so the Chairman and Board extend their deep appreciation of the contributions which Dr. Pagot has made as the founder Director of ILCA and thank him warmly for his help and cooperation during the three years of his appointment, first as Executive Officer and then as Director.

Wishing to recognize Dr. Pagot's services to ILCA the Board invites him to accept an appropriate termination settlement and hopes that he will permit the Board to commemorate his association with ILCA by naming the new ILCA library, "The J. R. Pagot Library".

Spontaneous applause from the assembled Board members greeted the statement of Dr. Hodgson. Dr. Pagot expressed his thanks and his particular appreciation of the library proposal. He concluded by expressing his best wishes for the future of ILCA.

The Special Meeting adjourned for lunch and resumed at 14-55 hours on Thursday, 2 December 1976 at Africa Hall, Addis Ababa. The following were present:

Members:	Dr. Hodgson, Mr. Mensah, Dr. Bembello, Dr. Girma Dr. Knutsson, Mr. Pratt, Dr. Schaefer-Kehnert, Dr. Tribe
Non-members:	Mrs. Gaillard, Mr. Thomas, Mr. Vanderbur

Dr. Pagot did not attend.

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International Livestock Centre for Africa

Subject / Title
Minutes of the Board of Trustees, Addis Ababa Appropriate settlement terms with Dr. J.R. Pajot (page 12)

Exception(s)
Personal Information

Additional Comments

The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information or other disclosure policies of the World Bank Group.

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K. Brenner-Delp	October 27, 2025

Among the many achievements made during the three years of Dr. Pagot's leadership particular mention deserves to be made of the effective arrangements he has established with a network of national governments and institutions. Through this network ILCA has been set firmly on the path of regional programmes developed in cooperation with appropriate governments. Similar progress has been made in the development of an information and documentation centre already stocked with a wealth of data probably unique in Africa.

All those associated with ILCA are pleased that Dr. Pagot has given his permission for the Board to commemorate his services to ILCA by naming the new ILCA library "The J.R. Pagot Library".

The Board has regretfully accepted Dr. Pagot's resignation and joins with all his friends and colleagues in expressing gratitude for his many contributions and best wishes for the future of the Pagot family.

Notification of Dr. Pagot's resignation to interested parties

It was unanimously resolved that Board members generally, and Dr. Hodgson in particular, should notify interested parties that Dr. Pagot has resigned and that, where appropriate, copies of Dr. Pagot's resignation statement, Dr. Hodgson's reply and the Minute of Appreciation should be sent. Interested parties would include, the Donors, the CG Secretariat, TAC, donor embassies in Addis Ababa, OAU, UNDP, FAO, ECA, etc.

Search Committee for a new Director

The Board agreed on the following procedure in the search for suitable candidates for the posts of Director and Deputy Director:

1. Having received the advice of Board members, the Chairman will prepare profiles for both Director and Deputy Director;

2. The Chairman will then write to the Consultative Group, the TAC and all members of the Board and Programme Committee to invite suggestions for both posts;

3. A Search Committee consisting of Dr. Hodgson, Chairman of the Board of Trustees, Mr. Mensah, Vice-Chairman, Dr. Bembello and Professor Germain, with powers to coopt from the Board, the Programme Committee or any other appropriate person, will meet to prepare a short-list, interview as necessary, and report to the Board, with recommendations if possible, at its March 1977 meeting.

Interim arrangements

It was unanimously resolved that when the Chairman of the Board is not personally available in Addis Ababa for carrying out the full control of the administration of ILCA the responsibility for these duties will be transferred to another Board Member. Such a Board Member will be designated as Representative of the Board and shall be responsible to the Chairman of the Board with all responsibilities, authorities, and any other powers, legal purposes or delegations of the Director as set forth by the Board of Trustees.

It is envisaged that Dr. D. E. Tribe shall be appointed Representative of the Board during the period December 9 to January 31, 1977 (approximately), and that Mr. D. J. Pratt shall so

function for the period January 15 to April 15 (approximately). In the overlapping period, the two Representatives shall serve in joint capacity as they may agree upon to minimise the disruption arising from the transition from one to the other.

Approval for the release of Dr. Tribe and Mr. Pratt has yet to be obtained from their employers. In the case of Mr. Pratt, other provisions or conditions to those listed may be needed following negotiations with his employer.

Other matters arising from the Executive Committee meeting

The Board formally approved the motions of the Executive Committee meeting concerning the selection of individuals to fill the vacancy on the Board and the consideration of future positions on the Board, given under items 3 and 4 of the report of that meeting.

It also agreed that plans should proceed for ILCA to participate in the organisation of the EDI training course, for which ILCA would probably provide the course Director. The Board approved ILCA's involvement in principal in a course tentatively planned by USAID and the Mali Government to be held in Mali, and in activities provided for under the U.S. Government Title XII act.

In respect of observers to the forthcoming meetings of the Programme Committee and Board of Trustees, representatives of donor countries and agencies and Consultative Group sponsors would be welcomed although it was to be understood that closed sessions would be held.

At 15·30 hours
Dr. Hodgson made a short explanatory speech to the ILCA Team Leaders and representatives of the Cooperative Programmes.

Programme Committee

It was unanimously resolved that a meeting of the Programme Committee should be held in Addis Ababa from 22 to 28 January 1977 instead of immediately prior to the Board Meeting in March 1977.

Meeting of the Board of Trustees

It was anticipated that the Board of Trustees would meet during the week beginning March 14, 1977. Dr. Hodgson would inform members of the exact timing in due course.

Draft for submission

International Livestock Centre for Africa

Executive Committee

Special Meeting held in Addis Ababa on January 29, 1977

Attendance : Dr. R. Hodgson, Chairman
Dr. D. Tribe, Representative of the Board of Trustees
Mr. D. Pratt, Incoming Representative of the Board of Trustees
Dr. W. Schaefer-Kehnert, Member
Mr. A. Thomas, Observer
Mrs. W. Allen, Secretary

Absent : Mr. M. Mensah, Vice-Chairman

Agenda :

Item 1 Adoption of the Minutes of the Executive Committee and Board meetings of November-December 1976

Item 2 Appointment of Director and Deputy Director; progress report and consideration of further interim arrangements

Item 3 Arrangements for Board meeting, March 1977

Item 4 Any Other Business

a) Review of staff recruitment and conditions

b) Review of internal structure

c) Remuneration for members of the Board of Trustees and its committees

d) Compensation for national income tax payments made by certain staff members

e) ILRAD Board meeting

f) Confidential documents of Dr. J. Pagot

g) Membership of the Board of Trustees and Program Committee

h) Terms of employment of Dr. Tribe and Mr. Pratt.

Item 1 Adoption of the Minutes of the Executive Committee and Board meetings, November-December 1976

The minutes of the meeting of the Executive Committee of November 28 to December 1 and of the special meeting of the Board of Trustees of December 2 and 3 1976 were approved. Copies would be sent to all Board members and to the CGIAR in due course. The minutes would be submitted to the Board at its meeting in mid-March for formal adoption.

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Item 2 Appointment of Director and Deputy Director; progress report and consideration of further interim arrangements

Dr. Hodgson stated that donor governments and international agencies had been informed by letter of ILCA's search for a new Director, and some responses had been received.

The Committee discussed criteria to guide the Search Committee in its consideration of recommendations and applications. Dr. Schaefer-Kehnert suggested 6 qualities which should be expected of applicants. These were refined as follows, in order of relative importance:

1) personality and leadership ability;

2) experience of livestock development, in particular in Africa;

3) research qualifications.

After discussion the following tentative schedule was established:

i) As soon as possible a final version of the profile of the posts of Director and Deputy Director would be prepared. Advertisements in English and French would be drafted and placed in leading newspapers in the donor countries and other countries where suitable candidates might be found, and in leading weekly professional journals. The job profiles would be sent to persons who expressed an interest in the posts, and also, with an appropriate covering letter, to the embassies of donor countries and representatives of international organisations in Addis Ababa, with a request to circulate it as widely as possible. In addition, the profiles would be sent to selected universities, and placed on the notice boards at ILCA headquarters. The closing date for applications would be 1 May 1977.

ii) Early May. The Search Committee would meet as soon as possible after 1 May to consider the applications received and to draw up a preliminary short-list of 10 - 20 names.

iii) In May and June unsuccessful candidates would be thanked for their interest; the references supplied by the short-listed candidates would be followed up and candidates would be asked to confirm that they were still available.

iv) In late June the Search Committee would meet again, together with co-opted advisers and any Board members wishing to attend. A final short-list of up to half a dozen names would probably emerge from this meeting. The occasion might also form a suitable opportunity for an Executive Committee meeting.

v) August/September. The candidates on the final short-list would be invited for interview by a full meeting of the Board to be held probably in London in late August/early September. Prior to the meeting the most rigorous investigation of the candidates' qualifications and personal qualities would have been carried out, and the candidates would have been provided with background data on ILCA. The candidate chosen would be invited to visit Addis Ababa before a final appointment was made. It was hoped that the name of the final nominee could be given to the CGIAR at Centers' Week to be held from 13 to 15 September 1977.

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The Committee realised that the schedule would involve a considerable amount of work, particularly for Mr. Mensah and Dr. Hodgson, as Chairman of the Search Committee. ILCA headquarters would furnish every possible assistance and the secretariat for the Board in Addis Ababa would keep a file of applications received, send acknowledgements of applications and write appropriate letters to unsuccessful candidates. The Chairman of the Search Committee would keep the secretariat in Addis Ababa informed, and vice versa, by exchanging copies of all correspondance.

Interim Arrangements

Under the interim arrangements established by the Board, Mr. Pratt would be available until 7 April at the latest; the schedule drawn up for the Search Committee would necessitate further interim arrangements for a period of 6 to 9 months. It was noted that no current Board member was able to act for the period required. There were therefore 2 possibilities:

a) a person unconnected with ILCA, but knowing its background, could be given a contract, on a consultancy basis, for the period required. This person would most probably be retired or holding a university post.

b) a present ILCA staff member could be appointed Acting Director for the period required.

After discussion, three names emerged : those of Mr. R. Melville, formerly of ODM, Dr. R. Temple, leader of the ILCA Animal Science Team, and Dr. Asrat Felleke, a former member of the Board of Trustees.

It was agreed that Dr. Asrat, if interested in joining ILCA, would be offered the post of assistant to the Director in the first instance, with a one-year renewable contract. He could be guaranteed a permanent position whether or not he was chosen as Acting Director.

It was agreed that a final decison, probably between Mr. Melville, Dr. Temple and Dr. Asrat, would be made at the March 1977 Board meeting, on the advice of Mr. Pratt.

Dr. Hodgson undertook to write letters of appreciation to the University of Melbourne and ODM for their co-operation in releasing Dr. Tribe and Mr. Pratt.

Item 3 Arrangements for a Board Meeting in mid-March

It was agreed that the Search Committee would report to a special meeting of the Executive Committee on Tuesday 15 March. The full Board plus guests could then meet for discussion of general business matters and an initial discussion of the report of the Program Committee meeting in open session on Wednesday 16 March and the morning of Thursday 17 March.

The open session of the Board could then continue on Thursday afternoon following the arrival of the TAC Sub-Committee members, when Dr. Hodgson would formally hand over the Board Chairmanship to Mr. Mensah. At about 4 p.m. that afternoon there would be a ceremony at which Dr. Hodgson

.../

would lay the foundation stone of the permanent headquarters at Shola. It was suggested that the wording of the stone, to be decided by Mr. Pratt and Mr. Thomas, should be simple. A possible wording was : "The International Livestock Centre for Africa, 17 March 1977. Foundation Stone laid by Ralph E. Hodgson, Chairman of the Board of Trustees 1973 - 1977.". All ILCA staff, colleagues in Ethiopia and high-level representatives of donor countries and agencies would be invited to the ceremony. Formal invitations would contain a short account of the history and aims of ILCA. Mr. Mensah, as Chairman of the Board, would introduce Dr. Hodgson, who would make a speech and perform the ceremony. It was agreed that the Ethiopian Minister of Agriculture or his representative should be invited to make a closing speech.

The session of the Board on the morning of Friday 18 March, would be a closed session, to which members of the TAC Sub-Committee would be invited. The ILCA Program and the Search Committee's report to the Executive Committee would be discussed in detail.

During Friday afternoon and/or Saturday morning the TAC Sub-Committee would be encouraged to meet the staff individually and, if they wished, senior staff members as a group. Meanwhile, the Board would finish its business in open session. The Chairman said he hoped that business would be completed on Saturday the 19th, but warned that members should be prepared for the possibility of a meeting on the following Monday.

Item 4 Any Other Business

a) Review of staff recruitment and conditions

Dr. Tribe reported that recruitment had been frozen for the time being, except for the appointment of Dr. Amare Getahun as co-ordinator for the Ethiopian Rangelands project. The posts of personnel officer and animal production systems specialist and a 6-month consultancy for management of small livestock had been advertised, and Dr. Sall was authorised to seek 10 indexers to be recruited on local contract.

The question of annual increments was raised, and it was agreed that each staff member (local or international) would be paid the increments statutorily provided for, unless his or her performance had been unsatisfactory - in which case he or she would be provided with a written statement of the grounds on which the increment had been withheld. The Senior Administrative Officer was accordingly requested to arrange for payment of the appropriate increments to all staff members with a current contract. The only exceptions should be those staff members who were already at the maximum level of their grade or who had already received an annual increment for 1976/77. The size of the increment should be as laid down in the Staff Regulations for internationally recruited staff, and, for locally recruited staff, should be 10% of the lowest point of the appropriate classification.

.../

It was noted that the salary scales were unclear and that the matching of individual posts to the scales was arbitrary. A complete reappraisal of staff recruitment and management was required. A former FAO personnel director had been offered a post as consultant to make recommendations on the subject, which would be put into effect in due course by the future personnel officer.

It was agreed that all posts should be advertised as widely as possible, including within ILCA. Clerical and support staff posts would be advertised internally, and externally at the discretion of the Director. It was thought particularly important to advertise widely in Ethiopia for secretarial and accounts positions.

Applicants should be required to state whether a member of their family was already employed at ILCA.

b) Review of Internal Structure

The question was raised of a review of the structure of ILCA. In view of the prospect of an extended period of interim management, it was thought that an internal reorganisation of ILCA might need to be considered before a permanent Director was appointed.

There was discussion as to whether a firm of management consultants should be engaged, or whether ILCA should itself carry out a study of its internal organisation. Mr. Pratt was requested to consider the advisability of engaging a firm of consultants. The Committee requested him to proceed as quickly as possible, in order to be able to report on progress to the Board of Trustees at its meeting in March, and empowered him to appoint a suitable firm if he thought fit. Dr. Schaefer-Kehnert offered to provide assistance if required in the choice of consultants.

c) Remuneration for members of the Board of Trustees and its Committees

The paper prepared by the Senior Administrative Officer (attached to these minutes as annex 1) was discussed, and the following remuneration was approved.

All members of the Board of Trustees and its Committees will receive, as from March 1 1977, the following remuneration and allowances:

1) A daily allowance of US$ 150 payable for every day spent away from home station for the purpose of attending ILCA Board or Committee meetings;

2) Hotel accommodation plus US$ 25 per day for incidental expenses while attending such meetings, and (where appropriate) for one day of travel before and one after attendance at these meetings.

In the absence of hotel bills for travel days specified under (2) a composite sum of US$ 50 per day shall be payable.

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In addition, the above daily allowances will be payable to members for visits or other ILCA business authorised by the Chairman of the Board or the appropriate Committee. The Chairman of the Board and of ILCA Committees shall be entitled to the above daily allowances for up to 60 days a year over and above days spent attending ILCA Board and Committee meetings.

d) Compensation for national income tax payments made by certain staff members

It was agreed that as a matter of principle financial arrangements should be made to resolve disparities in the net incomes of staff members resulting from their liability to national income tax. At present, staff members from Australia, Ethiopia, Kenya, Mali, Switzerland and U.S.A. were liable to tax on all or part of their income.

The Committee requested the Senior Administrative Officer to study the matter in detail and to prepare a paper for the March meeting of the Board of Trustees.

e) ILRAD Board Meeting

The ILRAD Board meeting was to be held from 28 to 30 March 1977. If possible, Mr. Pratt would visit Kenya at that time and attend part of the meeting. It was hoped that he would be accompanied by Dr. Girma Tadege.

f) Confidential documents of Dr. J. Pagot

Papers given in confidence to Dr. Tribe by Dr. Pagot were handed over to the Chairman, who would keep them for the present together with his own copies.

g) Membership of the Board of Trustees and Program Committee

It was agreed that Dr. Tribe should invite Dr. A. Provost to become a member of the Program Committee to replace Dr. K. Turk. Dr. H. Ruthenberg would be invited to serve another term as a member of the Committee.

h) Terms of Employment of Dr. Tribe and Mr. Pratt

It was agreed that Dr. Tribe and Mr. Pratt would receive a daily allowance of US$ 175. In addition, ILCA would pay for their accommodation plus a daily subsistence allowance of US$ 25. Mr. Pratt would also receive US$ 15 per day to compensate for the interuption in his pension fund contribution. The Committee authorised Mr. Pratt, at ILCA expense, to make one visit each to Sana'a and London in connection with his continuing responsibilities to ODM.

Item 4c ANNEX 1

24 January 1977

The Technical Advisory Committee (TAC), now pays as follows: honorarium of $ 150 per day for actual meeting days; plus $ 50 per day for expenses, including one travel day before meetings and one travel day after meetings; plus air tickets. This practice appears suitable for ILCA.

Therefore, after this date, elected Trustees will be paid the following schedule of honoraria and expenses:

a) For attendance at the Annual Board meetings, a lump sum honorarium of $ 450 (3 days x $ 150) which includes attendance at any committee meetings scheduled on dates prior or consecutive to the Board meetings.

b) For attendance at Executive Committee meetings other than the Committee meetings during the annual Board meetings, $ 150 per day for days of actual Committee meetings.

c) For consulting work requested by ILCA, $ 150 per day for days of actual consulting.

d) Actual itemized travel expenses will be reimbursed in addition to honorarium; or $ 50 per day* in lieu of itemized expenses including one travel day before and after service to ILCA; plus first class air ticket.

e) During visits to ILCA program, for the purpose of acquainting the Trustees with current work, expenses will be paid as (d) but no honorarium.

* Or hotel room plus US$ 25 per day.

Item 4 Matters Arising

(a) Change of Chairman

The proposal that the Chairmanship of the Board should be transferred at the current meeting, March 1977, from Dr. Hodgson to Mr. Mensah has had to be amended. The present proposal is that Dr. Hodgson will continue as Chairman until the end of 1977 and that Mr. Mensah will take over in January 1978.

Item 4 Matters Arising

(b) CGIAR Review Committee Report

Members are aware of the CGIAR Review Committee Report. Although the Consultative Group has been asked to send a copy of the full report to all members it is not known whether this will arrive in time for study before the March meeting. Accordingly, annexed hereto is a summary of the Review Committee's recommendations, and the Consultative Group's note on possible ways of implementing the recommendations accepted by the Group.

It is hoped that the CGIAR representative attending our Board meeting will be in a position to talk to this paper and provide the latest information concerning implementation.

Draft
December 13, 1976

Implementation of the Recommendations of the CGIAR Review Committee

The CGIAR Secretariat has outlined below its suggestions to Center Directors for implementation of the recommendations of the CGIAR Review Committee, which were approved by the Group on October 27-28, 1976.

Recommendations 1-3 (Need for the CGIAR; Emphasis on Foodcrops; Period of Consolidation)

No specific action by Center Directors immediately required.

Recommendation 4 (Forum Function)

The CG Secretariat has identified several alternatives regarding the possible structure, timing, subject matter, participation and other aspects of forum discussions sponsored by the CGIAR. It will shortly be seeking comments and suggestions from a representative number of members of the Group, Center Directors, TAC members and others. A specific proposal will then be formulated by mid-February 1977.

Recommendation 5 (Integrated Programs)

The Group expects the international centers to conceive of their broad range of activities as an integrated program, regardless of type of funding or location of activity. The recommendation is to do away with the artificial distinctions between different aspects of a center's program. It is aimed primarily at the special project activity, and in effect urges a center (and its donors) to develop all its activities within the context of an agreed integrated, coherent program.

The practical effect of this recommendation may be that an international center should only accept new "special project" activity which is consistent with its integrated program, as it may be developed within the guidelines described in Recommendation 6 below.

A corollary to this recommendation is that the entire program of a center may henceforth be subject to review by the Group.

Centers are requested to ensure that their 1978 Program and Budget papers provide adequate detail on the nature of all on-going and prospective special projects, and their relationship to the overall mandate and program of the center.

Recommendation 6 (Program Balance)
Recommendation 10 (Longer-term Planning)
Recommendation 16 (Center Size)
Recommendation 18 (TAC Review)

These four recommendations are inter-related.

The Group generally believes that the international centers should be more explicit in setting their longer-term research objectives, deter-

mining the appropriate balance of activities, and assessing their optimal size in relation to their mandate and research program.

Most centers have a short-term mechanism of forward planning, through annual program reviews and other methods. However, apart from one or two centers, there appears to be little specific longer-term planning, which translates the center's mandate into specific research strategy and objectives.

In particular, the Secretariat believes the Group would wish to have the centers develop: (i) an explicit statement of objectives and a longer-term research strategy; (ii) a justification for the balance of program activities among research, training, conferences, etc., and -- at multiple-crop centers -- for the split of resources among different crops or systems work; (iii) an assessment of where the impact of the research is likely to be felt initially and in succeeding stages, and what changes in emphasis, if any, are envisaged over a five-year period; and (iv) some assessment of what the centers believe is their appropriate size, in terms of staff, given their program objectives.

The Secretariat believes that it will take time to develop a rationale for program choice, balance and size. Perhaps the best approach would be to ask centers to prepare a statement on these questions in preparation for TAC Quinquennial Reviews. It could then form part of the review exercise. For those centers which have already been reviewed, or which are not scheduled for a Review for the next 18 months, a separate timetable could be devised. Ideally, all centers will have developed a statement on program objectives, strategies, size and balance by the end of 1978.

Recommendation 7 (Links with National Programs)

The "boundaries" question continues to be of special interest to donors. The Group generally endorsed the recommendation of the Review Committee, including its breakdown of "appropriate" and "inappropriate" activities of the centers in cooperation with national research programs as outlined on Page 82 of the Report.

It is suggested that the 1978 Program and Budget papers, in describing the special project activity as proposed under Recommendation 5, should refer to the definitions of appropriate activity given in the Report. If there are any special projects which appear to fall in the "inappropriate" category, explicit justification should be given for their continuation.

Recommendation 8 (Definition of Core/Extra-core)

The Study Team working on the Review noted that the distinction between a Center's core program and its program of Special Projects was often made arbitrarily in accordance with the source of funding rather than on the merits of whether an activity was central and critical to carrying out the Center's mandate as distinct from being supplementary

or ancillary. The Review Committee's report sought to clarify the concepts and Recommendation 8 made a specific proposal about the terminology for different kinds of funding.

The discussion in the Consultative Group on this item reached the conclusion that while a Center's program should be presented and considered as an integrated whole, it was valid to distinguish between that part of it which was central and critical and that which was supplementary and usually short term with limited objectives and often for a single client rather than the Center's clientele as a whole. The most recent version of the CGIAR Budgeting and Accounting Procedures Paper (February 25, 1976) lays down definitions of "core program" and "special projects" which are consistent with this concept and these definitions therefore remain valid.

There remains, however, the problem identified by the Study Team that these definitions are sometimes distorted or even abused to accommodate a donor's desire to designate an activity it is funding as a "special project" even when it properly forms part of a Center's core program. Efforts should now be made to phase out this practice and as a step in that direction the Secretariat will shortly circulate a proposed change in the terminology for distinguishing between funds of three different kinds: (a) those available without restriction for a Center's core program, (b) those restricted to designated parts of the core program and (c) those restricted to supplementary or ancillary activities. Funds of the first and second character provided by a member of the CGIAR would be counted as part of the donor's "pledge" to the CGIAR regardless of their budgetary source and funds of the third character would, as at present, fall outside the CGIAR arrangements for "pledged" funds; the activities financed by them would, as heretofore, be termed "special projects" but in future would be reasonably fully described in Center Program and Budget Papers and their relevance to the core program explained.

Recommendation 9 (Special Project Review)

As indicated above, the Group wishes to have more information and scrutiny of those aspects of a center's program which is financed outside the core budget, but which forms part of a center's integrated program.

The Recommendation proposes that TAC review any special project activity which might be deemed to (i) be outside a center's major objectives, (ii) strain the center's management, (iii) eventually be recommended for core support or, (iv) be unusually large. These are questions of judgment and interpretation. What is needed is a single test for deciding when to bring a proposed special project to TAC in advance of becoming committed to it. The Secretariat suggests, therefore, that the international centers routinely advise the Secretariat in January of each year (at the time they are to advise of any new core program initiatives) whether there are any prospective special projects which might eventually be suitable for the core program, or will cost $250,000 per year, or both. These activities could be reviewed by TAC in connection with its annual core program dis-

cussion. If a Center wished to move more quickly on a project than waiting until January would allow, it could advise the TAC Chairman in writing at any time, with copies to each of the Secretariats.

In addition to this process of advising the two Secretariats, the Center's Program and Budget Paper submission should explain the objectives of every special project, the manner in which progress is to be assessed, and the number of man-days of center core staff needed to carry out the project, in addition to information on the financial and man-year cost of the special project itself.

It should be emphasized that it is not the desire of the Group or TAC to "approve" special project activity. It is rather a desire to ensure that a center's program is an integrated, coherent whole.

Recommendation 11 (Inter-Center Collaboration)

This recommendation is self-explanatory.

Centers are requested to provide the Secretariat with a copy of any inter-center agreements which have been concluded. Any agreements entered into henceforth should also be copied routinely to the Secretariat.

The Program and Budget submissions might also highlight cooperative activities.

Recommendation 12 (Board Composition)

The Chairmen of the Boards of Trustees of the international centers are asked to bring this recommendation to the attention of their Boards at the next scheduled Board meeting.

The Secretariat would appreciate receiving statements of criteria and procedures for the selection of Board members, to the extent they are not already contained in the Articles or By-Laws of the center.

For those centers which do not now have Board members selected in conjunction with the CGIAR, the Secretariat would appreciate receiving a statement from the Board indicating whether the Board accepts this proposal in principle, and what steps would need to be taken to carry out this recommendation. If such action would create legal difficulties, this should be indicated.

Recommendation 13 (Staff Recruitment/Development)

In carrying out its field investigations, the CG Study Team gained the impression that several aspects of staff recruitment and development required attention. Recognizing that the quality of any institution depends on the quality of its staff, the Study Team and the Review Committee wished to bring these suggestions to the attention of Center Directors. The Review Report, particularly pp. 92-94, identifies specific activities regarding recruitment and staff development which the Group suggests the

Center Directors address, individually and collectively.

The Secretariat suggests that the spokesman for the Center Directors make a presentation to the Group at International Centers Week outlining any steps which are being taken by centers to implement these suggestions.

Recommendation 15 (TAC Research Program Reviews)

Recommendation 18 (TAC Forward Plan Reviews)

Center Directors should note that TAC is asked to continue its quinquennial review evaluation, to assess future center research plans, and to undertake cross-center analyses of specific topics.

TAC will also be responsible for reviewing the longer-term program plan described under Recommendation 6 above.

Center Directors are asked to note particularly the final sentence of Recommendation 18 regarding the period of consolidation of the CG network which is to follow.

Recommendation 17 (Biennial Budgets)

The Secretariat will be circulating shortly a paper describing, among other changes stemming from the review, the procedures for biennial budgeting.

Three or four centers have been selected to initiate the biennial budget process for the 1978 Program and Budget submission. These centers have already been notified.

The Budgeting and Accounting Paper will be revised before the 1979 budget cycle begins in early 1978.

Recommendation 19 (Donor Action)

Center Directors will wish to note particularly items (4) and (5) of this recommendation which encourages donors not to overfund a center and which calls for a CG review of a center which is consistently underfunded.

Recommendation 20 (Standby Committee)

The Group authorized the Chairman of the CG to select and activate the Standby Committee, as needed. No such action will be required in 1977.

Recommendation 21 (Joint Secretariat Activity)

The CG and TAC Secretariats plan to produce integrated program and budget commentaries for each center in 1977, and a joint Integrative Report.

The draft commentaries will be sent to the Center Directors as early

as possible and reviewed with them during the May/June TAC meeting.

Suggestions on the coverage of the program descriptions in the 1978 Program and Budget submissions will be circulated to Centers with the proposals on biennial budgeting.

Recommendation 22 (Cash Flow)

Most donors appear to be able to accelerate their contributions in 1977. Arrangements are also being sought for the World Bank to provide limited short-term accommodation where necessary. Specific instructions for access to these standby funds will be circulated by the Secretariat if the proposal is agreed by the Executive Directors of the World Bank in January 1977.

ANNEX

CGIAR REVIEW COMMITTEE RECOMMENDATIONS

Recommendation 1: *The need for a sustained research effort to increase food availability in developing countries will continue and is likely to increase. Therefore, we recommend that the Consultative Group on International Agricultural Research proceed on the basis that it should continue to function for the foreseeable future (pp. 58-60).*

Recommendation 2: *We recommend that the CGIAR should continue to endorse TAC's conclusion that the primary focus of the CGIAR should be to support research and technology development that can potentially increase food production in the food-deficit countries of the world. The research activities supported by the CGIAR are appropriately focused on food commodities which are widely consumed and collectively represent the majority of the food sources of the developing world and no major changes or additions are called for at this time (pp. 61-63).*

Recommendation 3: *We recommend that the next three years should be viewed by the CGIAR as a period of consolidation. During this period continued support should be provided for the current set of centers and related activities. We caution against undertaking initiatives requiring major financial commitments. TAC should continue during this period of consolidation to explore the need for new initiatives and changes in existing programs (pp. 61-74).*

Recommendation 4: *In addition to the current practice of receiving reports from related activities such as IFDC, IFPRI, AVRDC, and CGFPI, we recommend that the CGIAR should support fora for information exchange among members of the Group, technical personnel from their agencies, centers, other aid agencies and national programs in developing countries.*

In this connection the CGIAR should consider two specific activities (1) commissioning papers as a basis for discussions of CGIAR issues of interest to donors and research beneficiaries and (2) explicitly seeking to foster increased information exchange among CGIAR donors and related agencies about other activities in which they are jointly involved (pp. 61-63).

Recommendation 5: *We recommend that all projects undertaken by a center be regarded as components of its total integrated program regardless of sources of funds and that the entire program be subject to the review procedure as outlined in this report (pp. 75-76).*

Recommendation 6: *We recommend that each center develop an objective set of criteria for program choice and periodically reassess the balance of its program with respect to: (1) research and technology development, (2) training, (3) cooperation with national programs and advanced research institutions; and (4) communication and exchange of information between center scientists and others in related fields (pp. 76-79).*

Recommendation 7: *We recommend that centers continue to develop and strengthen their cooperation with national programs, insofar as this is essential to accomplish their research mandate. Beyond this centers should remain alert and responsive to additional opportunities for cooperation to the extent that extra-core funds are available, that these activities do not compromise or distort the central research mission of the center and that they are within the centers' capacity to staff and manage (pp. 79-84).*

Recommendation 8: *We recommend that all support to a center other than that provided through the CGIAR be classified as extra-core funding. Further, we recommend that these funds be used to supplement activities supported by core funds and/or to finance activities that the center may wish to undertake primarily to benefit a particular country (pp. 84-86).*

Recommendation 9: *We recommend that any proposal for a new project to be supported by extra-core funds should be forwarded by the center to TAC for review when (1) there is a question as to whether the purpose of the activity lies within the center's mandate, (2) acceptance has implications for future core support, (3) the proposed activity might put undue additional strain on center management, or (4) the extra-core funding is particularly large (pp. 84-86).*

Recommendation 10: *We recommend that all centers develop more effective forward research program planning procedures and include as advisors international scientists with competence in the appropriate areas (pp. 88-89).*

Recommendation 11: *We recommend that centers should be encouraged to collaborate wherever possible in executing their cooperative research activities with national programs when working in the same region or with the same commodity. The negotiation and administration of these linkages should be the responsibility of center directors and the respective boards of trustees. TAC or the CGIAR should serve only to advise and assist in reaching a solution in the case of disputes that cannot be resolved by the centers. Further, we recommend that agreements and arrangements between centers be formally recorded in writing and a copy of all such agreements be sent to the CGIAR Secretariat (pp. 89-90).*

Recommendation 12: *We recommend that each board of trustees define criteria and procedures for the selection and appointment of its own members and that these be made available to the CGIAR. Further, we recommend that each board of trustees broaden its membership by including, when appropriate and consistent with national laws, three members selected in conjunction with and ratified by the CGIAR (pp. 91-92).*

Recommendation 13: *Since quality of the staff is a central factor in the success of the program, we recommend that: (1) center directors advertise as widely and openly as possible in seeking candidates for staff positions, (2) every effort be made to maintain staff vitality, and (3) outposted staff receive the same sabbatical privileges as staff posted at headquarters regardless of source of funds supporting the scientist (pp. 92-94).*

Recommendation 14: *We recommend that the CGIAR review its overall program and operation every three to five years. The CGIAR should appoint an ad hoc committee to conduct a review of the substantive program of the CGIAR as well as review those policies, procedures, and management mechanisms which require attention. TAC should provide a major input into this long term forward look at the substantive program (pp. 96-98).*

Recommendation 15: *We recommend continuation of the TAC quinquennial reviews for evaluation of scientific quality, scope, and balance of current programs, and to evaluate future plans, including explicit review of center proposals to continue projects of long standing. We also recommend that the TAC give greater emphasis to periodic, across center analysis of particular topics (stripe analysis) (pp. 96-98).*

Recommendation 16: *We recommend that the concept of a desirable size range for centers be adopted. We further recommend that centers be asked to propose their desired size based on the number of senior scientists translated into financial terms. Until these plans are developed, we recommend that any proposed increase in senior staff numbers that would take centers above the size of the largest existing centers should be closely scrutinized (pp. 86-87 and 98-100).*

Recommendation 17: *We recommend that a biennial budget cycle be adopted for centers and related activities. In addition, a further indicative plan for the two years beyond the biennium should be developed. These budgets and indicative plans to be developed by centers should be consistent with their proposed desired size (pp. 98-100).*

Recommendation 18: *We recommend that the desired size and indicative plan proposals from centers be revieved by TAC. TAC should make appropriate recommendations to the CGIAR, after the discussion of any proposed adjustments with the centers. The CGIAR approved plans would then form the guidelines for the preparation of the center's next biennial budget. Until this process is in operation, centers should recognize that proposals for budget increases will be reviewed very carefully in the spirit of our recommended period of consolidation (pp. 98-100).*

Recommendation 19: *We recommend that within the framework of the following guidelines, donor autonomy be preserved and that center budgets result from the sum of independent donor decisions. The guidelines are: (1) donors be encouraged to increase the flexibility of their pledges, (2) donors be encouraged to continue support for a reasonable period of time to allow centers to produce research results, (3) donors be encouraged to precede*

any substantial reduction in support by two years' notice, (4) that donors agree to cooperate to assure that no center or other CGIAR supported activity receives greater support than its budget request, including supplemental requests, and (5) donor(s) of last resort fund a center that is seriously underfunded, but if that situation continues for two or three years the future of the center should be reviewed by the CGIAR (pp. 100-101).

Recommendation 20: *We recommend that a standby committee of the CGIAR be authorized. Its membership should include the chairman of the TAC and the executive secretary. We suggest the committee stand ready to advise on how the Group should deal with significant shortfalls in funding. The committee could also be activated by the CGIAR or the Chairman of the CGIAR for advice should other policy issues or circumstances arise (pp. 101-102).*

Recommendation 21: *We recommend that steps be taken to ensure closer coordination between the TAC and CGIAR secretariats to enable them to jointly produce integrated program and budget analysis for the CGIAR. Certain additional points of organization and procedure should be agreed upon:*

(1) *Adequate staff and financial resources must be provided for the work of each of the secretariats.*

(2) *The co-sponsors should report to the Group at its July meeting on the budgets of the secretariats for the coming year. If sufficient resources cannot be provided by them, donors should be asked to make additional funds available.*

(3) Each secretariat should recognize that it reports only to the Group, through its respective chairman.

We further recommend that the co-sponsors report to the Group at the forthcoming meeting (October 1976) whether they foresee any difficulty in meeting these considerations (pp. 102-103).

Recommendation 22: We recommend that donors be strongly encouraged to provide their pledged funds as early in the fiscal year as possible. Further, we recommend that the CGIAR Secretariat provide donors and centers with a time schedule of center budgetary needs and availability of donors' funds. If these two mechanisms do not solve the cash flow problem, we recommend that the World Bank explore alternative solutions (pp. 103-104).

Item 4 Matters Arising

(c) Vanderbur Report

The revision of these papers is still under way following the Executive Committee meeting of 28 November - 1 December 1976. Professor Tribe, who undertook to revise the Procedural Guidelines has indicated that he will try to circulate his revised version from Australia. The revised version of the Articles of Association will be available among the papers awaiting members cn their arrival in Addis Ababa.

Item 4 Matters Arising

(d) International Network of Feed Information Centres (INFIC)

Hohenheim University has reminded us (Annex 1) of commitments that were made in respect of our contribution to INFIC. The response of the Resident Representative of the Board is also attached (Annex 2).

While the involvement of ILCA to INFIC is limited under the terms of Item 12 (d) of the minutes of the 1976 Board meeting, it seems that progress is obstructed by continued delay in the International Union of Nutrition Scientists (IUNS)' meeting which is to agree on the choice of analytical fractions. Contact has been made with Dr. Balch of IUNS (Annex 3) to see if he has acceptable suggestions concerning ways in which ILCA might help to remove the obstruction.

The proposition before the Board is whether or not ILCA should assist IUNS in any way as a means of proceeding towards the more technical meeting for which ILCA has accepted commitment.

Annex I

MEETING WITH THE VIEW OF IMPROVEMENT OF INFORMATION ON TROPICAL AND SUBTROPICAL FEEDS IN AFRICAN COUNTRIES

30 April 1976 in Stuttgart-Hohenheim

MINUTES

Participants:

Dr. Pagot, International Livestock Centre for Africa - ILCA -, Addis-Abeba

Dr. Rendel, Livestock Research & Education Service, FAO, Rom

Dr. Mayer, Feed Information Centre, FAO, Rom

Dr. Réchaussat, Institut d'Elevage et de Médecine Vétérinaire des Pays Tropicaux - IEMVT -, Maisons-Alfort

Dr. Clemens, Deutsche Gesellschaft für technische Zusammenarbeit - GTZ -, Eschborn

Professor Dr. Huss, Institut für Tierernährung, Universität Hohenheim, Stuttgart-70

Professor Dr. Menke, Institut für Tierernährung, Universität Hohenheim, Stuttgart-70

Dr. Lantzsch, Institut für Tierernährung, Universität Hohenheim, Stuttgart-70

Dr. Haendler, Dokumentationsstelle der Universität Hohenheim, Stuttgart-70

Dr. Friede, Dokumentationsstelle der Universität Hohenheim, Stuttgart-70

Dr. Lai Dinh, Dokumentationsstelle der Universität Hohenheim, Stuttgart-70

Dipl.-Landw. Jager, Dokumentationsstelle der Universität Hohenheim, Stuttgart-70

Frau Neese, Dokumentationsstelle der Universität Hohenheim, Stuttgart-70

General statements of participants

A short introduction was given by Dr. Haendler, regarding the development of the International Network of Feed Information Centres (INFIC), the cooperation between the Documentation Centre of the Hohenheim University with FAO, the joint promotion project of ILCA and Hohenheim University supported by the Federal Ministry of Economic Cooperation (BMZ), Bonn with the task to promote

(1) the production of better and more reliable feed composition data of African countries, and

(2) the recording and processing of such data in the feed data bank for the information of interested users.

The meeting should lead to close and efficacious cooperation between the represented institutions basing on the results of a mission commonly undertaken to six African countries by representatives of FAO, Hohenheim and ILCA (Dr. Mayer, Dr. Friede, Dr. Lantzsch, Dr. Shenkute Tessema).

Dr. Mayer summarized the results of this survey of feed information and feed analysis work in six African countries (the full report of which was in the hands of the participants). Among the visited institutions only three had satisfactory equipments and staffs:

(1) Institut National de la Recherche Agronomique de Tunisie (INRAT), Tunis-Ariana (Tunisia),

(2) Department of Animal Science, University of Ibadan (Nigeria),

(3) Institut Sénégalais de Recherches Agricoles (ISRA), Dakar-Hann (Senegal).

The activities of these institutes primarily concern research and less routine analyses. A certain number of the analyses carried out by INRAT are routine analyses. Further German support for INRAT is desirable. The institute in Dakar is a French foundation and supplies data to IEMVT, the recording of the extensive data production in Ibadan needs a Nigerian specialist paid by BMZ/ILCA ? means.

The laboratories in Egypt, Ethiopia and Mali are not able to guarantee the production of reliable data because of an insufficient number of trained staff members (except Egypt), poor equipment and inadequate management.

Dr. Clemens pointed out that German support would better be concentrated on North African countries and Nigeria because of the high priority of animal production and the economic situation in these countries and the demand for better information on feeds.

Dr. Réchaussat explained on behalf of the Director General of IEMVT that this institute - independant of the government's policy - is giving technical aid (together with the French GERDAT organization for tropical countries). He emphasized the necessity of assistance for the production of data especially in respect to

(1) higher security of analytics - by better equipment and training of personnel,

(2) standardizing of analytical methods and specialization of laboratories in certain analyses - by analyses of reference samples, elaboration of an unsophisticated manual for feed analysis methods,

(3) exact describing of feeds by using the "International Vocabulary prepared in cooperation of Hohenheim, Logan and IEMVT, and introducing staff members of the laboratories into the principle of this vocabulary.

Professor Menke outlined that - in his opinion - more information could be obtained by introducing certain methods of analyses - beyond those already applied now - especially in-vitro-methods for determining digestibility according to modified Tilly and Terry methods and the van Soest method. For applying such methods for which fistulated cattle is needed for getting rumen liquid, training of personnel (for inst. in Hohenheim) and an adaption of the methods to the conditions in tropical countries are necessary.

Dr. Pagot mentioned the role of INFIC for the activities in Africa. His opinion was that the cooperation with the laboratory people in Africa needs a better definition of the objects of INFIC. Africans must understand what their data should be used for. He proposed a meeting of the directors of feeds laboratories and animal nutrition institutes in Africa organized by ILCA in order to discuss the future role of such institutions in the development of their respective national livestock activities and their relationship to INFIC. Moreover he proposed another meeting of European and African experts in order to develop feed laboratory methods suitable for African conditions. A manual giving precise instructions on laboratory methods applicable in Africa should be worked out.

Dr. Rendel reminded of the objects of INFIC the importance of which is generally recognized; they must however be adapted to and interpreted for the special conditions in Africa. Research development has been supported in Africa, but little has been done in the past for systematizing routine laboratory work. He supports the proposals of Dr. Pagot.

Results

After an intensive and detailed discussion the participants of the meeting agreed in the following points:

(1) It is very important to have more and better information on composition and value of feeds from African countries. It is especially necessary to have better feed information from countries with increasing animal production.

(2) The institutions represented at the meeting are willing to cooperate in this improvement of information and will mutually inform each other about their activities.

(3) The objectives of INFIC with special regard to the compilation of data from African countries and its task of supplying information to users in these countries should be defined better. Thus the report of this meeting should be presented to the INFIC meeting in Ottawa in July 1976.

(4) ILCA should coordinate all activities within countries of Africa South of Sahara. At the Ibadan institution a staff member should be instructed by ILCA into the recording of data. The possibilities of developing feed reference laboratories in Ivory coast or eventually Cameroun and Zaire should be envisaged.

(5) The Documentation Centres of IEMVT and the Hohenheim University will be furthermore responsible for the input of African feed data into the INFIC data bank, IEMVT especially for institutes in Dakar and elsewhere with which it is in permanent contact.

(6) The German Federal Ministry for Economic Cooperation (BMZ) should be asked to give further support to the activities to be carried out in cooperation between Hohenheim institutes and ILCA concerning training of laboratory personnel, developing analytical methods adapted to tropical conditions, data recording and processing. Among others the financing of a Nigeria staff member in the Ibadan institution is regarded necessary.

(7) ILCA will organize a meeting of leaders of African feed laboratories and animal nutrition institutes before the end of 1976 with the view of improving cooperation in the concerned field and with INFIC.

(8) On the basis of methods developed by the European Community a manual for feed laboratory methods (which must not be too sophisticated) applicable under African conditions should be worked out with Hohenheim-, IEMVT- and African experts; ILCA will establish a working group for this purpose.

(9) Activities to be provided for Egypt should be confirmed by FAO representatives in contact with Dr. El-Shazly, Deputy Minister of Agriculture, Egypt.

Annex II

00712/DIR/81

February 15 1977

Dr. H. Haendler
Universität Hohenheim
Dokumentationsstelle
7000 Stuttgart 70
Postfach 106

Dear Dr. Haerdler,

Your letter of 26 January has come to me as the Resident Representative of the Board of Trustees, with responsibility for looking after the administration of ILCA pending the appointment of an Acting Director.

I understand your concern for continuing harmonious relations between ILCA and Hohenheim University, and would assure you that ILCA's policy as it affects Hohenheim has innno way changed.

Turning to the specific points you raise:

1. There is no record of the Second Supplementary Agreement of 1977 having been received at ILCA. How or where it has gone astray I do not know but I suggest you resubmit the documents at your earliest convenience.

2. Although ILCA has not been idle on matters of feed information since the discussions of April 1976, there have been several set-backs in the interim. Firstly, at the INFIC meeting in Ottawa in July 1976 (which was attended by Dr. Shenkute Tessema of the ILCA staff) it became clear that the proposed IUNS meeting on the choice of analytical fractions, already overdue, was to be postponed indefinitely. In the view of our animal science staff, this international meeting, and the agreement on the choice of analytical fractions which was expected toensue, was and still is a necessary precursor for the African-oriented meeting discussed under item (8) of the minutes of the April 1976 discussions.

Meanwhile, we have been considering the desirability of proceeding independently with the larger meeting specified under item (7) of the minutes, but have been coming progressively to the conclusion that this meeting also will be most profitable if it follows the international and African meetings cited above. Our present thinking, therefore, is that these various meetings are interdependent and should follow each other in ordered sequence. This conclusion is supported by our experience at a seminar on 'techniques and methodology of collection of research information on animal production systems' which we have just held and at which some considerable discussion on feed matters was generated. We will be sending you a copy of the record of this meeting as soon as it is ready.

.../

We are now writing to Dr. Balch of IUNS to determine what are the present prospects for the IUNS meeting and whether there is any way in which ILCA can help. At present, ILCA has no mandate to support an IUNS meeting but, depending on the result of our contacts with Dr. Balch, we could consider placing a proposition on these lines before our next Board meeting in mid-March. At present, our mandate concerning INFIC is quite narrowly defined, as shown by minute 12 (d) from the Board meeting of March 1976 (attached). This, incidentally, is the mandate to which Dr. Pagot was in practice tied when you had your meeting in April 1976.

We will, of course, keep you informed of progress, and would welcome any comments which you may wish to make on our present analysis of the situation.

3. The only information that I have at hand concerning ILCA support for research at Ibadan is item (6) in the minutes of the April 1976 meeting. While it is possible under our budget to finance a specific research project, it is necessary first for us to have a detailed description of the project and its itemised costs, and to agree that the results of the research are likely to be of immediate value to the furtherance of ILCA's own research programme. Perhaps you are in a position to provide further information in respect of the case now underddiscussion?

4. Unfortunately you omitted to enclose with your letter invitations for your course on animal nutrition in the tropics and sub-tropics; we will be glad to respond as soon as we have the invitations.

With best regards,

Sincerely yours,

D.J. Pratt
Resident Representative
of the Board of Trustees

DP/wa

cc: Dr. Shenkute Tessema
Encl.

Meeting of the Board of Trustees
Addis Ababa, Ethiopia
10 - 12 March, 1976

EXTRACT

Item 12 d Feed Composition and Nomenclature Programme

The Board approved the following resolution :
"that ILCA lends its support in principle to the INFIC system and is prepared to organise a seminar in order to bring together African scientists working in this field : a) to discuss the aims and operations of the INFIC programme; and
b) to encourage African participation in it.

ILCA will also make available to INFIC the results of all feed analyses which are carried out as part of its research programmes.

However, at its present stage of development, ILCA feels unable to assume formal responsibility as the African coordinator for INFIC, without first receiving a clear statement setting out the extent of this commitment, including its duration and estimates of cost and staff involvement.

Therefore, we invite the Director to prepare such a statement for consideration at our next meeting.

In the meantime, the Director is authorised to continue ILCA's present commitments in relation to INFIC but is asked not to extend them, except for the organization of the seminar."

Annex III

INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

CENTRE INTERNATIONAL PO EN AFRIQUE

ADDIS-ABABA ETHIOPIA

00832 /DIR/86

17 February, 1977

Dr. C.C. Balch
National Institute of
Research in Dairying
Shinfield,
U.K.

Dear Dr. Balch,

I have been informed by Dr. Shankute of our institute that you would be the proper person to contact on a query we have on a proposed IUNS (International Union of Nutrition Scientists) meeting. This is particularly about the meeting on the choice of analytical fractions employed in the analysis of feedstuffs.

We notice from our files that attempts to hold this meeting have been made since 1974 and it has now been indefinately post-poned for lack of funding.

At a meeting in Stuttgart-Hohenheim on 30th April 1976, which various INFIC member institutes attended, and at a subsequent Fifth INFIC meeting held in July in Ottawa, Canada; it was expressed that ILCA should organize a meeting for leaders of African animal metho-dologies to be adopted by centers in Africa. It was also proposed for ILCA to organize a training program of African senior research workers in animal nutrition on new techniques on feed analysis.

In view of our animal science staff both these programs; the establishment of appropriate methodology and the training on techniques will depend upon the agreement on the choice of analytical fractions for properly assessing nutritive value of feedstuffs. Therefore we feel that the kind of meeting as proposed for IUNS is still a necessary precursor before ILCA launches these two meetings.

.../...

P. O. Box 5689 Cable ILCAF/ Addis Ababa — Tel. 15-13-22
Telex ILCA ADDIS 21207 15-13-94

ILCA is very much interested to proceed with these meetings. However, we also believe that these meetings should follow each other in ordered sequence and therefore would like to know the present status of the IUNS meetings on choice of analytical fractions. Is there any way that ILCA can assist in the commencement of this meeting? At present, ILCA has no mandate to support an IUNS meeting; but depending on your response and upon what prospects there may be from other institutions, I can place a proposition to our Board of Trustees at its next meeting in mid-March 1977. I am hoping to receive your reply before this meeting.

Sincerely,

Robert A. Dimple
Acting for:

D.J. Pratt
Resident Representative
of the Board of Trustees

Annex to Item 4 Matters Arising (d) INFIC

Further to the correspondence already presented as background material for item 4 (d), a reply has now been received from Dr. Balch, to say that responsibility for organising the IUNS meeting has passed to Dr. Pigden in Ottawa. A telex from Dr. Pigden dated 15 March indicates that there is no source of funds in sight for the meeting under consideration.

This leaves the Board to decide

(a) whether it wishes to support, or use its influence to persuade others to support, the IUNS meetings, or
(b) whether it wishes ILCA to disassociate its contribution to INFIC from the IUNS meeting.

In the latter event, the Board may wish to redefine ILCA's position vis-à-vis INFIC.

Annex to Item 4 Matters Arising (c) Vanderbur Report

Attached for insertion under the above head is a revised version of the Articles of Association prepared for the Board by Mr. G. Vanderbur.

It is a substantial revision because the original version was found to confer powers and activities additional to those allowed under the Memorandum of Agreement, and which, it is suggested, cannot be assumed without legal revision of the Memorandum of Agreement. While the Board is entitled to seek such a revision, the additional powers and activities cited in the original draft of the Articles of Association do not appear to be sufficiently substantive to warrant entering into a procedure of legal revision.

In making the present revision, it has been assumed that the primary purposesof the Articles of Association are

(a) to set out the rules which the Board has framed for its own working, and other major decisions taken under Section 8 of the Memorandum of Agreement;
(b) to form a base document to preface the Procedural Guidelines for the Board and Committees; and
(c) to facilitate these purposes by summarising the organisation, objectives, powers and activities of ILCA as set out in the Memorandum of Agreement.

The Articles have been revised on this basis.

-:-:-:-:-:-:-:-:-

Also attached is a revised and shortened version of the Procedural Guidelines, prepared on the request of the Executive Committee by Dr. D.E. Tribe; and incorporating a few editorial changes which have been made subsequent to its receipt (on 13 March) in Addis Ababa.

In submitting his revision, Dr. Tribe comments that, in their original form, 'there was a good deal of overlap between the Articles, which for example set out clearly the powers and duties of the Board, and the details included in the Guidelines. I have tried to simplify the Guidelines and have left out materials which have already been covered either by the Articles or other resolutions of the Board. I have also taken the view that if the Guidelines are too detailed and complex we will tend to ignore them. Only if they are kept to simple and straight-forward essentials will they form the basis of our practice'. Dr. Tribe also notes that 'the section about the Program Committee

is taken almost verbatim from the decisions made by the Program Committee, and subsequently verified by the Board, in February 1975'.

In respect of both the 'Articles' and the 'Guidelines', it is suggested that the Board should

(a) review their present relevance to the operation of ILCA and the Board;
(b) propose such substantive changes as are deemed appropriate; and
(c) defer the final revision of the documents to the Executive Committee.

INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

ARTICLES OF ASSOCIATION

ARTICLE I

ORGANIZATION

Section 1. - These articles refer specifically and solely to the International Livestock Centre for Africa, hereinafter referred to as the Centre. The Centre is established to operate for an indefinite duration as an autonomous, non-profit organization, international in character, governed by a Board of Trustees (Board) selected as hereinafter described and administered by a Director appointed by the Board, for the purposes of assisting livestock production in Africa through research, training, documentation and information services.

Section 2. - Without prejudice or detriment to the generality of its powers as otherwise set forth herein, including provision to receive support from other sources, the Centre is established by and supported through the Consultative Group on International Agricultural Research (CGIAR), which is empowered to require or conduct such program and budget projections, reviews, reports, and audits as it deems necessary. Program development and continuance is dependent upon the extent of financial support as above provided.

Section 3. - Following a Memorandum of Understanding signed by parties with interests in furthering the establishment of an international livestock centre for Africa, the International Bank for Reconstruction and Development agreed to act as executing agent for the purpose of establishing such a Centre. Subsequently on 16 July 1974, a Memorandum of Agreement was signed by the executing agent acting on behalf of the CGIAR and by the Imperial Government of Ethiopia for the establishment of the International Livestock Centre for Africa with its principal office in Ethiopia. Copies fo these Memoranda (incorporating the above amendment are held at the Headquarters Office of ILCA. Thereafter, on 1 November 1975, having determined that the Centre satisfied the conditions set for its establishment, the executing agent endorsed its rights and obligations to the Board.

Section 4. - The place of the principal office of the Centre is Addis Ababa, Ethiopia (Post Office Box 5689), with such other units or offices in other locations in Africa as are determined by the Board.

ARTICLE II
OBJECTIVES

(Section 3 of the Memorandum of Agreement)

The purpose of the Centre is to assist national efforts which aim to effect a change in production and marketing systems in tropical Africa so as to increase the total yield and output of livestock products and improve the quality of life of the people in this region. In particular, the Centre is intended to serve

- as an international centre for research conducted on an interdisciplinary basis, to promote the development and demonstration of improved livestock production systems, optimizing the use of human natural resources in Africa;
- as a focal point for training activities which will increase regional competence in a systems approach to livestock production and development; and
- as a documentation centre, in French and English, for livestock industries of Africa.

ARTICLE III

POWERS

(Section 5 of the Memoradum of Agreement)

The Centre shall possess full juridical personality, and, in particular, the capacity to :

a) acquire or obtain from any governmental authority, national, municipal or local, foreign or domestic,. or otherwise, or from any company, corporation, association, person, foundation or other entity, such charters, franchises, licenses, rights, privileges, assistance (financial or otherwise), and concessions as are conducive to and necessary for the attainment of the purpose of the Centre;

b) receive and acquire from any person, firm or entity, by donation, grant, exchange, devise, bequest, purchase or lease, either absolutely or in trust, contributions, consisting of such property, real or personal, including funds and valuable effects or things, as may be useful or necessary to carry out the purposes and objectives of the Centre and to hold, own, operate, use or dispose of said property or valuable things;

c) do and perform all acts and things as are necessary, expedient, suitable, or proper for the furtherance or accomplishment of the purposes and the attainment of any or all of the objectives herein stated, or which shall appear, at any time, as conducive to and useful for the activities of the Centre, including the capacity to institute legal proceedings.

ARTICLE IV

ACTIVITIES

(Sections 3 and 4 of the Memorandum of Agreement)

Section 1. - The Centre shall develop close linkages with national and regional organizations undertaking research, training and documentation activities in the same and closely related fields of interest. The Centre shall seek to identify means of increasing the efficiency of the major animal production systems of tropical Africa, and to assist the governments and authorities responsible for achieving new levels of productivity.

Section 2. - In particular, it is intended that the Centre shall :

(a) retrieve, assemble and make available in both English and French all relevant information on animal production in tropical Africa;

(b) engage a multidisciplinary research staff to study existing animal production systems (including the breeding, feeding, management and related health aspects of husbandry, the improvement of range and pasture, and the social and economic factors affecting the livestock industry including processing and marketing), develop new or amended systems of production, and define priorities for other research;

(c) support, supplement and cooperate with existing national and regional research stations or programs in developing a fully coordinated program of production and rangeland research which is appropriately related to the urgent needs of livestock development;

(d) develop the capacity to undertake research programs in specific aspects of livestock production which are appropriate to an international centre;

(e) organize , or assist in organizing, seminars, technical conferences and training courses for staff engaged in livestock research, extension, planning and production, in order particularly to increase regional competence in the multidisciplinary systems approach to livestock research and development;

(f) make available statistical support, information or advice to national, regional and international authorities in the various fields relating to animal production in which the Centre is actively engaged;

(g) engage in such other activities as may be found necessary in the furtherance of its objectives.

ARTICLE V

BOARD OF TRUSTEES

Section 1. - The Centre is governed by a Board of twelve members, comprised and selected as follows :

- Two members designated by the Government of Ethiopia;
- Three members designated by the CGIAR;
- Six members-at-large with interests and qualifications relevant to the work of the Centre, including at least three African nationals (with appropriate representation from different parts of tropical Africa), and
- The Director of the Centre (ex officio).

Section 2. - Pursuant upon the powers and responsibilities conferred on the Board under Section 8 of the Memorandum of Agreement, the Board confirms or rules that :

(a) the number of members may be expanded by action of the Board, not to exceed fifteen members in total, any such expansion of membership to be in the category of members-at-large;

(b) terms of office shall be conditioned as follows :

i) Board members designated by the Government of Ethiopia shall serve as determined by that Government, and the Director for as long as he continues to serve as Director;

ii) other members of the Board shall serve for terms fixed by the Board, but not in excess of three years per term, and not for more than two terms in succession except after an absence from membership of two years or more;

iii) terms of office shall be counted by consecutive annual Board meetings, with the first year of service ending at the closing of the annual meeting following the meeting of election;

iv) terms of office shall be fixed so that, as nearly as possible, one-third of the members affected shall terminate each year; and

v) a member who is elected to replace another member on a fixed term shall be appointed for the remainder of the term of the member who is being replaced, unless the vacancy occurs at the expiration of a term, when the appointment shall be made for a full three year term.

c) vacancies arising that are not to be filled by designating bodies (i.e. vacancies among members-at-large) shall be filled by the Board, according to selection procedures that shall consider the variety and balance of expertise appropriate to the needs of the Centre.

d) vacancies or expected vacancies among members-at-large shall be made known to CGIAR members and to ccuntries and organizations having a particular interest in the work of the Centre, in reasonable time for nominations to be received before selection is made.

e) the Board of Trustees of the International Laboratory for Research on Animal Diseases (ILRAD) shall be invited to send two of its members to attend as observers at all meetings of the Board.

Section 3. - The Board shall have the following powers and duties :

a) to meet at least once annually, with the date normally set at the preceding meeting, or rescheduled by notification giving at least thirty days in advance; to have such other regular and special meetings as it may determine are necessary; to have its quorum as half or more of the members that make up the Board, and to take decisions by majority vote of those present except as specifically provided otherwise;

b) to elect a Chairman and Vice Chairman and establish such other positions as it may find appropriate, and have an Executive Committee, Program Committee, and/or other committees, and to delegate any or some of its powers to these committees;

c) to determine, interpret, reform or modify policies and regulations of the Centre, and to define its program and set its objectives, and to develop and/or approve its program activities;

d) to effect and control the employment of the Director of the Centre, as it deems necessary and appropriate, and to delegate to the Director, under such policies and directives as it may lay down, responsibility and accountability for governing and directly administrating the total program of the Centre;

e) to cause, determine and/or approve the annual budget and longer term budget or budgets as applicable, scrutinize the financial conditions and status of the Centre, provide for selecting the fiscal auditor on a yearly basis and determine his responsibilities, and review and evaluate audit and other financial reports;

f) to review and evaluate the program progress reports as may be submitted by the Director;

g) to approve the appointment of senior staff members of the Centre on the recommendation of the Director;

h) to take such action as shall be necessary to conclude, and realize the purpose of, such formal relationships as may be determined from time to time by the CGIAR including, without limitation, dissolution or reconstitution of the Board and/or the Centre;

i) to exercise responsibility for the conduct of the business and control of the properties owned or held by the Centre;

j) to exercise such other powers and do and perform all other acts as may be necessary, conducive, suitable and proper for the promotion or attainment of any or all purposes, activities and objectives of the centre; and

k) in the event that the Board, with two-thirds or more consenting vote of all members of the Board, determines that the Centre should be dissolved, it will so notify the CGIAR and proceed in accordance with existing agreements; residual assets of any kind whatsoever, following satisfaction of obligations and agreements, to be distributed by the Board in agreement with the CGIAR.

Section 3. - Operational procedures and guidelines for the functioning of the Board and its Committees shall be separately set forth.

ARTICLE VI

MISCELLANEOUS

Section 1. - These Articles of Association may be adopted, amended or modified by a two-thirds vote of the Board at any regular meeting or at any special meeting called for the purpose, provided notice of such proposed change shall have been mailed to all members of the Board at least thirty days in advance of such meeting, or such notice is waived by all members of the Board, and provided also that such change does not assume to alter the text or intent of the Memorandum of Agreement without previously having caused the Memorandum of Agreement to be formally and legally modified to accommodate the proposed change.

PROCEDURAL GUIDELINES
FOR THE BOARD OF TRUSTEES AND ITS COMMITTEES
INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

These guidelines are the procedural guidelines provided for under Article V, section 3 of the Articles of Association. They are effective until changed by majority decision of a quorum at any properly convened meeting of the Board.

1. Board of Trustees

(a) Meetings

(i) The Board shall meet at least once annually, normally within the 10 weeks preceeding 15 April. At each annual meeting the Director shall submit a proposed calender of meetings for the next two years, including committee meetings.

2. (ii) Annual meetings shall be held at the headquarters of the Centre, unless otherwise decided by the Board.

3. (iii) Any change of meeting date and/or location shall be transmitted at least thirty days in advance to each Board member.

4. (iv) Special meetings may be called by the Chairman, or upon request of the Director or the Executive Committee, or of any four Board members. Whenever possible, thirty days notice shall be provided to each Board member.

5. (v) At each meeting each Board member shall have one vote. In the event of a deadlock, the Chairman shall have a second vote.

6. (vi) A quorum of members shall be at least half of all Board members.Except for amending Memoranda of Agreement and/or Articles of Association or for the dissolution of the Centre, actions may be approved by a majority of the members represented at a meeting, provided a quorum exists. If there is not a quorum the meeting shall be adjourned. The meeting may then be reconvened as a Special Meeting within one hour if the majority of the members present agree.

7. (vii) Board members may be polled by mail or cable, and action may be taken as though they were present in person.

8. (viii) Amendment to Memoranda of Agreement and Articles of Association or the dissolution of the Centre shall require two-thirds majority of all Board members. Notice of such proposed amendment or action shall be transmitted to all Board members at least thirty days in advance.

9. (ix) An agenda, supported by appropriate background material, shall be furnished to each Board member prior to each meeting, though it may be changed by action of the Board during a meeting. At each meeting, the Director shall normally provide a brief summary of each new project program or activity that has been initiated, or is being submitted for approval, together with a brief report on all continuing projects.

(b) Officials of the Board

10. (i) A Chairman of the Board shall be elected by Board members from their number to serve for up to three years. If the Chairman does not complete his term, a new Chairman shall be elected as the first order of business at the following Board meeting. A Vice Chairman shall be elected or re-elected annually by Board members from their number.

(ii) A Secretary to the Board shall be appointed by the Board, for such term as may be set. The Financial Controller of the Centre shall serve as Treasurer to the Board, unless the Board shall otherwise designate.

11. (iii) The Chairman of the Board shall chair a meeting if present; in his absence, the Vice Chairman shall act. Upon the absence of both, a temporary Chairman shall be elected by the Board members present. That person shall serve until the Chairman or Vice-Chairman arrive, or for the duration of the ongoing meeting.

(c) Minutes

12. (i) All business conducted at meetings of the Board shall be recorded in minutes, which shall be prepared by the Secretary and signed by the Chairman. Copies of minutes in draft form shall be circulated within thirty days to Board members who attended the meeting. Board members shall notify corrections to the minutes in writing within thirty days of receipt of the draft and a reconciled copy shall then be finalised by the Secretary, communicated to all Board members, signed by the Chairman and kept for permanent record by the Secretary.

(ii) A summary of the minutes will be made available to the CGIAR secretariat and may be made available to others according to the decision of the Board.

(iii) On matters of particular confidentiality, the Chairman may direct the Secretary to omit particular details in the minutes, and to provide instead a confidential report for limited exposure to those persons requiring specific knowledge.

2. Committees

(a) General

13. (i) The Board shall form such committees as are necessary for the effective execution of its duties and responsibilities. In particular there shall be two standing committes of the Board: the Executive Committee and the Program Committee.

(b) Executive Committee

(i) An Executive Committee shall be appointed to act for the Board between Board meetings and to take such actions as are delegated to it by the Board or are referred to it as a matter of urgency by the Chairman or Director. Its powers shall not extend to altering Memoranda of Agreement or Articles of Association or the fundamental policies of the Board.

(ii) The Executive Committee shall be composed of the Board Chairman and Vice Chairman, the Chairman of the Program Committee (q.v.), the Director and such other Board members who may be designated annually by the Board.

(iii) Minutes shall be kept and circulated to all Board members for information as soon as practicable after each meeting. A full report shall be submitted to the Board at its next subsequent meeting and, where appropriate, action of the Executive Committee shall be subject to ratification by the Board.

(c) Program Committee

(i) A Program Committee shall be appointed to advise the Board on all matters concerning overall scientific planning (including research, training and documentation activities).

(ii) Specifically it shall

- offer views on the program prepared and submitted to it by the Director;
- propose subjects for research;
- consider the annual scientific report and periodically review program components being undertaken;
- consider such other matters as may be referred to it from time to time by the Board.

(iii) In reporting to the Board, the Program Committee will comment on the various program components and activities being undertaken in relation to their scientific merit and to the general staffing, financial support and facilities available. All recommendations of the Committee will be subject to subsequent consideration by the Board.

(iv) The Program Committee shall consist of:-

- such members as may be appointed from time to time by the Board from among its members;
- such other members as may be appointed from time to time by the Board;
- the Chairman of the Board and the Director as ex officio members.

(v) The Chairman of the Program Committee shall be appointed by the Board; he may invite outside advisers and/or observers to attend particular meetings of the Committee.

(vi) The Program Committee shall meet at least once a year, at dates decided on by the Board. Although meetings will normally be held in Ethiopia, they can also be held from time to time in other countries, particularly those in which the Centre is undertaking, or proposes to undertake, research studies.

Item 4 Matters Arising

(e) Other Matters

ILCA Staff Council

Under Item 8 : Review of the Staff Regulations, of the 1976 Board meeting, the Board gave encouragement to the staff of ILCA to prepare proposals for the establishment of a Staff Council or an Appeals Committee. A draft constitution for a Staff Council is attached hereto (Annex 1) submitted by the Steering Committee established for this purpose.

STATUTE OF THE STAFF ASSOCIATION OF THE INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

First draft

CHAPTER I. NAME AND OBJECTIVE

Article 1

The Association shall be known as the Staff Association of the International Livestock Centre for Africa (hereinafter referred to as "the Staff Association").

Article 2

The purposes of the Staff Association are:

(a) To promote and safeguard the rights, interests and welfare of all members of the Staff of the International Livestock Centre for Africa, especially with regard to the terms of employment and the working conditions of the Staff, so as to ensure that they are in conformity with the principles laid down in the United Nations Charter, in the Universal Declaration of Human Rights and by the African Governments and in the ILCA Staff Regulations.

(b) To contribute to the promotion of the objectives of the ILCA as defined by the consultative group on International Agricultural Research and its organs and as laid down in the Agreements with African Governments.

(c) To maintain relations and co-operation with staff organizations and similar bodies of other International and inter-governmental organizations and, in particular with the Federation of International Civil Servants Associations (FICSA)

Article 3

These objectives shall be pursued by the following means among others:

(a) The setting up of such organs as may be necessary for the purpose of enabling Staff to form and voice their opinion and enhance their welfare.

(b) Consultations with and recommendations to the Director of ILCA and other responsible officers in charge of administrative and executive matters in the promotion of the objectives set forth in Article 2.

(c) The maintenance of relations and co-operation/with Staff Organizations and similar bodies of other International Organizations

(d) Membership of and full participation in the activities of the Federation of International Civil Servants' Associations (FICSA).

CHAPTER II. MEMBERSHIP

Article 4

All members of the Staff of the International Livestock Centre for Africa shall be deemed to be Members of the Staff Association, unless they state in writing that they do not wish to join the Association.

CHAPTER III. ORGANIZATION

Article 5

The functions of the Staff Association shall be exercised through:

(a) The Staff Council

(b) The General Meeting

(c) Referendum

CHAPTER IV. THE STAFF COUNCIL

Article 6

The Staff Council is the executive body of the Staff Association. It shall promote the welfare of the members of the Staff Association in accordance with the intent of Chapter VIII of the Staff Regulations and

secure the observance of ~~its Statute and implement~~ decisions taken either by referendum or by vote of the General Meeting.

Article 7

The Staff Council shall consist of nine members elected for one year by secret ballot. Membership shall be divided proportionally between internationally and locally hired staff, based on total ILCA employmant. The Director, Deputy Directors, Program directors, Senior Administrative Officer, and Team leaders are not elligible for candidacy.

A member of the Staff Council who is unable to attend any meeting of the Council because of absence from Addis Ababa or illness may nominate a proxy to serve in his place, subject to the approval of the Chairman.

On the occurrence of a vacancy due to resignation or any other cause or prolonged absence of a member, the council shall co-opt another member to fill the vacancy.

Article 8

The Staff Council shall be responsible for the administration of the finances of the Staff Association in accordance with the provisions of Chapter V below.

The Staff Council shall approve an annual budget for each financial year and shall publish the same at the beginning of the financial year. In preparing the annual budget, the Staff Council should set forth, by categories, all expenditure to be incurred in furtherance of the purposes of the Staff Association in the ensuing fiscal year and all revenues from whatever source there may be the following year. Where necessary, supplementary budgets may be approved by the Staff Council and shall be published in a similar manner.

Article 9

The Staff Council shall elect from among its members a Chairman, a Vice-Chairman, a Secretary and a Treasurer. These officers shall be elected by secret ballot, and by simple majority of the members of the

Staff Council. If in the first ballot no candidate obtains the majority required, a second ballot shall be taken which shall be confined to the two candidates obtaining the largest number of votes.

Article 10

The Staff Council may establish such sub-committees and other subsidiary bodies as it may decide. It may invite members of the Staff Association who are not members of the Staff Council to take part in the work of its sub-committees and other subsidiary bodies.

Article 11

The Staff Council shall meet regularly at suitable intervals and, in any case, not less frequently than once every month. Five members of the Staff Council shall constitute a quorum. The meetings of the Council shall be closed unless the Council decides otherwise. The approved minutes of meetings shall be available to any staff Association member on request.

Article 12

If a motion of no-confidence in the Staff Council is voted by a two-thirds majority at a General Meeting or by a simple majority of the members in a referendum, the Staff Council shall resign and a new Staff Council shall be elected to serve for the balance of the original term.

CHAPTER V. FINANCIAL RULES

Article 13

The financial (operating) year of the Staff Association shall be from 1 January of one year to 31 December of the following year.

Article 14

The custody of any and all funds and the maintenance of accounts thereof shall be the responsibility of the Treasurer of the Staff Council. In addition his duties shall be as follows:

(a) To act as Coolector and Disbursing Officer of the Staff Council;

(b) To submit to the Staff Council a quarterly report and any special report as required showing the state of the accounts which shall be available to any member of the Staff Association on request;

(c) To submit in writing to the Staff Council for circulation to the members of the Staff Association, at least two weeks before the Annual General Meeting a report on the finances of the Staff Association.

Article 15

The funds of the Staff Association shall be deposited in a bank to be selected by the Staff Council.

All bank transactions shall be conducted over the signature of the Treasurer and of one other member of the Staff Council designated by it.

Article 16

The revenues of the Staff Association may be derived from annual dues, assessments for an emergency fund, such voluntary contributions as the Association may receive and any other appropriate sources. Dues and fees shall be fixed by the Annual General Meeting or by an Extraordinary General Meeting.

The Staff Council may, subject to approval by a General Meeting, levy special assessments for an emergency fund which shall be used only to cover unforeseen or extraordinary expenditures.

CHAPTER VI. THE GENERAL MEETING

Article 17

The Staff Council shall before the end of December of each year convene an Annual General Meeting of all members.

Article 18

Extraordinary General Meetings may be convened by the Staff Council either or its own initiative or at the written request of at least 25 Members of the Staff Association.

Article 19

1. The Agenda of the Annual General Meeting shall include the following items:

(a) Annual Report of the Staff Council

(b) Annual Financial Report

2. The provisional agenda of a General Meeting shall include all items proposed by the Staff Council and any items proposed by at least five members. The provisional agenda shall be circulated to the members at least six days in advance. In exceptional circumstances this time limit may be waived by the Staff Council.

Article 20

(a) Unless otherwise provided in this Statute, decisions at a General Meeting shall be taken by a simple majority of the members present and voting. If the vote is equal, the Chairman shall exercise a casting vote.

(b) The quorum for a General Meeting shall be 30. If less than 30 members are present the meeting shall be adjourned and the Council will give 15 days' notice for another General Meeting; at this meeting, the members present shall constitute a quorum irrespective of their number.

Article 21

Election of the Staff Council members will be limited to those who have been employed by ILCA for at least 6 months.

CHAPTER VII. REFERENDUM

Article 22

A referendum shall be held by decision of the Staff Council or at the written request of at least 25 members. Such a referendum shall be conducted by the Polling Officers. An interval of five working days shall be allowed between the submission of any questions to the members and the recording of their votes.

What about Mali, Kenya Staff

Except where otherwise provided, decisions in a referendum shall be made by a majority of those voting.

CHAPTER VIII. AMENDMENTS TO THE STATUTE

Article 23

Amendments or supplements to this Statute can be made by a General Meeting or by a referendum. In a referendum any amendmen or supplements to this Statute shall be made by a simple majority vote of the Members of the Staff Association; at a General Meeting an amendment or supplement may be passed by a two-thirds majority of those present at the General Meeting, provided that the amendment or supplement of the Statute was put on the agenda for the particular General Meeting and circulated at least one week in advance.

CHAPTER IX. RULES OF ELECTION

Article 24

(a) There shall be three Polling Officers. They shall be elected by the Annual General Meeting and shall serve until the next Annual General Meeting. The Polling Officers are not eligible for election to the Staff Council during their period of office.

(b) The Polling Officers shall organize the election of members of the Staff Council in such a way as to ensure the complete secrecy and fairness of the vote. They shall:

(i) Elect their Chairman.

(ii) Publish the list of candidates at least three working days before the election and publish at the same time the rules which all candidates should follow during the advertising campaign. In publishing these rules, stress should be laid on the need to ensure equitable representation of Staff as regards the International and local categories. + HQ + field staff

(iii) Organize the polling and receive the ballots.

(iv) Count the votes duly cast for each candidate. The candidates are authorized, if they so wish, to be present at the counting of the votes.

(v) Report to the Members of the Staff Association by appropriate means, the number of votes cast for each candidate and the names of the elected members.

Item 5 TAC Sub-Committee

The TAC Sub-Committee which is visiting ILCA from 16 to 19 March comprises: Sir John Crawford (Chairman), Dr. R.W. Cummings (Chairman of TAC), Dr. T. Ajibola Taylor, Dr. G. Camus, Dr. H.J. Oslage and Mr. P. Mahler (Secretary of TAC).

The Sub-Committee is visiting ILCA as anticipated in the Task Force Report to review the state of progress of ILCA, and subsequently will report its findings and its recommendations for the future of ILCA to the TAC and hence to the CGIAR.

Item 6 Report of the Program Committee

In a separate folder are provided the report of the Program Committee and the background papers which were available to the Committee.

The Resident Representative of the Board will make a brief presentation covering the most recent developments. The final review and adoption of this report is deferred until Item 14 on the provisional agenda in order to allow the opportunity for its discussion in closed session between the Board and the TAC Sub-Committee.

Item 7 Report on Centre Activities

This report will be delivered by the Resident Representative of the Board. Since the Program and Budget 1978 gives a summary of the present status of the Centre in most respects, the present report will be given verbally with emphasis on the most recent happenings.

Item 8 Report on Financial Status

The essential features of the financial status are contained in the paper attached prepared by the Financial Controller.

FINANCIAL REPORT

As indicated in the 1978 Program and Budget paper we have not yet finished closing our books for the year ended 31 December 1976, nor have our books been finally audited. However, the final actual figures are expected to be as provisionally indicated below.

US$ '000'	1974 Actual	1975 Actual	1976 Provisional
Current assets	812	1,467	2,782
Less: Current liabilities	3	175	782
Net Current assets	809	1,292	2,000
Fixed assets	42	348	1,700
Capital balances & unexpended funds	851	1,640	3,700

Our good liquidity position at 31 December 1976 is due to the marked reduction in the rate of recruitment and to the slowing down of operations in Ethiopia. Also there have been some difficulties in Mali with the contractor's work, resulting in diminished expenditure in 1976: the work is, however, being performed in 1977.

Contributions for 1976 were received from our Donors as follows:

	US$ '000'
Australia	374
Belgium	324
Denmark	41
France	194
IDA	980
Iran	250
West Germany	509
Netherlands	125
Nigeria	159
Norway	103
Saudi Arabia	20
Sweden	343
Switzerland	382
United Kingdom	88
United States of America	1,200
	5,097
West Germany (INFIC Special Project)	118

With reference to 1977, we have already been informed by the CG Secretariat that it is anticipated that our budget request of US$ 8.5 million will be granted by the Donors, apart from a small shortfall of US$45,000.

ANIMAL PRODUCTION SYSTEMS IN SUB - SAHARAN AFRICA A REVIEW AND DEFINITION OF ILCA'S ACTIVITIES

Prepared by the ILCA Staff
for submission to the
ILCA Program Committee
January 1977

CONTENTS

		Index
Preface		
Introduction		A
1.	Animal Production Systems in High Potential Highland Regions	B
2.	Animal Production Systems in the Arid and Semi-Arid Zones	C
3.	Small Animal Production Systems in the Humid Tropics	D
4.	Animal Production Systems in the Semi-Humid Tropics	E
5.	Monitoring Animal Production Systems in Development Schemes	F
6.	The Use and Potential of Trypanotolerant Livestock	G
7.	Documentation: Information Retrieval, Collection, and Dissemination	H
8.	Seminars, Conferences, and Training	I/J
9.	Specialist Studies	K
10.	Allocation of ILCA'S Resources	L

P R E F A C E

Three years have now passed since ILCA was founded. They have been busy and exciting years of establishment, development, and expansion. An international staff of 53 has been recruited, together with a support staff of 61. A substantial building program has been planned; the new headquarters at Shola (a district of Addis Ababa) are taking shape according to schedule, and a Field Station at Debre Zeit has been established. Research programs are operational in Ethiopia, Kenya, and Mali. The Proceedings of ILCA's first major conference have been published in both French and English and the Documentation Centre has already accumulated a collection of published and unpublished material on animal production in Africa that is unusual, if not unique, in the continent.

In founding ILCA, the Consultative Group on International Agricultural Research anticipated that the first three years would constitute the "establishment phase", at the end of which the staff would prepare "proposals for the next five years for examination by a Special Review Committee appointed by the Consultative Group." In accord with this intention the ILCA Board has asked its Program Committee to review and define all ILCA programs, and to submit a formal report and set of recommendations for the consideration of the Board and a Sub-Committee of the Technical Advisory Committee in mid-March, 1977. To assist the Program Committee in this task, the ILCA staff has carried out its own in-house review of existing and proposed activities, the results of which are included in the present document.

It is to be emphasised that this "Review and Definition of ILCA's Activities" is not intended as a report of progress, but as a statement of suggested future activities that seem to the staff to be both urgently needed and appropriate for ILCA to undertake. These suggestions take the form of discussion papers to be considered by the Program Committee at its meeting in Addis Ababa between 24th and 28th January, 1977. The papers have resulted from a series of meetings, missions, and conferences that have involved many colleagues from African institutions and international agencies as well as the ILCA staff.

The broad budgetary implications of these proposals have been considered and are outlined in the final part of this submission. However, the detailed financial analysis of resources needed for the future must await the scientific judgements and specific program recommendations of, first, the Program Committee, and then the Board.

INTRODUCTION

The official mandate of ILCA is "to assist national efforts which aim to effect a change in the production marketing systems in tropical Africa south of the Sahara so as to increase the total yield and output of livestock products and improve the quality of life of the people in this region." 1/

Therefore the staff of ILCA seeks to relate their various activities (applied research, documentation, conferences and training) to the problems and progress of livestock development, the conservation and rational use of the natural resources upon which livestock production depends, and the socio-economic progress of livestock owners. At the same time, if ILCA is to make important contributions in these areas, it is essential that its activities should be carried out in the closest possible collaboration with national institutions, for the application of knowledge must ultimately depend upon policies and decisions taken at the national level. Like all international agricultural centres, ILCA has a role that is inevitably advisory, but it cannot be executive and decision-making.

From the outset, ILCA's terms of reference have also emphasised the importance of "increasing the efficiency of the major animal production systems of tropical Africa" 2/ by activities which "promote the development and demonstration of improved livestock production systems optimizing the use of human and natural resources in Africa.3/

This use of the "systems approach" necessarily involves specialists from many disciplines - biologists, social anthropologists and economists - and this emphasis and involvement combine to give the activities of ILCA their characteristic flavour and importance. In particular, this combination ensures that there is a basic unity of purpose and methodology

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1/, 2/ and 3/ Extracts from the ILCA Memorandum of Agreement.

running through all of ILCA's activities and for this reason it is appropriate to think of a single ILCA program, albeit with several different sections each with its special characteristics.

Therefore, the following papers are presented as semi-autonomous sections of the whole. These sections have been purposely selected to cover representative, although contrasting, examples of the "major animal production systems of Tropical Africa".

For example, the emphasis of the studies of humid, semi-humid and highland zones is relatively much more concerned with improved productivity through biotechincal innovations and better crop, pasture and animal management.

By contrast, the emphasis of activities in the arid and semi-arid zones, although not exclusive, is concerned with the means of conserving natural resources in the long term, and not only with the means of increasing livestock production per se. Although some detailed improvements in the biotechnical management of the rangelands and of grazing animals may be possible, the overwhelming problem of human and animal population increase, with its associated over-grazing and resource degradation, can only be resolved by social change.

The implementation of desirable innovations in stock and range management, such as the rational use of water, fodder conservation for dry seasons, and the limitation of stocking densities, essentially depends upon the development of new levels of individual and community discipline and control governed by traditional, though amended, social structures and hierarchies.

The sections of the program numbered 1 to 6 cover a complementary group of animal production systems, including those undergoing change within government-supported development schemes. Also included is a section (no. 6) on the use and potential of trypanotolerant livestock that complements the immunological research of ILRAD.

It deserves to be stressed that many parts of the overall program are already operational. For example, in Section 2, results from the Mali and Ethiopian locations are already being analysed, and field staff have been active for more than a year. Similarly, parts of the proposed monitoring network (Section 5) are operational, and good progress has been made with the preliminary phase of Section 6. At the end of January 1977, ILCA is organising its second major conference with international participation, and the Documentation Centre has been active almost from the beginning. Throughout the following pages are many references to work already accomplished.

These proposals for continuing and future activities are based upon the results and collective experience of the staff during the last two years. In the view of the staff, they represent a balanced and stimulating program which is likely to benefit greatly livestock production and development in sub-Saharan Africa.

B

SECTION ONE

1) Title: Animal Production Systems in the High Potential Highland Regions.

2) The Problem: With their high rainfall and relatively fertile soils, the highlands of Ethiopia offer a resource base that is well-suited for livestock production. Of the nation's estimated 29 million livestock units, 75 % exist in the highlands. However, this livestock resource contributes far less to the national economy than the existing potential (see Annex 2). Large tracts of land are overgrazed and, at the same time, under-utilized. With an ever-increasing demand for food grains by humans, livestock production in the crop farming areas of the highlands is being pushed more and more into marginal and unproductive lands. However, because of the necessity for maintaining animals for draft power their number is continually increasing, which in turn puts more pressure on animal feed supplies in the highlands. This deteriorating situation could be reversed by developing a system in which the animal becomes an integral part of the crop farming system, thus effecting increases in both crop and livestock production.

Efforts are being made, through research, extension programs, and development agencies, to increase livestock production in these highland regions. However, these efforts have adopted a sectoral approach, and the results have been disappointing. For example, the crossbred dairy animal was advocated without due regard to the management level (nutrition and disease control) required for efficient production. Even in cases where the nutrition of animals has been emphasized by encouraging fodder production, problems of competition for land and draft power between food crops and fodder production have generally been ignored. Furthermore the concept, socio-economic acceptability, and technical feasibility of a balanced "mixed farming system" in which the animal (whether a dairy cow, a beef steer, or a sheep) becomes an integral part of the farming system, have not been tested, either by individuals or institutions, in the Ethiopian highland environment.

The component techniques and research results advocated by local institutions are in themselves sound and applicable to the highland environment, but these component parts have not been brought together into a system that is technically feasible and economically viable.

3) Objective: To bring together available technologies in a range of farming systems that will increase animal productivity and profitability in the highlands.

The aim is to formulate farming operations and establish "farm units"[1] in representative sample areas in the highlands to test and demonstrate farming systems which will bring together the farmer, the animals, the environment, and the improved technologies for increased and more efficient production.

The hypothesis to be tested is that livestock production in the highlands need not be seen only as an adjunct to the production system, but can compete directly with crop farming to return comparable and possibly greater income to the farmer, provided that: a) feed resources are improved; b) the animal's ability to utilize feed resources is improved; c) the draft power of animals is improved through better breeding, nutrition and management; and d) more efficient animal-drawn implements are introduced for land preparation and cultivation.

4) Location: The primary site will be in the Ethiopian highlands, but a limited amount of work will also be carried out in Kenya, and other highland regions in Africa after adequate experiences have been acquired from the Ethiopian programme.

5) Description of the Area: The highland high potential region can be described as that part of the country that lies within the range of 1800 to 2500 metres elevation, on the average, with sections

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1) "A farm unit" is defined as a farm operated by an individual farmer or a group of farmers, depending upon the prevailing practices of the peasant associations in the selected sites. The organisation and supervision of these "farm units" will be the responsibility of ILCA, while their operation will be the responsibility of the farmer or farmers.

at altitudes as high as 4,000 metres. The region is extremely diverse in its geology and soil formation, broken and interrupted by valleys and rivers and surrounded by escarpments, with plateaux and tablelands in the central part. (For detailed descriptions, see Annex 1.)

6) State of Knowledge: see Annex 2.

7) Methodology and Time Schedule: Details are given in Annex 3

8) Resources: The staff requirements will be as follows:
- a programme coordinator (animal scientist) for all sample sites (1977 to 1982)
- a farm management specialist (1978 to 1982)
- an agricultural engineer (small implements specialist)(1978 - 1980)
- an agronomist to coordinate pasture and crop policies (1977 to 19[illegible]
- a site supervisor for each of four sites
- four technical assistants for each of four sites
- custodians to maintain facilities at each site.

It will be necessary to set up some rudimentary infrastructure at each site: a small office with store; an implement shed etc.. to accommodate necessary staff and supplies.

9) Expected Reports and Publications:
1. Analysis of Existing Farming Systems in the Debre Zeit Area of the Ethiopian Highlands (1977)
2. Analysis of Existing Farming Systems in the Debre Berhan Area of the Ethiopian Highlands (1978)
3. Analysis of Existing Farming Systems in the Sululta Area of the Ethiopian Highlands (1979)
4. Analysis of Existing Farming Systems in the Holleta Area of the Ethiopian Highlands (1980)
5. A Comparative Analysis of Existing Farming Systems in Four Selected Sites of the Ethiopian Highlands (1980)
6. The Market for Dairy Products in Major Consumption Centres of the Ethiopian Highlands.
7. Results of Efforts to Integrate Improved Livestock Production Systems in the High Potential Highland Regions of Ethiopia (1985)

8. Numerous research results can be extracted for publication from the various component parts of the farming systems study, e.g.
- Adaptation of various pasture and fodder crop species into the crop rotation system in the Ethiopian highlands;
- Methods of feeding livestock for increased productivity on feedstuffs solely produced on the farm;
- Introduction and adaptation of improved animal-drawn implements for efficient farm operations in the Ethiopian highlands;
- Socio-economic implications of introducing innovations (to be specified) into the farming systems of the Ethiopian highlands, etc

10) Expected Benefits: The effective integration of livestock into farming systems in the Ethiopian highlands will:
- increase the income of the farmer and of the farming community, and thereby improve the standard of living;
- increase the production of milk and meat, which will improve the dietary supply of protein; and
- improve the foreign exchange position of the country by making possible a decrease in the import and an increase in the export of livestock products.

In addition, the techniques and methodologies developed in this program will be transferable to other high potential localities in Africa.

It is expected that increased productivity in the system will be detected by the end of the third year of operation; however, the project will continue for at least five years at all sites.

ANNEXES

Annex 1: Description of the Study Area

1) The Ethiopian Highlands[1)]

At present, there exists no detailed description and evaluation of the soil and geology of the Ethiopian highlands. In general, the soils of the region belong to the Alfisols, Vertisols, and Inceptisols. The shallow soils are red to light red-brown on the mountains

1) Summarized from E. Westphal, Agricultural Systems in Ethiopia, Wageningen, 1975.

and hillsides; red-brown on the slopes; and brown to dark brown in the rolling country to nearly black in the plains. The red-brown to dark brown soils are excellent for agriculture, particularly for grain crops, which are found throughout the highlands. Stony mountain slopes and plains are used for grazing. The major soil problems are erosion on the slopes; lack of drainage in the plains, a high acidity, and a general lack of available phosphorus.

In most parts of the highlands, the rainfall is bimodal, with the "big rains" occurring during July-September and the "small rains" occurring during February-April. Fifty to eighty percent of the total falls during the big rains. Humidity and could cover are high, and rain falls continously for several days during this period. Hail also occurs frequently in heavy storms. The frequency of the small rains (February - April) is not always reliable, and at times these rains merge into the big rains. The mean annual rainfall for the highlands ranges from 1,000 to 1,500 mm, depending generally on altitude, with a maximum of 2,000 mm in some regions.

During the long periods of dry weather from November to March the humidity can be extremely low (20 % or even less). The temperature is generally moderate and uniform, although in some cases there are extreme diurnal variations. The mean monthly average temperature is around 18°C. Night frosts may occur above 2,100m . elevation between November and January.

The area is extremely diverse ecologically, and it is difficult to categorise it into a reasonable number of zones. In classifying the vegetation types, various ecologists have recognized the xerophilous open woodland; the montane evergreen ticket and shrub; the montane savanna; the montane dry evergreen forest; the Mimusops kummel forest; the Podocarpus gracilion forest; the Juniperus procera forest and the montane moist evergreen vegetation.

For the purposes of this study, four sites will be selected. These sites are selected because they all fall within the general description of the highland high potential crop farming areas. They also differ from one other to some extent in elevation, soil, rainfall, and vegetation, as well as in prevalent farming systems.

While the aim of better integrating animals into the crop farming systems will be the same at all four sites, it is recognized that different livestock enterprises e.g. dairying sheep raising, draft power improvement may need to be emphasized at each site, depending on the farming system most suitable and acceptable in the area.

Another important criterion for selecting these sites is because of their close proximity to a large market outlet; i.e. Addis Ababa.

The proposed study sites are near Debre Zeit, Debre Berhan, Sululta, and Holleta. Below the description of Debre Zeit area is given as this is the first site where ILCA plans to begin th s programme.

2) Description of the Debre Zeit Area: [1]

Location and Size

ILCA's Debre Zeit experiment station is located 7 km north of Debre Zeit town near the village of Babo Gaya, bordering the south-east crater lake of Hula. The surface area is about 160 ha, with elevations ranging from 1,786 metres in the flooded bottom lands to 1,816 metres at the edge of the lake cliff.

This land was given to ILCA by the Government of Ethiopia with the cooperation of two local peasant associations. Thirty four families with a membership of 153 persons live within the boundaries of the experiment station.

Climate

Data from the Agricultural Experiment Station at Debre Zeit for the period 1960-1976 show that the mean annual rainfall was about 846 mm, with more than 70 % falling during the months of June to September. The area also receives rain from February to May, averaging about 40 mm per month; however, the rains during this period are not reliable. The dry season lasts from October to February, with mean monthly rainfalls of less than 15 mm.

The annual average relative humidity is 48.3 %, ranging from 41.8 % in May to 60.1 % in August.

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1) Compiled from ILCA documents on Debre Zeit prepared by Ato Ephraim Bekele and Dr. H.N. Le Houérou.

The annual mean temperature is 16.2°C, varying from 14.9°C in December to 17.9°C in May. The mean minimum varies from 8.1°C in December to 11°C in May. The mean monthly minimum may drop to 2.9°C (December 1973); the mean monthly maximum may rise to 29.3°C (May 1973). The coldest temperature recorded was - 8.0°C in February 1969, but temperatures usually do not go below -1.5°.

Soils

The soils in the area are mainly dark brown clay loams, black clay loams, and sandy loams. In general, the pH of these soils is slightly acid (6.5 - 7.0) in the surface layers and neutral to alkaline (7.0 - 8.5) in the deeper layers. Their organic matter content is low: 1.5 - 2.5 % in the upper layers. Total nitrogen content is also low: 0.1 - 0.2 percent. The available phosphorous in the upper soils is reported to be good (35 - 70 p.p.m. P_2O5), and potassium is reported to be high. The soils in the flat areas are poorly drained, and crops planted there commonly suffer from water-logging. A small portion of the area is normally flooded during the rainy season. Farmers plant chickpeas on the flooded areas as the water recedes, and part of the flooded area is used for dry-season grazing.

Crops Grown in the Area

Except for some sparsely scattered acacia trees and some grasses growing in the areas not fit for crops, the natural vegetation has given way to cultivated crops. Teff, wheat and chickpeas are the dominant crops grown in rotation. The Debre Zeit area is famous for the high quality of its teff and wheat. Other legumes grown to a lesser extent include chickpeas, lentils, cowpeas, field peas, Indian peas, horsebeans, and haricot beans. Some farmers also grow sunflower, red pepper, rape, flax, and corn in limited quantities.

Livestock Production

The area is not a major livestock region, but animals are raised by the farmers mainly for draft and on-farm consumption purposes. A typical farm family in the area owns one or two oxen for plowing, one or two cows for breeding and providing milk, and heifer and a calf to replace the milking cow and the plowing oxen. In addition it may own a donkey for transporting goods to and from the market, and one or two sheep or goats and a few poultry for producing meat and eggs.

The livestock owned by twenty-five of the families on the station is as follows:

Livestock	Number	Average per family
oxen	29	1.2
cows	32	1.3
heifers	20	0.8
calves	34	1.4
sheep	48	1.9
goats	9	0.4
donkeys	21	0.8

Infrastructure

ILCA's Debre Zeit experiment station lies north of Debre Zeit town, 7 km from the Addis Ababa - Nazareth highways. The site is accesible by a 3-km all-weather road branching from the Debre Zeit Godino Road.

The site is close to two major markets, Debre Zeit and Godino. The market at Debre Zeit operates every day, although Tuesdays and Saturdays are the major market days for the farmers in the hinterland. The Godino market is held weekly on Mondays.

The Hula lake, from which the community gets its water supply, borders the southeastern edge of the site. The water supply is assured, as the lake never dries up.

Annex 2: State of Knowledge of Animal Production and Associated Problems in the Highland Regions

The Ethiopian Highlands - A General Picture

The management practices followed by highland farmers are primitive and unsystematic. Livestock are largely left to themselves when grazing, with different species and animals belonging to many farmers herded together. This gives rise to uncontrolled breeding and calving, which is aggravated by the non-castration of inferior male animals. Unproductive animals are maintained for a long time, which contributes to the feed shortage. There is no rotational grazing, forage production and conservation, nor use of drugs to control parasites and disease.

Table 1 shows that the highlands of Ethiopia contain 92 % of the human population and the country, 85 % of the cattle, 75 % of the sheep and 71 % of the equine populations. In livestock units, the region contains 73 % of the total country's livestock. Estimates show that those parts of the highlands receiving more than 700 mm of rainfall produce only a third of their feed requirements. Consequently there is considerable transhumance from the highlands to the lowlands. The susceptibility of the lowlands to periodic drought is critical, not only for the livestock in the lowlands but also for those in the highlands. For the country as a whole, there exists a 50 % shortage of livestock feed.

Table 1. Distribution of Livestock Population in Ethiopia[a)]

	Cattle	Sheep	Goats	Camels	Equines	Total	LU [b)]	LU/HUMAN Ration
Highland								
Agriculture	22m	18m	5m	-	5m	50m	13.8	.6
Percent of total	85	75	28	-	71	-	73	
Lowland								
Pastoral	4m	6m	13m	1m	2m	26m	5.2	2.6
Percent of total	15	25	72	-	29	-	27	
Highland / Lowland Ratio	5.5	3	-	-	2.5	1.		

a) Source: LMB Livestock Population Data

b) LU = One Livestock Unit = 250 kg liveweight (adult) animal

The constraints that limit increased production of livestock in the highlands are several, varied, and often interdependent. They can be usefully categorized as technical and non-technical.

The Technical Constraints

a) Genetics

The fertility and calving rates of indigenous cattle are very low (on the average 50-55 %). Cows calve for the first time when 3 or 4 years old, and then about every 2 years. Mortality rates, particularly of young animals, are high-up to 30 % for calves and about 20-25 % for lambs and kids. Cattle reach maturity at the age of 4-5 years, but their average liveweight is only about 250 kg. Aged cattle represent 71 % of the slaughtered animals, with a poor carcass

weight - 77 kg meat per head and 108 kg of dressed weight - dressing percent being 45. The average weight of lambs and kids is also low - about 25 kg. Native cows yield an average of 300 litres, for a lactation period of about six months or less. The annual growth rate of the national herd is estimated at 0.5 %.

b) Disease and Parasites

Livestock diseases and internal and external parasites take a heavy toll of the livestock population. Annual mortality losses are estimated at 2.25 million cattle, 3.5 million sheep and 2 million goats.This represents a value of nearly Eth. $ 500 million. Morbidity losses through reduced productivity and decreased quality are even higher than mortality losses. The secondary consequences must be considered as far more significant than the primary mortality and morbidity losses, e.g. the depressive effects on livestock improvement measures, the deterrent against capital investment in livestock industries, and the obstacles to foreign markets.

The livestock disease and parasite situation in Ethiopia is well understood and control measures are sufficiently well known. What is needed is the adoption by livestock owners of an appropriate system of animal husbandry.

c) Acute Shortage of Feed

The overall feed shortage appears even worse when the quality as well as the quantity of the feeds are considered. There is large deficit in protein and some minerals and vitamins, since 90 % of feed is provided by natural pastures of poor quality and the remaining 10 % by crop residues and negligible amounts of grain, mainly barley and oats. Farmers do not grow fodder crops nor do they use agro-industrial by-products. The results is that the livestock are under- and malnourished, which makes them susceptible to diseases and inefficient producers.

Any improvement programme for livestock must incorporate a better supply of animal feed. Highland soils have been exploited for such a long time that 20 % are now left in fallow and, in some areas, fallow land constitutes as much as 50 %. These fallow lands are left for 5-10 years to recover their soil fertility and to produce pasture by natural reseeding of the local grasses, which takes a long time and produces poor forage. It is technically feasible to introduce intens

fodder cultivation into the rotation of crops and eliminate this huge area under fallow. This would mean a drastic change in the present farming system, but it is one of the most important answers to the main bottleneck of feed shortage. FAO has estimated that if half the present fallow area were to be put under fodder crop production, some 5 billion feed units could be produced annually.[1)]

The feed shortage for meat and dairy production is made worse by the demands of the 5.2 million oxen and 7 million equines that produce the power for plowing and rural transportation. It is estimated that 40 % of the feed consumed is for draft purposes. Any improvement and innovation that reduces livestock numbers required for draft purposes would release feed for meat and milk purposes. The productivity of plowing oxen can be increased through improved breeding and feedings, and the introduction of improved harness and ox-drawn farm implements.

The Non-technical Constraints

The non-technical constraints with a significant bearing on the total farming system are summarized below. Any research or development programme assigned to relax the technical problems must include a consideration of these constraints. Research, especially on the socio-economic constraints, can increase our understanding of how these affect the farming system in general.

a) Social Constraints

- conservative attitudes toward innovations
- low levels or complete lack of formal education
- limited consumer tastes for quality livestock products

b) Institutional Problems

- lack of a comprehensive national policy in livestock production
- lack of experienced professional and middle-level manpower for government services in the livestock sector
- inadequate veterinary and extension services

c) Infrastructural Problems

- lack of an adequate road network
- underdevelopment of water resources
- lack of credit facilities in the rural areas
- lack of investment capital
- lack of a systematic market that gives incentives for increased livestock production

Annex 3: Methodology and Time Schedule

A) Baseline Study of Present Farming System of Selected Sites

In cooperation with the peasant associations, a short baseline study of the existing farming systems will be conducted. This study will include:

- social structures
- economic factors of production; resource base; capital; labor available; implements; animals; feed available; incomes; expenditures, etc.
- livestock productivity data
- management practices
- health control measures
- feeding methods

The information from this survey will reveal the working of the present system and provide the baseline for comparative purposes when improvement and increased productivity have been affected.

B) Setting Up of "Farm Units" in the Selected Sites

Farm units will be set up, at each of four selected sites, in cooperation with peasant associations. A limited number of individuals or groups of farmers, will be selected, upon the advice and consent of the peasant associations.

In general terms, ILCA will provide the necessary organization, guidance, supervision, and funding for new inputs required for the programme, while the farmer or groups of farmers will provide the labor and management and will also be responsible for the return of the interest-free loans provided to him.

In the unlikely event that a cooperating farmer is subjected to losses in net income, ILCA will provide a guaranteed minimum income, probably based on the average income of similar farmers in the area and provided that the farmer has strictly followed the recommendations and advice given by ILCA.

C) Participating National Institutions

National institutions will be invited to participate in the planning and programming of the study and to take responsibilities for those aspects of the study in which they have more competence than ILCA.

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National institutions will be invited to participate in the planning and programming of the study and to take responsibilities for those aspects of the study in which they have more competence than ILCA.

For example:

1) The Agronomy Department of IAR will be invited to advise on the design of a cropping pattern and sequence for the rotation system of a particular area, including crop species and varieties, fertilizer types and rates, cultural practices, etc.

2) The pasture and Forage Section of IAR will be invited to advise on the choice of forage or fodder crops suitable for inclusion in rotation, and on the establishment of permanent pastures on hillsides and other land not suitable for cropping.

3) The Animal Production Section of IAR will be invited to suggest what dairy and sheep breeds should be introduced into the system.

4) EPID will be invited to assist in the organization and arrangement of the farm units and in establishing liaison between ILCA and the surrounding farmers.

5) The Dairy Development Agency will be invited to assist in providing external services to the farm units e.g. milk marketing, AI services.

6) The Institute of Developmental Research will be invited to participate in the exchange of ideas, opinions, and results, particularly with regard to the socio-economic aspects of the programme.

D) Implementation of Field Programmes

A farm plan will be prepared that fits the localities and includes new innovations that could possibly be adopted by the farmers. The following ideas are especially recommended for consideration.

1. Improvement of Feed Supply as a Focal Point in the Farming System

Since feed deficiency is the most acute problem in the production system of the highlands, it is important that efforts be made to solve this problem. If nutritional problems are resolved first, many other problems may no longer be significant constraints in the production system: fertility rates will improve; calving intervals can be shortened; death losses can be minimized etc.

The use of better milk-producing crossbred dairy cows heavier and stronger crossbred draft oxen, and fast-growing crossbred animals for fattening implies the availability of good quality feed and a well-planned feeding system. Because of the increasing competition for grains by humans, any form of livestock production, whether dairying or sheep production, should be chosen with the thought in mind that more reliance is to be placed on home grown feeds - especially forage and fodder.

There are many ways of improving feed supply at the farm level, and the following should be considered.

i) Inclusion of Forage or Fodder Crop Cultivation in the Farming System

A successful livestock program must be based on ample supplies of pasture or conserved fodder crops that are sufficiently nutritious to allow optimum productivity throughout the year. The best possibility for attaining this objective in the highlands is with sown pastures and fodder crops as part of the crop rotation system.

Such a system will not only increase livestock production through a greater supply of nutritious forage during the dry season, but will also help to increase the yield of succeeding crops as a result of the nitrogen fixed by legumes. This advantage is especially important because in some parts of the highlands one finds up to 50 % fallow land each year.

In the cereal-legume growing areas, the rotation can be extended to include a forage crop by devising a rational cropping sequence. In the cereal-fallow areas, the forage or pasture crop associated with perennial or annual legumes can either replace the fallow or be undersown with a cereal crop on the fallow.

Legumes and grass species such as subterranean clover, Berseem clover, Dolichos lab-lab, Glycine, Desmodium, Leuceana, Medicago sativa, Pennisetum, Setaria, Sudan grass, etc. are all possibilities for inclusion in the rotation system for grazing pastures, green chop, and hay - or silage-making. A number of these species have been tested at various experiment stations, and recommendations of the staff there will be sought in establishing the species at the various sites.

The degree of interest that farmers will show in such a scheme will depend to a large degree on the extent to which they perceive it as assisting or conflicting with crop farming. The release of land for livestock feed will depend either on increasing the yields of fodder crops or on growing fodder crops as an alternative to a fallow to maintain fertility.

Finally the fodder crop produced in the rotation system or on the fallow land must be such that it will support the production level of high producing animals.

ii) Better Feed Harvesting and Conservation Practices

Technologies to test in the farm systems include the following.

- Reserve some of grazing land during the growing season for making hay or silage.
- Make hay at the right time for better quality.
- Make silage from excess pasture or fodder crops.

iii) Cull surplus and unproductive animals: e.g. old cows, old bulls, and young males not required for draft purposes.

iv) Bring into productivity rough marginal lands not suitable for cropping, e.g. steep hillsides and poorly drained bottom lands and swamps, by establishing good permanent browsing and grazing.

v) Increase efforts to utilize more efficiently the large amount of crop-residues and aftermath, i.e. harvest more straw; store and perhaps treat these materials for better utilization.

2. Dairying as the Central point in the Farming System

Dairying is likely to be the catalyst for other agricultural activities in the farming system to be developed because the dairy cow is an efficient converter of low quality feeds into much-needed high quality human food; second, because a heavier and stronger draft animal would be produced as a "spin-off" from the maintenance of a dairy herd; and third, because the excess male animals from the dairy herd can be fattened, thus making this by-product of the dairy industry the only form of beef production in the highlands.

Cows should have the capacity to produce more milk than is required to raise their calves and supply their owners' needs. Indigenous cattle have a low producing capacity, and work done by the Institute of Agricultural Research indicates that they do not produce sufficient milk for specialized dairy farming even when fed and treated relatively well. IAR studies also show that the number of cows with

possibly acceptable yields for commercial milk production is so small that any selection programme would be uneconomic.

For this reason crossbred cattle will be used, and the aim will be to introduce a crossbred cow that can give 1,000 - 1,200 litres of milk per lactation (which is approximately double the average of the indigenous cow). The grade of this animal will have to be appropriate to the management capability of the farmer, preferably starting at a low level, e.g. 25 % exotic, and increasing when management and feeding level has improved.

3. Draft Power Improvement

With improved feeding and management, it would be possible to introduce a heavier and more efficient draft animal into the system. This will enable the farmer to cultivate more land in one season, and to facilitate bringing fallow land into production, e.g. for the production of fodder crops. It will also reduce the necessity for keeping more male animals, which in turn releases more feed for other productive animals.

It is also intended to test the usefulness, efficiency, and acceptability of improved animal-drawn farm implements that have been developed in other countries (e.g., India, West Africa) for cultivation, sowing, weeding, or harvesting operations.

5. Sheep Production

In many of the highland areas, sheep production offers a great potential for increased output of meat. This is because many areas are unsuited for cropping due to slope and exposure, and many that are now plowed should be returned to grazing and stocked with sheep.

With the establishment of good permanent pastures in these slopes and hillsides, erosion will be prevented and a substantial increase in available feedstuffs will be possible.

The majority of sheep coming from the highlands to market are immature animals with low body weight (12 - 18 kg). These animals are at present slaughtered before achieving anything like their full potential in terms of meat production. Sheep meat is preferred to beef in the domestic market and sells at a considerable premium price. In addition to favorable domestic markets, there is also a considerable demand for sheep meat in the oil-rich Middle Eastern markets. The primary aim in sheep production is therefore, to

increase carcass size and quality through better feeding and management and the selection of superior animals among the indigenous flocks. However, it might also be possible to use an improved wool-type sheep in the Menz and Southern Wollo areas, where there is a flourishing carpet wool industry.

E) Research Inputs into the System

It is expected that further research will need to be conducted at various national institutions (i.e. IAR, ARDU etc.) to contribute new technological inputs to the system, for example:

- the development of better forage grasses and legumes
- the introduction of appropriate species for the permanent pastures on hills and rugged land
- better feeding methods for high-producing cows
- more efficient and economic methods of finishing old cows, oxen, and 2-3 year old steers, using locally produced feedstuffs
- more appropriate and cheap methods of fodder preservation.
- determination of the levels of farm management (feeding, disease control, etc.) needed to maintain various grades of exotic blood
- better methods of increasing the productivity of draft oxen
- the introduction of improved animal-drawn implements (plows, cultivators, etc.).

F) Schedule of the Programme

Year 1 (1977):

1. Complete the survey and analysis of the farming system in the Debre Zeit area (Site I), which is already underway.
2. Allocate land to the 40 families living on the experiment site and start implementing the programme outlined in Annex 3 with 20 of the farm families.
3. Monitor the activities on Site I, including the collection of all pertinent data - (input - output, household consumption and expenditures, marketing, and sociological data) - on participating farm families, that will permit the detection and measurement of changes brought about by the innovations introduced into the farming system.
4. Conduct a baseline survey of Site II in the Debre Berhan area. This survey will be followed by the selection of the specific location for Site II and the selection of the particular farmers or groups of

farmers who will participate in the programme, with the cooperation of the local representative of the Minstry of Agriculture and Land Settlement and the peasant associations. Farm plans that would fit the conditions prevailing in Site II would also be prepared in Year 1 of the programme.

5. Conduct a study of the historical development of the livestock production systems in the Kenyan highlands. The purpose of this exercise is to identify and understand the important factors that have contributed to the development of livestock production systems, i.e. dairying, in the Kenyan highlands, in order to derive useful lessons for the implementation of development programmes in Ethiopia's highland high potential regions.

6. Review progress made during the year.

Year 2 (1978):

1. Continue implementation of the programme at Site I by increasing the participating farm units to 40.
2. Commence implementation of programme at Site II.
3. Monitor activities at Sites I and II.
4. Conduct baseline surveys for Sites III and IV and select specific locations and participating farmers or groups of farmers.
5. Review progress made during the year.

Year 3 (1979):

1. Continue implementation of the programme at Sites I and II.
2. Monitor activities at Sites I and II.
3. Conduct a market study on the supply and demand of dairy products in the major consumption centers of the Ethiopian highlands.
4. Review progress made during the year.

Year 4 (1980):

1. In-house review of the programme during the preceeding three years for the purpose of assessing its progress and direction, with a view to determining future activities at Sites I and II and the nature of the programme at Sites III and IV.
2. On the basis of experience gained in Ethiopia, consider launching similar programmes in other high potential highland regions in Africa.

C

SECTION TWO

1) Title: Systems of Animal Production in the Arid and Semi-arid Zones.

2) The Problem: The practical problems to which this investigation is directed are essentially similar across the semi-arid area of Africa. They are problems related to characteristics of human adaptations to the precariousness of the natural resources of the environment.

The general characteristics of the production systems in the semi-arid zones of Africa are as follows:

(a) animals are privately owned and exchangeable;

(b) pasture and water are communal and not exchangeable;

(c) agricultural land is not exchangeable

(d) pasture resources are a limiting factor to increasing production;

(e) there is a lower limit to the number of animals required by a household to satisfy its consumption needs;

(f) there is a positive population growth among the pastoralist;

(g) natural resources are extremely sensitive to over-exploitation.

These characteristics have the following implications:

(1) Limited investment opportunities in agriculture stimulate cultivators to invest agricultural surplus in livestock (a consequence of a, b, c).

(2) Pasture supplies do not act as a limit to the number of animals/household is interested in accumulating (a consequence of a and b).

(3) An increasing number of households will lose viability as pure pastoral units (a consequence of e and f).

(4) Non-viable households are likely to supplement their income by allocating more time to agricultural production and thus reducing pasture resources further (a consequence of 3).

(5) Overstocking and deterioration of pasture resources are likely (a consequence of 1, 2 and 4).

(6) Increase of pasture resources through technical innovations alone will not provide long-term solutions because these innovations will not reverse the effects of the destructive trends caused by social and economic factors 1/.

1/See Annex 3 for an elaboration of this argument.

Previously there were controls that checked the self-destructive tendencies in the systems. For example, increasing pressure on pasture increased tribal warfare and expulsion of groups by military means, and diseases restricted the growth of human and animal populations. Under these circumstances pastoral groups had developed institutions that were adaptive not only in terms of the direct use of the environment, but also in terms of mutual support, in the form of mobilization of personnel for military purposes, in the form of stimulating high birth rates, and in the form of economic reciprocities.

The outcome of these processes has been pastoral systems characterized by relatively high man/animal ratios. Compared with semi-arid areas in Australia and USA, the African areas maintain a relatively high human population in the pastoral niche. With the elimination of the controls mentioned above, the traditional institutions are now unable to ensure the appropriate adaption of large population categories to the new circumstances.

ILCA's problem is to identify and formulate institutional mechanisms functionally equivalent to the traditional mechanisms regulating pastoral production. This is mostly a question of identifying possibilities for change in the existing pastoral population and a question of national government interest and ability to support specific solutions.

An essential aspect of the problem is thus socio-political. From this point of view the critical proble for planning is to have information about the nature of the social systems they aim at changing. The scope for modifying these systems may, however, significantly depend on the possibility of introducing changes in connection with bio-technical innovations. Annex 3 presents this argument in more detail.

It is essential to provide quantitative evidence to governments concerning the basic "vicious cycle syndrome" of the pastoralists in the arid and semi-arid zones. Planners need to be convinced that socio-economic and political measures are necessary to implement change, and they should not continue to entertain futile hopes of break throughs in biotechnical research.

3) Objectives: Four objectives of ILCA research in the arid and semi-arid zone can be identified. These relate directly to the general characteristics of the systems as identified previously.

(a) To provide information on the static and dynamic structure of these livestock production systems, which will give the basis for designing innovations (bio-technical and institutional) to reverse the trends identified above.

(b) To develop innovations and evaluate their effects not only with reference to the performance of individual management units, but also with reference to their implications in a regional and national context.

(c) To develop techniques of data collection appropriate to the evaluation, over time, of extensive livestock production systems. The intention is to define minimum data sets that will permit definitive evaluation of the states of such systems at any point in time. It is imperative that these systems have the capacity to uncover emerging trends at an early stage when they still are reversible, if undesirable.

(d) To provide comparative data on extensive livestock production systems with a view to extrapolating this knowledge to other such systems in the arid and semi-arid zones.

4) Locations: Within the arid and semi-arid zones there are significant variations on the theme outlin' d initially both in terms of bio-climatic and socio-economic conditions. The following areas are proposed as locations for ILCA research. Further details of these locations are given in Annexes 4 - 8: Sudano-Sahelian (Niono, Mali), Jijiga, Sidamo and Northeastern rangelands (Ethiopia), and North-Eastern and Masai rangelands (Kenya).

5) Description of Areas: (see also Annexes 1, 2 and 4 to 8)

(A) Sudano-Sahelian (Mali)

The major features dominating the project area are the presence of an irrigated rice-producing scheme adjacent to the pastoral area, and a large interior delta giving a basis for rice cultivation in the flooded season and good pasture for the pastoralists in the dry season. Both these features have significant implications for pastoral exploitation of the Sahelian Zone.

(B) Sidamo (Ethiopia)

The area is characterized by a bi-modal but erratic rainfall. Agriculture is found around the few towns in the area and along the banks of the lower Ganale and Dawa rivers, but the dominant mode of production in the area is pure pastoralism, based on cattle.

Particular features of the Borana areas are the deep wells, which provide water in the dry season and seem to work as an important constraint on the overall stocking rate in the area. Access to the wells regulates the grazing area that may be utilized in the critical dry season, and the watering technology demands a higher input of labour per head of stock than is the case with, for example, ponds.

A unique feature of the area is that the Borana seem to have developed institutions that imply a certain control over utilization of pasture and water resources, and also over reproduction of the human population. Thus, the Sidamo area does not seem to suffer from over-exploitation. However, there are indications that the traditional control system is weakening.

(C) Jijiga Rangelands (Ethiopia)

The Jijiga project area in southeastern Ethiopia includes settled agriculturalists, transhumants, and nomads. The area has several identifiably different ecosystems ranging from fertile plains to low rainfall (400 mm) rangeland to river valleys. The population is predominantly Somali. A complex of locally developed and accepted rules control land utilizations. Parts of the range are severely over-grazed. Proposals for further agricultural settlement and the growing human population indicate growing stress on this production system.

(D) Northern Rangeland (Ethiopia)

The northeast rangeland of Ethiopia is the most arid of the five proposed locations for research. Although it is usually defined as an arid area, it is characterized in general by many of the same problems as the other locations. The two features that make this area interesting to ILCA's study of semi-arid areas are its low annual rainfall and the use of water spreading to increase pasture resources.

(E) Kenya Rangelands

For comparative purposes, it is advisable that production systems in semi-arid areas in Kenya be studied. These production systems cover important variations in externally stimulated organizational attempts to solve the problems of semi-arid adaptations. In the northeast of Kenya, the pasture resource is extended by establishment of water ponds. This implies that pressure on pasture is temporarily relieved, but the basic mechanisms underlying the trends toward overstocking are still operating.

The group ranches in the Masai area constitute the most interesting attempt to modify and modernize a traditional system of livestock production. Whether it achieves the purpose of controlling overexploitation depends on how efficient the new mechanisms are with reference to stimulating lower birth rates, out-migration of excess personnel, and coordination of individual management strategies. Monitoring of the behavioral solutions adopted by the Masai under these new circumstances is not only of direct relevance for the development agencies concerned in this specific case, but is also relevant for development of a comparative perspective on modernization of traditional systems. This part of the programme is also referred to in Section 5 of ILCA's total programme.

6) State of Knowledge: Some information is available on animal production in the five project areas (see Annexes 1, 2, and 4 to 8); however, specific information on the various systems of animal production, relationships among pastoralists, agriculturalists and traders, and the production parameters within the systems is sparse.

7) Methodology: Different types of research are necessary in order to achieve the stated objectives. Broadly speaking, they are as follows:

(a) Investigations directed toward description and analysis of the important interdependencies characterizing the existing systems of production in selected project areas.

(b) Testing of hypotheses relevant to bio-technical problems identified in existing production systems i.e. provisions of information for innovation by the pastoralists and by administrative agencies.

(c) Long-term monitoring of trends emerging in the production systems (with or without innovations).

The purpose of the first type of research is not to test specific hypotheses, but to discover the basic structural features of the system we are planning to improve. In order to formulate a rational plan for change we must know the characteristics of the systems with which we are working.

Specifically, the practical problems outlined require specialized research on the following aspects:

i) What is the distribution and numbers of livestock in the various seasons? This can most efficiently be investigated by seasonal aerial surveys showing the number of animals held by different groups in different seasons.

ii) What is the range trend and how best may it be monitored? This would require ecological ground surveys.

iii) What kind of technical innovations are applicable (different grazing systems, plant interactions, range regeneration, improved herd management, etc.)?

iv) What is the population growth rate?

v) What is the organizational context of livestock production and distribution, e.g. land tenure, principles of ownership, institutional mechanisms for livestock transactions, structure of the management units, skills and competence, social commitments structuring livestock management, the interdependence between units in pastoral and non-pastoral activities?

vi) What is the aggregate outcome of management strategies?

(A) What is the balance between agriculture and pastoralism:

(a) on the level of management units, allocation of time and resources;

(b) on the aggregate level of regional land use patterns.

(B) What is the balance between herd off-take in various forms and herd investment:

(a) on the level of management units;

(b) on aggregate regional herd composition.

vii) What is the relative economic importance (for sale, draft use, and "home" consumption) of the different species of animals (cattle, goats, sheep, camels)?

viii) What are the animal disease and parasitic problems affecting the livestock?

ix) What are the effects of shortages of feed and water on growth rates, fertility, mortality, etc. due to necessary movements?

x) What are the most important traits to be selected for in the livestock to make them more resistant to the environment and more productive?

The Research Approach

A prerequisite to detailed bio-technical and socio-economic research in extensive livestock production systems is a knowledge of the human and natural resource base. This resource base will be determined using broad-scale survey techniques; the so-called integrated survey approach. In the three rangeland areas of Ethiopia and in Kenya, baseline studies are to be undertaken as part of the evaluation of livestock development projects and the broad scale survey would be the initial phase of this baseline study. The broadscale survey in Mali will not be complemented by separate baseline studies. Mapping of these areas will be done at a scale of 1:250,000. Some areas will be studied in more detailed.

These initial surveys are intended to provide an overview of the systems at one point in time. For this reason they cannot be expected to provide insights into the complex of dynamic relationships in each of these systems. The dynamics of these systems will be identified and quantified through longer-term studies on stuitably selected sites. Such studies will only be undertaken to the extent that they are, a priori, expected to provide details on relationships believed to be of importance in terms of whole systems performance.

The total elapsed time from the beginning to the end of the baseline survey in each area should be no more than one year.

During this time some longer-term studies may be initiated. The intrinsic variability evident in all livestock systems in the arid and semi-arid zone may require ongoing research studies. Initially work plans would be developed for five years, subject to annual review and a major review at the end of the fourth year. At this time a decision would be made whether to proceed with the study beyond the fifth year.

Some computer-based modelling of these production systems is envisaged. The number, size, and complexity of these models will be dictated by the needs of the research 1/. The bio-technical and socio-economic research undertaken will complement these modelling efforts to the extent that this research will provide data to validate particular structural relationships considered important in the overall performance of the systems. Also, the modelling will complement the research by assisting in identifying areas where current knowledge of the systems is inadequate. In this way problem oriented research will be assured.

The systems under study are complex, time-dynamic, and subject to the substantial effects of uncontrollable (exogenous) factors. In addition, the innovations that might be introduced to improve these systems are potentially of varied character. For these reasons it is important to develop the facility to separate the effects of these innovations from each other (when used in combinations) and from the effects of the exogenous factors. Without the facility to separate out the effects of the uncontrollable factors, it is likely that inappropriate conclusions will be drawn about the effects of the innovations /2.

1/ Several herd development models are already being evaluated by ILCA staff. The model or models selected will be used to investigate the long-term implications of different sets of production assumptions on herd development.

2/ For example: an improvement in the turnoff weights of cattle may be attributed entirely to the effect of improved water supplies (an innovation) rather than to the effect on pasture productivity of a sequence of favourable years.

It is necessary to delineate how the problems will be approached and studied in the project areas. It is obvious that in the study of animal production systems and of innovations that may improve these systems, the approach should be from the general to the specific (from an overview to the study of applicability and practicability of innovations), and must cover the main resources of the system (land and water, ecological relationships of the system, animals and humans). Consequently, the actual means of gathering the necessary information and of implementing innovations to be tested can be described as four different endeavors, all related and integrated, with the information of each being of use to the others. These four approaches for each project area are: 1) the general overview of the project area; 2) ecological evaluation and study over time of several (probably 4 to 8) sites; 3) detailed study, over time, of several (probably 3 or 4) villages (integrating crop and animal production and where some inhabitants gain their livelihood from working outside of the village); and 4) detailed study over time for several (probably 6 to 10) livestock herds and/or flocks that are managed on a transhumance or nomadic basis. Additional information on these approaches is given in Annex 9.

8) Resources: Strong interdisciplinary teams will be required in each of the proposed study areas. However, technical (disciplinary) expertise required on a full-time basis in each of the projects may not be. For example, an animal nutritionist may be employed full-time for the whole programme on arid and semi-arid zones, but would have responsibilities in all five parts of the programme (see Table 1).

A necessarily strong manpower component of ILCA's programmes is provided by consultants since this involves a desirable degree of flexibility.

Table 1 gives estimates of projected manpower needs, on an annual basis.

9. Expected Reports: 1) Annual Reports for each project area. The first reports to be completed by the end of 1977.

2) Various occasional papers produced at regular intervals on particular topics. An example is the "Productivity of Maure

Table 1: Annual Manpower Requirements in man months* for Programme on Systems of Livestock Production in arid and Semi-Arid Zones.

Project Area / Posts/ Scientists	Sudano-Sahelian (Mali)	Sidamo (Ethiopia)	Jijiga (Ethiopia)	Northeast Rangelands (Ethiopia)	Grazing Blks. (Kenya)	Total Man Years All Projects
Proj.Man.(Gen)	10	10	10	10	10	5
Socio/Anthro.	2	2	2	2	2	1
Field Assist.	10	10	10	10	10	5
Economist	5	5	5	5	5	2.5
An.Prod.(Gen)	10	5	5	5	5	3
Field Assist.	10	10	10	10	5	4.5
An.Nutr.	3	1	3	2	2	1.1
Field Assist.	6	4	4	4	5	2.3
An. Genetics	2	1	1	1	-	.5
Field Assist.	6	3	3	5	-	1.7
Range ecology	1.5	1.5	1.5	1.5	1.5	0.75
Range Man.	1.5	1.5	1.5	1.5	1.5	0.75
Botany	1.5	1.5	1.5	1.5	1.5	0.75
Field Expert	10 + 20	10	10	10	10	7.00
Fodder Prod.	1.5	-	1.5	1.5	-	0.45
Field Assist.	10	-	10	10	-	3.00
Integrated Surv.**	2 x (3)=6	3 x (3)=9	2 x (3)=6	2 x (3)=6	2 x (3)=6	3.3
Field Assist.	2 x (3)=6	3 x (3)=9	2 x (3)=6	2 x (3)=6	2 x (3)=6	3.3
					Annual Total	45.90

* Man/Months are based on 10 working months per year

** The requirements for the integrated surveys team are shown with/brackets. The figure in the brackets implies 3 men on the team.

and Peul Cattle at the Sahelian Station, Niono, Mali," which will be published in early 1977.

10) Expected Benefits: It is extremely difficult to project quantitative estimates of increases in animal production expected from this programme of study. One can make guesses on what the increases in production might be if certain innovations in the systems were successfully carried out, but FAO's projections in the Indicative World Plan and the Prospective Study on World Agricultural Development have been highly unreliable because of unsuccessful implementation of innovations. It is precisely this area of work to which ILCA is applying itself: what interactions, within a system of production or between systems, can be manipulated so that innovations are accepted.

Consequently, one of the benefits of this programme will be an understanding of the workings of the animal production systems and the identification of innovations to be tried. When these innovations are identified and they seem to have a high possibility of acceptance, some estimate can be made of the expected benefits.

However, having said the above, it is fair to add that one of the main factors that can be expected to increase is the offtake from the herds/flocks of the project areas. The offtakes are presently extremely low i.e. in most cases from 3 to 7%. It is reasonable to expect that such low offtakes can be increased and perhaps even doubled in a period of 3 to 5 years. It must be recognised, however, that by using biotechnical innovations to increase offtakes, one does not solve all the problems. The value of the increased offtake must be realised through innovations to improve marketing systems and must have some beneficial effect, in one way or another, to the producer.

ILCA must also have a long-term view concerning animal production. The effects of overstocking on the ecology of certain limited areas must be considered. Therefore, it may be necessary to reduce livestock populations (and even human populations) in certain areas, therefore actually reducing animal production but preserving resources for the future. Of course,

this implies being able to increase livestock numbers and human populations in higher potential areas, which is also being studied by ILCA in other programmes (see Sections 1, 3, 4, and 6).

Knowledge of these animal production systems will make it possible to plot strategies for ameliorating the effects of drought and also for conserving and using rationally the available natural resources on a long-term basis.

Annex 1: A Provisional Bio-Climatic Classification of Inter-tropical Africa

1 - Introduction

When talking about African climates and bioclimates within ILCA, at least, it is desirable to use the same language as our colleagues.

Terms like desert, arid, semi-arid, etc. have almost as many meanings as the number of people using them.

2 - Main Climatic Types

2.1. - The Hot Tropical Climates (monomodal rainfall pattern) are characterized by one single rainy season occurring in summer and average daily temperature of the coldest month above 10° C. Dry season average maximum temperatures are very high: 35 to 40° C.

This is the case of the Sahelian and Sudanian zones of West Africa and the Sudan.

The hot tropical climates may be dry or wet, i.e. desert, arid, semi-arid, sub-humid, or humid according to the amount of precipitation and the length of the rainy season. There are also tropical climates with cold winters, e.g. Kalahari, Karoo and, in America, Northern Mexico (Chihuahua), that are not considered here.

211 Subclimates

Subclimates	Ecological Zones	Rainfall mm	Rainy Season month (1)
Desert	Saharo-Sindian	$R < 100$	$RS < 1$
Arid	Saharo-Sahelian	$100 < R < 200$	$1 < RS < 3$
	Sahelian	$200 < R < 400$	$2 < RS < 4$
Semi-Arid	Sudano-Sahelian	$400 < R < 600$	$3 < RS < 5$
Sub-Humid	Northern Sudanian	$600 < R < 800$	$4 < RS < 6$
Humid	Central Sudanian	$800 < R < 1500$	$5 < RS < 8$
Very humid	Southern Sudanian	$1500 < R$	$8 < RS < 10$
Rain forest	Guinean	$R > 1500$	$RS > 10$

(1) Rainy season: number of month where $P \geq 0,5$ PET i.e. roughly when $P \geq 60$mm

These bioclimatic zones are also characterized by vegetation and land-use distribution patterns as follows:

Ecological Zones	Vegetation Types	Land-use Patterns
Saharo-Sindian	Contracted clustered	Nomadism long range No cultivation without irrigation
Saharo-Sahelian	Sparse spiny mimoseae scrub Annual grasses	Nomadism Transhumance No cultivation without irrigation
Sahelian	Spiny mimoseae Scrub Annual grasses	Transhumance Runoff and retread flood cultivation (millet, sorghum)
Sudano-Sahelian	Combretaceae Savanna Annual & perennial grasses	Transhumance and sedentary stock raising; rainfed agriculture (millet, cowpea, sorghum)

The tropical arid grazing lands are characterized by annual grasses (Aristida, Eragrostis, Schoenfeldia etc.) Whereas the equatorial arid grazing lands are dominated by perennial grasses (Cenchrus ciliaris, Andropogon kelleri, Chrysopogon aucheri,etc.)

Northern Sudanian	Woodland	Grazing cultivation
	Savanna	Millet
	Cultivation	Sorghum, sown pastures
		groundnuts,
		cotton,
	Perennial & annual grasses	cassava
Central	Woodland	Limited
	Savanna	grazing
		(Trypanosomiasis)
	cultivation	cultivation
	Perennial grasses	as above, plus fruit trees (Mango)
Southern Sudanian	Forest	Limited grazing
	Woodland	extensive
	Savanna	agriculture
	cultivation	oil-palm/sugar cane etc..
	Perennial grasses	

2.2 The Equatorial Climates (bimodal rainfall pattern)

Equatorial climates are characterized by a bi-modal rainfall pattern: two rainy seasons + two dry seasons; average maximum temperatures are lower than in the tropical zone, i.e. they rarely surpass 35° C. Minimum temperatures are higher than in the tropical zone and rarely drop below 20°, except of course in the highlands.

As for tropical climates, the equatorial may be dry or wet.

2.2.1 Equatorial Sub-climates

Sub-climates	Ecological zones	Rainfall	Rainy Season
Desert	Chalby/Danakil Somali	R ≤ 100 Grazing, contracted vegetation	RS < 4
Arid	East African (Ogaden, Somalia Northern Kenya)	100 < R < 400 Diffuse vegetation, Shrubland Bushland Perennial grasses no cultivation	1 < RS < 5
Semi-arid	East Africa	400 < R < 600 Shrubland bushland open woodland perennial grasses some cultivation	3 < RS < 6
Sub-humid	East Africa	600 < R < 800 Woodland Savanna Grassland, rainfed cultivation	5 < RS < 8
Humid	East & West African Guineas/Congolian	800 < R < 1500 Forest, woodland Savanna cultivation	8 < RS < 10
Very humid	Rain forest	1500 < R Rainforest, Savanna cultivation	10 < RS < 12

Shrubland = vegetation dominated by shrubs less than 5 m. high
bushland = " " " " " & + sparse trees
woodland (open) = " " + sparse trees over 5, high
woodland = " " trees with close canopies

3. Mountain Climates (Highlands)

Mountain climates are cold winter variants of the above-mentioned

ones. They are characterized by average minimum temperatures of the coldest month below 10° C. Rainfall may be monomodal (West Africa) or bi-modal (East Africa). Elevation above 1500 - 2000 m, according to latitude.

4. Afro-Alpine are characterized by an average minimum of the coldest month equal to, or are lower than 0° C. and usually above 3000 m. of elevation.

Annex 2. Some Indicative Statistics for Arid and Semi-Arid Zones

Table 1 gives selected statistics for five of the countries in the arid or semi-arid zones in Africa. The data for Ethiopia and Sudan are from the Animal Production Yearbook, FAO, 1974. The data for Mali, Chad, and Niger are from the Recueil Statistique de la Production Animale, SEDES, Paris, 1975. The statistics refer to all rural populations and thus do not discriminate between zones in these countries. Similarly the livestock populations are total country figures.

Table 1: Human and livestock population statistics for five arid and semi-arid countries

	Ethiopia	Sudan	Chad	Mali	Niger
Human population (thousands)					
Rural 1/	23670	17946	3393	5065	3767
Urban	3030	-----	507	649	306
(year)	(1973)	(1974)	(1975)	(1975)	(1975)
Livestock population (millions)					
Cattle	27	14	3.25	5.3	2.2
Sheep 2/	24	11.9	4.65	8.765	7.1
Goats	18	8.6	----	-----	---
Camels	1	2.62	.518	.241	.285
(year)	(1972)	(1974)	(1974)	(1972)	(1974)

1/ The separation of rural and urban population for Sudan were not available

2/ Sheep and goats are combined for Chad, Mali, and Niger.

Offtake rates (%)

	Ethiopia	Sudan	Chad	Mali	Niger
Cattle	6.7	7.6	10.4	11.9	12.5
Sheep 3/	30.3	36.1	30	30	24
Goats	34.5	5.2	--	--	33
Camels 4/	n.a.	n.a	5	n.a.	10
(year)	(1974)	(1974)	(1970)	(1970)	(1970)

3/ Sheep and goats are combined for Chad and Mali.

4/ n.a. ; not available

Annex 3: Aggregate Relationships in Pasture-Based Extensive Livestock Production System.

Figure 1 illustrates the pressure on, and carrying capacity of, a pasture-based livestock production system through time under several assumptions. Curves C_1 and C_2 represent the notional "carrying capacity" of the system with and without bio-technical innovations being introduced. It is recognized that the "carrying capacity" of such systems varies with season, but the fact that this has been omitted from the diagram for simplicity does not detract from the argument. Three levels of aggregate stocking rate (pressure) on the system are represented by D_1, D_2, and D_3. Curve D_1 represents the growth, through time, of pressure on the productive capacity of the system if no relieving innovations are introduced. Such pressure-relieving innovations are expected primarily to be the result of application of socio-economic innovations.

With the origin of the X axis indicating the current year, the curve D_1 will intersect C_1 in OA years. Had bio-technical innovations been introduced to raise C_1 to C_2 then the intersection would occur in O B years, implying a delay in the "crisis" for this system of (OB - OA) or AB years.

If socio-economic innovations were able to slow down the annual rate of growth in total demand (this annual growth rate will most assuredly be irregular) so the curve D_2 is then appropriate, the intersect without bio-technical innovations would occur in OC years. This would delay the "crisis" for (OC-OA) or AC years,. Given the construction of the curves in the figure, the curve D_2 does not intersect with C_2, which would imply indefinite deferrment of crisis conditions. In such a case the innovations might be successful 1/.

1/ Successful innovations in these systems are at two levels:
(1) those that assure long-term maintenance of the quality of the physical system; and

(2) those that provide for (1) and as well provide higher absolute standards of living for the human populations in those systems.

Annex 4: Systems of Animal Production in the Sahelo-Sudanian Zones (MALI)

The project area covers wide variations in environmental conditions as well as several human groups in different stages of adaptation. An understanding of any of these adaptations requires an analysis that shows their position in the regional ecosystem, e.g. their relation to natural resources and to other human groups with whom they compete or cooperate. Focus is here drawn to those groups that are involved in livestock production in the project area, which falls roughly into three major zones: the Sahel, the Niger River "Bourgou", and the Office du Niger irrigation scheme.

The major groups whose adaptation to this area, to a greater or lesser extent, is based on livestock are the following:

The Delta Fulani	}
The Sahel Fulani	}
The Moors	} Livestock Production
The tenants on Office du Niger	}
The traders	) Livestock distribution

The Delta Fulani are settled in the Niger river "Bourgou". The exploitation of the bourgoutière has been the right of the Delta Fulani. This exploitation was traditionally regulated by a system of laws called "Dina". However, the pastoral exploitation is based on a transhumant system. During the wet season the herders move the main herds ("garti" and "benti") toward the Sahel and return toward the river when the flood in the delta recedes in November.

The main part of the families remain in villages, where they each keep a few milk cows (the "dounti") and where they do some rice cultivation partly controlled by "Operation du Riz" and partly on an unregulated basis. Among the Delta Fulani there is a basic class distinction between the aristocratic Fulani who own the majority of the cattle and the lower class, Rimaibe, who mainly rely on rice cultivation.

The Sahel Fulani have their settlements around permanent water sources in the Sahelian zone. Apparently they keep a type of cattle with slightly different attributes from the Delta cattle. Most importantly, they are said to be less tolerant of the wet conditions of the bourgoutière.

Around the villages they do some millet cultivation. Their migrations are generally toward the north in the rainy season (the time when the Delta Fulani move into their dry season areas). At the beginning of the rains they follow after the Delta Fulani on the migrations toward the bourgoutière, but apparently prefer to stay away from the wetter parts.

In the dry season, the Moors follow after the Sahel Fulani in the migration southwards. Apparently the Moor cattle are more resistant to drought conditions than the Fulani cattle in the region.

The system of livestock production in the region cannot be adequately understood without taking into consideration the activities within the Office du Niger Scheme near Niono. Rice cultivation on the Office du Niger Scheme is based on tenant contracts whereby the land allocated to cultivating units is related to the number of working members they contain. In a context where land is allocated by administrative decisions, and investment opportunities in agriculture are limited to draft animals and simple equipment, there is a strong incentive for investment in livestock. This strategy is clearly realized by the tenants on the scheme.

During the cultivating season they send their animals with Fulani herders to the Sahel, where their presence servesto increase pressure further. After the harvest they feed on residue from rice production. During the last ten years there has been an increase in the number of cattle held by tenants even during the drought years.

	Draft animals	Cattle
1966	9586	9965
1967	8586	7863
1968	5922	7562
1969	5701	8164
1970	10670	8069
1971	9927	8219
1972	9929	8378
1973	10276	9106
1974	11038	9857
1975	13063	10608

The main reasons for this increase are that the tenants have a secure cash income from irrigated cultivation, and access to water and feed on the scheme in the dry season. As the pressure on pasture increases the tenants on the scheme are likely to have a competetive advantage vis-a-vis the Sahel Fulani. This may lead to a trend toward a gradual redistribution of cattle holdings between the groups.

To understand the adaptation of the pastoral groups, one has to take into consideration their relationship to the market. This is mediated by a specialized group of livestock traders (mainly Diawombe). The efficiency of the trading system significantly determines not only the returns to producers, but also the costs to consumers. A study of the main features of this system has now been completed by the ILCA team in Mali. The main constraints in the system can be summarized as follows:

a. Wide separation of producers from demand centers, and poorly developed means of transportation.

b. The supply comes from a multitude of small widely scattered producers.

c. Low level of market information among the producers.

d. The risk of transacting a stolen animal.

Thus, several functions, have to be performed in the trading system: guarantee for the legitimate ownership of the animal transacted; time-consuming bargaining; long-distance transport on hoof; and retail sale. The trading system is characterized by a diversity of different types of economic units performing these functions (guarantors, brokers, small traders, wholesale traders, retail traders, butchers, drovers, etc). The basis for this lack of vertical integration is the difficulty of maintaining control over personnel performing the various functions and at the same time allowing efficient decision-making.

The picture that emerges is one of a complex regional ecosystem, where the adaptations of different units are based on seasonal exploitation of different areas, combinations of economic activities (primarily livestock and agriculture), and linkages to a market system connecting them to the national and, partly, the international economy.

Definition of the Problems

The main problem to be investigated in the Mali Project is how to improve the quality of life of the Sahelian population through the improvement of the existing systems of production, particularly the livestock component.

This research was formulated in the Mali agreement as follows:

a. Study existing production systems in the Sahelian zone of West Africa; in particular, transhumant pastoralism and ranch development.

b. Study interdependence between zones and their effect on livestock production:

- dry and over flooded zones;
- pastoral zones and rainfed agriculture;
- pastoral zones and irrigated agriculture.

c. Define the constraints on improvement of the systems and study the means to remove them or to lessen their effect.

Although the project area is the focus of research investigations must be pursued outside the area when it is discovered that its productive activities are structured by relations of a larger scale. Sociological and economic research may have to take on this dimension if a solution is found to the "vicious cycle syndrome" which implies that some pastoralists may have to move out of their enviroment and their occupation.

The specific problems so far identified in the existing system involve the multiple use of the Sahel region itself, the Bourgou along the Niger, and the irrigation scheme of the Office du Niger by the Sahel Fulani, Delta Fulani, the Moors and tenants of the Office du Niger.

In this regional system, several problems can be identified that require further research in order to provide information needed to improve the situation.

Baseline investigation research into the socio-cultural constraints underlying the present system will be done by case studies of selected communities representing the main ethnic groups in the various subregions of the project area.

The baseline survey should also include some detailed collection of data on animal populations and the ecology of the area as well as studies by the integrated survey team to obtain a macro-evaluation of the state of the ecology of the region and an account of the members and movements of the livestock and the people. These surveys must be coordinated with, but not necessarily concurrent with the general socio-economic surveys.

Several biotechnical problems have been identified. The first three of the following proposals have been defined to the extent that experimental research can commence.

1. Identification of crops that can be grown in rotation with rice.

2. Identification of grasses/legumes especially adapted to the Sahel region.

3. Identification of fodder trees, shrubs, and bushes adapted to the Sahel region and especially utilizable during extremely dry periods (and droughts) as emergency feeds.

4. Comparison of adaptation of Peul and Maure breeds of cattle to the Sahel region and to the"Bourgou".

The investigation of the main features of the existing system is not only the basis of identification of specific biotechnical research problems, but it also provides the basis for predicting the effects of introducing biotechnical solutions into the system and for recommending administrative measures to counteract possible undesired outcomes. However, we will never be able to formulate the perfect plan and there is always a risk of over-planning. Therefore, an important research task is to monitor the effects of changes in order to discover emerging trends at a stage when they are still reversible. The specifics of the monitoring exercise should be designed after the baseline survey is completed.

Annex 5: Background Information on the Southern Rangelands of Ethiopia.

The main area of activities in the Southern Rangelands is located on the Borana plateau in the southern Sidamo province. This area is inhabited by one of the many Oromo-speaking peoples of Ethiopia, the Borana. In and around the small towns in the area, peoples of Amhara, Konso, Burji, and Somali origins are found.

The Borana plateau slopes gently from the northwest to the southeast, with peaks reaching above 2,000 metres and dropping down to the lowlands at below 1,000 metres. Here, as elsewhere in Ethiopia, altitude is an important modifier of climate, and rainfall within the area seems to be correlated to altitude. Mean annual rainfall in the area ranges from less than 500 mm in the southeast to over 700 mm in the northwest, and is distributed bimodally, with the main rainy season from March to May and a shorter one from September - October.

Climatological data for this area are scanty, and to the degree that they exist at all they indicate that rainfall in Borana is unreliable and erratic. Most of the rain that falls is concentrated in tropical thunderstorms, and downpours of 50-100 mm within a few hours and within a limited area are not at all rare. Distribution of rainfall, both in time and space, is uneven. This pattern, together with the concomitant high run-off rates, has some important implications for Borana pastoralism. One salient point is that the Borana, except during short periods in the rainy seasons, have to depend on deep wells for their water supplies. Since both rainfall and the wells are unevenly distributed, the utilization of pasture in the area is also uneven, with some areas underutilized and others intensely grazed.

From the vegetation point of view the area is little degraded, as compared to other climatically similar zones in Ethiopia. Therefore, innovations concerned with plant introduction are unlikely to have any impact in the forseeable future, however innovations including an improved network

of watering points could come from an improved grazing system.

Pre-drought figures/estimates of the Borana livestock population indicate approximately 1 million head of cattle, 24,000 camels, and 110,000 sheep and goats.

Census data for the Borana are nonexistent. Estimates range from 30,000, which is obviously much too low, to 230,000, which is probably too high. Population counts in connection with relief operations in the area for 1973-75 indicate a total Borana population in Ethiopia of some 150,000 people. Very little is known about the demographic trends in Borana, but again, estimates indicate a growth rate of 1.5% p.a.

The territorial distribution of the Borana has not been studied, but the environmental factors would indicate that the bulk of the population is concentrated in the well areas, in the triangle between the towns of Yabello, Moyale, and Erero. Seasonal population movements do occur, but precise information of the range, extent, and direction of such movements is very scanty. The information that exists is based on guesses and deductions from the environmental factors of available water and pasture. It is also known that some of the movements are caused by ritual and ceremonial requirements.

Borana social organization is highly complex, and several aspects are still only very imperfectly understood. There are indications, however, that the social organization of the Borana, together with the constraints of the environment in the area, make for a remarkably efficient system of control over population growth, access to water and pasture, and internal peace and security.

It seems important from the ecological point of view, to set up a range monitoring programme.

This programme will be based on:

i. A detailed baseline study on selected areas (there is already a broad-scale study with a range map at 1,500,000, where 30 range units are represented).
ii. A network of permanent ground observation sites.
iii. Periodical aerial sampling of the range and the numbers of animals through low altitude flights.

Population growth

The generation-grade system of the Borana, known as the Gada, comprises a set of rules governing marriage and reproduction. A basic feature of these rules is that a Borana male often finds himself in a situation where there is a considerable gap (up to 8 years) between the time when he may marry and the time when he may have sons. A further time gap of up to 5 years must elapse before he may raise daughters. In spite of a very evident preoccupation with reproduction and succession, and a pronounced love for children, there is evidence that the Borana adhere strictly to these rules, even to the extent of practising infanticide in the instances where the rules are being infringed upon.

The government has of course forbidden the practice of infanticide and today it is rare to find a Borana who admits that it still is being practiced. There are numerous examples of compromise solutions, where illegitimate children have been given up for adoption outside Borana society, to missionaries, townspeople, and the despised client-groups of the Borana (the Wata and Gabbra). But there are indications that the rigid rules of the Gada system are disintegrating, and that this obvious check on population growth may eventually be eliminated, as has happened in other Oromo societies in Ethiopia. If the Gada disappears, and if health services continue to be expanded in the Borana areas, it is probable that a rapid population growth will be the outcome. With our present knowledge of the demographics of the Borana, it is difficult to be specific about such anticipated growth, how important the practice of

infanticide is, or how the rules of the Gada are articulated in population trends. But it is clear that if the population of Borana grows rapidly, it will have serious implications for the overall ecological adaptation of the Borana population. There is a limit on the size of the population that the area can carry, and the problem will basically be to find out what happens to the excess population and how this excess population can be accommodated.

Access to Water and Pasture

The deep wells of the Borana are "owned" by single individuals, but they are also said to "belong" to the clan of the "owner". The "owner" of a well often transfers his "ownership rights" to other persons through a system of caretakers. Even so, the "owner" or caretaker has only marginal control over the well, which is run and controlled by a well-council composed of the actual users of the well.

A Borana well is a quite complex structure that requires continuous and coordinated labour inputs for maintenance and operation. The well-council delegates responsibility for the daily operation of the well to a number of elected officers, and the users must supply labour in proportion to the number of animals each herd-owner waters at the well. The main business of the well-council is to work out the watering rotas and to mobilize the personnel required for the practical tasks of operating and maintaining the well.

The crucial points in the social organization around the well are the processes that include and exclude herd-owners from access to the well. In principle, or according to the verbalized rules that may be elicited from informants, members of the clan that "own" the well have free access to it. Such rules, however, are unclear about who cannot use the well, and in actual practice clan members may be excluded and members of other clans included.

The main limiting factor to utilization of pasture in the Borana lands is access to permanent water, i.e., from the wells.

The complex Borana herd-management practices must be seen in relationship to water requirements. Watering rights are not obtained through inheritance or descent, but through complex transactions involving not one but several well-councils. Once access to a well is gained, these watering rights must be maintained through active participation in the practical tasks of maintaining the well and watering animals, as well as in the politics of the well-council. The system that results is a flexible one that permits split-herd management and movements over several seasons. It is evident, however, that non-participation is immediately sanctioned by exclusion from the water resource (and thus from the grazing resource as well).

This organization also seems to work as a check on the stocking rate of Borana pasture. Access to pasture is governed by access to water, which depends on active participation. With the watering technology that is available, this means that Borana pastoralism is much more labour-intensive than in the cases where watering of stock is from ponds. Herd growth thus must be balanced by increased available labour, and Borana stock management is sensitive to labour shortages, both because the animals simply don't get water, and because of the social sanctions entailed by defaulting on participation.

This constraint is, however, counteracted by other features of Borana stock management. Division of herds through inheritance is delayed as long as possible. This implies that sons rarely have the economic basis to leave their father as long as he is alive and thus remain as available labour for the common management of the family herd. Herding and watering co-operatives are common, as is the practice of dispensing cattle through a number of independent herds in various loan and contract agreements. It is thus possible for the management unit to manipulate the stock/labour ratio, and even if the traditional well organization seems to work as a control mechanism on the aggregate stocking rate, there are great differences between individual herdowners in terms of the amount of stock owned.

In contrast to mary other pastoralist production systems in East Africa, the returns to increased labour inputs above the minimum threshold, are noticeable among the Borana. At the same time, labour is a more critical production factor than is usual. Considering the crucial importance of the well and the social organization around it, it seems reasonable to expect that the introduction of stockponds not accompanied by the regulatory mechanisms of the traditional wells would change some of the fundamental premises for Borana pastoral production.

As long as we do not know what relationships are involved in gaining access to water or in maintaining watering rights; how the stock/labour ratio is manipulated, how herd growth is sanctioned, how pastoral labour requirements relate to other obligations, or how the well organization links up with other aspects of the total system, it is hazardous to predict the outcome of this change and its effect on herd growth, stocking rates, and stock management in general. But since water is a scarce resource at present, administered in a complex system of social relationships, free access to it will certainly mean a strain on and a change in the order of these relationships, and we will need to discover the implications of these changes.

Internal Peace and Security

A striking feature of Borana society is the remarkable degree of internal peace and security that is maintained. Events that are commonplace in other pastoral communties, e.g. stock-raiding, theft, murder, and feuding, seldom occur within Borana. We do not know much about the organizational features and mechanisms behind these traits, but some of the implications are clear.

Access to and control over resources are not reached through physical violence and competition, except vis-a-vis non-Boranas, but are, rather, aspects of being a Borana, i.e. having membership in the Borana identity. Thus, loss or gain of vital rights are, under normal conditions, not among the important considerations of the management strategies

of the Borana stock-owner. What is important, however, is permanent participation in the conflict-resolving and decision-making processes that maintain the "Nagaya Borana" (the peace of the Borana). The well-council is but one of several political fora, and will probably need to be studied in conjunction with all others before a clear view of Borana water and pasture control can be attained.

Annex 6: Animal Production in the Jijiga Rangelands (Ethiopia)

The project area covers some 45,000 Km^2, taking in practically all of the Jijiga Awraja and parts of Gursum and Dagabur Awrajas, all of which are in Hararghe Province. The main annual rainfall varies from 600 - 700 mm in the north near Babile, Fugnanbira, and Jijiga to 320 mm or less in the south at Dagabur and Aware. The rainfall pattern is bimodal. In the north around Jijiga, some 31% of the rainfalls in March, April and May (rains) and about 45% from July to September (Karan rains), with the main dry season from October to March. In the South, the main rains occur from March to May (about 50% of the annual rainfall), and the secondary rains occur from September to October.

The area can be divided into four physiographic units:-

(a) Area 1 East of the Jijiga Road is a flat, undissected area underlain by thick Jessoma Sandstone. The ground water is at considerable depths unless perched water tables exist. This area's water resources lie mainly in surface water catchment and concrete-lined tanks (berekedus).

(b) Area 2 West of the Jijiga - Dagabur road the area is primarily underlain by the Antalo Limestone Group. The area is dissected by the three main ephemeral rivers, the Dacata, Fafan, and Gerer. The alluvial deposits associated with the rivers constitute shallow aquifers capable of exploitation by properly constructed wells.

(c) Area 3 North of the Babile - Jijiga road is an area characterized by outcrops of Basement Complex with relatively narrow incised valleys. The Basement Complex is largely impermeable. The alluvial deposits in river beds are the preferred locations for ground water.

(d) Area 4 North of the Jijiga - Tug Wajale road is a rolling topography of low hills and broad valleys. Small but prominent hills are volcanic in origin, but the bulk of the area

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1/ The basic source of information is the Ethiopian Livestock and Meat Board, "Jijiga Livestock Project", August, 1974.

is underlain by the Antalo Limestone Group, below which occurs Adigrat Sandstone resting on an irregular basement surface. Boreholes to the basement have been reasonably successful, although there have been some water quality problems.

During the Gu and Karan (in north), or Dayr (in the south) rains, lack of drinking water is not a limiting factor in allowing livestock easy access to the available grazing. It may occasionally be so in the intermediate period between the Gu and Karan rains, and during Jilaal (dry season) quite large parts of the project area are without adequate drinking water for livestock. The situation is being changed by the introduction, by private enterprise, of concrete-lined tanks (berekedus) in which water may be stored for several months after rainfall. However, lack of permanent water is at present the only factor (other than disease) controlling livestock numbers and protecting the grazing from over-use. Of most concern to some pastoral clans is not the overall lack of permanent water, but the fact that some clans have no significant permanent water points in Ethiopia, and so are obliged either to go into Somalia in the dry season (where there are also water shortages) or to make contracts with clans that do have permanent water.

Within the project area the most important grass species are Chrysopogon aucheri (var. quinque-plumis), Sporobolus, Cenchrus, Cynodon Sp. and Tetrapogon Sp., Among the shrubs and trees Acacia (bussei, etbaica, mellifera, nilotica) and Commiphora are the most numerous. Other valuable browse species are Ziziphus and Boscia cadaber. Crop residues are an importance source, of livestock feed, especially in the dry season. Of the 33,000 km^2 of project area on which a vegetation study was carried out, 7,000 Km^2 (27%) was acacia shrub with grass, 5,000 km^2 (15%) mixed shrub with grass, 4,000 km^2 (12%) acacia trees with grass 2,000 km^2 (6%) acacia shrub and 2,000 km^2 (6%) grass land. According to a range study carried out 84% of the area shows sign of overuse and only 16% proper use or underuse. There is some evidence that the condition of the range is deteriorating. The traditional range-

use pattern is one of moving out from the dry-season permanent water points at the onset of the Gu rains (March), especially on to the grasslands of the Haud and Medher areas, and staying out there for as long as the temporary water supplies last, through May and June if possible (through the Karan rains), before falling back onto the permanent water supplies at the onset of the Jilaal dry season in October or November. The traditional pattern has been tending to break down, both because of the increase in cultivation and continuous settlement around the permanent water points, and because the introduction of concrete-lined water-tanks (berekedus) in the HaudMedher areas has greatly prolonged the possible period of grazing on these areas. On top of the general broad framework of the traditional range-use pattern set out above are superimposed regular and ad hoc movements of individual clans and families, taking advantage of the different times of onset of the rains in the north and south of the project area, and of the effects of individual rain storms. Groups of people and livestock may travel up to 200 kilometers, or even more, from their own h wells in the course of a single season, in search of good grazing and associated water.

The number of domestic livestock in parts and in the whole of the project area fluctuate from season to season, as the following summary, drawn from information obtained by aerial sample censuses carried out in the course of project preparation shows.

	1/ Season	True Rangelands 26,000 km^2	Cultivated Areas 7,000 km^2	Total Area 33,000 km^2
Cattle	Wet	355,000	314,000	669,000
	Dry	99,000	295,000	393,000
Sheep	Wet	716,000	166,000	882,000
	Dry	325,000	175,000	500,000
Goats	Wet	326,000	96,000	422,000
	Dry	103,000	34,000	137,000
Camels	Wet	163,000	28,000	192,000
	Dry	59,000	23,000	82,000
Domestic Livestock Units 2/	Wet	531,000	285,000	816,000
	Dry	174,000	260,000	434,000

1/ Wet season was early Gu rains in February 1972. Dry season was late Jilaal in January 1973.

2/ A livestock unit is defined as 250 kg of liveweight of animal.

In general, the breeds found are well adapted to the conditions and have high market acceptability. Average family livestock holdings over the whole area are in the range:-

	No.
Cattle	5-9
Sheep	6-12
Goats	2-6
Camels	1-3

But these average holdings mask big differences between clans and between cultivators and pastoralists. Camels are a necessity to far-ranging pastoralists. The Habar Awul are, therefore, big owners of camels, whereas the farmers of the Abaskul clan generally have none. Overall, pastoralists and cultivators together, the average livestock holding is between 6 and 11 livestock units (of 250 kg liveweight) per family. These are quite low figures, and indicate both the degree of reliance of

cultivators on their crops and the extent of monetisation of the pastoralists' economy. Subsistence pastoralists, obtaining nearly all their food directly from their livestock, could not survive on such small livestock holdings. Dr. Watson, who conducted the aerial census, found that the modal (most frequent) size of flocks or herds (which may or not be under one ownership) was as follows:-

Cattle.....1-5
Sheep.....More than 100 (A second peak was at 1-5)
Goats.....11-15
Camels..... 1-5

The land tenure position varies from one part of the project area to another, and is often uncertain. In much of the cultivated area the form of tenure is individual, although Central Statistical Office surveys show that up to 60% of the farmers may be tenants of private landlords. The vast bulk of the rangelands is officially defined as "government land", that is, since nobody pays land tax on it, the government is regarded (by government officials) as the residual owner; and this land can be alienated to individuals or to government departments. The pastoralists, however, refer to pieces of rangeland as belonging to one clan or another; and in terms of interclan relations, tribes do have preemptive grazing rights over such clan land, and these preemptive grazing rights are recognized by government authorities. Nevertheless, within the broad category of "government-owned" rangelands, some pieces are recognized both by government and by the clans as being more "government-owned" than others. Very often these pieces occur along disputed clan boundaries, where government has inserted its own claims in order to disengage clans. In some of the cultivated areas, the individuals cultivating have no proper claim to the land cultivated at all. They have simply excised a piece of rangeland and started cultivating. They pay no land tax, and have no legally defensible claim to the land. In other areas (particularly south of the Harer-Jijiga road), quite large tracts of land are subject to ill-defined claims by individual large landowners.

Neither the boundaries nor the surface areas are known, and in some cases even the name of the precise claimant is obscure.

The land-tenure position is unsatisfactory. Land is both being allocated by government, and being grabbed by local people, haphazardly and to the deteriment of the proper use and development of the rangelands. What is required is a land-use plan, so that optimum development of rangelands and cultivation can proceed in harmony. The limits of existing privately owned land must be defined.

The rural population of the project area, judging by counts of the number of dwellings, is about 76,000 families, say 350,000 - 500,000 people. Of these 76,00 families, again judging by housetypes, some 54,000 are semi-nomadic or transhumant pastoralists, and 22,000 are semi-settled cultivators. Jijiga town has a population of about 25,000. Other minor towns probably do not have populations in excess of two or three thousand each.

The area of cultivation is in the north, and in a tongue leading down the centre of the project area, and in a patch around Dagabur. Total area under present or recent cultivation is about 300,000 hectares (3,000 Km^2), of which 31% is fallow, and the area of "significant cultivation" (defined as areas where 5% or more of the surface area is under present or recent cultivation) amount to about 7,000 km^2, or 20% of the total project area.

The vast majority of the rural inhabitants of the project area are Somali-speakers, of thirteen different major clans, and some minor ones. In the northeast of the project area there are also some people whose native language is Gallinya. As already stated, the majority of the people of the project area are transhumant pastoralists who rely on their livestock to provide them with a living. While each pastoral clan trends to have its own "territory", they and their livestock herds migrate regularly over very long distances in search of water and grazing, using grazing and water points on the territories of other clans according to a system of contracts and agreements. Inter-clan

quarrels are not infrequent, and sometimes end in considerable bloodshed. Some of the clans who use the project area have their own water in Ethiopia (e.g., the Issa) or in Somalia (e.g., the Habar Awul and Arap).

While the pastoralists have no significant source of income outside their livestock flocks, they are fairly well integrated into a monetary economy and are far from being the "livestock-hoarding-for-prestige-purposes" pastoralists of the oldfashioned textbooks. Marketed offtake is about 6-9% in the case of cattle, 16% in the case of sheep, 12% in the case of goats, and probably about 5% in the case of camels, and would be higher if the disease situation allowed it. Much of the marketed offtake, especially in the case of sheep and goats, is illegally exported over the border into Somalia, and does not appear in the official trade statistics. The majority of marketed male cattle go west towards Harar and Dire Dawa, but cull females are probably sold into Somalia (because of restrictions, often unauthorised by law, on the slaughter of female animals in Ethiopia). Although fairly well integrated into a monetary economy, the pastoralists nevertheless consume a high proportion of the products (milk, butter, meat), of their own livestock.

Annex 7: Background Information on the North Eastern Rangelands (Ethiopia)

The North-East rangelands project area covers 75.000 km^2, located east of the highlands and north of the Awash delta, with the altitude decreasing from west to east. A number of rivers, both seasonal and perennial, drain into the project area from the highlands.

The area is characterised by low mean annual rainfall, correlated to altitude (at 500 metres, 350 mm). The rainfall is bi-modally distributed, with the main rains (about 60%) in July - September and secondary rains (about 20%) in February - April.

The human population in the area was estimated at 225,000 prior to the drought of 1973-74. Post-drought figures are not available, but estimates of human mortality during the drought run as high as 20-25%. The differences in the pre-drought and post-drought livestock population estimates are substantial, as can be seen below:

	September 72	January 74
Cattle	734.000	134.000
Goats	655.000	469.000
Sheep	556.000	279.000
Camels	206.000	132.000

Land rights in the area have traditionally been vested in the 10 Afar sub-tribes. These rights have rarely been actualized as far as grazing is concerned, but are important with regard to water points. As the agricultural potential of flooded, riverine land is realized, control over these lands has become increasingly important. Parts of the riverine areas have already been cultivated, depriving the herders of their crucial dry-season grazing reserves.

The north east rangelands are over-populated to the extent that even the minimum herd required to keep a domestic unit viable within the pastoral economy, will result in an aggregate stocking rate in the area that is above both the medium-term and the long-term carrying capacity of the area.

The World Bank Rangelands Development project proposes to alleviate this problem by:

- raising the carrying capacity of the rangelands (through range management and partial irrigation);
- creating alternative employment opportunities (irrigation agriculture).

The planned range management scheme hinges on the establishment of Tribal Range Councils, which, in co-operation with Range Wardens and Range Guards, will be vested with the authority to regulate the utilization of pasture. The Range Council is envisaged as a re-inforcement and partial re-structuring of the traditional tribal institutions, aimed at restoring and strengthening the traditional grazing systems. The range council is supposed to regulate the utilization of wet season/dry season pastures and grazing reserves as well as the stocking rates. The control on the stocking rates will be enforced through a system of taxation on animals in excess of the herd needed for household viability.

Plans are included for the settlement of some 4000 families on irrigated land. The irrigation project must be seen in conjunction with the plans for the range management scheme, as the irrigation project is located in traditional dry-season grazing areas. It is thought, however, that the utilization of crop residue as feed and improved pasture in the dispersion areas (dispersion of excess irrigation water) will more than compensate the losses of rangeland.

It is recognized that drought and famine traditionally have been the main regulatory mechanisms controlling both the human and animal populations of the area. The project is aimed at counter-acting the effects of drought and suggest alternative regulatory mechanisms. It is evident that the ability of the Range Concils to regulate pasture utilization and stocking rates is crucial in this context.

ILCA's activity in the North Eastern Rangelands has not yet been planned, however, the Livestock and Meat Board has specifically requested that ILCA be involved.

Annex 8: Systems of Animal Production in the Kenya Rangelands

1. Background: About one half of the total cattle population of nine million head and over one half of the other ruminant livestock in Kenya are in the rangelands. Pastoralism in these range areas is under growing pressure because of an increasing human population and continued reduction in the area of range for pastoralism due to increases in agricultural activity.

ILCA research in the semi-arid areas of Kenya will be in the north east rangelands and in the areas involving the group ranching scheme.

Grazing block development activity in the north east of Kenya will expand the area serviced by water points to 6.6 million hectares. Each water point will service an area of 55 thousand hectares. To ensure the long term survival of this ecosystem it is essential that workable management systems for the grazing blocks are designed and implemented. Such systems will include definition of the means to institute grazing stock limitations, levy fees to users of physical facilities, and other charges.

The group ranching scheme in Kenya has so far resulted in adjudications of almost one million hectares out of approximately five million hectares in favour of a total of over 10 thousand families. It has evolved from demands by pastoralists for range development. The program is designed to replace nomadic practices which no longer meet the needs of the people. It gives land tenure rights accompanied by range improvements. The basic premise is that if the growing human population is to take a full part in the development of the country, families wherever possible, must be able to rationalize land use, increase productivity and settle down to allow their increasing surplus population to follow alternative pursuits inside and outside their districts. Study of the introduction of these innovations into erstwhile traditional production systems will be of value to ILCA in its objective to achieve a comparative perspective of pastoral systems agricultural activity.

2. Definition of the Problems: Two general problems are identified in these rangelands.

1. In the medium term the pastoralists are tending to lose their dry season grazing reserves due to expanding agricultural activity. This demands that in the short and medium term new equilibria are created through the development of fodder banks that replace the traditional dry season grazing reserves.

2. In the longer term it is unlikely that establishment of fodder banks can maintain an increasing population of humans and livestock, let alone provide for increases in the standard of living of the population. Formidable socio-economic problems are foreseen as people are forced from the pastoral niche into other sectors of the economy. Kenya is a suitable laboratory for the study of these problems as the government has taken bold steps in development by promotion of grazing blocks and group ranches.

3. Methodology: For improvement in these rangelands in the medium term, research will focus on the different possibilities for improved fodder supplies in drought periods. To investigate whether these production systems can survive over the long term, research will be undertaken on the societal and institutional mechanisms in operation in these rangelands. The objective will be to design alternative production systems which are socially acceptable and also ensure the maintenance, or increase, in the productive capacity of the system.

Annex 9: The Research Approach

1. General over-view of the project area .

A first, but general, appraisal of the project area and the systems operating in the area with subsequent evaluations over time is necessary to understand the general linkages and interactions existing in the area. The first appraisal supplies knowledge for making decisions on the other three approaches, and the subsequent evaluations of the whole project area supply information on gross change in the area: ecology, water resources, movements of people, livestock and villages, cropping patterns and rotations, etc.

The general overview will be accomplished by integrated surveys utilising satellite imagery and aerial photos; low-level aerial counts and photographs of animals, people, villages, crops, etc., and sample ground surveys that supply basic data for interpreting photographs, satellite images, etc.

Although the data and information obtained from the general overview will have many uses, the main result will be maps (small-scale, 1 : 250,000 or in some cases 1 : 500,000), which will be used for the other three approaches and will furnish a permanent record, over time, of the dynamics of the systems of the area.

2. Evaluation and study (over time) of several ecological sites.

The livestock production systems operating in a given area depend greatly on the ecological components of the area and, in the case of transhumants, on the ecology of pastoral and cropping areas outside the project area. Therefore, detailed investigations of selected sites will be used for making larger scale maps (1 : 50,000) if deemed necessary. These studies and maps will assist in the selection of the sites and the understanding as to what is happening to plant communities and whether certain innovations (plant introduction, deferred

grazing, water spreading, predator control, etc.) can make any improvement on the ecology of the area as well as improve its usefulness for those occupying it (domestic animals, wild animals, humans, etc.).

Such sites obviously represent only samples of the whole project area, and therefore must be selected so as to give as good a representation of it as possible. At the same time, however, each site can be viewed as an entity in itself, since the changes that occur within it may represent the dynamics of plant communities (populations). But it should be emphasized that these detailed studies will only be carried out to the extent necessary to understand the animal production systems as a whole and their effects on the general ecology of the area.

Innovations (experiments) will be carried out at the ecological sites. Those innovations that appear promising for improvement would then be tried in other areas of the project area.

3. Study of several villages.

The interactions of the people living within villages in the semi-arid areas and between them and the pastoralists are the linkages that have to be understood in order to determine whether innovations in the system can be accepted. It is not only the highly visible interactions (those affected by policy decisions, development programmes, natural disasters, etc.) that need to be manipulated, but also those that occur on a day-to-day basis on a within-family and village level.

Several villages, which represent in a general way those of the whole project area, will be selected for continual study. The information gathered will reflect decision-making on an individual and family basis as well as attitudes toward innovations and policies that promise benefits.

It should be obvious that in the study of livestock production systems, much of the emphasis on the village level will be on those people engaged in or having a relation to livestock production. In addition, however, the study will reflect the attitudes and behaviour of those not directly affected by livestock production, but who are indirectly affected.

4. Study of several livestock herds and/or flocks.

Within the project areas there are often several different systems of management for livestock, i.e. sedentary, partially sedentary, transhumant, nomadic, etc. It is necessary to understand the day-to-day production (fertility, mortality, offtake, herd structure, growth rate, disease incidence, etc.) in order to determine whether innovations should be tried, and if they have any effect.

Experimental flocks/herds must be managed in the early stages in the traditional way to get meaningful information. However, some initial innovations such as animal identification are necessary in order to obtain cooperation. Some payments and/or minimal animal health control, etc. will probably be necessary. It is anticipated from ILCA's past experience in some of these project areas that good cooperation from herd owners can be obtained if they understand the programme, and if they receive some benefit or can visualize that in the future they will be better off.

D

SECTION THREE

1) Title: Small Animal Production Systems in the Humid Tropics

2) The Problem: It has been estimated that the 30 million goats and sheep which live in the humid zones of West Africa provide more than 50 % of the meat consumed in rural areas and also make important contribution to the cash incomes of peasant farmers. However, the productivity of these animals is severely restricted by:

- A high mortality rate, (especially young animals) probably caused by a low nutritive standard during certain periods of the year and the absence of disease-preventing management systems. The incidence of disease normally increases considerably with intensification;
- A low productivity per animal; and
- Socio-economic constraints, e.g. the allocation of labor to foodcrop production instead of to fodder crops.

3) Objectives: To develop viable farming systems in which small stock contribute more to the income and diet of villagers in the humid tropics of West Africa, through:

- reduction of disease incidence by improved management;
- improved nutrition; and
- improved productivity of meat and milk through the use of cross breeding and selection.

4) Location: Humid tropics, rain forest belt. Nigeria

5) Description of the Area: Region with a rainfall of 1750 mm - 2500 mm infested by the tsetse fly. Fairly densely populated area, extending throughout West Africa. Farming systems characterized by tree crops (oil palm, cocoa), rubber, rootcrop (cassava, yam) cereals (rice and some maize) and small stock (goats and sheep). For further details see Annex 1.

6) State of Knowledge: See Annex 2.

7) Methodology and time schedule

Phase I: Review and assess the present state of knowledge and research in progress, especially with goats and sheep, not only in Nigeria, but also in other humid tropical locations (April 1 - September 31, 1977).

Phase II: Study the role of small stock in the humid tropics of Nigeria by selecting two village situations near Ibadan, and two more further east, for an in-depth one-year study in which particular emphasis will be given to:

- Quantifying the requirements of goats and sheep for land, labour and capital, as well as their contribution to family incomes and diets, their marketing potential, and the factors that affect both the allocation of labour to different components of the farming system and meat consumption levels; and
- The biotechnical aspects, including animal health, nutrition, and husbandry practices at both flock and village levels.

Findings will be supplemented by crosschecks in other areas of the humid tropical zone of Nigeria and through liaison with FAO workers in Ghana. (October 1, 1977 - September 31, 1978).

Phase III: On the basis of the state of knowledge review and the constraints identified in the village study, research on the biotechnical and social aspects of small stock production in the tropics will be carried out at two experimental areas where village conditions can be simulated. The precise nature of this program will be formulated toward the end of Phase II. (January 1, 1978 - December 31, 1982). For further details, see Annex 3.

8) Resources (see Annex 4)

Personnel-Phase I and II:

one livestock economist with two assistants
one epizootiologist, for 6 months
one animal nutritionist, for 4 months
one socio-anthropologist, for 4 months

Phase III:

one forage agronomist
one animal nutritionist
one animal geneticist
one socio-economist

9) Expected Reports and Publications:

1. State of Knowledge on Research on Small Animals in the Humid Tropics. (September, 1977).

2. Actual and Potential Role of Goats and Other Livestock in Farming Systems of the Humid Tropics. (September, 1978).

3. A Proposal for Research on Small Animals in the Humid Tropics (September, 1978).

4. The Possibilities of Improved Feeding Regimes for Small Animals in the Humid Tropics. An Interim Report (December, 1980).

5. The Possibilities of Using Improved Sheep and Goat Breeds at the Village Level in the Humid Tropics. An Interim Report (December, 1980).

6. Management Systems for Small Animals in the Humid Tropics (December, 1982).

10) Expected Benefits: Small animals (goats and sheep) play an important role in supplementing the cash income and diet of small farmers and villagers throughout the humid tropics of West Africa. The development of a management system in which the productivity of small stock is increased will first benefit low income groups. Thirty million sheep and goats are now distributed among approximately 5 million households, and therefore the results of this project will potentially affect a substantial part of the West African population. Favorable conditions for the rapid application of results are:

- the considerable number of animals now in the region;
- the preference of the population for goat and sheep meat;
- the likely increase in the demand for sheep and goat meat that will result from increasing incomes.

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11) Annexes

Annex 1: Description of the Area.

The area is characterized by a rainfall of 1750 mm - 2500 mm and high population density (100 - 300 inh/km^2). It extends throughout West Africa (see maps 1 and 2). In all farming systems, rootcrops (yam, cassava) play an important role, together with tree crops (cocoa/rubber) and, in some regions, cereal production (rice and some maize). Livestock production is restricted to trypanotolerant cattle, sheep, and goats. In Nigeria there are approximately 600,000 trypanotolerant

cattle (N'Dama, Muturu, and Keteku),6 million goats, and 2.5 million sheep. In West Africa as a whole there are approximately 7 million trypanotolerant cattle, 30 million sheep and goats.
Sheep and goats are of a small-sized, short-legged type peculiar to the humid zone and play an important role in the village economy of the region. It is estimated that about 50 % of total meat consumption is provided by small animals,and the percentage is even higher in rural areas. Sheep and goats provide small quantities of meat at a time, have a low capital requirement, and have a high reproductive rate. In the rain forest/oil palm/rootcrops system, small animals play the most important role in livestock production at the village level. They also supplement the low protein rootcrop diet of the people, provide some security as a cash resource when necessary and provide much-needed manure to maintain soil fertility. Increasing population pressure is causing a reduction of the fallow period,and therefore there is a need to maintain soil fertility through other means.

Annex 2: State of Knowledge

The small amount of research carried out on sheep and goats in the humid tropics has been mainly limited to veterinary problems. It is generally considered that diseases form a major constraint on production - pneumonia, P.P.R., parasitic gastro-enteritis, and reproductive losses being the major problems.
Surveys carried out by I.I.T.A. and the University of Ibadan have studied the relative importance of small animals in village household economies, but little information exists with quantified inputs and outputs.
Breeding work carried out in research stations has been directed at improving meat and milk production, through cross-breeding with improved breeds, and it is now necessary to test the results of this work under village conditions.
Research on nutrition has examined the use of specific local by-products in relation to the nutrient requirements of goats and sheep. However, research in livestock production in Nigeria has been concentrated mainly on the north and on large animals, especially cattle.

Small animals in the south have not received much attention, although they form an integral part of the production system throughout the humid region of West Africa. Improvements that could be made in this system would have to be tested by ILCA for both their biotechnical and their sociological implications.
Contacts have been established with FAO colleagues working on sheep and goats in Ghana as well as with I.I.T.A., Nigerian universities, and the Nigerian Ministry of Agriculture. All have encouraged ILCA to develop this project and have promised their support and cooperati-

Annex 3: Methodology and Time Schedule

The first phase will include a review and assessment of the present state of knowledge and of research in progress, not only in Nigeria, but also in other humid tropical regions where sheep and goats play a role (e.g. other West African countries and the Caribbean).
The second phase will involve a study of present livestock production systems at the village level in order to characterise, analyse, and compare present systems and identify constraints impeding further progress in production. Two village situations near Ibadan and two more to the east will be selected for an in-depth study of one year. The findings will be supplemented by crosschecks in other humid tropical zones of Nigeria and West Africa.
The investigations will be done by interviewing and especially, by recording at the village level to quantify the following factors:

a) The requirements of sheep and goats for land, labour, and capital as well as their contribution to family income and their interaction with other components of the farming system.

b) The husbandry aspects, including disease control, nutrition and total feed availability throughout the year. The actual diets of the animals and the total availability of feed on a village level will be determined on a monthly basis.

c) Home consumption of meat and marketing possibilities.

d) Factors that affect: the alternative allocation of labour to foodcrops or fodder crops; the improved management of small livestock; and meat consumption.

Depending upon the results of the first two phases, the research in Phase Three will probably include the following.

- Feeding: The possibilities of improved nutrition throughout the year by the introduction and better use of fodder shrubs, improved pastures, and crop residues.
- Breeding: The possibilities for increased meat and milk production through crossbreeding and selection, especially the adaptation of crossbreeds to village level management.
- Husbandry: Development of better husbandry systems, including possibilities of intensive rearing systems.
- Disease: Development of management systems to improve disease control.

It is envisaged that two experimental areas will be selected in different parts of the humid zone, where controlled experiments will be carried out under simulated village conditions. It is important that the investigations on systems and methods of management be carried out under village conditions in which the results are to be applied.

In addition, the experimental areas will include:

a) a nursery and collection of grasses, legumes, fooder-shrubs, and trees;

b) different improved pastures and fodder plants that will be tested on the basis of animal performance;

c) pens where the performance of sheep and goats under zero-grazing and the feeding of crop residues will be tested.

The performance of different crosses will be compared with that of local breeds under village conditions.

Time Schedule

Review of existing knowledge:

April 1 - October 1, 1977

Study of the role of small animals in the humid tropics of Nigeria:

October 1, 1977 - October 1, 1978

Establishment of experimental areas:

January 1 - April 1, 1978

Establishment of nursery and pastures:
April 1 - October 1, 1978
Start of experimentation with different management systems:
October 1, 1978
End of experimentation:
December 31, 1982.

Annex 4: Resources

The following personnel will be required in Phases One and Two:

one livestock economist

a) to prepare the state-of-knowledge report;

b) to study the role of small animals on village level in the humid tropics;

c) together with ILCA headquarters personnel, prepare the recording scheme for the monitoring project.

In the preparation of the state-of-knowledge report, he will be assisted by a consultant animal scientist.

For the village study, he will be assisted by two graduate assistants, who may do this work as part of their requirements for a post-graduate degree in a Nigerian (or foreign) university. One will work in the Ibadan area, and the other will work in a village more to the east.

In the village study he will also be assisted by the following consultants:

- one epidemiologist (6 months): to assess the importance of diseases;
- one animal nutritionist (4 months): to determine the nutritional basis of small animal production under village conditions;
- one anthropologist (4 months): to determine social constraints on improved management systems.

In Phase three the following personnel is envisaged.

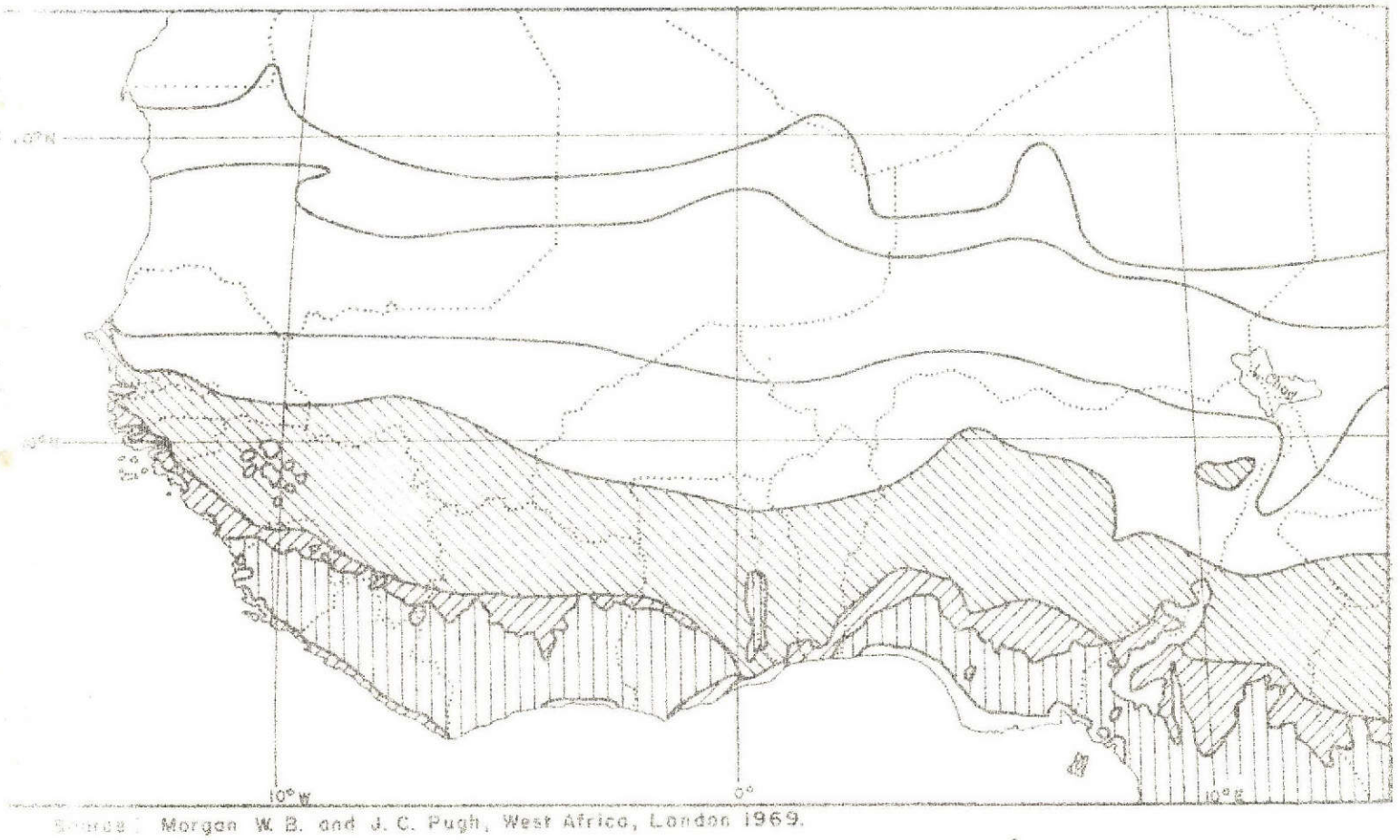
a) Forage agronomist: to conduct research on improving the forage availability.

b) Animal nutritionist: to conduct research on better utilization of improved pastures, fodder plants, and crop residues.

c) Animal geneticist: to conduct research on adaptation of improved goat and sheep crossbreeds and the possibility of further genetic improvement through selection.

d) Socio-economist: to assess the applicability of the biotechnical research results.

WEST AFRICA : VEGETATION ZONES



Source : Morgan W. B. and J. C. Pugh, West Africa, London 1969.

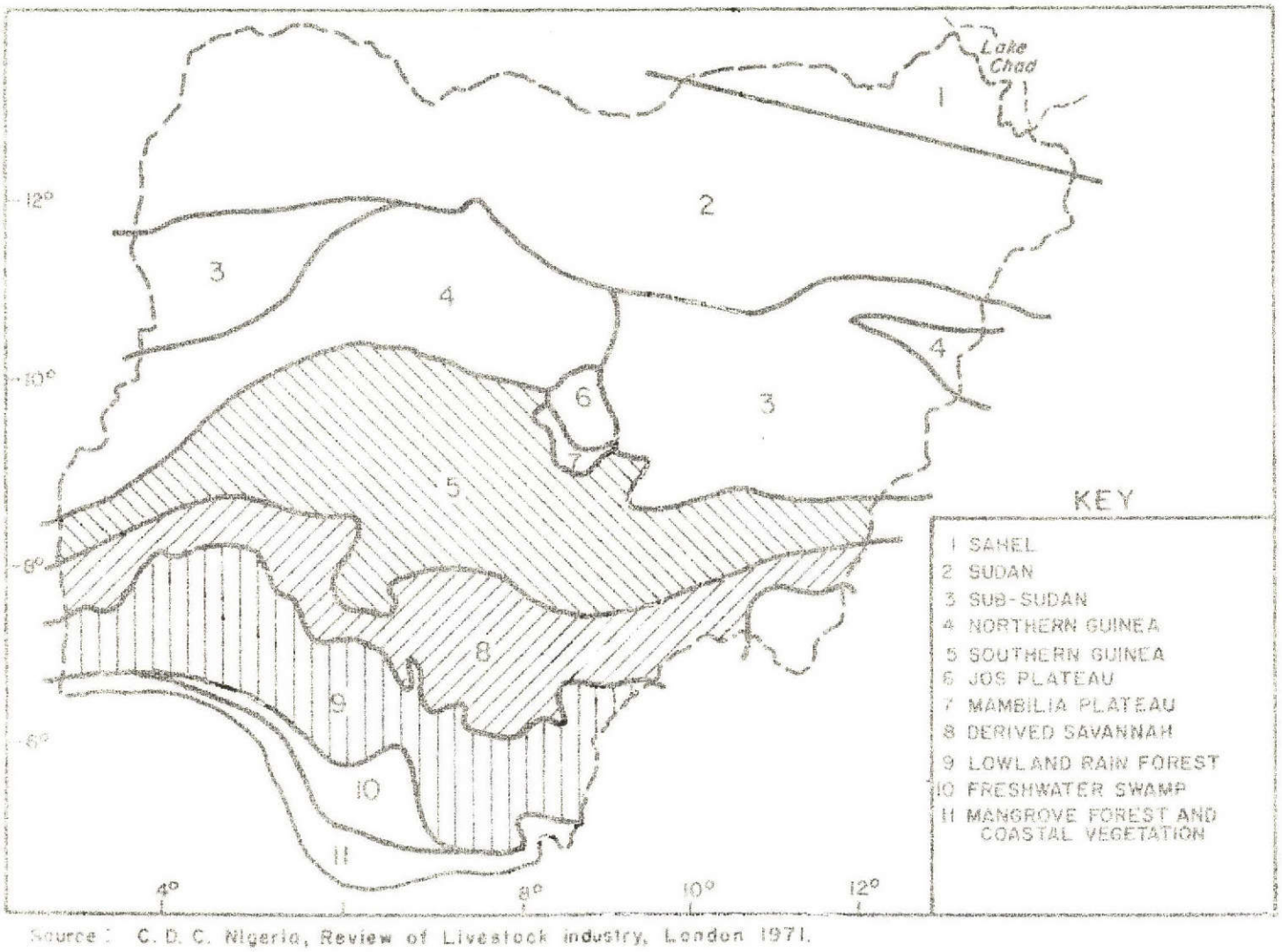
0 100 200 300 400 500 miles
0 200 400 600 800 km

MOIST FOREST

FOREST – SAVANNA MOSAIC

SAVANNA

APPROXIMATE BOUNDARIES OF ECOLOGICAL ZONES IN NIGERIA



Source : C. D. C. Nigeria, Review of Livestock industry, London 1971.

SECTION FOUR

1) Title: Animal Production Systems in the Semi-Humid Tropics.

2) The Problem: Because of drought, increased population pressures, and the spread of cultivation into marginal areas, increasing numbers of pastoralists are being forced out of the traditional migratory husbandry systems in the arid and semi-arid zones of West Africa, particularly in northern Nigeria, and are settling in more humid regions further south. At the same time, government and private capital is being invested in ranch development in the semi-humid belt. Information on these trends, on the economics of different approaches to tsetse control in this belt, and on viable livestock production systems is at present inadequate for development planners to regulate and plan these various processes (see also Annex 1).

3) Objectives:

Phase I:

a) As a first step to in-depth research directed toward the development of livestock production systems for the semi-humid tropics, it is necessary to collect relevant information on pasture, pasture management and ranch development, and on the economics of different approaches to tsetse control in the Derived Savannah and Southern Guinea Zone.

b) i) The underlying mechanisms of the sedentarisation of pastoral communities needs investigation in order to obtain information that will indicate the direction of probable future trends.

ii) The adaptation of settled pastoralists to the natural environment and to other social groups both in the north and the semi-humid tropics will be studied.

Phase II:

Suitable land-use systems will be developed to provide optimal use of the available resources and accommodate pastoralists from the semi-arid regions, giving special consideration to:

a) breeds of livestock to be used;

b) fodder regimes, especially the provision of fodder in the dry season;

c) techniques to be used for land conservation;

d) husbandry systems, including the comparison of a complete sedentary husbandry system with a partial migratory system; and

e) farming systems comparing mixed farming with specialized livestock systems.

4) Location: Derived Savannah Zone and Southern Guinea Zone, Nigeria (Lower Middle Belt).

5) Description of the Area: Regions with a rainfall from 1100 mm - 1800 mm, infested by the tsetse fly, characterized by a low population density, and suitable for grassland production. Present and future livestock development includes sedentarisation of pastoralists and ranch development (for further details, see Annex 1).

6) State of Knowledge (see Annex 2)

7) Methodology and Time Schedule: (see Annex 3).

Phase I:

a) i) As part of the general monitoring of development schemes for livestock production, a recording system will be established within the Nigerian Livestock Development Project (April 1 - September 31, 1977, establishment; recording through 1983). (See Annex 1 and Section Five).

ii) Procedures will be established on the ranches covered by this project for the cost recording of pasture establishment and maintenance in the semi-humid tropics. Stocking rates and live weight gains on different types of pasture will also be recorded (October 1 - December, 31, 1977, establishment; recording through 1983).

iii) A state-of-knowledge report will be prepared on pasture establishment in the semi-humid tropics (June 1, 1978 - May 31, 1979).

b) In a socio-anthropological study, the following information will be collected:

i) Mechanisms underlying the sedentarisation of pastoral societies, especially in Nigeria (January 1, 1978 - June 31, 1978).

ii) Social changes and adaptations of sedentarised pastoralists (July 1 - October 31, 1978).

iii) Adaptations of settled nomads in the south in a foreign natural environment (farming systems, husbandry practices, sources of income) and interactions with other social groups (competition and

symbiosis, livestock/cropping, changes in consumption pattern, demography). At the same time, land availability in the lower Middle Belt will be determined. (November 1, 1978 - June 31, 1979).

c) Direct and indirect costs of tsetse control methods in Nigeria will be established (January 1, 1978 - June 30, 1979).

Phase II:

a) Based on the information mentioned above, bio-technical and socio-economic research programmes will be designed to develop livestock production systems, as stipulated in the objectives (July 1 - December 31, 1979).

b) Actual experimentation will start (January 1980).

8) Resources:

Phase I:

a) For the evaluation of pasture development in the Lower Middle Belt:

Establishment of recording scheme (consultants)	9 man/months
Supervision (consultants	3 man/months/years
2 field assistants	permanent
For the state-of-knowledge report	
Consultants	1 1/2 man/years
b) For the socio-anthropological study:	
1 socio-anthropologist	1 1/2 years
4 field assistants	1 1/2 year
1 land-use specialist	1 year
c) For the economics tsetse control	
1 economist	1 1/2 man/years

Phase II: To be determined in 1979.

9) Expected Reports and Publications:

1. Factors Affecting Sedentarisation of Pastoralists in the North: July 1978.
2. Sedentarisation of pastoralists in the North and Associated Constraints: November 1978.
3. Sedentarisation of Pastoralists in the South and Associated Constraints: July 1979.
4. State-of-knowledge Report on Pasture Production and Dynamics and Ranch Development in the Semi-humid Tropics: July 1979.

5. Proposals for Research on the Development of Livestock Production Systems in the Lower Middle Belt: December 1979.

10) Expected benefits: In view of the potential of the region and the various constraints on livestock production in the North, it is expected that innovations developed for this region will have wide applicability.
Large sums of money are being allocated at the moment to the development of these semi-humid regions. The design of better alternatives for the utilisation of these empty areas will result in a more efficient use of funds.

The information collected on trends and adaptation patterns in sedentarisation will assist development planners to better regulate these processes in future.

Annex 1: Description of the Area

Livestock production in West Africa is concentrated in the northern semi-arid regions. The traditional livestock sector, based on non-trypanotolerant livestock, is governed mainly by the distribution of the tsetse fly. During the dry season there is a southward movement in search of water and pasture, and during the rainy season there is a return to the semi-arid areas.

In the semi-arid regions, the existing system of livestock production is coming under increasing strain. Population increase has led to increased acreages under cultivation by the traditional sedentary groups and to an increased aggregate livestock population among the pastoral groups. The implications for pastoral production are:

i) overgrazing; and

ii) an increased number of pastoralists involved in agricultural production whether because their livestockholdings are too small to support them, or because they are investing income from pastoral production in factors of agricultural production, mainly labour.

These trends are resulting in an increased sedentarisation of pastoralists in the semi-humid regions characterized by a rainfall of approximately 1100 mm - 1400 mm for the Southern Guinea Zone and 1250 mm - 1750 mm for the Derived Savannah Area (see maps). The two

areas together are called the Lower Middle Belt.
Climatological conditions favor grassland production, and the potential for crop production has not yet been explored.

This area extends throughout West Africa where hundreds of thousands of square kilometers with a low population density (40 - 80 inhabitants/km^2) are found.

The semi-humid and, to a lesser degree, humid regions have the greatest potential for increasing livestock production in West Africa but the presence of the tsetse fly has so far limited both the human and livestock populations. These regions have a much higher potential for fodder production than the drier northern parts, and given the elimination or reduction of tsetse fly infestation and other pathological problems, a large part of future livestock production is likely to take place in this region.
Tsetse eradication has received considerable emphasis in Nigeria and, during the last 20 years, the fly has been cleared from approximately 200,000 km^2. A serious problem has been the tendency of flies to re-infest reclaimed land, which makes it necessary to combine tsetse clearance with an effective land use plan and the development of viable farming systems.
The substantial tsetse clearance programme in Nigeria has made it possible for pastoralists to move south, and nomadic herdsman are now settling in the Lower Middle Belt. At the same time there is also settlement in non-cleared areas, where cattle are kept under drug treatment.
Another approach to use of trypanotolerant cattle breeds (N'Dama, Muturu, Keteku), will also have a place in the development of livestock production systems in this region. This forms the subject of a separate ILCA paper (see Section Six).
The International Bank for Reconstruction and Development is financing a livestock development project in the Lower Middle Belt of Nigeria that promotes improved methods of beef cattle production by nomadic and semi-nomadic graziers, small subsistence farmers, larger commercial farmers, and the public sector.
Although it covers both the semi-arid and semi-humid regions, its main emphasis is on the development of livestock in the more humid areas. A more detailed description of this project is given in Section Five.

In conclusion, this area has an considerable potential for the future expansion of the West Africa livestock industry. Expansion will probably come from two main directions:

a) sedetarisation of pastoralist societies, forced out of the more arid regions; and

b) investment in ranch development by both the government and the private sector.

Annex 2: State of Knowledge

The land resources of Nigeria have been described over approximately two thirds of the country by the Land Resources Division of the British Ministry of Overseas Development. Not covered by this study are some of the Western provinces of the Middle Belt. Throughout the region a considerable amount of work has been done on pasture establishment and fodder production (Akinola 1974).

As far as the presently practicable approaches to the tsetse and trypanosomiasis problems are concerned (tsetse clearance through insecticide application, bush clearing, etc.., the use of trypanocidal drugs), the biotechnical drawbacks and advantages are well known. The crucial and under-researched problem is how to combine and implement these measures in the context of overall land use planning, for the maximum lasting economic and social benefit to country.

A thesis by Olutogun (1976) gives detailed information on the performance of the N'Dama breed on the Upper Ogun Ranch, and includes also a review of pertinent literature on the production parameters of this breed. Regarding the pastoralist societies of the north, the Fulani have been described by De St. Croix (1972) and van Raay (1974), who give special attention to the settlement problems of pastoralists in the north. Livestock production parameters of Zebu cattle in the north under different systems were collected by Lamorde (1973). The Federal Livestock Department of Kaduna is sponsoring a study by the University of Ibadan on the problems related to sedentarisation in the more humid Western Provinces of Nigeria: a report is due at the beginning of 1977.

The economics of pasture establishment and maintenance have received little attention, and the potential of artificial versus natural pasture also needs to be studied from an economic point of view.

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Annex 3: Methodology

a) Economics of Different Approaches to the Tsetse Problem

A published study on this topic in East Africa is the major reference for the structure of the exposed programme. In cooperation with the Tsetse and Trypanosomiasis Division at Kaduna, a detailed costing of tsetse control measures will be undertaken in such a way that the results can be integrated in an economic analysis. Information on the economics of keeping animals with drugs will be collected. The overall patterns of land-use and land-use planning in Nigeria will then be analysed in relation to the economics of tsetse control. Typical land-use forms for areas affected by or cleared from tsetse will be identified, quantified and described.

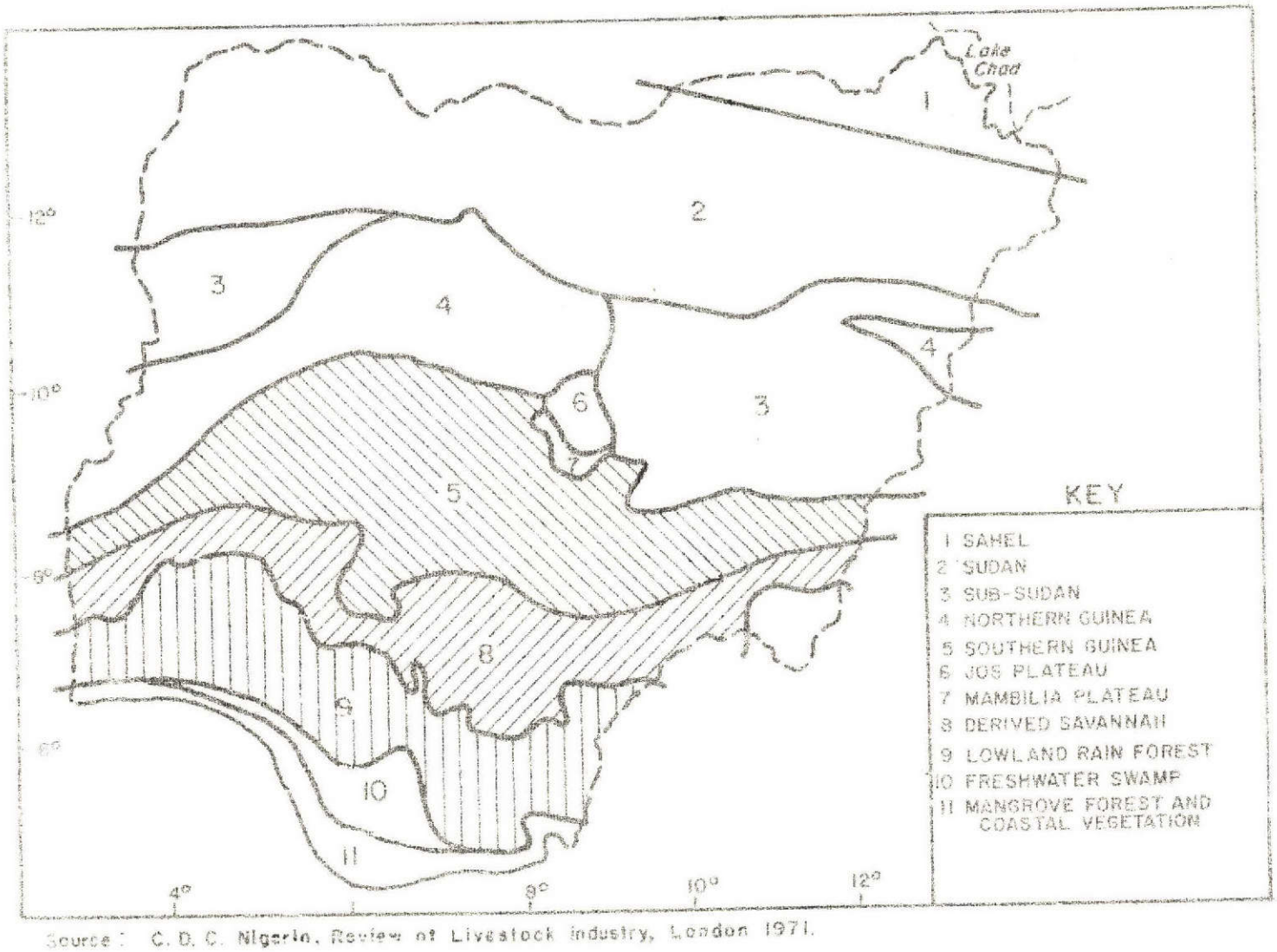
b) Problems Related to the Regularisation of Sedentarisation Processes Among Migratory Pastoralists.

The general mechanisms of sedentarisation are known, but additional information is required for prognoses about how sedentarisation can be stimulated, facilitated, and improved. The study will have an estimated duration of 6 months and will need one anthropologist and 4 assistants. As a second step, the adaptation of settled pastoralists in the north will be studied, in order to define their constraints and the potential for sedentarisation in this region (3 months of field work by same personnel).

As a third step, the adaptation of settled nomads in the south will be studied: their adaptation in a foreign natural environment (farming systems, husbandry practices, sources of income, etc.,) and their reactions to other social groups will form an important part of the study (competition of animal husbandry and cropping, symbiosis, changes in consumption needs). Approximately 9 months will be needed for this study, using the same personnel as before. During the study land availability for further sedentarisation will be determined, using existing information on land-use.

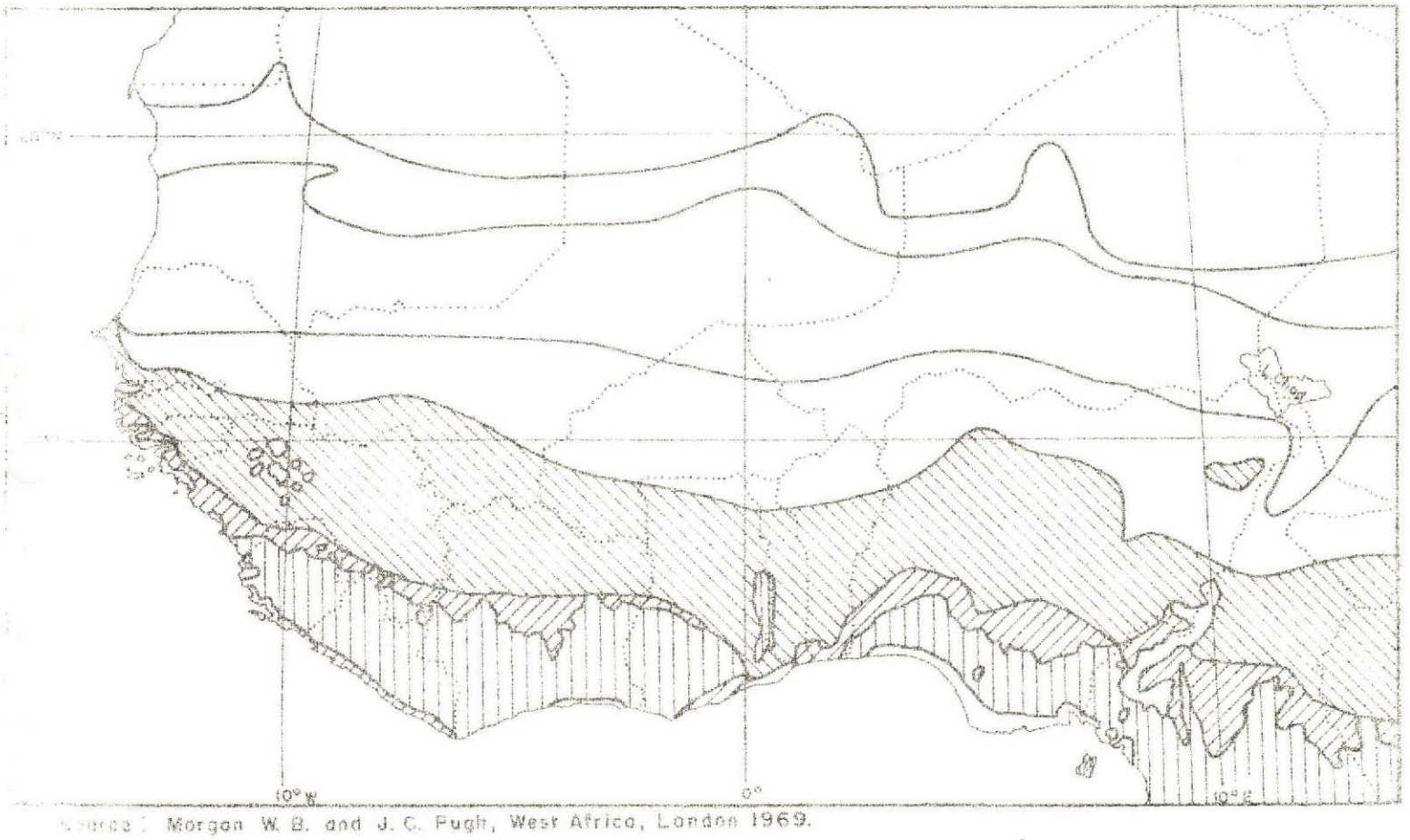
c) Cooperation with other institutes: several institutes are working in the different fields mentioned in this paper, and close cooperation will be established with them although all initial contacts will be made through the Federal Livestock Department at Kaduna. In this context, the study on sedentarisation in the north will be in cooperation with Ahmadu Bello University at Zaria and the National Animal Production Research Institute at Shika, whereas for the study on the adaptation of settled pastoralists in the Lower Middle Belt cooperation will be sought with the University of Ibadan.
The economics of different approaches to tsetse control will be studied in cooperation with the Tsetse and Trypanosomiasis Division and in coordination with F.A.O.

APPROXIMATE BOUNDARIES OF ECOLOGICAL ZONES IN NIGERIA



Source : C. D. C. Nigeria, Review of Livestock Industry, London 1971.

WEST AFRICA : VEGETATION ZONES



Source : Morgan W. B. and J. C. Pugh, West Africa, London 1969.

0 100 200 300 400 500 miles
0 200 400 600 800 km.

MOIST FOREST

FOREST – SAVANNA MOSAIC

SAVANNA

F

SECTION FIVE

1) Title : Monitoring Animal Production Systems in Development Schemes

2) The Problem : Many well-known biotechnical recipes for improving livestock production systems exist and have been tested (e.g. control of many epizootics, stock route development, tsetse control, dip installations, feedlotting, etc.). However, appropriate techniques for their implementation in different socio-economic environments and their combination with suitable organizational innovations are often lacking [1/]. With the equivalent of hundreds of millions of US dollars being invested in Africa's livestock industries, it is of paramount importance to study the factors of failure and success in development schemes.

It is for this reason that ILCA is setting up a network to monitor such livestock development schemes.

The term monitoring as used in the context of this paper refers to exercises of detecting and following changes in livestock production systems due to an inherent dynamism and/or organized development efforts.

3) Objectives :

a) To test the socio-economic and biotechnical hypotheses underlying livestock development plans and projects.

b) To help implement livestock development plans by providing information about the progress of the development schemes.

c) To contribute to the design and planning of future development schemes through comparative analysis of several contrasting schemes already operational.

d) To contribute to ILCA's understanding of the principal livestock production systems in Africa.

[1/] For example, the hypothesis that animals dipped regularly in a fluid of a certain acaricide strength can be kept clean both of ticks and the disease they carry has been well tested and it can be accepted as a working basis. Much more vague socio-economic hypotheses exist about how to implement successfully such a programme over large pastoral areas, and these remain to be tested.

e) To prepare where appropriate exercises of more in-depth research or longer term monitoring.

4) Location : Work will tend to be concentrated in the countries in which ILCA is already or is planning to become engaged in the study of animal production systems, i.e. Ethiopia, Kenya, Mali, and Nigeria (see sections 1,2,3,4, and Annex 1). In addition, the evaluation of the development scheme in Botswana will be part of the monitoring network (see Annex 2).

5) Description of the Areas : These countries give a contrasting range of socic-economic and ecological conditions and have features (e.g. land reform) of special interest in their development schemes, Ecologically they include dry countries with limited stratification possibilities (Mali and Botswana), countries that are developing huge tsetse-infested savanna belts (Nigeria and Kenya to some extent) and countries with pronounced stratification possibilities (Kenya and Ethiopia), important meat and livestock exporting ecomomies (Kenya and Ethiopia) where a growing domestic demand has to be satisfied while the export potential remains. Finally, a deficit country (Nigeria) is included, where import substitution is the prime goal of development efforts. More detailed descriptions of these livestock development schemes are given in Annexes 1 and 2.

6) State of Knowledge : The available literature on development schemes is generally focussed on theoretical and methodological questions of project evaluation. Little attention has been paid to the analysis of factors in conception and implementation that determine overall success or failure. Most attempts that have been made to learn from development projects[1/] have not dealt with the livestock sector and have been primarily based on ex-post analyses, as opposed to on-going comparative evaluation[2/].

1/ Perhaps the two most widely known examples are the studies by de Wilde (1967) and by Uma Lele (1975). Noteworthy are several internal studies of the World Bank.

2/ There is an example of monitoring livestock development for a farming situation in Mexico (Stoops and Schmidt in 1974).

A particular constraint has been the lack of data, and even the sharpest ex-post evaluator has been forced to resort to hunches, guesstimates, and generalities because of the lack of systematic information derived from a well-designed monitoring machinery.

7) Methodology and Time Schedule : Once agreement is reached with the government concerned that ILCA engage in the monitoring, the monitoring system is implemented in several phases. In the first phase a system of data collection and evaluation is set up, and this involves (1) an advisory role in setting up project accounts and reporting procedures [1/], (2), the selection of key socio-economic and biotechnical indicators and the design of sampling prodedures for assessing progress, and (3) the computerization of the herd development components. This first phase is followed by the routine supply and analysis of information and regular visits during the implementation period of about 5 years. During this period the incoming information will be used to the overall progress of the scheme (economic, social, ecological etc.), to identify critical variables, to carry out sensitivity analyses and to feed this information back to the Project Management and to the Governments concerned, so that they have an up-to-date picture of the development scheme at all times. Additional short studies will be carried out on such single components as "veterinary measures", "marketing", "infrastructure", etc. depending on their special relevance for the project concerned.

The methodology is elaborated in more detail in Annex 3.

[1/] It cannot be stressed too strongly that ILCA's monitoring function has nothing to do with the policing of funds; that no responsibility is assumed for accounting or reporting; and that ILCA has absolutely no service function for donor agencies.

8) Resources : The initial setting up of the monitoring network will require a heavy input of staff time during the first two years of the network's operation (1977-79). An ILCA staff member, working full-time, will be responsible for coordinating the overall network, for setting up the monitoring system, and supervising the collection and analysis of the relevant data for each country, and for the preparation of reports.

The responsibility for the implementation of the monitoring program in each country will be with an ILCA staff member stationed there, who will normally devote only a minor proportion of his time to this duty.

The following two examples illustrate resource requirements. The case of Ethiopia is typical of the countries where ILCA has operations in addition to the monitoring, while Botswana is a country where the monitoring represents the major ILCA input.

a) Ethiopia

The cost monitoring system and the reporting procedures for the Ethiopian project have already been developed in cooperation with the Livestock and Meat Board (LMB), which has put them into operation. Tha major herd development components have been computerized. The system for benefit monitoring is in the design stage and is expected to be finalized and approved by LMB by mid-1977. The initial setting up of these systems will then have taken up about six man-months. The whole routine monitoring (supervision of data collection, visits from headquarters, data analysis etc.) will require about four man-months per year. During the implementation period an additional four man-months is required for special studies.

b) Botswana

The ILCA monitoring operation in Botswana is of importance because the Botswana livestock development scheme reflects a major change in a traditional beef production system, specifically involving land tenure reform.

The Botswana Government has introduced a national policy on tribal grazing land which removes constraints imposed by the traditional communal grazing system on communal lands and involves a massive programme of consultation with and training of the livestock owners. In particular it allows stock owners security

of tenure and so encourages investment in grazing areas to halt overgrazing and increase productivity. The whole project represents a semi-arid laboratory where an attempt is being made to devise a "system" for meeting the next large scale drought.

One senior staff member will be provided by ILCA to act as Monitoring Manager in Botswana, with support as required from ILCA Headquarters, representing approximately four man-months per year. He will supervise the duties of a monitoring team of three scientists, to be recruited by the Government of Botswana on the advice and with the asistance of ILCA. This work will start in July 1977. Annex 2 lays out more details of contacts with the Botswana Government ; the present livestock management situation in the country ; the livestock development scheme; ILCA's involvement in the scheme; and the expected benefits from including this scheme in ILCA's monitoring network.

9) Expected Reports and Publications :

1) Outline of a system to monitor livestock development schemes (early 1978)

2) The status of the livestock development project in ... (internal annual report for each project).

3) A comparative analysis of livestock development projects
- drafts of certain parts will be ready from 1979 on ;
- comprehensive report in 1983.

10) Expected Benefits : Three major benefits can be expected from this program :

a) In 5 or 6 years ILCA will produce a comparative assessment of several contrasting schemes covering the major issues in livestock development. This information will assist future planning and so improve the effectiveness of future investments in the livestock industry of Africa. The analyses of on-going schemes will include the major socio-economic and biotechnical factors which help to increase or limit the success of such schemes.

b) A great deal of information will be collected about the principal livestock production systems in Africa which will greatly assist ILCA's other activities, particularly the Seminar, Conference, and Training Programme.

c) The involvement with on-going development schemes will stimulate ILCA's research and help to keep it relevant and practical.

Annex 1 : The Livestock Development Schemes to be monitored in Ethiopia, Kenya, Mali and Nigeria.

A. Ethiopia

1) The Appraisal Report [1/]

The Appraisal Report for the Ethiopian Rangelands Development Project was released in 1975 and gave the following summary of the development scheme :

a) Background :

The livestock subsector represents an important force in the future economic development of Ethiopia. The rengelands in particular have an immense potential for the sustained production of livestock and livestock products, and they are unique in that this potential could be exploited with only relatively small additional capital inputs. In the past, however, the total investments have not been commensurate with the magnitude of the development potential, and insufficient account has been taken of the need for a balanced investment program. This has reinforced the normal cyclical overstocking and over-grazing of the range areas brought about by traditional nomadic range and livestock management practice practices. Priority therefore has been given by Government to the development of a large-scale program aimed at the expansion of livestock production, and the rationalization and modernization of the traditional livestock sector.

b) Project Description :

The project would over a five-year period provide for the development and rehabilitation of three lowland range areas inhabited mostly by nomadic pastoralists engaged in extensive livestock production. The project would consist of three separate and distinct sub-projects, each with its own organizational structure. These sub-projects - the Southern Rangelands, Jijiga and Northeast Rangelands Development Projects - would each provide an integrated program of range management and veterinary services along with improved roads and water facilities. Through the establishment of ranches, a feedlot and smallholder fattening programs they would also aid in the stratification of the Ethiopian livestock industry, thus helping to lay the foundation for the sound future development of the livestock economy in the range areas. Finally, provision

would also be made for a program of trials and studies and for training of Project staff, livestock owners and tribal leaders in the short term the Project would attempt to restructure the traditional system of extensive livestock production, thus substantially raising the value of marketed livestock production and resulting in significantly increased incomes for the nomadic producers. One of the primary goals would be the eventual establishment of a comprehensive system of range use controls under which the nomads would voluntarily adjust their overall stock numbers to meet the carrying capacity of the ranges. As all the three areas differ markedly with regard to geographic and climatic conditions and are inhabited by peoples with widely varying languages and tribal customs, the individual sub-projects would necessarily adopt a slightly different strategy in each region. The overall objective would in each case remain the same, however, and in all three areas a concerted effort would be made to actively involve the nomads in the planning and execution of Project activities.

c) Project Execution :

Overall direction of the Project would be the responsibility of the Livestock and Meat Board. Each of the three sub-projects would have a separate organizational unit based at a headquarters within the individual project areas. These units - The Southern Rangelands Development Unit (SORDU), The Jijiga Rangelands Development Unit (JIRDU), and The Northeast Rangelands Development Unit (NERDU) - would each be under direction of a Project Manager directly responsible to the head of LMB's Rangeland Development Department. The Project Manager would have immediate responsibility for the coordination of all Project development activities in his area. In order to ensure coodination of these activities with other programs currently underway, each Manager would set up a Project Development Committee, whose membership would include the Head of the (Awraja) Administration, other local representatives, as well as representatives from the livestock owners in the area. LMB would

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1/ The Appraisal Report refers in all cases to the grey-covered report prepared by World Bank staff. This is the basic document for all projects receiving financial assistance from the Wold Bank Group.

help coordinate the activities of all three projects and would provide certain centralized administrative and technical services through its headquarters its headquarters in Addis Ababa.

d) Cost Estimates and Financial Arrangements :

An IDA credit of US $ 27.0 million is proposed which would cover about US $ 14.0 million of the foreign exchange component of the Project and 54% of local costs over the five year period. This would represent 63% of total Project costs of Eth $ 88.8 million (US $ 42.9 million), including import taxes and duties estimates at Eth $ 0.6 million (US $ 0.3 million). The proposed Africa Development Fund (ADF) contribution would total 5.0 million African Development Fund units of account (about US $ 5.5 million) ; this would finance the remaining US $ 2.9 million of the Project's foreign exchange costs and US $ 2.6 million of local costs. Together the ADF and the IDA contributions would finance 76% of total Project costs, and the remaining 24% would be contributed by Government. In addition, farmers participating in the smallholder fattening program would make a small cash contribution toward the cost of fattening and purchase of each animal ; these contributions, totalling about US $ 0.40 million over the five year period, were not included in the cost estimates. The ADF, IDA and Government contributions would be channelled directly by Government to LMB, which would establish separate bank accounts for each of the three sub-projects. Procurement of vehicles would be subject to international competitive bidding. Headquarters buildings and senior staff housing would be constructed according to normal Government procedures. All other buildings and field constructions would be built by the Project's own resources through force account or by local contractors hired by LMB. Veterinary equipment, medicines, and fertilizer would be procured through normal commercial channels.

e) Benefits and Justifications :

At full development (year 7) the Project would result in increased marketed production from the ranges of 100,000 head of cattle, 48,500 sheep and goats, and 3,000 camels annually. In addition to this increased offtake, the ranches, feedlot and smallholder fattening programs would result in significant increases

in total marketed meat production. The total incremental meat production attributable to the Project at full development would be equivalent to 15,000 tons of meat, representing about 14% of present estimated meat production. The Project would also result in increased production of milk from range cattle totalling 7.8 million litres of mild annually at full development. Finally. incremental crop production from the water spreading program in the Northeast Rangelands area would total about 1.1 million kg of cotton, 320,000 kg of sorghum or maize, and 120,000 kg of groundnuts annually at full development. The total annual value of incremental production attributable to the Project at full development would be Eth $ 23.6 million.

The overall economic rate of return for the Project over twenty years is estimated at 24%. Individual rates of return were calculated for each of the three sub-projects - these are estimated at 22% for Southern Rangelands, 25% for Jijiga, and 26% for North-east Rangelands. Rates of return were also calculated for certain specific components within these sub-projects - these were estimated at 17% for the ranches, 29% for the feedlot and 13% for the water spreading/irrigation program. The project would ensure both permanent (500 persons) and (about 4,000) temporary employment. Overall the Project would affect an estimated 100,000 families in the rangeland areas - the average per capita income of these pastoralists would be increased from Eth $ 60 (US $ 29) to about Eth $ 85 (US $ 41) over the life of the Project, thus substantially raising the incomes of one of the poorest segments of Ethiopia's population.

2) Present Status

The Project became effective in early 1976. At the same time an agreement was signed between the Government of Ethiopia and ILCA to formally endorse ILCA's monitoring function. The development of the monitoring system as outlined in Annex 3 is proceeding according to schedule and in step with the implementation of the Project.

B. Kenya

1) The Appraisal Report

The Second Livestock Project was appraised in 1972 with the report being released in 1974. Similar in concept to the successful first project, it was designed as a broadly based 5-year integrated program to increase Kenya beef production and improve range infrastructure ; it was also designed to contain a wildlife development component. The following sections are taken from the appraisal report.

a) Background :

Livestock represents a major national resource in Kenya. The livestock population comprises about 9.5 million cattle (including 0.5 million dairy cows) and about 8 million sheep and goats. About half are concentrated in the densely populated agricultural areas and the other half are widely scattered over the sparsely populated rangelands. About 0.5 million head are found on large-scale commercial ranches ; these are the main source of quality beef production. Growth in the national herd has averaged about 2% over the past decade. About 800,000 head of cattle are slaughtered annually, a total offtake rate of about 9%. However, only about 285,000 head are marketed through commercial channels, resulting in a commercial offtake rate of about 3%, about half of which comes from commercial farms and ranches and half from traditional pastoral areas. Domestic per capita beef consumption (about 13 kg) is high in comparison with that of other countries in Eastern Africa. Exports of livestock were valued at about US $ 24 million in 1972 and US $ 17 million in 1971 and represented significant increases over the previous five years when beef exports averaged US $ 8 million.

In view of Kenya's high potential for livestock development, the Government continues to give high priority to the improvement of the livestock production, marketing and distribution system. Particular emphasis has been placed on the development of ranches, communal range grazing, disease control, and wildlife resources.

b) Project Description :

The project would be the second IDA credit for livestock development in Kenya. The first credit, for US $ 3.6 million in 1968, assisted beef production on ranch enterprises and communally grazed rangeland. It also provided improved facilities for livestock movement and marketing, in part by providing credit to traditional pastoralists.

The proposed Project would develop about 60 group ranches, 100 commercial ranches, 21 company or cooperative ranches and three feedlots. It would also provide for the development of seven million acres of communal grazing land in Northeast Province and about three million acres in Isiolo district by providing water facilities and access roads. Marketing facilities would also be extended : 30 cattle markets would be established, existing holding grounds would be improved, and stock routes would be improved with the setting up of 80 new holding grounds. Transportation facilities would be augmented with the provision of five cattle trailers and 10 cattle trucks. Three wildlife areas would be developed to help overcome the resource competition with livestock; livestock census and monitoring units would also be included in the Project to improve technical knowledge in this field. Finally, the Project would provide for technical services, training, Project monitoring and evaluation, and for future project preparation.

c) Project Execution :

A Project Coordination Unit would be established in the Ministry of Agriculture to coordinate and supervise implementation of the Project ; personnel would include a Project Coordinator, an Assistant Project Coordinator and supporting staff. Technical services would also be provided to assist AFC and the Livestock Marketing Division (LMD) of the Ministry of Agriculture to implement the Project.

Procurement procedures under components financed by U.S., U.K. and Canadian aid would be in accordance with those countries' respective procurement regulations. Due to the fact that operations would be scattered over a wide area, ranch and other infrastructures within components financed by IDA would be constructed by local contract or force account.

Beef prices would be decontrolled within a three-year pasing plan. Current prices are about 25% below export levels.

d) Costs and Financial Arrangements :

Total Project cost over the five-year period from 1974 to 1979 would be about US $ 60 million. Foreign credits of about US $ 34 million (including an IDA credit of US $ 21.5 million) would finance foreign exchange costs of US $ 19 million and about 35% of local currency costs of about US $ 41 million. U.S. financing - US $ 7.3 million - would finance water development and some ranch development. Canadian financing - US $ 2.4 million - would finance water development and the wildlife census and monitoring unit. U.K. financing - US $ 3.7 million - would finance the livestock marketing component. The Agricultural Finance Corporation (AFC) would be the lending channel for loans to Project beneficiaries for ranch development and feedlots. Government lends finance to AFC for a term of 20 years, including a grace period of five years ; interest would be at 3% per annum, the rate under the First Livestock Project. AFC onlending terms would not exceed 10 years with a grace period of three years, and the interest rate would be 8% per annum. Funds for communal grazing schemes, livestock marketing, wildlife development and technical services would be invested by the Government directly.

e) Benefits and Justification :

The estimated financial rate of return on the beneficiaries incremental investments would range from 12 to 23%, while the rate of return to the Kenya economy would be about 25%. The Project at maturity (1985) would increase annual beef production by about 23,000 m tons, a 50% increase over present marketed levels. The net foreign exchange generated by the Project at full development is estimated at US $ 7 million annually. At full development the Project would create about 5,000 new jobs in addition to engaging 10,000 families totalling 50,000 people on the ranches. Communal range water development would benefit about 90,000 pastoralists.

The Project would directly benefit poor pastoralists and other small cattle owners and wage employees on commercial and company ranches, in meat marketing, meat processing, wildlife and range water development. In addition, higher prices for beef would transfer income from relatively prosperus urban consumers to the poorer rural producers.

2) Present Status

The Project became effective in December 1974. From the outset, various factors resulted in extremely slow project implementation. By the end of September 1975 the World Bank had only disbursed US $ 28,500 compared with an appraisal estimate of US $ 6.3 million.

In view of these issues an in-depth review paying particular attention to Project organization and management, the current economics beef production, and the escalation of Project costs was recommended and carried out in February/March 1976. An ILCA staff member participated in this review.

This reappraisal report has been produced, distributed and discussed. The changes in comparison with the appraisal report are not radical and it may be expected that the reappraisal report will be adopted in the very near future with the Project getting into full swing by mid-1977. The resident ILCA staff member responsible for the implementation of the Kenya Project has been recruited and assumes his duties on February 1.

C. Mali

1) The Appraisal Report

The resident Mission for West Africa of the World Bank identified the Project in October 1970, and subsequently prepared it, supported by FAC - financed SEDES and IEMVT Studies and relevant Malian Services. The Project was appraised in January/February 1974. The appraisal report which was released in January 1975 summarized the Project as follows :

a) Background :

The Government of Mali has requested IDA assistance in financing a livestock project. The location would be the 5th Region, Mali's most important and high potential livestock area (89,000 km^2, 1.12 million people), which during the 1972/73 drought lost about 25 percent of its 1.7 million cattle and 10 percent of its 2.2 million sheep. It would be IDA's first livestock operation in Mali, and the first comprehensive effort in West Africa to increase range livestock production by pastoralists in the Sahelian zone.

b) Project Description

i) The Project would aim at the rational use of land and water in the 5th Region and would help about 100,000 pastoralist families to rebuild and improve their herds and to protect them against future droughts. An essential feature of the project would be to develop effective grazing control, which offers the only means of creating and maintaining the conditions in which efficient and stable livestock production can be developed on the 5th Region's rangeland.

ii) A combination of incentives, regulation and education is needed to make grazing control effective - regulation without education would mean friction between pastoralists and authorities ; education alone would produce results too slowly ; and neither would have any lasting effect in the absence of strong incentives. The incentives and measures used would be adapted to the different areas covered by the project.

iii) In three special areas - one of about 5,000 km^2 and the other two about 1,000 km^2 together - permanent watering facilities would be provided, along with animal health and extension services. Pastoralists in these areas would have user rights to land and watering facilities which would be granted and safeguarded by the Government. This would provide the pastoralists with an incentive to use their land and facilities properly and an opportunity to invest in further developments such as fencing and additional watering facilities. To facilitate regulation and control, the project would aim at setting up pastoralists as legally constituted groups. Other areas amounting to about 10,000 km^2 would be provided with seasonal ponds and improved animal health services. The location of the ponds would be designed to increase the pasture available at the beginning of the dry season and thereby reduce the pressure on the dry season pastures in the Niger Delta. As the areas to be provided with permanent and seasonal watering facilities only cover about 20% of the 5th Region, and since the methods of introducing grazing control are new and untried, emphasis would be placed on the preparation of a second-phase project based on the experience provided by the first.

The project would be carried out over the five years 1975-79 and would comprise :

- introducing livestock extension services and grazing control in three special development areas :
- providing improved animal health services throughout the 5th Region ;
- construction 70 wells and 50 ponds ;
- constructing and managing an abattoir and hide-drying facilities at Mopti-Sevare ;
- constructing and managing five livestock markets ;
- establishing and managing a 150 ha livestock and pasture trial station ;
- providing personnel training and testing a functional literacy program for pastoralists , and
- preparing a second-phase livestock project.

c) Project Execution

1) The Government would establish the Operation de Developpement de l'Elevage de la Région de Mopti (ODEM), which would be a branch of the Ministry of Production responsible for all livestock development in the 5th Region and for the execution of the proposed project. ODEM would have legal authority to grant user rights to grazing lands and watering facilities and to prescribe conditions for their use. It would include a planning and range management unit, and services for livestock extension, animal health, livestock marketing and processing. It would employ 12 senior staff and about 500 support staff. In the absence of qualified and experienced Malians, expatiates would probably need to be recruited for at least the following : Deputy Director, Range Management Officer, Water Development Officer, and Pasture Agronomist. They would be replaced after four or five years by Malians who would have been trained within the project and abroad. The project would also provide for eighteen man-months of consultant services for studies related to project implementation and preparation of a second-phase project.

a) Cost Estimates and Financial Arrangements

The project cost for the five-year period, 1975-79, including taxes and duties is estimated at US $ 17.3 million. Taxes and duties account for about 14% of project costs before contingencies. It is proposed that an IDA Credit of US $ 13.3 million be made to the Government on standard terms, covering 77% of project costs. The Credit would finance the project's foreign exchange costs (US $ 9.0 million) and 52% (US $ 4.3 million) of local currency cost. The remaining 48% (US $ 4.0 million) of the latter would be met from Government budgetary allocations (US $ 3.4 million), ODEM's revenues (US $ 0.4 million), and livestock owners (US $ 0.2 million).

The IDA Credit would be disbursed over five years.

b) Benefits and Justification

The principal direct benefits from the project would be incremental annual livestock production worth MF 3.5. billion (US $ 7.8 million) in 1974 terms, yielding net foreign exchange earnings of the order of MF 1.7 billion (US $ 3.8 million). Some 100,000 pastoral families would increase their average cash incomes from livestock production from MF 65,000 (US $ 144) to MF 100,000 (US $ 222), and almost 400 jobs would be created.

The economic rate of return of the project is estimated at 51%, and is not very sensitive to increased costs or reduced benefits.

Without the changes that would be introduced under the project, it is likely that the 5th Region would continue to deteriorate as a grazing resource, as more and more rangeland would be destroyed by overgrazing and degraded by shifting millet and rice cultivation.

The appraisal report went on to spell out in some detail the risks the Project involved, namely (1) the degree to which pastoralists will respond to the grazing control measures introduced by the project ; (2) the degree to which other pastoralists will be prevented from encroaching on the grazing rights of participating groups: and (3) the frequency and extent of future droughts. It concluded that the potential benefits of the Project were so important that the risks were worth being taken.

c) Present Status

The implementation of the Project has commenced and while the initial stages of implementation are as usual slow it would be high time to start developing a monitoring system if the Government of Mali finds this desirable. ILCA has concluded an agreement with the Government of Mali concerning the study of livestock production systems in the fourth region only.

Assuming that the Government of Mali requests ILCA to be involved in the monitoring a resident staff member of ILCA could immediately be charged with initiating the setting up of the monitoring system.

D. Nigeria

1) The Appraisal Report

The project was appraised in July/August 1972. Cost estimates were updated as of early 1974. The appraisal report which was released in October 1974 summarized the project as follows :

a) Background

Nigeria has some 11 million beef cattle, 30 million sheep and goats and 70 million poultry. Except for a highly commercialized and modern poultry industry serving the main urban centers, and apart from better disease control, the subsector has remained unchanged for at least a century. Government has recently accorded high priority to livestock development, stimulated by the rapid rise of beef prices in recent years and the fact that domestic production meets only about 70% of consumption. Increased human population presently estimated at some 80 million and improved living standards will further intensify demand, and increase prices and the need for imports.

b) Project Description

i) The proposed project would (a) establish or improve seven bredding and two fattening ranches owned by Federal and State Government companies ; (b) provide credit and technical support for commercial farmers to establish about 50 medium-sized breeding and fattening ranches and for up to 1,500 smallholders to take up fattening ; (c) establish for about 1,500 nomadic herdsmen and their families some 1,600 sq mi of grazing reserves, appropriately equipped and staffed ; (d) establish and carry out

pasture improvement research programs ; and (e) provide training in beef cattle production for Government employees, private ranchers, smallholders and herdsmen.

ii) The project would provide the funds needes to build up breeding herds totalling about 100,000 head, improve about 21,000 ac of pasture, build 100 dams for watering cattle, and construct 2,000 miles of roads and firebreaks.

c) Project Execution :

A Livestock Project Unit (LPU) would be set up in the Federal Ministry of Agriculture and Natural Resources to coordinate project implementation and to (a) prepare development plans for the Federal, State,and privately owned ranches ; (b) operate as agent for the Nigerian Agricultural Bank (NAB), the credit scheme for beef cattle fattening by smallholders ; (c) provide technical supervision of borrowers for these ranches on behalf of NAB; (d) develop and manage the grazing reserves ; and (e) be directly responsible for training and research and for pasture seed production. NAB would be the credit channel for ranch development loans ; loans to smallholders for cattle fattening would be made by LPU on behalf of NAB. Consultants would be appointed to make regular evaluations of project progress, and to carry out project-related studies.

d) Costs and Financial Arrangements

i) Total project cost is estimated at US $ 42.0 million over an investment period of eight years. A bank loan of US $ 21.0 million is proposed, which would cover the project's foreign exchange costs,which amount to 50% of project costs. The remaining project costs would be financed as folbws : Federal Government 14%, State Governments 19%, NAB 12%, and private ranches and smallholders 5%.

ii) The Borrower would be the Federal Government, and the loan would be made for a term of 20 years, including a grace period of six years on principal. The Bank loan, together with a Federal Government contribution of N 3.9 million (US $ 5.9 million), would be deployed as follows : the Borrower would on-lend N 8.6 million (US $ 13.1 million) to NAB, which in turn would lend to the ultimate borrowers at an appropriate interest rate

varying between 5% and 9-1/2%. Of the balance : N 1.1 million (US $ 1.7 million) would be passed on to the North East and North Central States as grants in aid for its development of the grazing reserves ; N 4.4 million (US $ 6.7 million) would meet the costs of the Livestock Project Unit ; N 0.5 million (US $ 0.8 million) would be invested as equity in the federally owned ranching company ; and N 3.0 million (US $ 4.6 million) would remain to be allocated.

e) Benefits and justification :

At full development, which would be reached in the tenth year of the project, incremental annual production would comprise about 4,200 t carcass weight of beef (equivalent to some 4% of current domestic production) ; about 11,000 breeding heifers and 700 breeding bulls, 75% of which would be of the scarce trypanotolerant N'DAma breed. The value of this production would be of the order of US $ 10 million a year.

The economic rates of return from the direct investments in the production components of the project are as follows : ranching companies 13% - 18% ; private ranches 13%; and smallholder fatteners 15%. These rates of return are before charging LPU costs ; when these are taken into account, the overall rate of return for the project is about 11%.

The other benefits of the project would be varied and important. The project would introduce modern techniques of livestock production and train Nigerian stockmen, extension staff and project managers in the use of such techniques. Livestock credit facilities would be developed. The development of grazing reserves and use of improved pastures should increase carrying capacities, thereby helping to ease the confrontation between herdsman and agriculturalists in the heavily populated areas of the north. The smallholder cattle fattening component would provide a source of additional income by integrating livestock into the traditional crop production system. Studies on livestock taxation and development of land cleared of tsetse-fly sponsored by the project may well set the stage for a better institutional framework for livestock development and profitable investment in livestock production.

2) Present Status

The Project is completing its first preparatory year (year zero). The Government of Nigeria has expressed an interest in ILCA undertaking the monitoring of the project. At the same time ILCA is planning to set up additional research operations in Nigeria. Assuming that agreement can be reached with the Government of Nigeria on both accounts a resident ILCA staff member could take over responsibility for the monitoring as early as mid-1977.

Annex 2 : Monitoring in Botswana

A. Background to Botswana Government contacts with and proposals to ILCA

Having studied the brochure which lays out how ILCA intends to develop close linkages with national organizations, the Government of Botswana first approached ILCA in July 1976. In July and October 1976 they sent a senior official to ILCA for discussions and showed particular interest in being able to use ILCA's technical expertise in the broad field of development evaluation. Finally in November 1976, the Botswana Government asked ILCA to evaluate the effects of a major livestock development project and offered to supply a major portion of the inputs required for this programme.

B. Present situation related to livestock management and grazing control in Botswana.

The Republic of Botswana is a land-locked country approximately the size of France, lying between latitudes 18 degrees and 27 degrees south. It is bounded on the south and east by the Republic of South Africa, on the west and north by South West Africa (Namibia) and on the northeast by Rhodesia (Zimbabwe). At a point between South West Africa (Caprivi Strip) and Rhodesia it touches Zambia.

In east-west cross section, Botswana resembles a saucer filled with sand stretching westward into Namibia, with an eastern lip of low hills rising above the average 1,000 meters altitude of the sand veld. The eastern lip sheds rainfall that recharges aquifers on the base of the saucer that are exploited by more than 3,000 boreholes that enable the habitation and use of vast areas with no surface water. The sand fill is characteristically so fine that direct rainfall is retained in the top 6 meters and is available for plant use. Thus, although the rainfall is low, averaging 450 millimeters, (ranging from 250 in the south-west to over 550 in the extreme north and south-east), the herbage cover is better than might be expected. However, the top layer of soil is extremely fragile and the vegetation can be easily degraded. This susceptibility to abuse is compounded by the high degree of seasonal

variability of rainfall which ranges from 30% in the north to 80% in the south-west. Much of the range is already degraded and, in many areas, the people are dependent on more livestock than can be sustained without further degradation of the range.

Though the livestock industries proportional contribution to the nation's total export earnings have dropped from 80% in 1969 to 45% in 1974, actual earnings have risen from R10.2 million to R34.7 million over that period (U.S.$11.7 - U.S.$39.9).

The National Herd may have risen to approaching 3 million by the first quarter of 1976 but the last available census gave a total of 2,121,000 in 1972. Approximately 89% of these were owned by Botswana on tribal and state land. With controlled stocking on freehold farms, most of the increase in numbers occurs on the tribal lands.

The sheep and goat populations totalled about 350,000 and 875,000 head respectively in 1970 and were estimated at about 420,000 and 1,350,000 respectively in 1975.

Farmers on Tribal Lands normally graze their stock during the seven months dry period on communal pastures surrounding wells and boreholes and move their cattle further afield in the wet season to graze around natural catchments and ephemeral water holes. Communal grazing grounds surrounding permanent sources of water are invariably overstocked and deteriorating. Damage is marked by disappearance of grass, dominance of weed, and encroachment of bush. Areas opened up by the sinking of boreholes in recent years can often be dated by the uniform height and age of the predominating bush. Around older boreholes and wells the general pattern is one of near complete devastation within a radius of two or three kilometers from permanent sources of water, with damage decreasing gradually until natural range is reached some 12 - 15 kilometers away.

C. <u>The livestock development project</u>

The major project components include:

1. credit for the development of 150 ranches and 12 communal grazing units collectively covering over one million hectares of range land;
2. the establishment of a ranch development training centre;

3. development of trek routes, railway handling facilities and fire control unit;
4. the establishment of service companies;
5. the possible development of an Agricultural Division in the National Development Bank;
6. the development of a technical and economic monitoring capability.

Major contributions to this second livestock development project come from the World Bank and the European Development Fund.

D. ILCA's involvement in and expected benefits from the monitoring component.

ILCA will provide the following specific inputs:

- provide information about financial and physical progress of the Project;
- evaluate the Project after the disbursement period of five year;
- contribute to the establishment of a long-term monitoring system beyond the 5 year period;
- contribute to an assessment of project conception and planning in the long run as a result of several monitoring exercises;
- contribute to the design of follow projects;
- strengthen the local research capacity.

Involvement in Botswana would thus be part of ILCA's monitoring network and would have several advantages additional to the monitoring information directly obtained.

1. It would give ILCA the opportunity to have access to a vast amount of data on a new, well-planned approach to pastoral development, e.g. consultation with the people-reports on 2,900 separate radio learning groups involving 49,000 citizens and assessment of their reactions to the proposed policy.
2. The greater the number and variety of projects monitored the more useful will be the monitoring network.
3. A working arrangement with Botswana will give access to a considerable amount of range and animal production data and documentation both from within Botswana and from the rest of Southern Africa.

Annex 3 : Some Details on the Methodology of Evaluation

Differences in the monitoring systems will be made according to the number of agencies involved in project implementation. In Ethiopia only one implementing agency is involved (Livestock and Meat Board) whereas in Kenya a relatively large number of agencies is involved. The monitoring systems will reflect these differences to the extent that different reporting formats will be utilized. Additionally, differences in the monitoring systems will be necessary according to the relationships between benefits and costs in the areas undergoing development. In those areas where ranches are planned the monitoring system may consist largely of setting up recording systems on farms and ranches. Such a system would clearly be inappropriate in those areas where the projects focus on infrastructural investments in a pastoral setting.

Four separate components of monitoring systems can be identified. These are :

1. On ranch/farm monitoring: A recording system is set up such as done by Stoops and Schmidt in Mexico [1/]. Such a system will allow financial control and economic evaluation for the rancher and at the same time be structured to fit into the overall cost and benefit monitoring system. ILCA will only play an advisory role in the setting up of formats and will have no responsibility for accounting or reporting.
2. Overall cost monitoring: Disbursement and cost monitoring systems for all implementing agencies are set up. This involves the putting together in cooperation with the Project Manager of a quarterly and annual reporting procedure taking into account :

1/ D. Stoops and J. Schmidt: Guideline for Farm/Ranch-Level Monitoring of Agriculture and Livestock Enterprises using Bank/IDA Financing. World Bank, June 1974.

- the financers' reporting demands ;
- the availability of accounting and technical support staff;
- the need to have cost data that lend themselves for economic analysis as well as financial control.

It goes without saying that the cost (as well as the benefit) monitoring system provides from the start for a distinction between prices and physical quantities. Once the formats are set up the accounting and reporting is done by ordinary project staff. Normally, there is hardly any additional work involved.

Again it must be stressed that ILCA's role is only advisory and that no responsibility for cost accounting or reporting can be assumed.

3. Overall benefit monitoring : A benefit monitoring system is set up for the different components of the development scheme covering all expected benefits and effects of the project that are not included in ranch records. This exercise starts by identifying the key indicators (socio-economic and biotechnical) which are of greatest relevance for effects and benefits of the scheme. In most cases this then calls for the design of a sampling procedure to follow these indicators over time. It is here that other disciplines have to be called upon heavily to ensure comprehensiveness and consistency of the sampling procedure and to ensure that the schemes' effect on the environment (e.g. range trend) and on livestock productivity (e.g. fertility, mortality liveweight gain, offtake) are duly taken into account. The data collection in the field is to be carried out by staff of the development scheme supervised by an ILCA staff member permanently residing in the country concerned. Additional manpower is necessary to a limited degree only.

4. Computerization : In all cases a quantitative framework is drawn up which allows putting together the cost and the benefit indicators, be it from the farm/ranch level or from the project or national level, and to calculate at any point in time for a given set of assumptions and indicators the corresponding major benefit indicators over the project life, normally assumed to be some fifteen years. This includes e.g. incremental meat production, incremental herd size, financial and economic rate of return. For the sake of ease and speed of calculation the quantitative framework

is computerized. The models used are simple, straightforward and transparent. They serve to test assumptions for consistency, to show the relative importance of the different factors contributing to production and to point to critical aspects that require more in-depth examination and/or monitoring.

Sets of runs and sensitivity analysis are produced annually and in addition when necessary for management decision.

G

SECTION SIX

1) Title: The Use and Potential of Trypanotolerant Livestock.

2) The problem: There is considerable research and development under way involving trypanotolerant livestock on which there is little or no published information. A detailed study of (1) existing publications and (2) current and planned research by national and international institutions is essential, and should be undertaken by ILCA. At the same time, unanalysed data existing at national institutions should be analysed in cooperation with the countries and/or institutions concerned.

3) Objectives: Phase 1) To prepare a status-of-knowledge report on trypanotolerant animals, and research and development involving such animals.

Phase 2) To develop a long-term programme, in the light of Phase 1 above, to encourage the most effective use of trypanotolerant breeds and crosses in livestock development schemes in the humid and semi-humid tropics. This would cover both the improvement of the production potential of trypanotolerant animals through management, nutrition, selection and crossbreeding, and the dissemination of breeding stock using both natural and artificial breeding programmes.

4) Location: ILCA headquarters, with missions to countries where trypanotolerant livestock are being used for research and/or development and to other organisations that have relevant information and data.

5) Description of the Areas: African animal trypanosomiasis covers approximately 10 million km^2 of tropical Africa. This disease is a grave constraint to increasing animal production, in some thirty-five African countries (see Annex 1).

6) State of knowledge: Considerable information about animals which appear to have some tolerance to trypanosomiasis exists in the literature. A review entitled Trypanotolerant Animals and Trypanotolerance is being prepared by ILCA. However, research on trypanotolerant livestock (mainly cattle), and development programmes utilizing trypanotolerant livestock are currently under way in several African countries. ILCA is only partially aware of these

activities since progress reports either are not widely distributed or have not been made. In addition, it is known that data exist in several countries but have not been analysed.

7) Methodology and Time Schedule: In Phase 1, the general steps will be:

- Make contact with all international organisations concerned in any way with trypanotolerant livestock.
- Complete the review of available literature on trypanotolerant animals and trypanotolerance by March 1, 1977.
- Carry out missions to countries in Africa where it is known that current research and/or development programmes are currently underway or have been completed, and to those countries or organisations which have sponsored or supported such programmes and who may have available data and/or information which would be useful to the study. These missions would be carried out between April 1, 1977 and December 31, 1977.
- Complete status of knowledge report by mid-1978 and make recommendations to Programme Committee on future potential research and development proposals concerning the use and potential of trypanotolerant livestock.

The status-of-knowledge report would include basic information on trypanotolerant livestock according to the following points:

Demography and performance:

(1) Numbers, density, and settlement areas of the herds of cattle, sheep, and goats.

(2) Animal characteristics and performance
- Weights at periodic intervals
- Mature weights of all classes
- Reproductive performance
- Viability
- Carcass' characteristics
- Milk production
- Draught characteristics

(3) Management and its influence on trypanotolerance

(4) Herd/flock composition and structure

(5) Herd/flock offtakes

Economic evaluation:

(1) The economic importance of trypanotolerant livestock to the semi-humid areas of Africa.

(2) Appraisal of existing data and information to ascertain the economic potential of raising trypanotolerant livestock in semi-humid areas compared to non-trypanotolerant animals reared under chemo-therapeutic regimes. To make this comparison, some specific data on non-trypanotolerant livestock will have to be collected.

(3) The potential of increasing the numbers of trypanotolerant livestock through natural breeding and/or artificial insemination techniques.

This detailed methodology and schedule have been arrived at after consultation with ILRAD, FAO and other International institutions, with whom continued close contact will be maintained.

The general steps of Phase 2 will be determined by the results of Phase 1.

8) Resources: In Phase 1:

(a) Guidance of study - ILCA staff member - 2 man-months from March 31, 1977 to July 31, 1978.

(b) Consultant for one year. August 1, 1977 to July 31, 1978.

(c) Six missions of 1 to 2 months' duration each by ILCA staff members.

Some of these missions can be combined with other ILCA missions, especially those concerned with the comparison of indigenous African breeds and crosses.

(d) Analyses of data collected on mission - 2 man-months of computer services.

(e) Editing and printing of report.

9) Expected Reports and Publications: (a) Draft review of literature on trypanotolerant animals and trypanotolerance - mid January, 1977.

(b) Completed status-of-knowledge report on trypanotolerant animals and trypanotolerance - July 31, 1978.

10) Expected Benefits: The Phase 1 study will enable ILCA to determine:

(a) Whether further research on trypanotolerant animals and trypanotolerance is appropriate and necessary.

(b) Whether such research should be carried out by ILCA.

(c) What resources will be required for such research.

Annex 1: Areas to be studied

The following geographical regions will be considered in Phase 1:

(a) North East Africa
- Ethiopia
- Sudan

(b) East Africa
- Kenya
- Uganda
- Tanzania

(c) Southern Africa
- Angola
- Mozambique
- Rhodesia

(d) Central Africa
- Central African Empire
- Gabon
- Rwanda
- Congo
- Zaire
- Sao Tome and Principe
- Equatorial Guinea

(e) West Africa
- Upper Volta
- Mali
- Senegal
- Gambia
- Guinea Bissau
- Guinea
- Sierra Leone
- Liberia
- Ghana
- Ivory Coast
- Togo
- Dahomey
- Nigeria

In West Africa the main research and production stations to be contacted, or the areas of origin to prospect, are the following:

Mali - The Yanfolila region (at Dana)

Upper Volta - The stations at Mataurkou and Markove

Ivory Coast - The ranches of Abokou Amekko and Sipilou, the zootechnic station of Bouake-Minankro and the Odienner region.

Senegal - Trypanotolerant cattle are raised in the south of the country, in Sine Saloum and in the Keodugou region.

The "Djakore" breed (13/16 N'Dama and 3/16 Gobra) is being developed at the Bambey Research Station.

Ghana - Information on N'Dama, W.A. Shorthorn and Sanga herds is available at various centres: Ars Nunga; Ars Kpong; Farm University of Kumasi; Expt. Farm. Pong. Tamaie and the Demow and Tadzewv stations.

Guinea - The areas of origin of the N'Dama lie in Mamou and Labe.

Togo - Avetonou station

Dahomey - the Okpara and Krinnou stations

Nigeria - Various ranches (Upper Ogun)

H

SECTION SEVEN

1) Title : Documentation : Information Retrieval and Dissemination

2) Problem : Documentation activities are important insofar as information precedes research and supports it at every stage. Information concerning livestock production in Africa is scattered through many sources, published and unpublished, and in French and English. ILCA has a special responsibility to retrieve and collate all relevant material and, where required, make it available in French and English.

3) Objectives

a) to collect, collate, analyse and disseminate all relevant information on animal production and development in Africa.

b) to provide information for livestock scientists and planning authorities in Africa.

c) to publish bibliographies and reviews on particularly important topics.

d) to collect statistics relating to animal production in Africa.

e) to cooperate closely with national and international organisations also operating in this field of documentation.

4. Methodology : For procedures related to acquisition, registration, cataloguing and indexing see Annex 1. The flow of documentary units (books, periodicals, microfiches, etc.) within the ILCA system is represented by the chart in Annex 2.

.../...

The dissemination of information involves photocopyign, microfiches, bibliographical bulletins, indexes and contents lists, according to the nature of the information being handled.

Annex 1 : Operations Presently Observed Throughout the Documentary Chain

A. Acquisitions

The main activity has so far been to collect documents- monographs, periodicals, offprints, reports, and research material: directories, dictionaries, indexes, bibliographies and acquisition lists of other libraries.

Close collaboration has been established with leading booksellers, suppliers and other libraries, universities, research centres and bureaux throughout the world. The main difficulty has been the logistical problem of shipment, postage, etc.

When on field missions all ILCA staff take appropriate opportunities to retrieve and collect material which may be relevant to ILCA's activities.

Exchange arrangements are being made with a number of national and international institutions.

The microfiche unit has so far filmed 2403 documents from Senegal, Kenya, Ethiopia and Mali. The International Development Research Centre (I.D.R.C.) of Canada has offered to assist ILCA by providing additional help for microfilming in the field.

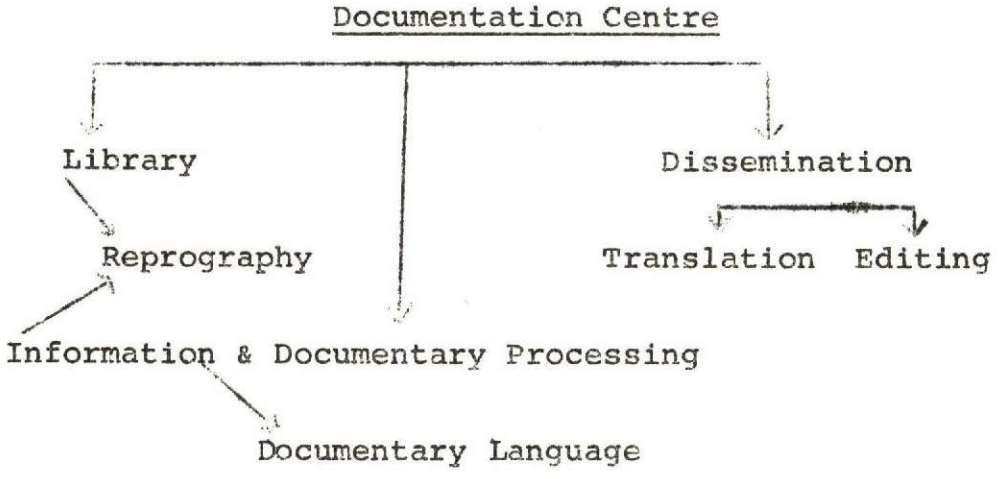
Inevitably there is a lag between collection, cataloguing and indexing. Steps recently taken to recruit more staff should alleviate this problem.

B. Documentation Techniques

Upon receipt, all documents, including periodicals, are registered, catalogued, and filed. Lists of new acquisitions are periodically circulated to the staff.

Books are borrowed on short- and long-term loan. The library staff attempts to locate documents not immediately available in the ILCA collection.

Annex 2 : Flow Chart



Documentation has three sections : Library; Information and Documentary Processing Section; and Dissemination. In addition there are four units : Translation ; Editing ; Documentary Language (a committee); and Reprography.

The Library is responsible for the acquisition, cataloguing, and storage of books, periodicals and other reference materials, and for assisting the ILCA staff in obtaining needed publications.

The Information and Documentary Processing Section deals with so-called non-conventional literature and works exclusively in microfiche. The functions of this section are : the processing of documentary units ; storage; and classification.

Dissemination has the task of selectively distributing ILCA's documentary units both internally and externally, in response to the needs of the international scientific community.

The Documentary Language Unit's function is to compile a "thesaurus" of terms to be used in interdisciplinary indexing, within the framework of the AGRIS Tropical Animal Production network. This thesaurus will appear in four languages, i.e. English, French, German and Spanish.

.../...

The Translation Unit serves ILCA's bilingual needs by providing both French and English versions of working papers, publications, etc.

The Editorial Unit is responsible for the technical quality of ILCA's publications, i.e. style and presentation.

The Reprography Unit films, files and duplicates all documents of interest to ILCA, and maintains an archive for reference and exchange purposes.

Annex 3 : Personnel

Section or Unit	Senior Staff	Supporting Staff
Administration	1	3
Library	3 (2)	7 (4)
Information and Documentary Processing	5 (3)	4 (4)
Dissemination	1	1 (1)
Translation	2 (1)	1
Editing	2 (1)	2 (2)
Reprography	3 (3)	4 (3)
Total	17 (10)	22 (14)

Note : The numbers in brackets indicate those positions which have yet to be filled. Since the Documentary Language Unit is actually a committee composed of members of the Documentation Centre, there are no personnel requirements.

IJ

SECTION EIGHT

1) Title: Seminars, Conferences and Training

2) The Problem: A serious limit to African research and development efforts is set by the availability of trained staff. This situation will continue for many years, even in the face of the ever-increasing numbers of well-trained African scientists[1/]. African research and planning staff wish to improve further their scientific and technological expertise, and it is particularly important to broaden the disciplinary bases and practical orientation of Africans engaged in livestock development and research. For example, the present preponderance of personnel in the animal health field needs to be balanced by scientists trained in the production disciplines of animal and range science, livestock economics and marketing, and production sociology. All programs need to be closely coordinated with and complementary to ILCA's research mandate in systems of livestock production.

3) Objectives: To fulfill its mission, the ILCA Seminar, Conference, and Training Program will cater for the needs of three levels of clientele:

a) the highest level of governmental officials responsible for planning programs and development strategies, by means of colloquia and workshops of short duration;

b) the senior and administrative level scientists, by means of workshops, conferences, and training sessions; and

c) the junior and intermediate level scientists, by means of on-the-job training.

4) Methodology: (a) Planning Strategy Seminars for Government Officials

This seminar program will serve the needs of government officials, e.g. ministers and permanent secretaries charged with national livestock policies and animal industry development. In this way, ILCA plans to stimulate increased awareness of the possibilities for efficient livestock productivity. Short

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1/The term "scientist" is used throughout this paper in a broad sense to include professionals of all types concerned with livestock development (e.g., socio-economists, planners)

duration seminars will provide excellent opportunities for communication at the international level and the sharing of experiences in livestock development. Seminars will be repeated in different areas of Africa, in order to bring together groups compatible in terms of circumstances, problems, and national development. There will be a close relationship between these seminars and ILCA's research programs, particularly the monitoring network (see Section 5).

It is envisaged that the series will include such topics as:

Land reform practices and policies
Water resource development strategies
Sedentarization of pastoral nomads
Marketing of livestock and livestock products

Specialists will be retained on a consultancy basis to "key-note" each workshop.

(b) Technical Workshops and Conferences

To meet the specific needs of senior level scientists, intensive workshops are planned to cover key subjects of vital interest. Guidelines governing such short courses, conferences and workshops are as follows:

1. Orientation: the courses will cater for intermediate and senior level scientists and for administrative level personnel such as directors of research stations, directors of veterinary services, and others charged with the direction of programs in their respective countries.

2. Duration: courses will vary from a few days possibly to several weeks.

3. Location: courses will be held mainly in Addis Ababa, but conferences will also be conducted in other parts of Africa, or even on other continents, if convenient or appropriate.

4. Subject Matter: courses will be mainly scientific in nature, dealing with topics such as experimental design, aerial monitoring techniques, and evaluation procedures for development projects. Emphasis will be given to the special

topics in which ILCA has a particular concern, and will therefore stress applied problems of a multidisciplinary nature.

5. Course Leaders: speakers and discussion leaders will frequently be drawn from the ILCA Staff, Board, or Program Committee. Consultants will also be engaged to plan, develop, and execute particular programs, thus bringing to each program the best expertise which can be obtained.

6. Funding: will generally be provided by ILCA, especially in the initial years. Participants will receive travel expenses and per diem allowances. It is envisaged that special courses may be underwritten in whole or part by other agencies, some of whom have already expressed interest in such ventures.

As an example, a conference is being held in Addis Ababa for five days, beginning January 31, 1977, entitled "Techniques and Methodology of Collection of Research Information on Animal Production Systems". Ten countries are sending senior scientists and research directors. Primary objectives of the conference are to discuss efficient means of data collection, analysis, and interpretation, which will in turn allow increased standardization between countries so that a broader applicability of research results will ensue. Participants will present most of the papers in workshop arrangement, but ILCA staff members will also lead discussions, and several members of the ILCA Program Committee will present papers or participate in panel discussions.

Several other conferences are in various stages of planning:

1. In cooperation with the Economics Development Institute (EDI) of the World Bank, a course entitled "Techniques of Preparation, Implementation, and Appraisal of Livestock Development Projects" will be given in October - November 1977. This will be a contribution to increasing the efficiency of the investments being made in livestock projects

in Africa, and may be offered on a continuing basis.

2. To familiarize ILCA staff and selected African scientists with the systems approach to animal production, negotiations are under way with USAID, Texas A & M University, and the Government of Mali for a workshop on "Systems Modelling". This will be held in Mali during 1977, and will involve the ILCA program based at Niono.

3. Consideration is now being given to special courses on i) "The Aerial Monitoring of Livestock Numbers, Land Use Patterns and Potential" and ii) "A Refresher Course on Statistics and Experimental Design".

(c) Program for Junior and Intermediate Level Scientists

The program will be flexible and will cater for the training needs of promising young African scientists. The emphasis will be given to on-the-job training to improve the competence of scientists who already have an advanced degree, through working in intimate contact with senior research scientists; where possible and appropriate to the individual's needs this on-the-job experience will be provided by ILCA staff working in ILCA's field programs. Briefly, the guidelines for the program are as follows:

1. Recruitment: primarily African students will be recruited, with a small percentage of non-Africans, e.g., Asians or South Americans, to broaden the international scope. Nominations will be sought from research institutions, university departments, government institutions, ministries, etc.

2. Level: postgraduate, with as much research or planning experience as possible. Preference will be given to scientists who have already completed an M.S. or Ph.D.

3. Terms: adequate stipends will be determined according to individual circumstances, and will include travel costs. Perquisites such as insurance programs will also be provided.

4. Program of work: preferably should lie within the general framework of ILCA's research program, particularly the field programs. Principal concern is to match the

training and research experience to the trainee's competence and field of future interest.

5. Duration: 1-3 years. Shorter courses for specific purposes (e.g., national staff working in cooperative programs) will also be provided.

6. Location: preferably within one of ILCA's locations, but may be funded to work at other stations in Africa, and if necessary, on other continents. However, all activities should be related to the urgent practical needs of livestock development in Africa.

The Seminars, Conferences, and Training program will establish liaison with all appropriate universities and research institutes, especially on the African continent, but also on the European, Australian and American as well. ILCA already has an impressive array of contacts, with working relationships in various stages of development with many institutions on several continents. Cooperative ventures are already available: the Governments of Belgium, Holland, and Germany have requested our participation in their program of "Associate Experts", and negotiations are under way with several candidates. The Government of the United States has recently amended its funding provisions for international programs: ILCA has been contacted by several "Land Grant Universities" that favor expanding their international involvement through cooperation with the International Centers; the Training program would appear to offer great opportunity for cooperative endeavor, whereby trainees could take formal courses of study in the U.S. while completing the research aspects of their training with ILCA.

5) Resources: A reasonable estimate of the manpower needs is:

Director	12-man-months
Assistant to Director	12-man-months
Training Officer-Anglophone	12-man-months
Training Officer-Francophone	12-man-months
Consultants	24-man-months

K

SECTION NINE

1) Title: Specialist Studies

2) The Problem: In addition to the studies of animal production systems described in Sections 1 to 6, there is a need for specialist reviews or studies that do not necessarily fit into any of the other sections of ILCA's programme but which may be important to all or some of them. Such studies may be specialised or multidisciplinary; they may be desk studies (e.g., literature reviews), or they may require travel and the use of consultants. Others may involve the analysis of data in cooperation with national institutions and may require field study or laboratory analyses for short periods of time.

Several such studies have already been initiated within ILCA, for example:

Guidelines for the economic evaluation of livestock development projects;

Study of the performance of indigenous cattle breeds and crosses in Africa;

A comparison of Maure and Peul cattle breeds and their crosses;

Livestock sector reviews;

The numerical status of livestock production in Africa;

The collection of routine animal production statistics.

3) Objective: To carry out specialist studies required by or related to ILCA's programme on animal production systems.

4) Location: Most desk studies and reviews of literature will be carried out at ILCA headquarters. However, some specialist studies will need to be undertaken at other locations in cooperation with national or international institutions.

5) Methodology: The methodology of each study will be determined according to its particular circumstances.

6) Resources: These studies will generally be supervised by ILCA staff, but they may involve the services of consultant(s).

It is suggested that this programme might appropriately be limited to some 5% of ILCA's total manpower budget.

7) Expected Reports; Completed studies will normally be published.

8) Expected Benefits: Critical reviews of existing knowledge and other specialist studies are essential, to avoid duplication of research effort, to highlight gaps in knowledge, and to produce discrete items of information of particular importance. ILCA will draw upon diverse sources of information and produce specialist publications of value to scientific and development agencies.

L

ALLOCATION OF RESOURCES

This paper will be distributed upon your arrival in Addis Ababa.

ILCA BOARD OF TRUSTEES

Report of the Program Committee Meeting
held in Addis Ababa, January 24-28, 1977

and

Base Papers prepared by the ILCA Staff
for submission to the
ILCA Program Committee
January 1977

FOREWORD

The attached constitute an internal ILCA document released for restricted circulation. The papers comprise the report of the ILCA Program Committee (January 1977), which is to be submitted to the ILCA Board of Trustees in March 1977, and the background materials prepared by the ILCA Staff as a basis for the Program Committee discussions.

The Executive Committee of the Board has given permission for these documents to be circulated for information to the secretariats of the CGIAR and TAC, to the official observers who attended the open sessions of the Program Committee meeting, and to all members of the ILCA Staff. It is believed that this limited circulation will facilitate discussions on ILCA's scientific program, which a visiting TAC Sub-Committee is scheduled to have with the ILCA Board and Staff in mid-March 1977. However, it should be understood that until the Board has discussed and accepted the Report of the Program Committee at its March meeting, the attached recommendations and documents do not represent formal ILCA policy, and they should be regarded as confidential papers for restricted information only.

CONTENTS

PART A : Report of the Program Committee Meeting held in Addis Ababa, January 24-28, 1977.

1. Welcome
2. Introduction
3. Animal Production Systems in High Potential Highland Regions
4. Animal Production Systems in the Arid and Semi-Arid Zones
5. Small Animal Production Systems in the Humid Tropics
6. Animal Production Systems in the Semi-Humid Tropics
7. Monitoring Animal Production Systems in Development Schemes
8. The Use and Potential of Trypanotolerant Livestock
9. Documentation : Information Retrieval, Collection, and Dissemination
10. Seminars, Conferences, and Training
11. Allocation of ILCA's Resources
12. General Considerations
13. Attachments I and II : Agenda and Attendance

PART B : Base Papers prepared by the ILCA Staff for submission to the ILCA Program Committee.

Preface

Introduction

1. Animal Production Systems in High Potential Highland Regions
2. Animal Production Systems in Arid and Semi-Arid Zones
3. Small Animal Production Systems in the Humid Tropics
4. Animal Production Systems in the Semi-Humid Tropics
5. Monitoring Animal Production Systems in Development Schemes
6. The Use and Potential of Trypanotolerant Livestock
7. Documentation : Information Retrieval, Collection, and Dissemination
8. Seminars, Conferences, and Training
9. Specialist Studies
10. Allocation of ILCA's Resources

PART A

REPORT OF THE

PROGRAM COMMITTEE MEETING

Held in ADDIS ABABA

JANUARY 24-28, 1977

Agenda : see Attachment I

Attendance : see Attachment II

Proceedings

1. Welcome

In welcoming all participants, Dr. R.E. Hodgson, Chairman of the Board of Trustees, suggested that the forthcoming visit to ILCA of the TAC Sub-Committee led by Sir John Crawford lent a special importance to the present meeting of the Program Committee. He mentioned for discussion some of the questions concerning ILCA's program that were raised in October 1976 at the TAC meeting in Hyderabad. Dr. Hodgson also briefly reported the circumstances that had led to the resignation in December 1976 of Dr. J.R. Pagot, and paid tribute to the contributions made by Dr. Pagot during his three-year period as the first Director of ILCA.

2. Introduction

The Chairman of the Program Committee, Professor D.E. Tribe, introduced the Agenda and reminded participants of the essential characteristics of ILCA's activities :

- that they should be oriented toward the practical problems of increasing livestock production and improving the quality of life of livestock owners ;
- that wherever possible, ILCA should work in cooperation with national institutions ; and
- that ILCA's research and training programs should emphasise the multidisciplinary systems approach and should not duplicate unnecessarily the work being carried out by other national and international institutions and agencies.

The purpose of the present meeting was to review the proposals for the future development of ILCA's program that had been prepared by the staff. These proposals had been formulated against the background of the last Program Committee report (March 1976), which had called for a "balanced" program, including studies :

- in zones that are both wet and dry, of high potential and low ;
- on both milk and meat production ;
- that involve various species, particularly cattle, goats, and sheep ;
- that are designed both to conserve natural resources and improve production ; and
- that have social, economic and technical aims.

The Program Committee had previously urged the staff to concentrate its activities, to avoid spreading its resources too thinly, to clarify its aims, and to define its priorities. These points formed the background to the present discussions.

To assist the Program Committee in formulating its report and recommendations to the Board of Trustees, the first three days were devoted to an open discussion of all aspects of the total program, in which the ILCA scientific staff, invited overseas observers, and representatives of sister institutions in Ethiopia were invited to participate.

Having listened to the open discussions, the Program Committee prepared the following comments and recommendations, which should be studied in relation to the base papers prepared by the staff.

3. Animal Production Systems in the High Potential Highland Regions

The Program Committee warmly welcomed this proposal to work in a high potential highland zone and commended the emphasis on dairying, fodder and pasture production, and the integration of cropping and livestock.

Further, the Committee believed that these proposals, with their shorter-term objectives and potential for improved production,

complement the essentially longer-term objectives of the work proposed for the dry areas of low potential.

Finally, the Committee attached particular importance to this proposal, since it is clearly important for ILCA to have some visible impact upon animal production in Ethiopia in as short a time as possible,

However, the proposal presently rests upon relationships between ILCA and cooperating peasant farmer associations, and the uncertainties necessarily involved in this relationship, including ILCA's lack of control over so many variables, caused the Committee a great deal of concern.

In order to maximise the chances of success in an activity that is extremely difficult but potentially so important, the Committee made the following recommendations :

a) A strong emphasis should be placed on the biological research component concerned with pasture, fodder crop, and nutritional research. This work could be carried out at several sites, including Debre Zeit and Shola, and should be done to complement and widen the investigations in progress at sister institutions, particularly the Ethiopian Institute of Agricultural Research, with which ILCA should maintain close cooperation. Non-conventional techniques of fodder production (e.g. with fodder bushes and trees) for use on non-arable grasslands, including valley bottoms and hillsides, also deserve attention.

b) Several trial-farms representing major alterations in land use should be under the absolute control of ILCA reseach staff, on land assigned to ILCA, and managed by persons employed by ILCA on a full-time basis. These trial-farms should certainly be developed at Debre Zeit and, if possible, at the other proposed experimental sites as well.

c) The use of cooperating farmers and peasant associations in the proposed "farm units" is unlikely to give the detailed and precise information that will result from ILCA's own trial-farms, but nevertheless, this part of the study will help to

show the extent to which innovations may improve productivity and profitability under conditions of peasant farm management. It will be extremely important to ensure that the cooperating farmers are adequately supervised, and as high a degree of control by ILCA as is possible will need to be developed. Much care should go into the choice of the innovations that are proposed to the farmers. Inputs by farm management and extension specialists will be needed for the further elaboration and implementation of the proposals as submitted to the Committee.

d) Finally, the proposed research should be expanded to include a study of highland dairy farms in the Addis Ababa Dairy Development Project. This part of the research should seek to determine the extent to which innovations are already being adopted, should evaluate the economic and technical effects of these innovations in cooperation with the Project management, and should try to identify further improvements for introduction on participating dairy farms.

The Committee believes that integrated activities involving these four approaches should be undertaken as a high priority, and that the necessary resources should be made available in order to ensure, as far as is possible, that they are successful. In the latter connection it will be necessary to assess the extent to which findings obtained at Debre Zeit and other experimental sites are relevant to other highland areas of Africa.

4. Animal Production Systems in the Arid and Semi-Arid Zones

This section of the overall research program of ILCA was developed earlier than the others, and the Program Committee was encouraged to learn of the progress that has been made with investigations based in Mali (centred at Niono), Ethiopia (centred at Jijjiga), and Kenya.

The Committee reaffirmed its view that ILCA should continue to work in these zones, and that the broad purpose of these investigations should be to maintain better and use more rationally the limited natural resources of the dry areas. However, it again recognised that research in these zones would inevitably be difficult and slow, and that it would be unlikely to yield a large increase in livestock production. Similarly, although it is important to study systems of rangeland and animal management that might help to alleviate the effects of future droughts, the possible opportunities for markedly moderating the consequences of severe drought are limited. The dilemma of the pastoralists will persist while human and animal populations continue to expand.

The Committee believed that there is limited scope for improving the productivity of the dry rangelands, except in particular localities with, for example, unusually favourable rainfall and better soils. However, the use of the rangelands in stratified systems of production in association with, for example, river basins or irrigation areas of high potential, deserves further study.

The Committee supported strongly those activities designed to improve the efficiency of the use of the water and vegetation resources that are available both in the dry areas and in associated areas of higher potential. The emphasis of this part of ILCA's work should be on studies of the socio-institutional problems that are basic to the control of animal numbers and grazing management systems, although not neglecting opportunities for biological research to improve the production of areas of higher potential.

When working in the arid zones it will be necessary to give more precision to objectives and to targets derived from these objectives. In particular it is recommended that :

a) Attention should be concentrated initially on ongoing development schemes and on information to be gained from the monitoring of these schemes (cf. paragraph 7 : Monitoring).

b) Emphasis should be given to studies, particularly those of a socio-ecological nature, designed to identify the causes of rangeland deterioration and the controls that pastoral societies can implement for improved management.

c) Investigations that are peripheral to these objectives or that can be undertaken by others, e.g. taxonomic research, fundamental studies of the primary production of ecosystems and grazing trials should be avoided.

d) Mapping and surveying in the arid zones, as in all others, should serve only the specific purposes of the applied multidisciplinary research that is ILCA's main purpose.

e) Proposed research in the Sidamo region of Ethiopia should be developed slowly and in the immediate future should be limited to socio-institutional studies, while work in the Ethiopian northeastern rangelands should be delayed for the next year.

f) Proposals for Kenya (other than monitoring) require more careful definition before implementation.

g) At this time there should be no expansion of research in the arid and semi-arid zones beyond the localities envisaged in the base papers now being discussed.

5. Small Animal Production Systems in the Humid Tropics

The Program Committee welcomed this research and supported its general purpose and outline. In view of the changes now taking place in West Africa, particularly in Nigeria, the Committee believed that the research is appropriate because the humid zone is presently characterized by high densities of human populations, low animal populations and a high potential for forage production and use, increasing demands for meat, and a move toward the

commercial development of meat production and marketing. The objective of producing a package of innovations that allows an efficient management system for commercial goat and sheep production is well chosen.

The Committee welcomed the opportunity presented by this research for cooperation with both IITA and the University of Ibadan.

However, the Committee recommends that the following points should be further considered :

a) Disease problems are likely to be vitally important, and further resources need to be devoted to this aspect in collaboration with veterinary research institutions ;

b) The use of exotic breeds should not be encouraged until present disease risks have been reduced ;

c) The importance of the biological research phase needs emphasis and, if possible, acceleration. In particular, nutritional investigations need to be carried out, and consideration should be given to exchanging the Economist in Phase I - II with the Animal Husbandry/Nutrition Specialist.

d) As this activity develops it is likely that some consideration will have to be given to other small animals and to milk production in goats and sheep. However, during the first two years the research effort should be concentrated on meat production from goats and sheep.

6. Animal Production Systems in the Semi-Humid Tropics

This part of the total program was seen by the Program Committee to be difficult and complex but of such importance that it is anticipated that in the future it may become one of ILCA's main preoccupations. In supporting the proposals the Committee commended the phasing envisaged and saw the initial preparation

of a state of knowledge report in Phase I as extremely important for the definition of priorities before the experimental investigations in Phase II are precisely formulated.

It was recognised that this research is essentially of a long-term nature, and that the significance of the results obtained will be of importance in many semi-humid areas of Africa, including Ethiopia.

The work has three main components : implications of the control of trypanosomiasis and other diseases; pasture and fodder improvement; and problems of sedenterisation. While all three are clearly important, the first two have the widest significance for the semi-humid zones of Africa. The Committee particularly recommended that ILCA should seize the opportunity to develop adequate biological research on pasture and fodder crop production, and the integration of cropping and livestock systems. In the development of this work it is urged that there should be the fullest discussion and cooperation with sister institutions such as IITA and ICRISAT.

The development of new and improved land use systems is clearly of vital importance in the long term, in view of expanding and immigrant human populations and the need for expanding rural employment. However, the enormous difficulties inherent in this development must be acknowledged at the outset. In particular, the biological problems of tsetse and trypanosomiasis control, while not directly related to ILCA's work, will nevertheless have an important bearing on the studies to be undertaken. It is therefore essential that ILCA maintain close contact with those institutions and agencies (FAO, IEMVT, ILRAD, etc.) that are working in this field.

7. Monitoring Animal Production Systems in Development Schemes

The Program Committee confirmed that the monitoring of ongoing development schemes is an appropriate and important activity for ILCA, and calls for its own methodology and an identifiable allocation of resources. The Committee therefore welcomed the appearance of monitoring as a separate subject head.

In the present context, monitoring is systematic data collection and analysis, planned and executed on an interdisciplinary basis. Monitoring usually starts with a baseline survey and extends over several years, following changes in key production parameters, including where relevant ecological, economic and social factors. Monitoring in development schemes usually seeks to differentiate change due to inherent dynamism and change due to development inputs. The monitoring process is thus essential to the testing of the hypotheses which underlie a development project and constitutes a powerful tool for defining relevant research problems in the context of development schemes.

The Committee believed that the interdisciplinary study of a representative selection of the most important of these schemes gives ILCA the opportunity to elaborate early practical advice to governments and lending agencies on effective development procedures, as well as providing unique insights into the operation of animal production systems and their sensitivity to change. Indeed, the Committee believed that several of the specific studies proposed under heads 3 - 6 could profitably be undertaken within the framework of the monitoring program, on the premise that experimental results relating directly to the circumstances of development schemes are the most likely to find early application.

The Committee acknowledged that since the majority of ongoing development schemes are directed at range livestock improvement, the monitoring program will represent a substantial allocation of ILCA resources to the arid and semi-arid areas : an allocation of resources that is accentuated initially by the need to undertake

baseline studies while the selected development schemes are still in their formative stages. However measures should be taken to transfer responsibility to national authorities so that this heavy commitment of resources need not extend beyond the short term.

While supporting the work, the Committee cautioned that the monitoring of change in development schemes is complex and difficult and requires careful preparation and a selective approach.

Therefore, it is recommended that :

a) Monitoring activities should be defined and initiated at the earliest opportunity in those development schemes that are regarded as representative of wider situations or opportunities, and which include activities designed to yield both short- and long-term information on those components that are the most relevant to future development.

b) In developing these plans in association with national authorities, opportunity should be sought to mobilise local staff for the execution of the work.

c) In executing these plans, emphasis should be given to identifying and using key parameters and methods that most cost-effectively describe or quantify the basic components of systems and of change.

d) All monitoring activities, and supporting training programs, should be organized in such a way as to permit progressive transfer of responsibility to national authorities.

e) Due attention should be given to the study of external factors where these are seen to impinge on the schemes and areas being monitored.

f) During the next year these activities should be limited to development schemes in Botswana, Ethiopia, Kenya, Mali and Nigeria, provided that negotiations between ILCA and these governments are satisfactorily concluded.

8. The Use and Potential of Trypanotolerant*Livestock

The Program Committee recognised that trypanotolerant livestock represent a major possible way of using large areas of Africa that are currently not available for livestock production.

The Committee also recognised that existing trypanotolerant cattle represent a substantial livestock resource and that little is yet known about their productivity.

It is therefore recommended that :

a) The proposal to produce a state of knowledge report be accepted, and that it should be produced in the closest possible cooperation with FAO, which is also proposing to undertake a relevant survey.

b) The ILCA contribution to this report should specially refer to the productivity of trypanotolerant breeds and crosses.

c) ILCA should not be directly involved in conducting research concerned with the mechanisms of immunity or blood grouping. It should nevertheless be aware of current research in these fields and maintain close links with sister institutions such as ILRAD and IEMVT.

The Committee looks forward to receiving, in 1978, detailed proposals from the staff for the development of appropriate research activities based on the conclusions of the state of knowledge report, which is seen as a direct contribution to the work described for the humid and semi-humid zones.

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* It was noted that "trypano-compatible" had been suggested as a better term.

9. Documentation : Information Retrieval, Collection, and Dissemination.

The Committee appreciated the importance of adequate documentation as an essential basis for much of the work to which ILCA is committed and commended the staff on their efforts so far. However, the Committee was aware of the dangers of unselective accumulation of information that may not be used, or may not even be usable. In particular, the most important aspect of documentation is the capacity to respond to the real needs of ILCA staff and to relevant requests from other sources, particularly from Africa.

The Committee believed that the production and dissemination of internal publications is a separate and highly important function which needs to be under the immediate management of the Director.

The Committee therefore recommended that :

a) The acquisition program should proceed gradually and selectively, in relation to priorities that should receive careful consideration .

b) The Documentation section should be encouraged to press ahead with the development of modern methods of data storage and retrieval, but should have regard to the special needs of ILCA staff both at headquarters and in the field.

c) Thought be given to the best organizational means of dealing with ILCA publications and editorial activities which, as a matter of policy, do not fit appropriately with documentation activities.

10. Seminars, Conferences, and Training.

The Program Committee emphasised the importance of these activities at ILCA, and commended the proposals submitted by the staff. The Committee made the following recommendations :

a) Seminars with high-level decision makers could be very effective, but great caution is advisable, particularly with topics of a controversial or political nature.

b) The idea of holding seminars or courses with senior research and planning personnel was fully supported, as were seminars to be carried out in cooperation with other institutions such as FAO, IBRD, IPD, and universities.

c) Strong emphasis should be given to the training of African research and planning personnel. ILCA should accept as many African post-graduates as possible for on-the-job-training within its research work, particularly field activities. It seems useful to organize this in such a way that the post-graduate student can use the results of his work with ILCA for a Master's or Ph.D. thesis. This must, of course, be done in cooperation with a university in Africa or elsewhere and should give appropriate emphasis to the multidisciplinary and systems approaches that characterise ILCA's activities. In a number of cases it might be useful to combine African and overseas post-graduate students in joint tasks that are part of ILCA's program.

d) ILCA should recognize the importance of well-trained lower- and middle-level staff involved in livestock production and extension : by developing programs to assist national training institutions; by providing courses for the staff of such institutions; and, where possible, by cooperating in courses offered by these institutions.

11. The Allocation of ILCA'S Resources.

The Program Committee fully appreciated the inevitable limitations of the paper presented, but warmly welcomed it as a most helpful general statement. The Committee hoped that at future

meetings it will be presented with up-dated information of this type and expected that as the program becomes stabilised, the accuracy of the budgetary analysis will improve.

It is clear that a very high proportion of ILCA's total resources is at present devoted to activities in the arid and semi-arid zones. However, it is recognised that this is due to the fact that ILCA first developed its activities in the arid areas following earlier serious droughts, and also because most development schemes of interest to ILCA are situated in these zones. As the foreshadowed activities now develop in zones of higher potential, a better-balanced allocation will result.

It was not possible or desirable for the Committee to define exactly what proportion of total research resources should be directed to any particular study, since circumstances are likely to vary from year to year as investigations progress. Also, it is not possible to switch research activities on and off at short notice. However, it expects that the reallocation of resources toward the zones of higher potential will be phased progressively during the next two years.

While by far the greater part of ILCA's activities involve multidisciplinary systems research, the Committee recognized the desirability of supporting this work with some specialist studies which, although related to ILCA's overall program, may not always be multidisciplinary. Therefore the Committee supports the general principle that a total budget equivalent to no more than five percent of ILCA's scientific manpower costs should be allocated to disciplinary teams, for specialist studies selected by team leaders and approved by the Director.

At this stage it was not possible for the Committee to predict with certainty how ILCA's activities will develop in the years ahead. However, it is likely that those parts of the overall

program concerned with the highland zones of high potential, the semi-humid zones, and the use of trypanotolerant livestock will assume increasing importance. The Committee looked forward to progress in these particular activities and served notice to the Board that, if this progress is as hoped, a much larger share of resources will need to be allocated to them in future. It is likely, for example, that ILCA will require field station facilities in one or two semi-humid zones, probably in West Africa. The exact definition of such needs will be made by the staff during the next year, and will be considered by the Program Committee in 1978.

The Committee again stressed to the staff that the financial resources available for international agricultural research are limited. While the prospects for a continued modest expansion of ILCA's resources during the next few years appear good - and such expansion is regarded by the Committee as essential - it is clear that there will not be sufficient finance to enable ILCA to undertake all the activities that are thought desirable. Therefore it is essential to define future priorities with precision and rigour. In this process the Committee urged that the new Director and his staff emphasise particularly those activities which, in the shortest possible time, are likely to :

- support better development and planning schemes ;
- improve the capacities of national institutions concerned with livestock improvement ;
- secure the more effective conservation of natural resources ; and
- produce applicable innovations.

12. General Considerations

The Program Committee congratulated the staff on the preparation of the base papers. These papers, together with their presentation and discussion, were helpful and stimulating, and the Committee was left with the clear impression that the staff are working enthusiastically and effectively within the terms of reference laid down for ILCA by the CGIAR.

In particular, the Committee was grateful to the Staff for the care it took to prepare its proposals according to the guidelines previously suggested by the Committee. The Committee commended the phasing of new activities so that no great commitment of resources is made before the situations chosen for study are adequately understood, both in terms of their interdisciplinary interactions and their relation to the wider area and production systems to which they belong. The Committee will look for evidence of this approach in all future proposals, coupled with realistic estimates of anticipated benefits.

The foregoing comments and recommendations reflect the Committee's reactions to specific activities, In conclusion, the Committee made the following broad recommendations :

a) ILCA's research activities should be regarded as components of a single, comprehensive, integrated program. In many ways and at several levels the various sections of this single program impinge on one another, and continuous interaction between staff will be required, crossing boundaries of organizational units, disciplines, and program activities. There is the need to define more precisely each group's target and within each group, each research worker's target. Research work in this context has the task of solving very special problems of crucial importance for the working of the system concerned.

b) Related to this need is the question of organization within ILCA. The Committee did not study this matter closely, nor did it wish to make specific proposals. However, for the benefit of the Board, the new Director, and the staff, it stressed the importance of developing a flexible structure within ILCA that primarily strengthens and serves field activities, at the same time maintaining the appropriate degree of disciplinary support.

c) Anticipating that the components of ILCA's program will continue to be described in terms of climatic zones, a standard

terminology for such zones should be agreed upon. It is desirable that the agreed terminology should conform with that used by IITA and ICRISAT, though it is appreciated that in the details of climatic classification, ILCA may need to stress different parameters (e.g. the length of dry seasons may be as important as the length of wet seasons).

d) Acknowledging that climatic zones alone provide an insufficient framework for specifying animal production systems, attention should be given to defining the production systems of Africa in broad terms (by reference to factors such as animal species, the basic diet of the livestock owners and the scale of their movements, as well as climatic or ecological parameters), so that individual studies and areas can be related to defined systems and distinguished from others.

13. Attachments

I - ILCA PROGRAM COMMITTEE AGENDA

Monday 24 January; OPEN SESSION

09.00 Opening and Welcome - Dr. R.E. Hodgson

09.15 Introduction - Prof. D.E. Tribe

09.45 Animal Production Systems in the High Potential Highland Regions

Chairman : Prof. K. Turk

Speakers : Dr. Shenkute
Dr. Solomon

13.00 Lunch

14.30 Animal Production Systems in the Arid and Semi-Arid Zones

Chairman : Prof. D.E. Tribe

Speakers : Dr. H. Le Houérou
Dr. G. Haaland
Dr. F. Anderson
Dr. R.S. Temple

18.00 Adjourn

Tuesday 25 January; OPEN SESSION

09.00 Small Animal Production Systems in the Humid Tropics

Chairman : Dr. W. Schaefer-Kehnert

Speaker : Dr. C. De Haan

11.00 Animal Production Systems in the Semi-Humid Tropics

Chairman : Mr. D.J. Pratt

Speakers : Dr. C. De Haan
Dr. H. Jahnke
Dr. G. Haaland

13.00 Adjourn

Attachment I continued

14.30 Monitoring Animal Production Systems

Chairman : Assoc. Prof. H.S.K. Nsubuga

Speakers : Dr. H. Jahnke

Dr. J. Trail

Mrs. C. de Montgolfier

18.00 Adjourn

Wednesday 26 January; OPEN SESSION

09.00 The Use and Potential of Trypanotolerant Livestock

Chairman : Prof. C.W.R. Spedding

Speakers : Dr. J. Trail

Dr. R. Quéval

Dr. R.S. Temple

11.00 Documentation : Information Retrieval, Collection and Dissemination

Chairman : Dr. Ngolo Traore

Speaker : Dr. M. Sall

13.00 Adjourn

14.30 Seminars, Conferences and Training

Chairman : Prof. H. Ruthenberg

Speaker : Dr. T. Sutherland

16.00 The Allocation of ILCA's Resources

Chairman : Prof. D.E. Tribe

Speaker : Mr. A.W. Thomas

18.00 Adjourn

Thursday 27 January : CLOSED SESSION

Friday 28 January : CLOSED SESSION

Attachments

II - ILCA PROGRAM COMMITTEE ATTENDANCE

ILCA Program Committee	Dr. R.E. Hodgson	ILCA Board
(All sessions)	Dr. Ngolo Traore	Mali
	Assoc. Prof. H.S.K. Nsubuga	Uganda
	Mr. D.J. Pratt	ILCA Board
	Prof. H. Ruthenberg	West Germany
	Dr. W. Schaefer-Kehnert	ILCA Board
	Prof. C.W.R. Spedding	U.K.
	Prof. D.E. Tribe	ILCA Board
	Prof. K. Turk	U.S.A.
Observers	Dr. J. Rendel	FAO, Rome
(Open sessions only)	Dr. D. Stoops	IBRD and CGIAR, Washington
	Dr. A. Provost	Ministère de la Cooperation de la France and IEMVT, Paris
	Dr. D. Gates	USAID, Washington
	Representative of the Secretary General	OAU, Addis Ababa
	Mr. J. Phillips	UNDP, Ethiopia
	Mr. C. Coombes	FAO, Ethiopia
	Mr. A. Hamersley	FAO/IAR, Addis Ababa
	Mr. A. Goudie	FAO/Reconstruction and Rehabilitation, Addis Ababa
	Dr. Girma Tadege	Ministry of Agriculture and Land Reform, Addis Ababa
	Dr. Seme Debela	National Science and Technology Council, Ethiopia
	Mr. E. de Jong	IBRD, Ethiopia
	Dr. O. Anthonio	UNECA, Ethiopia
	Mr. B. Thompson	UNECA, Ethiopia
	Dr. P. Lyman	USAID, Ethiopia
	Ato Amde Wondafrash	Livestock and Meat Board, Ethiopia
	Dr. Gebrehiwot Zere	Livestock and Meat Board, Ethiopia

Attachment II continued

Dr. Beyene Chichaibelu	Livestock and Meat Board, Ethiopia
Mr. R. Sandford	Livestock and Meat Board Ethiopia
Ato Temtim Lemma	Dairy Development Agency, Ethiopia
Dr. Zemedu Worku	Institute of Agricultural Research, Ethiopia
Dr. Haile Selassie Belay	Institute of Development Research, Ethiopia
Dr. Assefa Mehretu	Institute of Development Research, Ethiopia

All the Scientific Staff of ILCA

PART B

BASE PAPERS
PREPARED BY THE ILCA STAFF
FOR SUBMISSION TO THE
ILCA PROGRAM COMMITTEE
JANUARY 1977

ANIMAL PRODUCTION SYSTEMS IN SUB - SAHARAN AFRICA A REVIEW AND DEFINITION OF ILCA'S ACTIVITIES

Prepared by the ILCA Staff
for submission to the
ILCA Program Committee
January 1977

P R E F A C E

Three years have now passed since ILCA was founded. They have been busy and exciting years of establishment, development, and expansion. An international staff of 53 has been recruited, together with a support staff of 61. A substantial building program has been planned; the new headquarters at Shola (a district of Addis Ababa) are taking shape according to schedule, and a Field Station at Debre Zeit has been established. Research programs are operational in Ethiopia, Kenya, and Mali. The Proceedings of ILCA's first major conference have been published in both French and English and the Documentation Centre has already accumulated a collection of published and unpublished material on animal production in Africa that is unusual, if not unique, in the continent.

In founding ILCA, the Consultative Group on International Agricultural Research anticipated that the first three years would constitute the "establishment phase", at the end of which the staff would prepare "proposals for the next five years for examination by a Special Review Committee appointed by the Consultative Group." In accord with this intention the ILCA Board has asked its Program Committee to review and define all ILCA programs, and to submit a formal report and set of recommendations for the consideration of the Board and a Sub-Committee of the Technical Advisory Committee in mid-March, 1977. To assist the Program Committee in this task, the ILCA staff has carried out its own in-house review of existing and proposed activities, the results of which are included in the present document.

It is to be emphasised that this "Review and Definition of ILCA's Activities" is not intended as a report of progress, but as a statement of suggested future activities that seem to the staff to be both urgently needed and appropriate for ILCA to undertake. These suggestions take the form of discussion papers to be considered by the Program Committee at its meeting in Addis Ababa between 24th and 28th January, 1977. The papers have resulted from a series of meetings, missions, and conferences that have involved many colleagues from African institutions and international agencies as well as the ILCA staff.

The broad budgetary implications of these proposals have been considered and are outlined in the final part of this submission. However, the detailed financial analysis of resources needed for the future must await the scientific judgements and specific program recommendations of, first, the Program Committee, and then the Board.

INTRODUCTION

The official mandate of ILCA is "to assist national efforts which aim to effect a change in the production marketing systems in tropical Africa south of the Sahara so as to increase the total yield and output of livestock products and improve the quality of life of the people in this region." 1/

Therefore the staff of ILCA seeks to relate their various activities (applied research, documentation, conferences and training) to the problems and progress of livestock development, the conservation and rational use of the natural resources upon which livestock production depends, and the socio-economic progress of livestock owners. At the same time, if ILCA is to make important contributions in these areas, it is essential that its activities should be carried out in the closest possible collaboration with national institutions, for the application of knowledge must ultimately depend upon policies and decisions taken at the national level. Like all international agricultural centres, ILCA has a role that is inevitably advisory, but it cannot be executive and decision-making.

From the outset, ILCA's terms of reference have also emphasised the importance of "increasing the efficiency of the major animal production systems of tropical Africa" 2/ by activities which "promote the development and demonstration of improved livestock production systems optimizing the use of human and natural resources in Africa.3/

This use of the "systems approach" necessarily involves specialists from many disciplines - biologists, social anthropologists and economists - and this emphasis and involvement combine to give the activities of ILCA their characteristic flavour and importance. In particular, this combination ensures that there is a basic unity of purpose and methodology

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1/, 2/ and 3/ Extracts from the ILCA Memorandum of Agreement.

running through all of ILCA's activities and for this reason it is appropriate to think of a single ILCA program, albeit with several different sections each with its special characteristics.

Therefore, the following papers are presented as semi-autonomous sections of the whole. These sections have been purposely selected to cover representative, although contrasting, examples of the "major animal production systems of Tropical Africa".

For example, the emphasis of the studies of humid, semi-humid and highland zones is relatively much more concerned with improved productivity through biotechincal innovations and better crop, pasture and animal management.

By contrast, the emphasis of activities in the arid and semi-arid zones, although not exclusive, is concerned with the means of conserving natural resources in the long term, and not only with the means of increasing livestock production per se. Although some detailed improvements in the biotechnical management of the rangelands and of grazing animals may be possible, the overwhelming problem of human and animal population increase, with its associated over-grazing and resource degradation, can only be resolved by social change.

The implementation of desirable innovations in stock and range management, such as the rational use of water, fodder conservation for dry seasons, and the limitation of stocking densities, essentially depends upon the development of new levels of individual and community discipline and control governed by traditional, though amended, social structures and hierarchies.

The sections of the program numbered 1 to 6 cover a complementary group of animal production systems, including those undergoing change within government-supported development schemes. Also included is a section (no. 6) on the use and potential of trypanotolerant livestock that complements the immunological research of ILRAD.

It deserves to be stressed that many parts of the overall program are already operational. For example, in Section 2, results from the Mali and Ethiopian locations are already being analysed, and field staff have been active for more than a year. Similarly, parts of the proposed monitoring network (Section 5) are operational, and good progress has been made with the preliminary phase of Section 6. At the end of January 1977, TLCA is organising its second major conference with international participation, and the Documentation Centre has been active almost from the beginning. Throughout the following pages are many references to work already accomplished.

These proposals for continuing and future activities are based upon the results and collective experience of the staff during the last two years. In the view of the staff, they represent a balanced and stimulating program which is likely to benefit greatly livestock production and development in sub-Saharan Africa.

SECTION ONE

1) Title: Animal Production Systems in the High Potential Highland Regions.

2) The Problem: With their high rainfall and relatively fertile soils, the highlands of Ethiopia offer a resource base that is well-suited for livestock production. Of the nation's estimated 29 million livestock units, 75 % exist in the highlands. However, this livestock resource contributes far less to the national economy than the existing potential (see Annex 2). Large tracts of land are overgrazed and, at the same time, under-utilized. With an ever-increasing demand for food grains by humans, livestock production in the crop farming areas of the highlands is being pushed more and more into marginal and unproductive lands. However, because of the necessity for maintaining animals for draft power their number is continually increasing, which in turn puts more pressure on animal feed supplies in the highlands. This deteriorating situation could be reversed by developing a system in which the animal becomes an integral part of the crop farming system, thus effecting increases in both crop and livestock production.

Efforts are being made, through research, extension programs, and development agencies, to increase livestock production in these highland regions. However, these efforts have adopted a sectoral approach, and the results have been disappointing. For example, the crossbred dairy animal was advocated without due regard to the management level (nutrition and disease control) required for efficient production. Even in cases where the nutrition of animals has been emphasized by encouraging fodder production, problems of competition for land and draft power between food crops and fodder production have generally been ignored. Furthermore the concept, socio-economic acceptability, and technical feasibility of a balanced "mixed farming system" in which the animal (whether a dairy cow, a beef steer, or a sheep) becomes an integral part of the farming system, have not been tested, either by individuals or institutions, in the Ethiopian highland environment.

The component techniques and research results advocated by local institutions are in themselves sound and applicable to the highland environment, but these component parts have not been brought together into a system that is technically feasible and economically viable.

3) Objective: To bring together available technologies in a range of farming systems that will increase animal productivity and profitability in the highlands.

The aim is to formulate farming operations and establish "farm units"[1] in representative sample areas in the highlands to test and demonstrate farming systems which will bring together the farmer, the animals, the environment, and the improved technologies for increased and more efficient production.

The hypothesis to be tested is that livestock production in the highlands need not be seen only as an adjunct to the production system, but can compete directly with crop farming to return comparable and possibly greater income to the farmer, provided that: a) feed resources are improved; b) the animal's ability to utilize feed resources is improved; c) the draft power of animals is improved through better breeding, nutrition and management; and d) more efficient animal-drawn implements are introduced for land preparation and cultivation.

4) Location: The primary site will be in the Ethiopian highlands, but a limited amount of work will also be carried out in Kenya, and other highland regions in Africa after adequate experiences have been acquired from the Ethiopian programme.

5) Description of the Area: The highland high potential region can be described as that part of the country that lies within the range of 1800 to 2500 metres elevation, on the average, with sections

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[1] "A farm unit" is defined as a farm operated by an individual farmer or a group of farmers, depending upon the prevailing practices of the peasant associations in the selected sites. The organisation and supervision of these "farm units" will be the responsibility of ILCA, while their operation will be the responsibility of the farmer or farmers.

at altitudes as high as 4,000 metres. The region is extremely diverse in its geology and soil formation, broken and interrupted by valleys and rivers and surrounded by escarpments, with plateaux and tablelands in the central part. (For detailed descriptions, see Annex 1.)

6) State of Knowledge: see Annex 2.

7) Methodology and Time Schedule: Details are given in Annex 3

8) Resources: The staff requirements will be as follows:
- a programme coordinator (animal scientist) for all sample sites (1977 to 1982)
- a farm management specialist (1978 to 1982)
- an agricultural engineer (small implements specialist)(1978 - 1980)
- an agronomist to coordinate pasture and crop policies (1977 to 1980)
- a site supervisor for each of four sites
- four technical assistants for each of four sites
- custodians to maintain facilities at each site.

It will be necessary to set up some rudimentary infrastructure at each site: a small office with store; an implement shed etc.. to accommodate necessary staff and supplies.

9) Expected Reports and Publications:
1. Analysis of Existing Farming Systems in the Debre Zeit Area of the Ethiopian Highlands (1977)
2. Analysis of Existing Farming Systems in the Debre Berhan Area of the Ethiopian Highlands (1978)
3. Analysis of Existing Farming Systems in the Sululta Area of the Ethiopian Highlands (1979)
4. Analysis of Existing Farming Systems in the Holleta Area of the Ethiopian Highlands (1980)
5. A Comparative Analysis of Existing Farming Systems in Four Selected Sites of the Ethiopian Highlands (1980)
6. The Market for Dairy Products in Major Consumption Centres of the Ethiopian Highlands.
7. Results of Efforts to Integrate Improved Livestock Production Systems in the High Potential Highland Regions of Ethiopia (1985)

8. Numerous research results can be extracted for publication from the various component parts of the farming systems study, e.g.
- Adaptation of various pasture and fodder crop species into the crop rotation system in the Ethiopian highlands;
- Methods of feeding livestock for increased productivity on feedstuffs solely produced on the farm;
- Introduction and adaptation of improved animal-drawn implements for efficient farm operations in the Ethiopian highlands;
- Socio-economic implications of introducing innovations (to be specified) into the farming systems of the Ethiopian highlands, etc.

10) Expected Benefits: The effective integration of livestock into farming systems in the Ethiopian highlands will:
- increase the income of the farmer and of the farming community, and thereby improve the standard of living;
- increase the production of milk and meat, which will improve the dietary supply of protein; and
- improve the foreign exchange position of the country by making possible a decrease in the import and an increase in the export of livestock products.

In addition, the techniques and methodologies developed in this program will be transferable to other high potential localities in Africa.

It is expected that increased productivity in the system will be detected by the end of the third year of operation; however, the project will continue for at least five years at all sites.

ANNEXES

Annex 1: Description of the Study Area

1) The Ethiopian Highlands[1)]

At present, there exists no detailed description and evaluation of the soil and geology of the Ethiopian highlands. In general, the soils of the region belong to the Alfisols, Vertisols, and Inceptisols. The shallow soils are red to light red-brown on the mountains

1) Summarized from E. Westphal, Agricultural Systems in Ethiopia, Wageningen, 1975.

and hillsides; red-brown on the slopes; and brown to dark brown in the rolling country to nearly black in the plains. The red-brown to dark brown soils are excellent for agriculture, particularly for grain crops, which are found throughout the highlands. Stony mountain slopes and plains are used for grazing. The major soil problems are erosion on the slopes; lack of drainage in the plains, a high acidity, and a general lack of available phosphorus.

In most parts of the highlands, the rainfall is bimodal, with the "big rains" occurring during July-September and the "small rains" occurring during February-April. Fifty to eighty percent of the total falls during the big rains. Humidity and could cover are high, and rain falls continously for several days during this period. Hail also occurs frequently in heavy storms. The frequency of the small rains (February - April) is not always reliable, and at times these rains merge into the big rains. The mean annual rainfall for the highlands ranges from 1,000 to 1,500 mm, depending generally on altitude, with a maximum of 2,000 mm in some regions.

During the long periods of dry weather from November to March the humidity can be extremely low (20 % or even less). The temperature is generally moderate and uniform, although in some cases there are extreme diurnal variations. The mean monthly average temperature is around 18°C. Night frosts may occur above 2,100m elevation between November and January.

The area is extremely diverse ecologically, and it is difficult to categorise it into a reasonable number of zones. In classifying the vegetation types, various ecologists have recognized the xerophilous open woodland; the montane evergreen ticket and shrub; the montane savanna; the montane dry evergreen forest; the Mimusops kummel forest; the Podocarpus gracilion forest; the Juniperus procera forest and the montane moist evergreen vegetation.

For the purposes of this study, four sites will be selected. These sites are selected because they all fall within the general description of the highland high potential crop farming areas. They also differ from one other to some extent in elevation, soil, rainfall, and vegetation, as well as in prevalent farming systems.

While the aim of better integrating animals into the crop farming systems will be the same at all four sites, it is recognized that different livestock enterprises e.g. dairying sheep raising, draft power improvement may need to be emphasized at each site, depending on the farming system most suitable and acceptable in the area.

Another important criterion for selecting these sites is because of their close proximity to a large market outlet; i.e. Addis Ababa.

The proposed study sites are near Debre Zeit, Debre Berhan, Sululta, and Holleta. Below the description of Debre Zeit area is given as this is the first site where ILCA plans to begin th s programme.

2) Description of the Debre Zeit Area: [1]

Location and Size

ILCA's Debre Zeit experiment station is located 7 km north of Debre Zeit town near the village of Babo Gaya, bordering the south-east crater lake of Hula. The surface area is about 160 ha, with elevations ranging from 1,786 metres in the flooded bottom lands to 1,816 metres at the edge of the lake cliff.

This land was given to ILCA by the Government of Ethiopia with the cooperation of two local peasant associations. Thirty four families with a membership of 153 persons live within the boundaries of the experiment station.

Climate

Data from the Agricultural Experiment Station at Debre Zeit for the period 1960-1976 show that the mean annual rainfall was about 846 mm, with more than 70 % falling during the months of June to September. The area also receives rain from February to May, averaging about 40 mm per month; however, the rains during this period are not reliable. The dry season lasts from October to February, with mean monthly rainfalls of less than 15 mm.

The annual average relative humidity is 48.3 %, ranging from 41.8 % in May to 60.1 % in August.

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1) Compiled from ILCA documents on Debre Zeit prepared by Ato Ephraim Bekele and Dr. H.N. Le Houérou.

The annual mean temperature is 16.2°C, varying from 14.9°C in December to 17.9°C in May. The mean minimum varies from 8.1°C in December to 11°C in May. The mean monthly minimum may drop to 2.9°C (December 1973); the mean monthly maximum may rise to 29.3°C (May 1973). The coldest temperature recorded was - 8.0°C in February 1969, but temperatures usually do not go below -1.5°.

Soils

The soils in the area are mainly dark brown clay loams, black clay loams, and sandy loams. In general, the pH of these soils is slightly acid (6.5 - 7.0) in the surface layers and neutral to alkaline (7.0 - 8.5) in the deeper layers. Their organic matter content is low: 1.5 - 2.5 % in the upper layers. Total nitrogen content is also low: 0.1 - 0.2 percent. The available phosphorous in the upper soils is reported to be good (35 - 70 p.p.m. P_2O5), and potassium is reported to be high. The soils in the flat areas are poorly drained, and crops planted there commonly suffer from water-logging. A small portion of the area is normally flooded during the rainy season. Farmers plant chickpeas on the flooded areas as the water recedes, and part of the flooded area is used for dry-season grazing.

Crops Grown in the Area

Except for some sparsely scattered acacia trees and some grasses growing in the areas not fit for crops, the natural vegetation has given way to cultivated crops. Teff, wheat and chickpeas are the dominant crops grown in rotation. The Debre Zeit area is famous for the high quality of its teff and wheat. Other legumes grown to a lesser extent include chickpeas, lentils, cowpeas, field peas, Indian peas, horsebeans, and haricot beans. Some farmers also grow sunflower, red pepper, rape, flax, and corn in limited quantities.

Livestock Production

The area is not a major livestock region, but animals are raised by the farmers mainly for draft and on-farm consumption purposes. A typical farm family in the area owns one or two oxen for plowing, one or two cows for breeding and providing milk, and heifer and a calf to replace the milking cow and the plowing oxen. In addition it may own a donkey for transporting goods to and from the market, and one or two sheep or goats and a few poultry for producing meat and eggs.

The livestock owned by twenty-five of the families on the station is as follows:

Livestock	Number	Average per family
oxen	29	1.2
cows	32	1.3
heifers	20	0.8
calves	34	1.4
sheep	48	1.9
goats	9	0.4
donkeys	21	0.8

Infrastructure

ILCA's Debre Zeit experiment station lies north of Debre Zeit town, 7 km from the Addis Ababa - Nazareth highways. The site is accesible by a 3-km all-weather road branching from the Debre Zeit Godino Road.

The site is close to two major markets, Debre Zeit and Godino. The market at Debre Zeit operates every day, although Tuesdays and Saturdays are the major market days for the farmers in the hinterland. The Godino market is held weekly on Mondays.

The Hula lake, from which the community gets its water supply, borders the southeastern edge of the site. The water supply is assured, as the lake never dries up.

Annex 2: State of Knowledge of Animal Production and Associated Problems in the Highland Regions

The Ethiopian Highlands - A General Picture

The management practices followed by highland farmers are primitive and unsystematic. Livestock are largely left to themselves when grazing, with different species and animals belonging to many farmers herded together. This gives rise to uncontrolled breeding and calving, which is aggravated by the non-castration of inferior male animals. Unproductive animals are maintained for a long time, which contributes to the feed shortage. There is no rotational grazing, forage production and conservation, nor use of drugs to control parasites and disease.

Table 1 shows that the highlands of Ethiopia contain 92 % of the human population and the country, 85 % of the cattle, 75 % of the sheep and 71 % of the equine populations. In livestock units, the region contains 73 % of the total country's livestock. Estimates show that those parts of the highlands receiving more than 700 mm of rainfall produce only a third of their feed requirements. Consequently there is considerable transhumance from the highlands to the lowlands. The susceptibility of the lowlands to periodic drought is critical, not only for the livestock in the lowlands but also for those in the highlands. For the country as a whole, there exists a 50 % shortage of livestock feed.

Table 1. Distribution of Livestock Population in Ethiopia[a)]

	Cattle	Sheep	Goats	Camels	Equines	Total	LU[b)]	LU/HUMAN Ration
Highland								
Agriculture	22m	18m	5m	-	5m	50m	13.8	.6
Percent of total	85	75	28	-	71	-	73	
Lowland								
Pastoral	4m	6m	13m	1m	2m	26m	5.2	2.6
Percent of total	15	25	72	-	29	-	27	
Highland / Lowland Ratio	5.5	3	-	-	2.5	1.		

a) Source: IMS Livestock Population Data

b) LU = One Livestock Unit = 250 kg liveweight (adult) animal

The constraints that limit increased production of livestock in the highlands are several, varied, and often interdependent. They can be usefully categorized as technical and non-technical.

The Technical Constraints

a) Genetics

The fertility and calving rates of indigenous cattle are very low (on the average 50-55 %). Cows calve for the first time when 3 or 4 years old, and then about every 2 years. Mortality rates, particularly of young animals, are high-up to 30 % for calves and about 20-25 % for lambs and kids. Cattle reach maturity at the age of 4-5 years, but their average liveweight is only about 250 kg. Aged cattle represent 71 % of the slaughtered animals, with a poor carcass

weight - 77 kg meat per head and 108 kg of dressed weight - dressing percent being 45. The average weight of lambs and kids is also low - about 25 kg. Native cows yield an average of 300 litres, for a lactation period of about six months or less. The annual growth rate of the national herd is estimated at 0.5 %.

b) Disease and Parasites

Livestock diseases and internal and external parasites take a heavy toll of the livestock population. Annual mortality losses are estimated at 2.25 million cattle, 3.5 million sheep and 2 million goats. This represents a value of nearly Eth. $ 500 million. Morbidity losses through reduced productivity and decreased quality are even higher than mortality losses. The secondary consequences must be considered as far more significant than the primary mortality and morbidity losses, e.g. the depressive effects on livestock improvement measures, the deterrent against capital investment in livestock industries, and the obstacles to foreign markets.

The livestock disease and parasite situation in Ethiopia is well understood and control measures are sufficiently well known. What is needed is the adoption by livestock owners of an appropriate system of animal husbandry.

c) Acute Shortage of Feed

The overall feed shortage appears even worse when the quality as well as the quantity of the feeds are considered. There is large deficit in protein and some minerals and vitamins, since 90 % of feed is provided by natural pastures of poor quality and the remaining 10 % by crop residues and negligible amounts of grain, mainly barley and oats. Farmers do not grow fodder crops nor do they use agro-industrial by-products. The results is that the livestock are under- and malnourished, which makes them susceptible to diseases and inefficient producers.

Any improvement programme for livestock must incorporate a better supply of animal feed. Highland soils have been exploited for such a long time that 20 % are now left in fallow and, in some areas, fallow land constitutes as much as 50 %. These fallow lands are left for 5-10 years to recover their soil fertility and to produce pasture by natural reseeding of the local grasses, which takes a long time and produces poor forage. It is technically feasible to introduce intensive

fodder cultivation into the rotation of crops and eliminate this huge area under fallow. This would mean a drastic change in the present farming system, but it is one of the most important answers to the main bottleneck of feed shortage. FAO has estimated that if half the present fallow area were to be put under fodder crop production, some 5 billion feed units could be produced annually.[1)]

The feed shortage for meat and dairy production is made worse by the demands of the 5.2 million oxen and 7 million equines that produce the power for plowing and rural transportation. It is estimated that 40 % of the feed consumed is for draft purposes. Any improvement and innovation that reduces livestock numbers required for draft purposes would release feed for meat and milk purposes. The productivity of plowing oxen can be increased through improved breeding and feedings, and the introduction of improved harness and ox-drawn farm implements.

The Non-technical Constraints

The non-technical constraints with a significant bearing on the total farming system are summarized below. Any research or development programme assigned to relax the technical problems must include a consideration of these constraints. Research, especially on the socio-economic constraints, can increase our understanding of how these affect the farming system in general.

a) Social Constraints

- conservative attitudes toward innovations
- low levels or complete lack of formal education
- limited consumer tastes for quality livestock products

b) Institutional Problems

- lack of a comprehensive national policy in livestock production
- lack of experienced professional and middle-level manpower for government services in the livestock sector
- inadequate veterinary and extension services

c) Infrastructural Problems

- lack of an adequate road network
- underdevelopment of water resources
- lack of credit facilities in the rural areas
- lack of investment capital
- lack of a systematic market that gives incentives for increased livestock production

Annex 3: Methodology and Time Schedule

A) Baseline Study of Present Farming System of Selected Sites

In cooperation with the peasant associations, a short baseline study of the existing farming systems will be conducted. This study will include:

- social structures
- economic factors of production; resource base; capital; labor available; implements; animals; feed available; incomes; expenditures, etc.
- livestock productivity data
- management practices
- health control measures
- feeding methods

The information from this survey will reveal the working of the present system and provide the baseline for comparative purposes when improvement and increased productivity have been affected.

B) Setting Up of "Farm Units" in the Selected Sites

Farm units will be set up, at each of four selected sites, in cooperation with peasant associations. A limited number of individuals or groups of farmers will be selected, upon the advice and consent of the peasant associations.

In general terms, ILCA will provide the necessary organization, guidance, supervision, and funding for new inputs required for the programme, while the farmer or groups of farmers will provide the labor and management and will also be responsible for the return of the interest-free loans provided to him.

In the unlikely event that a cooperating farmer is subjected to losses in net income, ILCA will provide a guaranteed minimum income, probably based on the average income of similar farmers in the area and provided that the farmer has strictly followed the recommendations and advice given by ILCA.

C) Participating National Institutions

National institutions will be invited to participate in the planning and programming of the study and to take responsibilities for those aspects of the study in which they have more competence than ILCA.

For example:

1) The Agronomy Department of IAR will be invited to advise on the design of a cropping pattern and sequence for the rotation system of a particular area, including crop species and varieties, fertilizer types and rates, cultural practices, etc.

2) The pasture and Forage Section of IAR will be invited to advise on the choice of forage or fodder crops suitable for inclusion in rotation, and on the establishment of permanent pastures on hillsides and other land not suitable for cropping.

3) The Animal Production Section of IAR will be invited to suggest what dairy and sheep breeds should be introduced into the system.

4) EPID will be invited to assist in the organization and arrangement of the farm units and in establishing liaison between ILCA and the surrounding farmers.

5) The Dairy Development Agency will be invited to assist in providing external services to the farm units e.g. milk marketing, AI services.

6) The Institute of Developmental Research will be invited to participate in the exchange of ideas, opinions, and results, particularly with regard to the socio-economic aspects of the programme.

D) Implementation of Field Programmes

A farm plan will be prepared that fits the localities and includes new innovations that could possibly be adopted by the farmers. The following ideas are especially recommended for consideration.

1. Improvement of Feed Supply as a Focal Point in the Farming System

Since feed deficiency is the most acute problem in the production system of the highlands, it is important that efforts be made to solve this problem. If nutritional problems are resolved first, many other problems may no longer be significant constraints in the production system: fertility rates will improve; calving intervals can be shortened; death losses can be minimized etc.

The use of better milk-producing crossbred dairy cows heavier and stronger crossbred draft oxen, and fast-growing crossbred animals for fattening implies the availability of good quality feed and a well-planned feeding system. Because of the increasing competition for grains by humans, any form of livestock production, whether dairying or sheep production, should be chosen with the thought in mind that more reliance is to be placed on home grown feeds - especially forage and fodder.

There are many ways of improving feed supply at the farm level, and the following should be considered.

i) Inclusion of Forage or Fodder Crop Cultivation in the Farming System

A successful livestock program must be based on ample supplies of pasture or conserved fodder crops that are sufficiently nutritious to allow optimum productivity throughout the year. The best possibility for attaining this objective in the highlands is with sown pastures and fodder crops as part of the crop rotation system.

Such a system will not only increase livestock production through a greater supply of nutritious forage during the dry season, but will also help to increase the yield of succeeding crops as a result of the nitrogen fixed by legumes. This advantage is especially important because in some parts of the highlands one finds up to 50 % fallow land each year.

In the cereal-legume growing areas, the rotation can be extended to include a forage crop by devising a rational cropping sequence. In the cereal-fallow areas, the forage or pasture crop associated with perennial or annual legumes can either replace the fallow or be undersown with a cereal crop on the fallow.

Legumes and grass species such as subterranean clover, Berseem clover, Dolichos lab-lab, Glycine, Desmodium, Leuceana, Medicago sativa, Pennisetum, Setaria, Sudan grass, etc. are all possibilities for inclusion in the rotation system for grazing pastures, green chop, and hay - or silage-making. A number of these species have been tested at various experiment stations, and recommendations of the staff there will be sought in establishing the species at the various sites.

The degree of interest that farmers will show in such a scheme will depend to a large degree on the extent to which they perceive it as assisting or conflicting with crop farming. The release of land for livestock feed will depend either on increasing the yields of fodder crops or on growing fodder crops as an alternative to a fallow to maintain fertility.

Finally the fodder crop produced in the rotation system or on the fallow land must be such that it will support the production level of high producing animals.

ii) Better Feed Harvesting and Conservation Practices

Technologies to test in the farm systems include the following.

- Reserve some of grazing land during the growing season for making hay or silage.
- Make hay at the right time for better quality.
- Make silage from excess pasture or fodder crops.

iii) Cull surplus and unproductive animals: e.g. old cows, old bulls, and young males not required for draft purposes.

iv) Bring into productivity rough marginal lands not suitable for cropping, e.g. steep hillsides and poorly drained bottom lands and swamps, by establishing good permanent browsing and grazing.

v) Increase efforts to utilize more efficiently the large amount of crop-residues and aftermath, i.e. harvest more straw; store and perhaps treat these materials for better utilization.

2. Dairying as the Central point in the Farming System

Dairying is likely to be the catalyst for other agricultural activities in the farming system to be developed because the dairy cow is an efficient converter of low quality feeds into much-needed high quality human food; second, because a heavier and stronger draft animal would be produced as a "spin-off" from the maintenance of a dairy herd; and third, because the excess male animals from the dairy herd can be fattened, thus making this by-product of the dairy industry the only form of beef production in the highlands.

Cows should have the capacity to produce more milk than is required to raise their calves and supply their owners' needs. Indigenous cattle have a low producing capacity, and work done by the Institute of Agricultural Research indicates that they do not produce sufficient milk for specialized dairy farming even when fed and treated relatively well. TAR studies also show that the number of cows with

possibly acceptable yields for commercial milk production is so small that any selection programme would be uneconomic.

For this reason crossbred cattle will be used, and the aim will be to introduce a crossbred cow that can give 1,000 - 1,200 litres of milk per lactation (which is approximately double the average of the indigenous cow). The grade of this animal will have to be appropriate to the management capability of the farmer, preferably starting at a low level, e.g. 25 % exotic, and increasing when management and feeding level has improved.

3. Draft Power Improvement

With improved feeding and management, it would be possible to introduce a heavier and more efficient draft animal into the system. This will enable the farmer to cultivate more land in one season, and to facilitate bringing fallow land into production, e.g. for the production of fodder crops. It will also reduce the necessity for keeping more male animals, which in turn releases more feed for other productive animals.

It is also intended to test the usefulness, efficiency, and acceptability of improved animal-drawn farm implements that have been developed in other countries (e.g., India, West Africa) for cultivation, sowing, weeding, or harvesting operations.

5. Sheep Production

In many of the highland areas, sheep production offers a great potential for increased output of meat. This is because many areas are unsuited for cropping due to slope and exposure, and many that are now plowed should be returned to grazing and stocked with sheep.

With the establishment of good permanent pastures in these slopes and hillsides, erosion will be prevented and a substantial increase in available feedstuffs will be possible.

The majority of sheep coming from the highlands to market are immature animals with low body weight (12 - 18 kg). These animals are at present slaughtered before achieving anything like their full potential in terms of meat production. Sheep meat is preferred to beef in the domestic market and sells at a considerable premium price. In addition to favorable domestic markets, there is also a considerable demand for sheep meat in the oil-rich Middle Eastern markets. The primary aim in sheep production is therefore, to

increase carcass size and quality through better feeding and management and the selection of superior animals among the indigenous flocks. However, it might also be possible to use an improved wool-type sheep in the Menz and Southern Wollo areas, where there is a flourishing carpet wool industry.

E) Research Inputs into the System

It is expected that further research will need to be conducted at various national institutions (i.e. IAR, ARDU etc.) to contribute new technological inputs to the system, for example:

- the development of better forage grasses and legumes
- the introduction of appropriate species for the permanent pastures on hills and rugged land
- better feeding methods for high-producing cows
- more efficient and economic methods of finishing old cows, oxen, and 2-3 year old steers, using locally produced feedstuffs
- more appropriate and cheap methods of fodder preservation.
- determination of the levels of farm management (feeding, disease control, etc.) needed to maintain various grades of exotic blood
- better methods of increasing the productivity of draft oxen
- the introduction of improved animal-drawn implements (plows, cultivators, etc.).

F) Schedule of the Programme

Year 1 (1977):

1. Complete the survey and analysis of the farming system in the Debre Zeit area (Site I), which is already underway.
2. Allocate land to the 40 families living on the experiment site and start implementing the programme outlined in Annex 3 with 20 of the farm families.
3. Monitor the activities on Site I, including the collection of all pertinent data - (input - output, household consumption and expenditures, marketing, and sociological data) - on participating farm families, that will permit the detection and measurement of changes brought about by the innovations introduced into the farming system.
4. Conduct a baseline survey of Site II in the Debre Berhan area. This survey will be followed by the selection of the specific location for Site II and the selection of the particular farmers or groups of

farmers who will participate in the programme, with the cooperation of the local representative of the Minstry of Agriculture and Land Settlement and the peasant associations. Farm plans that would fit the conditions prevailing in Site II would also be prepared in Year 1 of the programme.

5. Conduct a study of the historical development of the livestock production systems in the Kenyan highlands. The purpose of this exercise is to identify and understand the important factors that have contributed to the development of livestock production systems, i.e. dairying, in the Kenyan highlands, in order to derive useful lessons for the implementation of development programmes in Ethiopia's highland high potential regions.

6. Review progress made during the year.

Year 2 (1978):

1. Continue implementation of the programme at Site I by increasing the participating farm units to 40.
2. Commence implementation of programme at Site II.
3. Monitor activities at Sites I and II.
4. Conduct baseline surveys for Sites III and IV and select specific locations and participating farmers or groups of farmers.
5. Review progress made during the year.

Year 3 (1979):

1. Continue implementation of the programme at Sites I and II.
2. Monitor activities at Sites I and II.
3. Conduct a market study on the supply and demand of dairy products in the major consumption centers of the Ethiopian highlands.
4. Review progress made during the year.

Year 4 (1980):

1. In-house review of the programme during the preceeding three years for the purpose of assessing its progress and direction, with a view to determining future activities at Sites I and II and the nature of the programme at Sites III and IV.
2. On the basis of experience gained in Ethiopia, consider launching similar programmes in other high potential highland regions in Africa.

SECTION TWO

1) Title: Systems of Animal Production in the Arid and Semi-arid Zones.

2) The Problem: The practical problems to which this investigation is directed are essentially similar across the semi-arid area of Africa. They are problems related to characteristics of human adaptations to the precariousness of the natural resources of the environment.

The general characteristics of the production systems in the semi-arid zones of Africa are as follows:

(a) animals are privately owned and exchangeable;

(b) pasture and water are communal and not exchangeable;

(c) agricultural land is not exchangeable

(d) pasture resources are a limiting factor to increasing production;

(e) there is a lower limit to the number of animals required by a household to satisfy its consumption needs;

(f) there is a positive population growth among the pastoralist;

(g) natural resources are extremely sensitive to over-exploitation.

These characteristics have the following implications:

(1) Limited investment opportunities in agriculture stimulate cultivators to invest agricultural surplus in livestock (a consequence of a, b, c).

(2) Pasture supplies do not act as a limit to the number of animals/household is interested in accumulating (a consequence of a and b).

(3) An increasing number of households will lose viability as pure pastoral units (a consequence of e and f).

(4) Non-viable households are likely to supplement their income by allocating more time to agricultural production and thus reducing pasture resources further (a consequence of 3).

(5) Overstocking and deterioration of pasture resources are likely (a consequence of 1, 2 and 4).

(6) Increase of pasture resources through technical innovations alone will not provide long-term solutions because these innovations will not reverse the effects of the destructive trends caused by social and economic factors 1/.

1/See Annex 3 for an elaboration of this argument.

Previously there were controls that checked the self-destructive tendencies in the systems. For example, increasing pressure on pasture increased tribal warfare and expulsion of groups by military means, and diseases restricted the growth of human and animal populations. Under these circumstances pastoral groups had developed institutions that were adaptive not only in terms of the direct use of the environment, but also in terms of mutual support, in the form of mobilization of personnel for military purposes, in the form of stimulating high birth rates, and in the form of economic reciprocities.

The outcome of these processes has been pastoral systems characterized by relatively high man/animal ratios. Compared with semi-arid areas in Australia and USA, the African areas maintain a relatively high human population in the pastoral niche. With the elimination of the controls mentioned above, the traditional institutions are now unable to ensure the appropriate adaption of large population categories to the new circumstances.

ILCA's problem is to identify and formulate institutional mechanisms functionally equivalent to the traditional mechanisms regulating pastoral production. This is mostly a question of identifying possibilities for change in the existing pastoral population and a question of national government interest and ability to support specific solutions.

An essential aspect of the problem is thus socio-political. From this point of view the critical proble for planning is to have information about the nature of the social systems they aim at changing. The scope for modifying these systems may, however, significantly depend on the possibility of introducing changes in connection with bio-technical innovations. Annex 3 presents this argument in more detail.

It is essential to provide quantitative evidence to governments concerning the basic "vicious cycle syndrome" of the pastoralists in the arid and semi-arid zones. Planners need to be convinced that socio-economic and political measures are necessary to implement change, and they should not continue to entertain futile hopes of break throughs in biotechnical research.

3) Objectives: Four objectives of ILCA research in the arid and semi-arid zone can be identified. These relate directly to the general characteristics of the systems as identified previously.

(a) To provide information on the static and dynamic structure of these livestock production systems, which will give the basis for designing innovations (bio-technical and institutional) to reverse the trends identified above.

(b) To develop innovations and evaluate their effects not only with reference to the performance of individual management units, but also with reference to their implications in a regional and national context.

(c) To develop techniques of data collection appropriate to the evaluation, over time, of extensive livestock production systems. The intention is to define minimum data sets that will permit definitive evaluation of the states of such systems at any point in time. It is imperative that these systems have the capacity to uncover emerging trends at an early stage when they still are reversible, if undesirable.

(d) To provide comparative data on extensive livestock production systems with a view to extrapolating this knowledge to other such systems in the arid and semi-arid zones.

4) Locations: Within the arid and semi-arid zones there are significant variations on the theme outlin d initially both in terms of bio-climatic and socio-economic conditions. The following areas are proposed as locations for ILCA research. Further details of these locations are given in Annexes 4 - 8: Sudano-Sahelian (Niono, Mali), Jijiga, Sidamo and Northeastern rangelands (Ethiopia), and North-Eastern and Masai rangelands (Kenya).

5) Description of Areas: (see also Annexes 1, 2 and 4 to 8)

(A) Sudano-Sahelian (Mali)

The major features dominating the project area are the presence of an irrigated rice-producing scheme adjacent to the pastoral area, and a large interior delta giving a basis for rice cultivation in the flooded season and good pasture for the pastoralists in the dry season. Both these features have significant implications for pastoral exploitation of the Sahelian Zone.

(B) Sidamo (Ethiopia)

The area is characterized by a bi-modal but erratic rainfall. Agriculture is found around the few towns in the area and along the banks of the lower Ganale and Dawa rivers, but the dominant mode of production in the area is pure pastoralism, based on cattle.

Particular features of the Borana areas are the deep wells, which provide water in the dry season and seem to work as an important constraint on the overall stocking rate in the area. Access to the wells regulates the grazing area that may be utilized in the critical dry season, and the watering technology demands a higher input of labour per head of stock than is the case with, for example, ponds.

A unique feature of the area is that the Borana seem to have developed institutions that imply a certain control over utilization of pasture and water resources, and also over reproduction of the human population. Thus, the Sidamo area does not seem to suffer from over-exploitation. However, there are indications that the traditional control system is weakening.

(C) Jijiga Rangelands (Ethiopia)

The Jijiga project area in southeastern Ethiopia includes settled agriculturalists, transhumants, and nomads. The area has several identifiably different ecosystems ranging from fertile plains to low rainfall (400 mm) rangeland to river valleys. The population is predominantly Somali. A complex of locally developed and accepted rules control land utilizations. Parts of the range are severely over-grazed. Proposals for further agricultural settlement and the growing human population indicate growing stress on this production system.

(D) Northern Rangeland (Ethiopia)

The northeast rangeland of Ethiopia is the most arid of the five proposed locations for research. Although it is usually defined as an arid area, it is characterized in general by many of the same problems as the other locations. The two features that make this area interesting to ILCA's study of semi-arid areas are its low annual rainfall and the use of water spreading to increase pasture resources.

(E) Kenya Rangelands

For comparative purposes, it is advisable that production systems in semi-arid areas in Kenya be studied. These production systems cover important variations in externally stimulated organizational attempts to solve the problems of semi-arid adaptations. In the northeast of Kenya, the pasture resource is extended by establishment of water ponds. This implies that pressure on pasture is temporarily relieved, but the basic mechanisms underlying the trends toward overstocking are still operating.

The group ranches in the Masai area constitute the most interesting attempt to modify and modernize a traditional system of livestock production. Whether it achieves the purpose of controlling overexploitation depends on how efficient the new mechanisms are with reference to stimulating lower birth rates, out-migration of excess personnel, and coordination of individual management strategies. Monitoring of the behavioral solutions adopted by the Masai under these new circumstances is not only of direct relevance for the development agencies concerned in this specific case, but is also relevant for development of a comparative perspective on modernization of traditional systems. This part of the programme is also referred to in Section 5 of ILCA's total programme.

6) State of Knowledge: Some information is available on animal production in the five project areas (see Annexes 1, 2, and 4 to 8); however, specific information on the various systems of animal production, relationships among pastoralists, agriculturalists and traders, and the production parameters within the systems is sparse.

7) Methodology: Different types of research are necessary in order to achieve the stated objectives. Broadly speaking, they are as follows:

(a) Investigations directed toward description and analysis of the important interdependencies characterizing the existing systems of production in selected project areas.

(b) Testing of hypotheses relevant to bio-technical problems identified in existing production systems i.e. provisions of information for innovation by the pastoralists and by administrative agencies.

(c) Long-term monitoring of trends emerging in the production systems (with or without innovations).

The purpose of the first type of research is not to test specific hypotheses, but to discover the basic structural features of the system we are planning to improve. In order to formulate a rational plan for change we must know the characteristics of the systems with which we are working.

Specifically, the practical problems outlined require specialized research on the following aspects:

i) What is the distribution and numbers of livestock in the various seasons? This can most efficiently be investigated by seasonal aerial surveys showing the number of animals held by different groups in different seasons.

ii) What is the range trend and how best may it be monitored? This would require ecological ground surveys.

iii) What kind of technical innovations are applicable (different grazing systems, plant interactions, range regeneration, improved herd management, etc.)?

iv) What is the population growth rate?

v) What is the organizational context of livestock production and distribution, e.g. land tenure, principles of ownership, institutional mechanisms for livestock transactions, structure of the management units, skills and competence, social commitments structuring livestock management, the interdependence between units in pastoral and non-pastoral activities?

vi) What is the aggregate outcome of management strategies?

(A) What is the balance between agriculture and pastoralism:

(a) on the level of management units, allocation of time and resources;

(b) on the aggregate level of regional land use patterns.

(B) What is the balance between herd off-take in various forms and herd investment:

(a) on the level of management units;

(b) on aggregate regional herd composition.

vii) What is the relative economic importance (for sale, draft use, and "home" consumption) of the different species of animals (cattle, goats, sheep, camels)?

viii) What are the animal disease and parasitic problems affecting the livestock?

ix) What are the effects of shortages of feed and water on growth rates, fertility, mortality, etc. due to necessary movements?

x) What are the most important traits to be selected for in the livestock to make them more resistant to the environment and more productive?

The Research Approach

A prerequisite to detailed bio-technical and socio-economic research in extensive livestock production systems is a knowledge of the human and natural resource base. This resource base will be determined using broad-scale survey techniques; the so-called integrated survey approach. In the three rangeland areas of Ethiopia and in Kenya, baseline studies are to be undertaken as part of the evaluation of livestock development projects and the broad scale survey would be the initial phase of this baseline study. The broadscale survey in Mali will not be complemented by separate baseline studies. Mapping of these areas will be done at a scale of 1:250,000. Some areas will be studied in more detailed.

These initial surveys are intended to provide an overview of the systems at one point in time. For this reason they cannot be expected to provide insights into the complex of dynamic relationships in each of these systems. The dynamics of these systems will be identified and quantified through longer-term studies on stuitably selected sites. Such studies will only be undertaken to the extent that they are, a priori, expected to provide details on relationships believed to be of importance in terms of whole systems performance.

The total elapsed time from the beginning to the end of the baseline survey in each area should be no more than one year.

During this time some longer-term studies may be initiated. The intrinsic variability evident in all livestock systems in the arid and semi-arid zone may require ongoing research studies. Initially work plans would be developed for five years, subject to annual review and a major review at the end of the fourth year. At this time a decision would be made whether to proceed with the study beyond the fifth year.

Some computer-based modelling of these production systems is envisaged. The number, size, and complexity of these models will be dictated by the needs of the research 1/. The bio-technical and socio-economic research undertaken will complement these modelling efforts to the extent that this research will provide data to validate particular structural relationships considered important in the overall performance of the systems. Also, the modelling will complement the research by assisting in identifying areas where current knowledge of the systems is inadequate. In this way problem oriented research will be assured.

The systems under study are complex, time-dynamic, and subject to the substantial effects of uncontrollable (exogenous) factors. In addition, the innovations that might be introduced to improve these systems are potentially of varied character. For these reasons it is important to develop the facility to separate the effects of these innovations from each other (when used in combinations) and from the effects of the exogenous factors. Without the facility to separate out the effects of the uncontrollable factors, it is likely that inappropriate conclusions will be drawn about the effects of the innovations /2.

1/ Several herd development models are already being evaluated by ILCA staff. The model or models selected will be used to investigate the long-term implications of different sets of production assumptions on herd development.

2/ For example: an improvement in the turnoff weights of cattle may be attributed entirely to the effect of improved water supplies (an innovation) rather than to the effect on pasture productivity of a sequence of favourable years.

It is necessary to delineate how the problems will be approached and studied in the project areas. It is obvious that in the study of animal production systems and of innovations that may improve these systems, the approach should be from the general to the specific (from an overview to the study of applicability and practicability of innovations), and must cover the main resources of the system (land and water, ecological relationships of the system, animals and humans). Consequently, the actual means of gathering the necessary information and of implementing innovations to be tested can be described as four different endeavors, all related and integrated, with the information of each being of use to the others. These four approaches for each project area are: 1) the general overview of the project area; 2) ecological evaluation and study over time of several (probably 4 to 8) sites; 3) detailed study, over time, of several (probably 3 or 4) villages (integrating crop and animal production and where some inhabitants gain their livelihood from working outside of the village); and 4) detailed study over time for several (probably 6 to 10) livestock herds and/or flocks that are managed on a transhumance or nomadic basis. Additional information on these approaches is given in Annex 9.

8) Resources: Strong interdisciplinary teams will be required in each of the proposed study areas. However, technical (disciplinary) expertise may not be required on a full-time basis in each of the projects. For example, an animal nutritionist may be employed full-time for the whole programme on arid and semi-arid zones, but would have responsibilities in all five parts of the programme (see Table 1).

A necessarily strong manpower component of ILCA's programmes is provided by consultants since this involves a desirable degree of flexibility.

Table 1 gives estimates of projected manpower needs, on an annual basis.

9. Expected Reports: 1) Annual Reports for each project area. The first reports to be completed by the end of 1977.

2) Various occasional papers produced at regular intervals on particular topics. An example is the "Productivity of Maure

Table 1: Estimates of Annual Manpower Requirements in man months* for Programme on Systems of Livestock Production in arid and Semi-Arid Zones.

Project Area / Posts/ Scientists	Sudano-Sahelian (Mali)	Sidamo (Ethiopia)	Jijiga (Ethiopia)	Northeast Rangelands (Ethiopia)	Grazing Blks. (Kenya)	Total Man Years All Projects
Proj.Man.(Gen)	10	10	10	10	10	5
Socio/Anthro.	2	2	2	2	2	1
Field Assist.	10	10	10	10	10	5
Economist	5	5	5	5	5	2.5
An.Prod.(Gen)	10	5	5	5	5	3
Field Assist.	10	10	10	10	5	4.5
An.Nutr.	3	1	3	2	2	1.1
Field Assist.	6	4	4	4	5	2.3
An. Genetics	2	1	1	1	-	.5
Field Assist.	6	3	3	5	-	1.7
Range ecology	1.5	1.5	1.5	1.5	1.5	0.75
Range Man.	1.5	1.5	1.5	1.5	1.5	0.75
Botany	1.5	1.5	1.5	1.5	1.5	0.75
Field Expert	10 + 20	10	10	10	10	7.00
Fodder Prod.	1.5	-	1.5	1.5	-	0.45
Field Assist.	10	-	10	10	-	3.00
Integrated Surv.**	2 x (3)=6	3 x (3)=9	2 x (3)=6	2 x (3)=6	2 x (3)=6	3.3
Field Assist.	2 x (3)=6	3 x (3)=9	2 x (3)=6	2 x (3)=6	2 x (3)=6	3.3
					Annual Total	45.90

* Man/Months are based on 10 working months per year

** The requirements for the integrated surveys team are shown without brackets. The figure in the brackets implies 3 men on the team.

and Peul Cattle at the Sahelian Station, Niono, Mali," which will be published in early 1977.

10) Expected Benefits: It is extremely difficult to project quantitative estimates of increases in animal production expected from this programme of study. One can make guesses on what the increases in production might be if certain innovations in the systems were successfully carried out, but FAO's projections in the Indicative World Plan and the Prospective Study on World Agricultural Development have been highly unreliable because of unsuccessful implementation of innovations. It is precisely this area of work to which ILCA is applying itself: what interactions, within a system of production or between system, can be manipulated so that innovations are accepted.

Consequently, one of the benefits of this programme will be an understanding of the workings of the animal production systems and the identification of innovations to be tried. When these innovations are identified and they seem to have a high possibility of acceptance, some estimate can be made of the expected benefits.

However, having said the above, it is fair to add that one of the main factors that can be expected to increase is the offtake from the herds/flocks of the project areas. The offtakes are presently extremely low i.e. in most cases from 3 to 7%. It is reasonable to expect that such low offtakes can be increased and perhaps even doubled in a period of 3 to 5 years. It must be recognised, however, that by using biotechnical innovations to increase offtakes, one does not solve all the problems. The value of the increased offtake must be realised through innovations to improve marketing systems and must have some beneficial effect, in one way or another, to the producer.

ILCA must also have a long-term view concerning animal production. The effects of overstocking on the ecology of certain limited areas must be considered. Therefore, it may be necessary to reduce livestock populations (and even human populations) in certain areas, therefore actually reducing animal production but preserving resources for the future. Of course,

this implies being able to increase livestock numbers and human populations in higher potential areas, which is also being studied by ILCA in other programmes (see Sections 1, 3, 4, and 6).

Knowledge of these animal production systems will make it possible to plot strategies for ameliorating the effects of drought and also for conserving and using rationally the available natural resources on a long-term basis.

Annex 1: A Provisional Bio-Climatic Classification of Inter-tropical Africa

1 - Introduction

When talking about African climates and bioclimates within ILCA, at least, it is desirable to use the same language as our colleagues.

Terms like desert, arid, semi-arid, etc. have almost as many meanings as the number of people using them.

2 - Main Climatic Types

2.1. - The Hot Tropical Climates (monomodal rainfall pattern) are characterized by one single rainy season occurring in summer and average daily temperature of the coldest month above 10° C. Dry season average maximum temperatures are very high: 35 to 40° C.

This is the case of the Sahelian and Sudanian zones of West Africa and the Sudan.

The hot tropical climates may be dry or wet, i.e. desert, arid, semi-arid, sub-humid, or humid according to the amount of precipitation and the length of the rainy season. There are also tropical climates with cold winters, e.g. Kalahari, Karoo and, in America, Northern Mexico (Chihuahua), that are not considered here.

211 Subclimates

Subclimates	Ecological Zones	Rainfall mm	Rainy Season month (1)
Desert	Saharo-Sindian	R < 100	RS < 1
Arid	Saharo-Sahelian	100 < R < 200	1 < RS < 3
	Sahelian	200 < R < 400	2 < RS < 4
Semi-Arid	Sudano-Sahelian	400 < R < 600	3 < RS < 5
Sub-Humid	Northern Sudanian	600 < R < 800	4 < RS < 6
Humid	Central Sudanian	800 < R < 1500	5 < RS < 8
Very humid	Southern Sudanian	1500 < R	8 < RS < 10
Rain forest	Guinean	R > 1500	RS > 10

(1) Rainy season: number of month where P $\geq$ 0,5 PET i.e. roughly when P $\geq$ 60mm

These bioclimatic zones are also characterized by vegetation and land-use distribution patterns as follows:

Ecological Zones	Vegetation Types	Land-use Patterns
Saharo-Sindian	Contracted clustered	Nomadism long range No cultivation without irrigation
Saharo-Sahelian	Sparse spiny mimoseae scrub Annual grasses	Nomadism Transhumance No cultivation without irrigation
Sahelian	Spiny mimoseae Scrub Annual grasses	Transhumance Runoff and retread flood cultivation (millet, sorghum)
Sudano-Sahelian	Combretaceae Savanna Annual & perennial grasses	Transhumance and sedentary stock raising; rainfed agriculture (millet, cowpea, sorghum)

The tropical arid grazing lands are characterized by annual grasses (Aristida, Eragrostis, Schoenfeldia etc.) Whereas the equatorial arid grazing lands are dominated by perennial grasses (Cenchrus ciliaris, Andropogon kelleri, Chrysopogon aucheri,etc.)

Northern Sudanian	Woodland	Grazing cultivation
	Savanna	Millet
	Cultivation	Sorghum, sown pastures
		groundnuts,
	Perennial & annual grasses	cotton, cassava
Central	Woodland	Limited
	Savanna	grazing
		(Trypanosomiasis)
	cultivation	cultivation
	Perennial grasses	as above, plus fruit trees (Mango)
Southern Sudanian	Forest	Limited grazing
	Woodland	extensive
	Savanna	agriculture
	cultivation	oil-palm/sugar cane etc..
	Perennial grasses	

2.2 The Equatorial Climates (bimodal rainfall pattern)

Equatorial climates are characterized by a bi-modal rainfall pattern: two rainy seasons + two dry seasons; average maximum temperatures are lower than in the tropical zone, i.e. they rarely surpass 35° C. Minimum temperatures are higher than in the tropical zone and rarely drop below 20°, except of course in the highlands.

As for tropical climates, the equatorial may be dry or wet.

2.2.1 Equatorial Sub-climates

Sub-climates	Ecological zones	Rainfall	Rainy Season
Desert	Chalby/Danakil Somali	$R \leq 100$ Grazing, contracted vegetation	$RS < 4$
Arid	East African (Ogaden, Somalia Northern Kenya)	$100 < R < 400$ Diffuse vegetation Shrubland Bushland Perennial grasses no cultivation	$1 < RS < 5$
Semi-arid	East Africa	$400 < R < 600$ Shrubland bushland open woodland perennial grasses some cultivation	$3 < RS < 6$
Sub-humid	East Africa	$600 < R < 800$ Woodland Savanna Grassland, rainfed cultivation	$5 < RS < 8$
Humid	East & West African Guineas/Congolian	$800 < R < 1500$ Forest, woodland Savanna cultivation	$8 < RS < 10$
Very humid	Rain forest	$1500 < R$ Rainforest, Savanna cultivation	$10 < RS < 12$

Shrubland = vegetation dominated by shrubs less than 5 m. high
bushland = " " " " " & + sparse trees
woodland (open) = " " + sparse trees over 5, high
woodland = " " trees with close canopies

3. Mountain Climates (Highlands)

Mountain climates are cold winter variants of the above-mentioned

ones. They are characterized by average minimum temperatures of the coldest month below 10° C. Rainfall may be monomodal (West Africa) or bi-modal (East Africa). Elevation above 1500 - 2000 m, according to latitude.

4. Afro-Alpine are characterized by an average minimum of the coldest month equal to, or are lower than 0° C. and usually above 3000 m. of elevation.

Annex 2: Some Indicative Statistics for Arid and Semi-Arid Zones

Table 1 gives selected statistics for five of the countries in the arid or semi-arid zones in Africa. The data for Ethiopia and Sudan are from the Animal Production Yearbook, FAO, 1974. The data for Mali, Chad, and Niger are from the Recueil Statistique de la Production Animale, SEDES, Paris, 1975. The statistics refer to all rural populations and thus do not discriminate between zones in these countries. Similarly the livestock populations are total country figures.

Table 1: Human and livestock population statistics for five arid and semi-arid countries

	Ethiopia	Sudan	Chad	Mali	Niger
Human population (thousands)					
Rural 1/	23670	17946	3393	5065	3767
Urban	3030	-----	507	649	306
(year)	(1973)	(1974)	(1975)	(1975)	(1975)
Livestock population (millions)					
Cattle	27	14	3.25	5.3	2.2
Sheep 2/	24	11.9	4.65	8.765	7.1
Goats	18	8.6	----	-----	---
Camels	1	2.62	.518	.241	.285
(year)	(1972)	(1974)	(1974)	(1972)	(1974)

1/ The separation of rural and urban population for Sudan were not available

2/ Sheep and goats are combined for Chad, Mali, and Niger.

Offtake rates (%)

	Ethiopia	Sudan	Chad	Mali	Niger
Cattle	6.7	7.6	10.4	11.9	12.5
Sheep 3/	30.3	36.1	30	30	24
Goats	34.5	5.2	--	--	33
Camels 4/	n.a.	n.a	5	n.a.	10
(year)	(1974)	(1974)	(1970)	(1970)	(1970)

3/ Sheep and goats are combined for Chad and Mali.

4/ n.a. ; not available

Annex 3: Aggregate Relationships in Pasture-Based Extensive Livestock Production System.

Figure 1 illustrates the pressure on, and carrying capacity of, a pasture-based livestock production system through time under several assumptions. Curves C_1 and C_2 represent the notional "carrying capacity" of the system with and without bio-technical innovations being introduced. It is recognized that the "carrying capacity" of such systems varies with season, but the fact that this has been omitted from the diagram for simplicity does not detract from the argument. Three levels of aggregate stocking rate (pressure) on the system are represented by D_1, D_2, and D_3. Curve D_1 represents the growth, through time, of pressure on the productive capacity of the system if no relieving innovations are introduced. Such pressure-relieving innovations are expected primarily to be the result of application of socio-economic innovations.

With the origin of the X axis indicating the current year, the curve D_1 will intersect C_1 in OA years. Had bio-technical innovations been introduced to raise C_1 to C_2 then the intersection would occur in O B years, implying a delay in the "crisis" for this system of (OB - OA) or AB years.

If socio-economic innovations were able to slow down the annual rate of growth in total demand (this annual growth rate will most assuredly be irregular) so the curve D_2 is then appropriate, the intersect without bio-technical innovations would occur in OC years. This would delay the "crisis" for (OC-OA) or AC years,. Given the construction of the curves in the figure, the curve D_2 does not intersect with C_2, which would imply indefinite deferrment of crisis conditions. In such a case the innovations might be successful 1/.

1/ Successful innovations in these systems are at two levels:
(1) those that assure long-term maintenance of the quality of the physical system; and

(2) those that provide for (1) and as well provide higher absolute standards of living for the human populations in those systems.

Assuming D_3 were possible through adoption of appropriate innovations the existing productivity level of the system would be sufficient for long term viability.

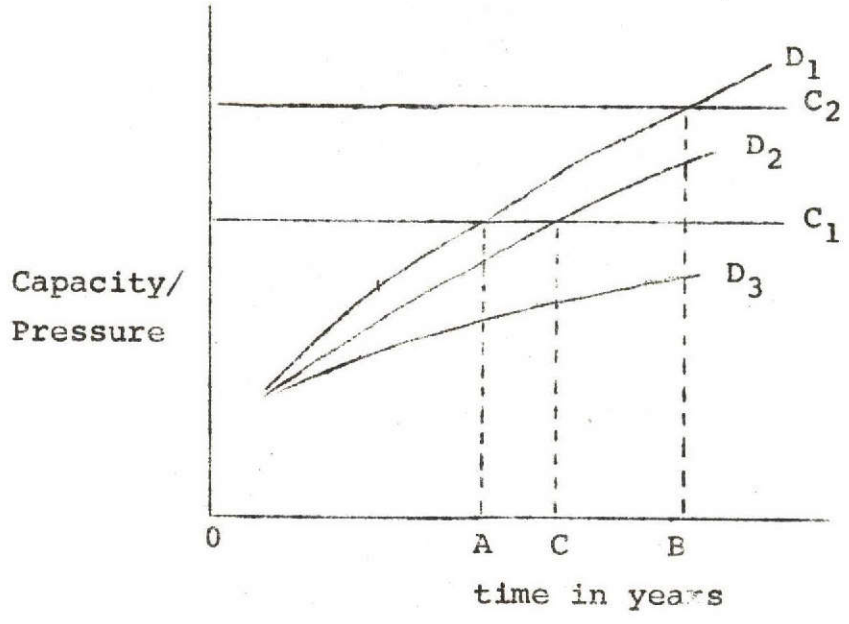

Figure 1. Illustration of interactions between pressure on and capacity of resources in a livestock system under various assumptions.

Annex 4: Systems of Animal Production in the Sahelo-Sudanian Zones (MALI)

The project area covers wide variations in environmental conditions as well as several human groups in different stages of adaptation. An understanding of any of these adaptations requires an analysis that shows their position in the regional ecosystem, e.g. their relation to natural resources and to other human groups with whom they compete or cooperate. Focus is here drawn to those groups that are involved in livestock production in the project area, which falls roughly into three major zones: the Sahel, the Niger River "Bourgou", and the Office du Niger irrigation scheme.

The major groups whose adaptation to this area, to a greater or lesser extent, is based on livestock are the following:

The Delta Fulani The Sahel Fulani The Moors The tenants on Office du Niger	Livestock Production
The traders	Livestock distribution

The Delta Fulani are settled in the Niger river "Bourgou". The exploitation of the bourgoutière has been the right of the Delta Fulani. This exploitation was traditionally regulated by a system of laws called "Dina". However, the pastoral exploitation is based on a transhumant system. During the wet season the herders move the main herds ("garti" and "benti") toward the Sahel and return toward the river when the flood in the delta recedes in November.

The main part of the families remain in villages, where they each keep a few milk cows (the "dounti") and where they do some rice cultivation partly controlled by "Operation du Riz" and partly on an unregulated basis. Among the Delta Fulani there is a basic class distinction between the aristocratic Fulani who own the majority of the cattle and the lower class, Rimaibe, who mainly rely on rice cultivation.

The Sahel Fulani have their settlements around permanent water sources in the Sahelian zone. Apparently they keep a type of cattle with slightly different attributes from the Delta cattle. Most importantly, they are said to be less tolerant of the wet conditions of the bourgoutière.

Around the villages they do some millet cultivation. Their migrations are generally toward the north in the rainy season (the time when the Delta Fulani move into their dry season areas). At the beginning of the rains they follow after the Delta Fulani on the migrations toward the bourgoutière, but apparently prefer to stay away from the wetter parts.

In the dry season, the Moors follow after the Sahel Fulani in the migration southwards. Apparently the Moor cattle are more resistant to drought conditions than the Fulani cattle in the region.

The system of livestock production in the region cannot be adequately understood without taking into consideration the activities within the Office du Niger Scheme near Niono. Rice cultivation on the Office du Niger Scheme is based on tenant contracts whereby the land allocated to cultivating units is related to the number of working members they contain. In a context where land is allocated by administrative decisions, and investment opportunities in agriculture are limited to draft animals and simple equipment, there is a strong incentive for investment in livestock. This strategy is clearly realized by the tenants on the scheme.

During the cultivating season they send their animals with Fulani herders to the Sahel, where their presence servesto increase pressure further. After the harvest they feed on residue from rice production. During the last ten years there has been an increase in the number of cattle held by tenants even during the drought years.

	Draft animals	Cattle
1966	9586	9965
1967	8586	7863
1968	5922	7562
1969	5701	8164
1970	10670	8069
1971	9927	8219
1972	9929	8378
1973	10276	9106
1974	11038	9857
1975	13063	10608

The main reasons for this increase are that the tenants have a secure cash income from irrigated cultivation, and access to water and feed on the scheme in the dry season. As the pressure on pasture increases the tenants on the scheme are likely to have a competetive advantage vis-a-vis the Sahel Fulani. This may lead to a trend toward a gradual redistribution of cattle holdings between the groups.

To understand the adaptation of the pastoral groups, one has to take into consideration their relationship to the market. This is mediated by a specialized group of livestock traders (mainly Diawombe). The efficiency of the trading system significantly determines not only the returns to producers, but also the costs to consumers. A study of the main features of this system has now been completed by the ILCA team in Mali. The main constraints in the system can be summarized as follows:

a. Wide separation of producers from demand centers, and poorly developed means of transportation.

b. The supply comes from a multitude of small widely scattered producers.

c. Low level of market information among the producers.

d. The risk of transacting a stolen animal.

Thus, several functions, have to be performed in the trading system: guarantee for the legitimate ownership of the animal transacted; time-consuming bargaining; long-distance transport on hoof; and retail sale. The trading system is characterized by a diversity of different types of economic units performing these functions (guarantors, brokers, small traders, wholesale traders, retail traders, butchers, drovers, etc). The basis for this lack of vertical integration is the difficulty of maintaining control over personnel performing the various functions and at the same time allowing efficient decision-making.

The picture that emerges is one of a complex regional ecosystem, where the adaptations of different units are based on seasonal exploitation of different areas, combinations of economic activities (primarily livestock and agriculture), and linkages to a market system connecting them to the national and, partly, the international economy.

Definition of the Problems

The main problem to be investigated in the Mali Project is how to improve the quality of life of the Sahelian population through the improvement of the existing systems of production, particularly the livestock component.

This research was formulated in the Mali agreement as follows:

a. Study existing production systems in the Sahelian zone of West Africa; in particular, transhumant pastoralism and ranch development.

b. Study interdependence between zones and their effect on livestock production:

- dry and over flooded zones;
- pastoral zones and rainfed agriculture;
- pastoral zones and irrigated agriculture.

c. Define the constraints on improvement of the systems and study the means to remove them or to lessen their effect.

Although the project area is the focus of research investigations must be pursued outside the area when it is discovered that its productive activities are structured by relations of a larger scale. Sociological and economic research may have to take on this dimension if a solution is found to the "vicious cycle syndrome" which implies that some pastoralists may have to move out of their enviroment and their occupation.

The specific problems so far identified in the existing system involve the multiple use of the Sahel region itself, the Bourgou along the Niger, and the irrigation scheme of the Office du Niger by the Sahel Fulani, Delta Fulani, the Moors and tenants of the Office du Niger.

In this regional system, several problems can be identified that require further research in order to provide information needed to improve the situation.

Baseline investigation research into the socio-cultural constraints underlying the present system will be done by case studies of selected communities representing the main ethnic groups in the various subregions of the project area.

The baseline survey should also include some detailed collection of data on animal populations and the ecology of the area as well as studies by the integrated survey team to obtain a macro-evaluation of the state of the ecology of the region and an account of the members and movements of the livestock and the people. These surveys must be coordinated with, but not necessarily concurrent with the general socio-economic surveys.

Several biotechnical problems have been identified. The first three of the following proposals have been defined to the extent that experimental research can commence.

1. Identification of crops that can be grown in rotation with rice.

2. Identification of grasses/legumes especially adapted to the Sahel region.

3. Identification of fodder trees, shrubs, and bushes adapted to the Sahel region and especially utilizable during extremely dry periods (and droughts) as emergency feeds.

4. Comparison of adaptation of Peul and Maure breeds of cattle to the Sahel region and to the"Bourgou".

The investigation of the main features of the existing system is not only the basis of identification of specific biotechnical research problems, but it also provides the basis for predicting the effects of introducing biotechnical solutions into the system and for recommending administrative measures to counteract possible undesired outcomes. However, we will never be able to formulate the perfect plan and there is always a risk of over-planning. Therefore, an important research task is to monitor the effects of changes in order to discover emerging trends at a stage when they are still reversible. The specifics of the monitoring exercise should be designed after the baseline survey is completed.

Annex 5: Background Information on the Southern Rangelands of Ethiopia.

The main area of activities in the Southern Rangelands is located on the Borana plateau in the southern Sidamo province. This area is inhabited by one of the many Oromo-speaking peoples of Ethiopia, the Borana. In and around the small towns in the area, peoples of Amhara, Konso, Burji, and Somali origins are found.

The Borana plateau slopes gently from the northwest to the southeast, with peaks reaching above 2,000 metres and dropping down to the lowlands at below 1,000 metres. Here, as elsewhere in Ethiopia, altitude is an important modifier of climate, and rainfall within the area seems to be correlated to altitude. Mean annual rainfall in the area ranges from less than 500 mm in the southeast to over 700 mm in the northwest, and is distributed bimodally, with the main rainy season from March to May and a shorter one from September - October.

Climatological data for this area are scanty, and to the degree that they exist at all they indicate that rainfall in Borana is unreliable and erratic. Most of the rain that falls is concentrated in tropical thunderstorms, and downpours of 50-100 mm within a few hours and within a limited area are not at all rare. Distribution of rainfall, both in time and space, is uneven. This pattern, together with the concomitant high run-off rates, has some important implications for Borana pastoralism. One salient point is that the Borana, except during short periods in the rainy seasons, have to depend on deep wells for their water supplies. Since both rainfall and the wells are unevenly distributed, the utilization of pasture in the area is also uneven, with some areas underutilized and others intensely grazed.

From the vegetation point of view the area is little degraded, as compared to other climatically similar zones in Ethiopia. Therefore, innovations concerned with plant introduction are unlikely to have any impact in the forseeable future, however innovations

of watering points could come from an improved grazing system.

Pre-drought figures/estimates of the Borana livestock population indicate approximately 1 million head of cattle, 24,000 camels, and 110,000 sheep and goats.

Census data for the Borana are nonexistent. Estimates range from 30,000, which is obviously much too low, to 230,000, which is probably too high. Population counts in connection with relief operations in the area for 1973-75 indicate a total Borana population in Ethiopia of some 150,000 people. Very little is known about the demographic trends in Borana, but again, estimates indicate a growth rate of 1.5% p.a.

The territorial distribution of the Borana has not been studied, but the environmental factors would indicate that the bulk of the population is concentrated in the well areas, in the triangle between the towns of Yabello, Moyale, and Erero. Seasonal population movements do occur, but precise information of the range, extent, and direction of such movements is very scanty. The information that exists is based on guesses and deductions from the environmental factors of available water and pasture. It is also known that some of the movements are caused by ritual and ceremonial requirements.

Borana social organization is highly complex, and several aspects are still only very imperfectly understood. There are indications, however, that the social organization of the Borana, together with the constraints of the environment in the area, make for a remarkably efficient system of control over population growth, access to water and pasture, and internal peace and security.

It seems important from the ecological point of view, to set up a range monitoring programme.

This programme will be based on:

i. A detailed baseline study on selected areas (there is already a broad-scale study with a range map at 1,500,000, where 30 range units are represented).
ii. A network of permanent ground observation sites.
iii. Periodical aerial sampling of the range and the numbers of animals through low altitude flights.

Population growth

The generation-grade system of the Borana, known as the Gada, comprises a set of rules governing marriage and reproduction. A basic feature of these rules is that a Borana male often finds himself in a situation where there is a considerable gap (up to 8 years) between the time when he may marry and the time when he may have sons. A further time gap of up to 5 years must elapse before he may raise daughters. In spite of a very evident preoccupation with reproduction and succession, and a pronounced love for children, there is evidence that the Borana adhere strictly to these rules, even to the extent of practising infanticide in the instances where the rules are being infringed upon.

The government has of course forbidden the practice of infanticide and today it is rare to find a Borana who admits that it still is being practiced. There are numerous examples of compromise solutions, where illegitimate children have been given up for adoption outside Borana society, to missionaries, townspeople, and the despised client-groups of the Borana (the Wata and Gabbra). But there are indications that the rigid rules of the Gada system are disintegrating, and that this obvious check on population growth may eventually be eliminated, as has happened in other Oromo societies in Ethiopia. If the Gada disappears, and if health services continue to be expanded in the Borana areas, it is probable that a rapid population growth will be the outcome. With our present knowledge of the demographics of the Borana, it is difficult to be specific about such anticipated growth, how important the practice of

infanticide is, or how the rules of the Gada are articulated in population trends. But it is clear that if the population of Borana grows rapidly, it will have serious implications for the overall ecological adaptation of the Borana population. There is a limit on the size of the population that the area can carry, and the problem will basically be to find out what happens to the excess population and how this excess population can be accommodated.

Access to Water and Pasture

The deep wells of the Borana are "owned" by single individuals, but they are also said to "belong" to the clan of the "owner". The "owner" of a well often transfers his "ownership rights" to other persons through a system of caretakers. Even so, the "owner" or caretaker has only marginal control over the well, which is run and controlled by a well-council composed of the actual users of the well.

A Borana well is a quite complex structure that requires continuous and coordinated labour inputs for maintenance and operation. The well-council delegates responsibility for the daily operation of the well to a number of elected officers, and the users must supply labour in proportion to the number of animals each herd-owner waters at the well. The main business of the well-council is to work out the watering rotas and to mobilize the personnel required for the practical tasks of operating and maintaining the well.

The crucial points in the social organization around the well are the processes that include and exclude herd-owners from access to the well. In principle, or according to the verbalized rules that may be elicited from informants, members of the clan that "own" the well have free access to it. Such rules, however, are unclear about who cannot use the well, and in actual practice clan members may be excluded and members of other clans included.

The main limiting factor to utilization of pasture in the Borana lands is access to permanent water, i.e., from the wells.

The complex Borana herd-management practices must be seen in relationship to water requirements. Watering rights are not obtained through inheritance or descent, but through complex transactions involving not one but several well-councils. Once access to a well is gained, these watering rights must be maintained through active participation in the practical tasks of maintaining the well and watering animals, as well as in the politics of the well-council. The system that results is a flexible one that permits split-herd management and movements over several seasons. It is evident, however, that non-participation is immediately sanctioned by exclusion from the water resource (and thus from the grazing resource as well).

This organization also seems to work as a check on the stocking rate of Borana pasture. Access to pasture is governed by access to water, which depends on active participation. With the watering technology that is available, this means that Borana pastoralism is much more labour-intensive than in the cases where watering of stock is from ponds. Herd growth thus must be balanced by increased available labour, and Borana stock management is sensitive to labour shortages, both because the animals simply don't get water, and because of the social sanctions entailed by defaulting on participation.

This constraint is, however, counteracted by other features of Borana stock management. Division of herds through inheritance is delayed as long as possible. This implies that sons rarely have the economic basis to leave their father as long as he is alive and thus remain as available labour for the common management of the family herd. Herding and watering co-operatives are common, as is the practice of dispensing cattle through a number of independent herds in various loan and contract agreements. It is thus possible for the management unit to manipulate the stock/labour ratio, and even if the traditional well organization seems to work as a control mechanism on the aggregate stocking rate, there are great differences between individual herdowners in terms of the amount of stock owned.

In contrast to mary other pastoralist production systems in East Africa, the returns to increased labour inputs above the minimum threshold, are noticeable among the Borana. At the same time, labour is a more critical production factor than is usual. Considering the crucial importance of the well and the social organization around it, it seems reasonable to expect that the introduction of stockponds not accompanied by the regulatory mechanisms of the traditional wells would change some of the fundamental premises for Borana pastoral production.

As long as we do not know what relationships are involved in gaining access to water or in maintaining watering rights; how the stock/labour ratio is manipulated, how herd growth is sanctioned, how pastoral labour requirements relate to other obligations, or how the well organization links up with other aspects of the total system, it is hazardous to predict the outcome of this change and its effect on herd growth, stocking rates, and stock management in general. But since water is a scarce resource at present, administered in a complex system of social relationships, free access to it will certainly mean a strain on and a change in the order of these relationships, and we will need to discover the implications of these changes.

Internal Peace and Security

A striking feature of Borana society is the remarkable degree of internal peace and security that is maintained. Events that are commonplace in other pastoral communties, e.g. stock-raiding, theft, murder, and feuding, seldom occur within Borana. We do not know much about the organizational features and mechanisms behind these traits, but some of the implications are clear.

Access to and control over resources are not reached through physical violence and competition, except vis-a-vis non-Boranas, but are, rather, aspects of being a Borana, i.e. having membership in the Borana identity. Thus, loss or gain of vital rights are, under normal conditions, not among the important considerations of the management strategies

of the Borana stock-owner. What is important, however, is permanent participation in the conflict-resolving and decision-making processes that maintain the "Nagaya Borana" (the peace of the Borana). The well-council is but one of several political fora, and will probably need to be studied in conjunction with all others before a clear view of Borana water and pasture control can be attained.

Annex 6: Animal Production in the Jijiga Rangelands (Ethiopia)

The project area covers some 45,000 Km^2, taking in practically all of the Jijiga Awraja and parts of Gursum and Dagabur Awrajas, all of which are in Hararghe Province. The main annual rainfall varies from 600 - 700 mm in the north near Babile, Fugnanbira, and Jijiga to 320 mm or less in the south at Dagabur and Aware. The rainfall pattern is bimodal. In the north around Jijiga, some 31% of the rainfalls in March, April and May (rains) and about 45% from July to September (Karan rains), with the main dry season from October to March. In the South, the main rains occur from March to May (about 50% of the annual rainfall), and the secondary rains occur from September to October.

The area can be divided into four physiographic units:-

(a) Area 1 East of the Jijiga Road is a flat, undissected area underlain by thick Jessoma Sandstone. The ground water is at considerable depths unless perched water tables exist. This area's water resources lie mainly in surface water catchment and concrete-lined tanks (berekedus).

(b) Area 2 West of the Jijiga - Dagabur road the area is primarily underlain by the Antalo Limestone Group. The area is dissected by the three main ephemeral rivers, the Dacata, Fafan, and Gerer. The alluvial deposits associated with the rivers constitute shallow aquifers capable of exploitation by properly constructed wells.

(c) Area 3 North of the Babile - Jijiga road is an area characterized by outcrops of Basement Complex with relatively narrow incised valleys. The Basement Complex is largely impermeable. The alluvial deposits in river beds are the preferred locations for ground water.

(d) Area 4 North of the Jijiga - Tug Wajale road is a rolling topography of low hills and broad valleys. Small but prominent hills are volcanic in origin, but the bulk of the area

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1/ The basic source of information is the Ethiopian Livestock and Meat Board, "Jijiga Livestock Project", August, 1974.

is underlain by the Antalo Limestone Group, below which occurs Adigrat Sandstone resting on an irregular basement surface. Boreholes to the basement have been reasonably successful, although there have been some water quality problems.

During the Gu and Karan (in north), or Dayr (in the south) rains, lack of drinking water is not a limiting factor in allowing livestock easy access to the available grazing. It may occasionally be so in the intermediate period between the Gu and Karan rains, and during Jilaal (dry season) quite large parts of the project area are without adequate drinking water for livestock. The situation is being changed by the introduction, by private enterprise, of concrete-lined tanks (berekedus) in which water may be stored for several months after rainfall. However, lack of permanent water is at present the only factor (other than disease) controlling livestock numbers and protecting the grazing from over-use. Of most concern to some pastoral clans is not the overall lack of permanent water, but the fact that some clans have no significant permanent water points in Ethiopia, and so are obliged either to go into Somalia in the dry season (where there are also water shortages) or to make contracts with clans that do have permanent water.

Within the project area the most important grass species are Chrysopogon aucheri (var. quinque-plumis), Sporobolus, Cenchrus, Cynodon Sp. and Tetrapogon Sp., Among the shrubs and trees Acacia (bussei, etbaica, mellifera, nilotica) and Commiphora are the most numerous. Other valuable browse species are Ziziphus and Boscia cadaber. Crop residues are an importance source, of livestock feed, especially in the dry season. Of the 33,000 km^2 of project area on which a vegetation study was carried out, 7,000 Km^2 (27%) was acacia shrub with grass, 5,000 km^2 (15%) mixed shrub with grass, 4,000 km^2 (12%) acacia trees with grass 2,000 km^2 (6%) acacia shrub and 2,000 km^2 (6%) grass land. According to a range study carried out 84% of the area shows sign of overuse and only 16% proper use or underuse. There is some evidence that the condition of the range is deteriorating. The traditional range-

use pattern is one of moving out from the dry-season permanent water points at the onset of the Gu rains (March), especially on to the grasslands of the Haud and Medher areas, and staying out there for as long as the temporary water supplies last, through May and June if possible (through the Karan rains), before falling back onto the permanent water supplies at the onset of the Jilaal dry season in October or November. The traditional pattern has been tending to break down, both because of the increase in cultivation and continuous settlement around the permanent water points, and because the introduction of concrete-lined water-tanks (berekedus) in the HaudMedher areas has greatly prolonged the possible period of grazing on these areas. On top of the general broad framework of the traditional range-use pattern set out above are superimposed regular and ad hoc movements of individual clans and families, taking advantage of the different times of onset of the rains in the north and south of the project area, and of the effects of individual rain storms. Groups of people and livestock may travel up to 200 kilometers, or even more, from their own h wells in the course of a single season, in search of good grazing and associated water.

The number of domestic livestock in parts and in the whole of the project area fluctuate from season to season, as the following summary, drawn from information obtained by aerial sample censuses carried out in the course of project preparation shows.

	1/ Season	True Rangelands 26,000 km^2	Cultivated Areas 7,000 km^2	Total Area 33,000 km^2
Cattle	Wet	355,000	314,000	669,000
	Dry	99,000	295,000	393,000
Sheep	Wet	716,000	166,000	882,000
	Dry	325,000	175,000	500,000
Goats	Wet	326,000	96,000	422,000
	Dry	103,000	34,000	137,000
Camels	Wet	163,000	28,000	192,000
	Dry	59,000	23,000	82,000
Domestic Livestock Units 2/	Wet	531,000	285,000	816,000
	Dry	174,000	260,000	434,000

1/ Wet season was early Gu rains in February 1972. Dry season was late Jilaal in January 1973.

2/ A livestock unit is defined as 250 kg of liveweight of animal.

In general, the breeds found are well adapted to the conditions and have high market acceptability. Average family livestock holdings over the whole area are in the range:-

	No.
Cattle	5-9
Sheep	6-12
Goats	2-6
Camels	1-3

But these average holdings mask big differences between clans and between cultivators and pastoralists. Camels are a necessity to far-ranging pastoralists. The Habar Awul are, therefore, big owners of camels, whereas the farmers of the Abaskul clan generally have none. Overall, pastoralists and cultivators together, the average livestock holding is between 6 and 11 livestock units (of 250 kg liveweight) per family. These are quite low figures, and indicate both the degree of reliance of

cultivators on their crops and the extent of monetisation of the pastoralists' economy. Subsistence pastoralists, obtaining nearly all their food directly from their livestock, could not survive on such small livestock holdings. Dr. Watson, who conducted the aerial census, found that the modal (most frequent) size of flocks or herds (which may or may not be under one ownership) was as follows:-

Cattle.....1-5

Sheep.....More than 100 (A second peak was at 1-5)

Goats.....11-15

Camels.....1-5

Prior to the 1975 Land Reform Proclamation the land tenure position varied from one part of the project area to another, and was often uncertain. In much of the cultivated area the form of tenure was individual, although Central Statistical Office surveys show that up to 60% of the farmers may have been tenants of private landlords. The vast bulk of the rangelands was officially defined as "government land", that is, since nobody paid land tax on it, the government was regarded (by government officials) as the residual owner; and this land could be alienated to individuals or to government departments. The pastoralists, however, referred to pieces of rangeland as belonging to one clan or another: in terms of inter-clan relations, tribes did have preemptive grazing rights over such clan land, and these preemptive grazing rights were recognized by government authorities. Nevertheless, within the broad category of "government - owned" rangelands, some pieces were recognized both by government and by the clans as being more "government-owned" than others. Very often these pieces occurred along disputed clan boundaries, where government had inserted its own claims in order to disengage clans. In some of the cultivated areas, the individuals cultivating had no proper claim to the land cultivated at all. They had simply excised a piece of rangeland and started cultivating. They paid no land tax, and had no legally defensible claim to the land. In other areas (particularly south of the Harer-Jijiga road),

quite large tracts of land were subject to ill-defined claims by individual large landowners. Neither the boundaries nor the surface areas were known, and in some cases even the name of the precise claimant was obscure.

The land tenure situation was unsatisfactory, as land was being allocated by government and grabbed by the local people haphazardly for cropping, to the detriment of the proper use and development of the rangelands.

The Land Reform Proclamation No. 31 of 1975 has abolished all forms of ownership of land, thus making land the collective property of all Ethiopians. All forms of tenancy were also abolished, and individuals were given the right to cultivate up to a maximum of 10 hectares. In the pastoral areas, the use rights of the nomads over the lands they customarily use for grazing were confirmed.

The Proclamation instituted Peasant Associations (one per 800 hectares) in the cultivated areas and Grazier's Associations in the pastoral areas, for the purpose of carrying out the provisions of the Reform. To date the formation of Peasant Associations has progressed rather well in the cultivated areas. The formation of Grazier's Associations, however, is proceeding at a very slow rate. The conflict between pastoralists and agriculturalists for land still persists. What is required is a land use plan for the proejct area so that Government can guide the optimum development of livestock and crop production.

The rural population of the project area, judging by counts of the number of dwellings, is about 76,000 families, say 350,000-500,000 people. Of these 76,00 families, again judging by house-types, some 54,000 are semi-nomadic or transhumant pastoralists, and 22,000 are semi-settled cultivators. Jijiga town has a population of about 25,000. Other minor towns probably do not have populations in excess of two or three thousand each.

The area of cultivation is in the north, in a tongue leading down the centre of the project area, and in a patch around Degabur.

Total area under present or recent cultivation is about 300,000 hectares (3,000 km^2), of which 31% is fallow, and the areas of "significant cultivation" (defined as areas where 5% or more of the surface area is under present or recent cultivation) amount to about 7,000 km^2, or 20% of the total project area.

The vast majority of the rural inhabitants of the project area are Somali-speakers, of thirteen different major clans and some minor ones. In the northeast of the project area there are also some people whose native language is Gallinya. As already stated, the majority of the people of the project area are transhumant pastoralists who rely on their livestock to provide them with a living. While each pastoral clan tends to have its own "territory", they and their livestock herds migrate regularly over very long distances in search of water and grazing, using grazing and water points on the territories of other clans according to a system of contracts and agreements. Inter-clan quarrels are frequent and sometimes end in considerable bloodshed. Some of the clans that use the project area have their own water in Ethiopia (e.g., the Issa) or in Somalia (e.g., the Hałar Awul and Arap).

While the pastoralists have no significant source of income outside their livestock flocks, they are fairly well integrated into a monetary economy and are far from being the "livestock-hoarding-for-prestige-purposes" pastoralists of the old-fashioned textbooks. Marketed offtake is about 6-9% in the case of cattle, 16% in the case of sheep, 12% in the case of goats, and probably about 5% in the case of camels, and would be higher if the disease situation allowed it. Much of the marketed offtake, especially in the case of sheep and goats, is illegally exported over the border into Somalia, and does not appear in the official trade statistics. The majority of marketed male cattle go west toward Harar and Dire Dawa, but cull females are probably sold into Somalia (because of restrictions, often unauthorised by law, on the slaughter of female animals in Ethiopia). Although fairly well integrated into a monetary economy, the pastoralists nevertheless consume a high proportion of the products (milk, butter, meat), of their own livestock.

Annex 7: Background Information on the North Eastern Rangelands (Ethiopia)

The North-East rangelands project area covers 75.000 km^2, located east of the highlands and north of the Awash delta, with the altitude decreasing from west to east. A number of rivers, both seasonal and perennial, drain into the project area from the highlands.

The area is characterised by low mean annual rainfall, correlated to altitude (at 500 metres, 350 mm). The rainfall is bi-modally distributed, with the main rains (about 60%) in July - September and secondary rains (about 20%) in February - April.

The human population in the area was estimated at 225,000 prior to the drought of 1973-74. Post-drought figures are not available, but estimates of human mortality during the drought run as high as 20-25%. The differences in the pre-drought and post-drought livestock population estimates are substantial, as can be seen below:

	September 72	January 74
Cattle	734.000	134.000
Goats	655.000	469.000
Sheep	556.000	279.000
Camels	206.000	132.000

Land rights in the area have traditionally been vested in the 10 Afar sub-tribes. These rights have rarely been actualized as far as grazing is concerned, but are important with regard to water points. As the agricultural potential of flooded, riverine land is realized, control over these lands has become increasingly important. Parts of the riverine areas have already been cultivated, depriving the herders of their crucial dry-season grazing reserves.

The north east rangelands are over-populated to the extent that even the minimum herd required to keep a domestic unit viable within the pastoral economy, will result in an aggregate stocking rate in the area that is above both the medium-term and the long-term carrying capacity of the area.

The World Bank Rangelands Development project proposes to alleviate this problem by:

- raising the carrying capacity of the rangelands (through range management and partial irrigation);
- creating alternative employment opportunities (irrigation agriculture).

The planned range management scheme hinges on the establishment of Tribal Range Councils, which, in co-operation with Range Wardens and Range Guards, will be vested with the authority to regulate the utilization of pasture. The Range Council is envisaged as a re-inforcement and partial re-structuring of the traditional tribal institutions, aimed at restoring and strengthening the traditional grazing systems. The range council is supposed to regulate the utilization of wet season/dry season pastures and grazing reserves as well as the stocking rates. The control on the stocking rates will be enforced through a system of taxation on animals in excess of the herd needed for household viability.

Plans are included for the settlement of some 4000 families on irrigated land. The irrigation project must be seen in conjunction with the plans for the range management scheme, as the irrigation project is located in traditional dry-season grazing areas. It is thought, however, that the utilization of crop residue as feed and improved pasture in the dispersion areas (dispersion of excess irrigation water) will more than compensate the losses of rangeland.

It is recognized that drought and famine traditionally have been the main regulatory mechanisms controlling both the human and animal populations of the area. The project is aimed at counter-acting the effects of drought and suggest alternative regulatory mechanisms. It is evident that the ability of the Range Concils to regulate pasture utilization and stocking rates is crucial in this context.

ILCA's activity in the North Eastern Rangelands has not yet been planned, however, the Livestock and Meat Board has specifically requested that ILCA be involved.

Annex 8: Systems of Animal Production in the Kenya Rangelands

1. Background: About one half of the total cattle population of nine million head and over one half of the other ruminant livestock in Kenya are in the rangelands. Pastoralism in these range areas is under growing pressure because of an increasing human population and continued reduction in the area of range for pastoralism due to increases in agricultural activity.

ILCA research in the semi-arid areas of Kenya will be in the north east rangelands and in the areas involving the group ranching scheme.

Grazing block development activity in the north east of Kenya will expand the area serviced by water points to 6.6 million hectares. Each water point will service an area of 55 thousand hectares. To ensure the long term survival of this ecosystem it is essential that workable management systems for the grazing blocks are designed and implemented. Such systems will include definition of the means to institute grazing stock limitations, levy fees to users of physical facilities, and other charges.

The group ranching scheme in Kenya has so far resulted in adjudications of almost one million hectares out of approximately five million hectares in favour of a total of over 10 thousand families. It has evolved from demands by pastoralists for range development. The program is designed to replace nomadic practices which no longer meet the needs of the people. It gives land tenure rights accompanied by range improvements. The basic premise is that if the growing human population is to take a full part in the development of the country, families wherever possible, must be able to rationalize land use, increase productivity and settle down to allow their increasing surplus population to follow alternative pursuits inside and outside their districts. Study of the introduction of these innovations into erstwhile traditional production systems will be of value to ILCA in its objective to achieve a comparative perspective of pastoral systems agricultural activity.

2. Definition of the Problems: Two general problems are identified in these rangelands.

1. In the medium term the pastoralists are tending to lose their dry season grazing reserves due to expanding agricultural activity. This demands that in the short and medium term new equilibria are created through the development of fodder banks that replace the traditional dry season grazing reserves.

2. In the longer term it is unlikely that establishment of fodder banks can maintain an increasing population of humans and livestock, let alone provide for increases in the standard of living of the population. Formidable socio-economic problems are foreseen as people are forced from the pastoral niche into other sectors of the economy. Kenya is a suitable laboratory for the study of these problems as the government has taken bold steps in development by promotion of grazing blocks and group ranches.

3. Methodology: For improvement in these rangelands in the medium term, research will focus on the different possibilities for improved fodder supplies in drought periods. To investigate whether these production systems can survive over the long term, research will be undertaken on the societal and institutional mechanisms in operation in these rangelands. The objective will be to design alternative production systems which are socially acceptable and also ensure the maintenance, or increase, in the productive capacity of the system.

Annex 9: The Research Approach

1. General over-view of the project area .

A first, but general, appraisal of the project area and the systems operating in the area with subsequent evaluations over time is necessary to understand the general linkages and interactions existing in the area. The first appraisal supplies knowledge for making decisions on the other three approaches, and the subsequent evaluations of the whole project area supply information on gross change in the area: ecology, water resources, movements of people, livestock and villages, cropping patterns and rotations, etc.

The general overview will be accomplished by integrated surveys utilising satellite imagery and aerial photos; low-level aerial counts and photographs of animals, people, villages, crops, etc., and sample ground surveys that supply basic data for interpreting photographs, satellite images, etc.

Although the data and information obtained from the general overview will have many uses, the main result will be maps (small-scale, 1 : 250,000 or in some cases 1 : 500,000), which will be used for the other three approaches and will furnish a permanent record, over time, of the dynamics of the systems of the area.

2. Evaluation and study (over time) of several ecological sites.

The livestock production systems operating in a given area depend greatly on the ecological components of the area and, in the case of transhumants, on the ecology of pastoral and cropping areas outside the project area. Therefore, detailed investigations of selected sites will be used for making larger scale maps (1 : 50,000) if deemed necessary. These studies and maps will assist in the selection of the sites and the understanding as to what is happening to plant communities and whether certain innovations (plant introduction, deferred

grazing, water spreading, predator control, etc.) can make any improvement on the ecology of the area as well as improve its usefulness for those occupying it (domestic animals, wild animals, humans, etc.).

Such sites obviously represent only samples of the whole project area, and therefore must be selected so as to give as good a representation of it as possible. At the same time, however, each site can be viewed as an entity in itself, since the changes that occur within it may represent the dynamics of plant communities (populations). But it should be emphasized that these detailed studies will only be carried out to the extent necessary to understand the animal production systems as a whole and their effects on the general ecology of the area.

Innovations (experiments) will be carried out at the ecological sites. Those innovations that appear promising for improvement would then be tried in other areas of the project area.

3. Study of several villages.

The interactions of the people living within villages in the semi-arid areas and between them and the pastoralists are the linkages that have to be understood in order to determine whether innovations in the system can be accepted. It is not only the highly visible interactions (those affected by policy decisions, development programmes, natural disasters, etc.) that need to be manipulated, but also those that occur on a day-to-day basis on a within-family and village level.

Several villages, which represent in a general way those of the whole project area, will be selected for continual study. The information gathered will reflect decision-making on an individual and family basis as well as attitudes toward innovations and policies that promise benefits.

It should be obvious that in the study of livestock production systems, much of the emphasis on the village level will be on those people engaged in or having a relation to livestock production. In addition, however, the study will reflect the attitudes and behaviour of those not directly affected by livestock production, but who are indirectly affected.

4. Study of several livestock herds and/or flocks.

Within the project areas there are often several different systems of management for livestock, i.e. sedentary, partially sedentary, transhumant, nomadic, etc. It is necessary to understand the day-to-day production (fertility, mortality, offtake, herd structure, growth rate, disease incidence, etc.) in order to determine whether innovations should be tried, and if they have any effect.

Experimental flocks/herds must be managed in the early stages in the traditional way to get meaningful information. However, some initial innovations such as animal identification are necessary in order to obtain cooperation. Some payments and/or minimal animal health control, etc. will probably be necessary. It is anticipated from ILCA's past experience in some of these project areas that good cooperation from herd owners can be obtained if they understand the programme, and if they receive some benefit or can visualize that in the future they will be better off.

SECTION THREE

1) Title: Small Animal Production Systems in the Humid Tropics

2) The Problem: It has been estimated that the 30 million goats and sheep which live in the humid zones of West Africa provide more than 50 % of the meat consumed in rural areas and also make important contribution to the cash incomes of peasant farmers. However, the productivity of these animals is severely restricted by:

- A high mortality rate, (especially young animals) probably caused by a low nutritive standard during certain periods of the year and the absence of disease-preventing management systems. The incidence of disease normally increases considerably with intensification;
- A low productivity per animal; and
- Socio-economic constraints, e.g. the allocation of labor to foodcrop production instead of to fodder crops.

3) Objectives: To develop viable farming systems in which small stock contribute more to the income and diet of villagers in the humid tropics of West Africa, through:

- reduction of disease incidence by improved management;
- improved nutrition; and
- improved productivity of meat and milk through the use of cross breeding and selection.

4) Location: Humid tropics, rain forest belt. Nigeria

5) Description of the Area: Region with a rainfall of 1750 mm - 2500 mm infested by the tsetse fly. Fairly densely populated area, extending throughout West Africa. Farming systems characterized by tree crops (oil palm, cocoa), rubber, rootcrop (cassava, yam) cereals (rice and some maize) and small stock (goats and sheep). For further details see Annex 1.

6) State of Knowledge: See Annex 2.

7) Methodology and time schedule

Phase I: Review and assess the present state of knowledge and research in progress, especially with goats and sheep, not only in Nigeria, but also in other humid tropical locations (April 1 - September 31, 1977).

Phase II: Study the role of small stock in the humid tropics of Nigeria by selecting two village situations near Ibadan, and two more further east, for an in-depth one-year study in which particular emphasis will be given to:

- Quantifying the requirements of goats and sheep for land, labour and capital, as well as their contribution to family incomes and diets, their marketing potential, and the factors that affect both the allocation of labour to different components of the farming system and meat consumption levels; and
- The biotechnical aspects, including animal health, nutrition, and husbandry practices at both flock and village levels.

Findings will be supplemented by crosschecks in other areas of the humid tropical zone of Nigeria and through liaison with FAO workers in Ghana. (October 1, 1977 - September 31, 1978).

Phase III: On the basis of the state of knowledge review and the constraints identified in the village study, research on the biotechnical and social aspects of small stock production in the tropics will be carried out at two experimental areas where village conditions can be simulated. The precise nature of this program will be formulated toward the end of Phase II. (January 1, 1978 - December 31, 1982). For further details, see Annex 3.

8) Resources (see Annex 4)

Personnel-Phase I and II:

one livestock economist with two assistants
one epizootiologist, for 6 months
one animal nutritionist, for 4 months
one socio-anthropologist, for 4 months

Phase III:

one forage agronomist
one animal nutritionist
one animal geneticist
one socio-economist

9) Expected Reports and Publications:

1. State of Knowledge on Research on Small Animals in the Humid Tropics. (September,1977).

2. Actual and Potential Role of Goats and Other Livestock in Farming Systems of the Humid Tropics. (September,1978).

3. A Proposal for Research on Small Animals in the Humid Tropics (September, 1978).

4. The Possibilities of Improved Feeding Regimes for Small Animals in the Humid Tropics. An Interim Report (December, 1980).

5. The Possibilities of Using Improved Sheep and Goat Breeds at the Village Level in the Humid Tropics. An Interim Report (December, 1980).

6. Management Systems for Small Animals in the Humid Tropics (December, 1982).

10) Expected Benefits: Small animals (goats and sheep) play an important role in supplementing the cash income and diet of small farmers and villagers throughout the humid tropics of West Africa. The development of a management system in which the productivity of small stock is increased will first benefit low income groups. Thirty million sheep and goats are now distributed among approximately 5 million households,and therefore the results of this project will potentially affect a substantial part of the West African population. Favorable conditions for the rapid application of results are:

- the considerable number of animals now in the region;
- the preference of the population for goat and sheep meat;
- the likely increase in the demand for sheep and goat meat that will result from increasing incomes.

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11) Annexes

Annex 1: Description of the Area.

The area is characterized by a rainfall of 1750 mm - 2500 mm and high population density (100 - 300 inh/km^2). It extends throughout West Africa (see maps 1 and 2). In all farming systems, rootcrops (yam, cassava) play an important role, together with tree crops (cocoa/ rubber) and, in some regions, cereal production (rice and some maize). Livestock production is restricted to trypanotolerant cattle, sheep, and goats. In Nigeria there are approximately 600,000 trypanotolerant

cattle (N'Dama, Muturu, and Keteku),6 million goats, and 2.5 million sheep. In West Africa as a whole there are approximately 7 million trypanotolerant cattle, 30 million sheep and goats.
Sheep and goats are of a small-sized, short-legged type peculiar to the humid zone and play an important role in the village economy of the region. It is estimated that about 50 % of total meat consumption is provided by small animals,and the percentage is even higher in rural areas. Sheep and goats provide small quantities of meat at a time, have a low capital requirement, and have a high reproductive rate. In the rain forest/oil palm/rootcrops system, small animals play the most important role in livestock production at the village level. They also supplement the low protein rootcrop diet of the people, provide some security as a cash resource when necessary and provide much-needed manure to maintain soil fertility. Increasing population pressure is causing a reduction of the fallow period,and therefore there is a need to maintain soil fertility through other means.

Annex 2: State of Knowledge
The small amount of research carried out on sheep and goats in the humid tropics has been mainly limited to veterinary problems. It is generally considered that diseases form a major constraint on production - pneumonia, P.P.R., parasitic gastro-enteritis, and reproductive losses being the major problems.
Surveys carried out by I.I.T.A. and the University of Ibadan have studied the relative importance of small animals in village household economies, but little information exists with quantified inputs and outputs.
Breeding work carried out in research stations has been directed at improving meat and milk production, through cross-breeding with improved breeds, and it is now necessary to test the results of this work under village conditions.
Research on nutrition has examined the use of specific local by-products in relation to the nutrient requirements of goats and sheep. However, research in livestock production in Nigeria has been concentrated mainly on the north and on large animals, especially cattle.

Small animals in the south have not received much attention, although they form an integral part of the production system throughout the humid region of West Africa. Improvements that could be made in this system would have to be tested by ILCA for both their biotechnical and their sociological implications.
Contacts have been established with FAO colleagues working on sheep and goats in Ghana as well as with I.I.T.A., Nigerian universities, and the Nigerian Ministry of Agriculture. All have encouraged ILCA to develop this project and have promised their support and cooperation.

Annex 3: Methodology and Time Schedule

The first phase will include a review and assessment of the present state of knowledge and of research in progress, not only in Nigeria, but also in other humid tropical regions where sheep and goats play a role (e.g. other West African countries and the Caribbean).
The second phase will involve a study of present livestock production systems at the village level in order to characterise, analyse, and compare present systems and identify constraints impeding further progress in production. Two village situations near Ibadan and two more to the east will be selected for an in-depth study of one year. The findings will be supplemented by crosschecks in other humid tropical zones of Nigeria and West Africa.
The investigations will be done by interviewing and especially, by recording at the village level to quantify the following factors:

a) The requirements of sheep and goats for land, labour, and capital as well as their contribution to family income and their interaction with other components of the farming system.

b) The husbandry aspects, including disease control, nutrition, and total feed availability throughout the year. The actual diets of the animals and the total availability of feed on a village level will be determined on a monthly basis.

c) Home consumption of meat and marketing possibilities.

d) Factors that affect: the alternative allocation of labour to foodcrops or fodddercrops; the improved management of small livestock; and meat consumption.

Depending upon the results of the first two phases, the research in Phase Three will probably include the following.

- Feeding: The possibilities of improved nutrition throughout the year by the introduction and better use of fodder shrubs, improved pastures, and crop residues.
- Breeding: The possibilities for increased meat and milk production through crossbreeding and selection, especially the adaptation of crossbreeds to village level management.
- Husbandry: Development of better husbandry systems, including possibilities of intensive rearing systems.
- Disease: Development of management systems to improve disease control.

It is envisaged that two experimental areas will be selected in different parts of the humid zone, where controlled experiments will be carried out under simulated village conditions. It is important that the investigations on systems and methods of management be carried out under village conditions in which the results are to be applied.

In addition, the experimental areas will include:

a) a nursery and collection of grasses, legumes, fooder-shrubs, and trees;

b) different improved pastures and fodder plants that will be tested on the basis of animal performance;

c) pens where the performance of sheep and goats under zero-grazing and the feeding of crop residuces will be tested.

The performance of different crosses will be compared with that of local breeds under village conditions.

Time Schedule

Review of existing knowledge:

April 1 - October 1, 1977

Study of the role of small animals in the humid tropics of Nigeria:

October 1, 1977 - October 1, 1978

Establishment of experimental areas:

January 1 - April 1, 1978

Establishment of nursery and pastures:
April 1 - October 1, 1978
Start of experimentation with different management systems:
October 1, 1978
End of experimentation:
December 31, 1982.

Annex 4: Resources

The following personnel will be required in Phases One and Two:

one livestock economist

a) to prepare the state-of-knowledge report;

b) to study the role of small animals on village level in the humid tropics;

c) together with ILCA headquarters personnel, prepare the recording scheme for the monitoring project.

In the preparation of the state-of-knowledge report, he will be assisted by a consultant animal scientist.

For the village study, he will be assisted by two graduate assistants, who may do this work as part of their requirements for a post-graduate degree in a Nigerian (or foreign) university. One will work in the Ibadan area, and the other will work in a village more to the east.

In the village study he will also be assisted by the following consultants:

- one epidemiologist (6 months): to assess the importance of diseases;
- one animal nutritionist (4 months): to determine the nutritional basis of small animal production under village conditions;
- one anthropologist (4 months): to determine social constraints on improved management systems.

In Phase three the following personnel is envisaged.

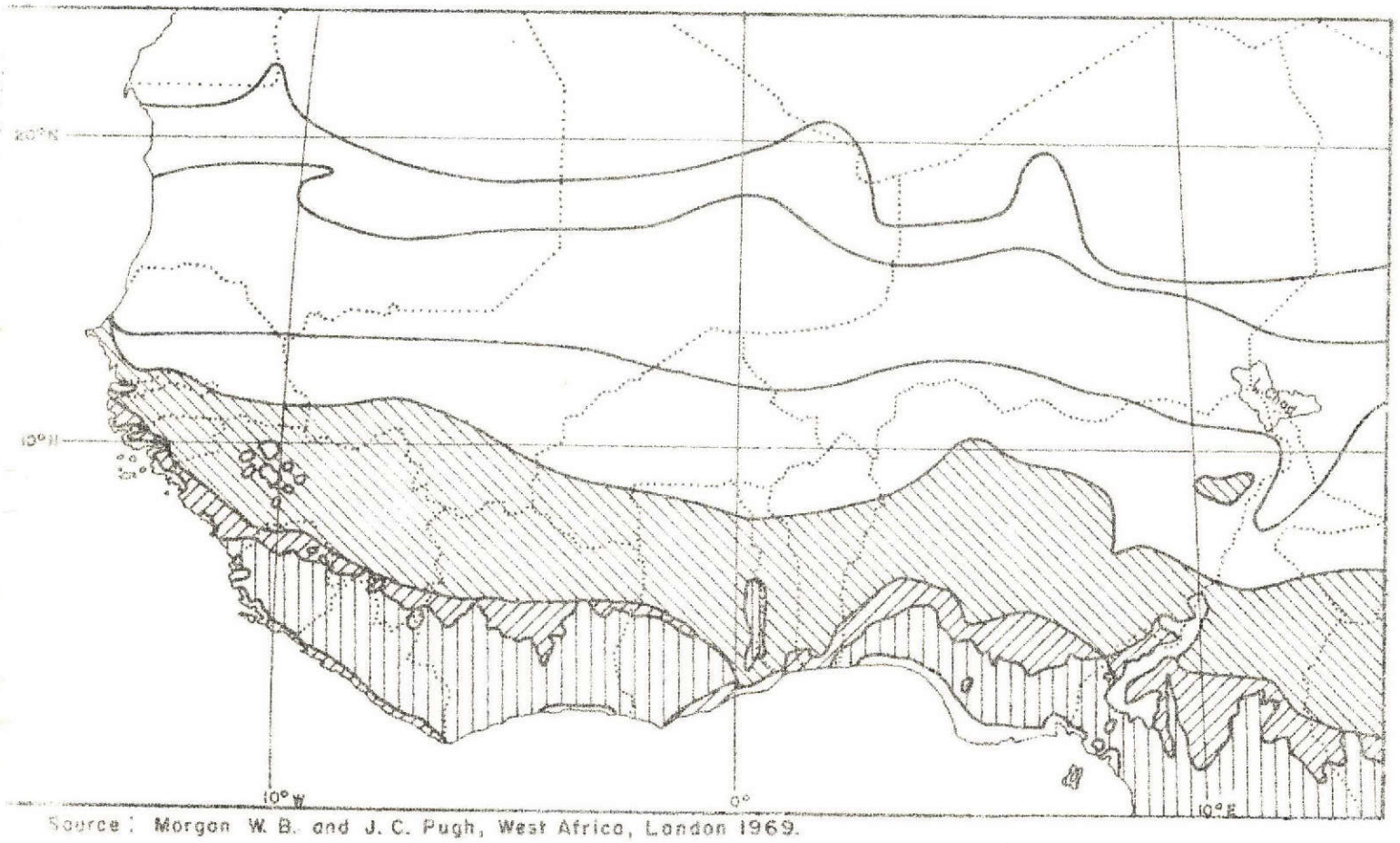
a) Forage agronomist: to conduct research on improving the forage availability.

b) Animal nutritionist: to conduct research on better utilisation of improved pastures, fodder plants, and crop residues.

c) Animal geneticist: to conduct research on adaptation of improved goat and sheep crossbreeds and the possibility of further genetic improvement through selection.

d) Socio-economist: to assess the applicability of the biotechnical research results.

WEST AFRICA : VEGETATION ZONES



Source : Morgan W. B. and J. C. Pugh, West Africa, London 1969.

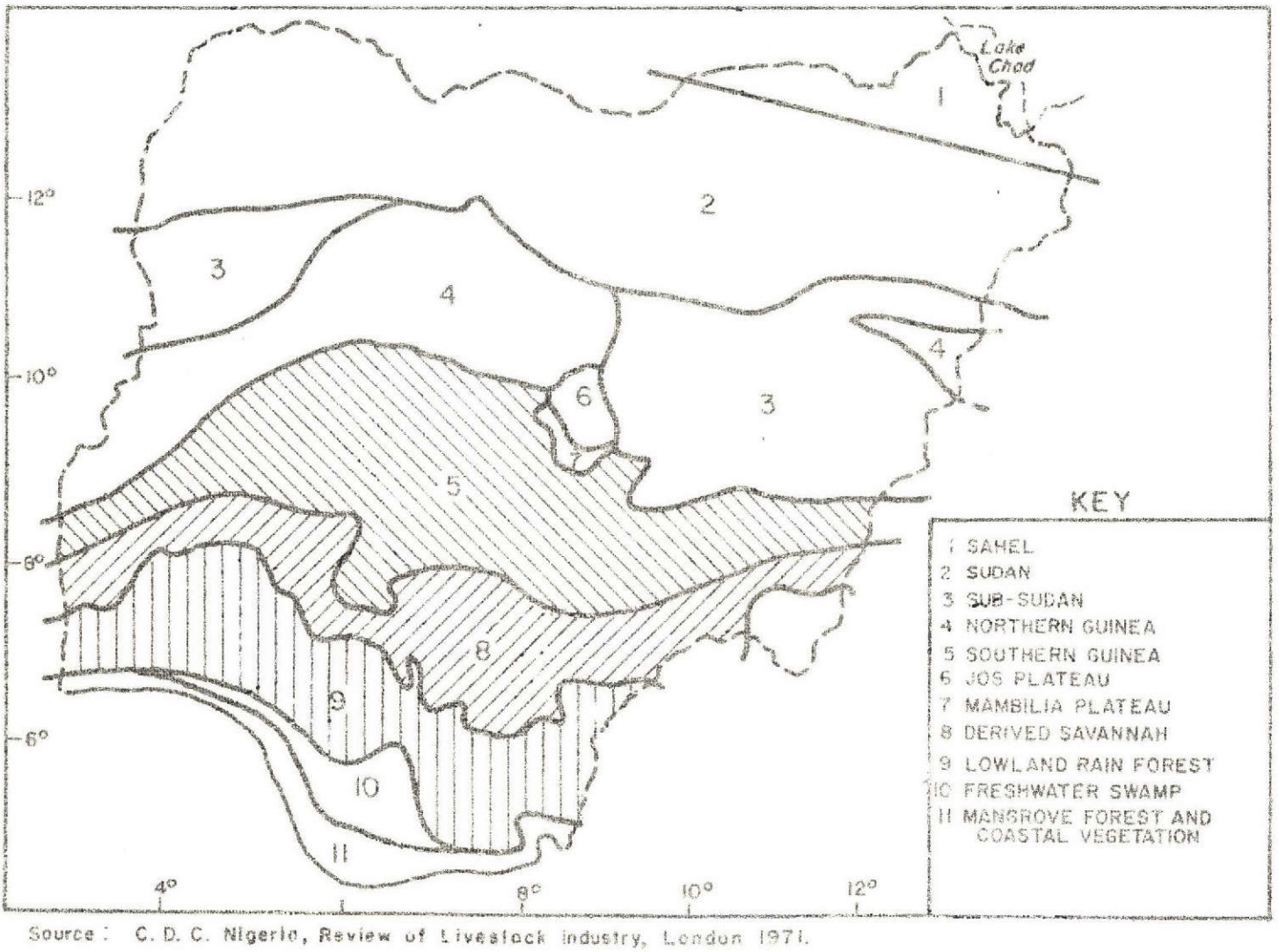
0 100 200 300 400 500 miles
0 200 400 600 800 km.

MOIST FOREST

FOREST - SAVANNA MOSAIC

SAVANNA

APPROXIMATE BOUNDARIES OF ECOLOGICAL ZONES IN NIGERIA



Source : C. D. C. Nigeria, Review of Livestock Industry, London 1971.

SECTION FOUR

1) Title: Animal Production Systems in the Semi-Humid Tropics.

2) The Problem: Because of drought, increased population pressures, and the spread of cultivation into marginal areas, increasing numbers of pastoralists are being forced out of the traditional migratory husbandry systems in the arid and semi-arid zones of West Africa, particularly in northern Nigeria, and are settling in more humid regions further south. At the same time, government and private capital is being invested in ranch development in the semi-humid belt. Information on these trends, on the economics of different approaches to tsetse control in this belt, and on viable livestock production systems is at present inadequate for development planners to regulate and plan these various processes (see also Annex 1).

3) Objectives:

Phase I:

a) As a first step to in-depth research directed toward the development of livestock production systems for the semi-humid tropics, it is necessary to collect relevant information on pasture, pasture management and ranch development, and on the economics of different approaches to tsetse control in the Derived Savannah and Southern Guinea Zone.

b) i) The underlying mechanisms of the sedentarisation of pastoral communities needs investigation in order to obtain information that will indicate the direction of probable future trends.

ii) The adaptation of settled pastoralists to the natural environment and to other social groups both in the north and the semi-humid tropics will be studied.

Phase II:

Suitable land-use systems will be developed to provide optimal use of the available resources and accommodate pastoralists from the semi-arid regions, giving special consideration to:

a) breeds of livestock to be used;

b) fodder regimes, especially the provision of fodder in the dry season;

c) techniques to be used for land conservation;

d) husbandry systems, including the comparison of a complete sedentary husbandry system with a partial migratory system; and

e) farming systems comparing mixed farming with specialized livestock systems.

4) Location: Derived Savannah Zone and Southern Guinea Zone, Nigeria (Lower Middle Belt).

5) Description of the Area: Regions with a rainfall from 1100 mm - 1800 mm, infested by the tsetse fly, characterized by a low population density, and suitable for grassland production. Present and future livestock development includes sedentarisation of pastoralists and ranch development (for further details, see Annex 1).

6) State of Knowledge (see Annex 2)

7) Methodology and Time Schedule: (see Annex 3).

Phase I:

a) i) As part of the general monitoring of development schemes for livestock production, a recording system will be established within the Nigerian Livestock Development Project (April 1 - September 31, 1977, establishment; recording through 1983). (See Annex 1 and Section Five).

ii) Procedures will be established on the ranches covered by this project for the cost recording of pasture establishment and maintenance in the semi-humid tropics. Stocking rates and live weight gains on different types of pasture will also be recorded (October 1 - December, 31, 1977, establishment; recording through 1983).

iii) A state-of-knowledge report will be prepared on pasture establishment in the semi-humid tropics (June 1, 1978 - May 31, 1979).

b) In a socio-anthropological study, the following information will be collected:

i) Mechanisms underlying the sedentarisation of pastoral societies, especially in Nigeria (January 1, 1978 - June 31, 1978).

ii) Social changes and adaptations of sedentarised pastoralists (July 1 - October 31, 1978).

iii) Adaptations of settled nomads in the south in a foreign natural environment (farming systems, husbandry practices, sources of income)and interactions with other social groups (competition and

symbiosis, livestock/cropping, changes in consumption pattern, demography). At the same time, land availability in the lower Middle Belt will be determined. (November 1, 1978 - June 31, 1979).

c) Direct and indirect costs of tsetse control methods in Nigeria will be established (January 1, 1978 - June 30, 1979).

Phase II:

a) Based on the information mentioned above, bio-technical and socio-economic research programmes will be designed to develop livestock production systems, as stipulated in the objectives (July 1 - December 31, 1979).

b) Actual experimentation will start (January 1980).

8) Resources:

Phase I:

a) For the evaluation of pasture development in the Lower Middle Belt:

Establishment of recording scheme (consultants)	9 man/months
Supervision (consultants	3 man/months/years
2 field assistants	permanent
For the state-of-knowledge report	
Consultants	1 1/2 man/years
b) For the socio-anthropological study:	
1 socio-anthropologist	1 1/2 years
4 field assistants	1 1/2 year
1 land-use specialist	1 year
c) For the economics tsetse control	
1 economist	1 1/2 man/years

Phase II: To be determined in 1979.

9) Expected Reports and Publications:

1. Factors Affecting Sedentarisation of Pastoralists in the North: July 1978.
2. Sedentarisation of pastoralists in the North and Associated Constraints: November 1978.
3. Sedentarisation of Pastoralists in the South and Associated Constraints: July 1979.
4. State-of-knowledge Report on Pasture Production and Dynamics and Ranch Development in the Semi-humid Tropics: July 1979.

5. Proposals for Research on the Development of Livestock Production Systems in the Lower Middle Belt: December 1979.

10) Expected benefits: In view of the potential of the region and the various constraints on livestock production in the North, it is expected that innovations developed for this region will have wide applicability.
Large sums of money are being allocated at the moment to the development of these semi-humid regions. The design of better alternatives for the utilisation of these empty areas will result in a more efficient use of funds.

The information collected on trends and adaptation patterns in sedentarisation will assist development planners to better regulate these processes in future.

Annex 1: Description of the Area
Livestock production in West Africa is concentrated in the northern semi-arid regions. The traditional livestock sector, based on non-trypanotolerant livestock, is governed mainly by the distribution of the tsetse fly. During the dry season there is a southward movement in search of water and pasture, and during the rainy season there is a return to the semi-arid areas.

In the semi-arid regions, the existing system of livestock production is coming under increasing strain. Population increase has led to increased acreages under cultivation by the traditional sedentary groups and to an increased aggregate livestock population among the pastoral groups. The implications for pastoral production are:

i) overgrazing; and

ii) an increased number of pastoralists involved in agricultural production whether because their livestockholdings are too small to support them, or because they are investing income from pastoral production in factors of agricultural production, mainly labour.

These trends are resulting in an increased sedentarisation of pastoralists in the semi-humid regions characterized by a rainfall of approximately 1100 mm - 1400 mm for the Southern Guinea Zone and 1250 mm - 1750 mm for the Derived Savannah Area (see maps). The two

areas together are called the Lower Middle Belt.
Climatological conditions favor grassland production, and the potential for crop production has not yet been explored.

This area extends throughout West Africa where hundreds of thousands of square kilometers with a low population density (40 - 80 inhabitants/km^2) are found.

The semi-humid and, to a lesser degree, humid regions have the greatest potential for increasing livestock production in West Africa but the presence of the tsetse fly has so far limited both the human and livestock populations. These regions have a much higher potential for fodder production than the drier northern parts, and given the elimination or reduction of tsetse fly infestation and other pathological problems, a large part of future livestock production is likely to take place in this region.
Tsetse eradication has received considerable emphasis in Nigeria and, during the last 20 years, the fly has been cleared from approximately 200,000 km^2. A serious problem has been the tendency of flies to re-infest reclaimed land, which makes it necessary to combine tsetse clearance with an effective land use plan and the development of viable farming systems.
The substantial tsetse clearance programme in Nigeria has made it possible for pastoralists to move south, and nomadic herdsman are now settling in the Lower Middle Belt. At the same time there is also settlement in non-cleared areas, where cattle are kept under drug treatment.
Another approach to use of trypanotolerant cattle breeds (N'Dama, Muturu, Keteku), will also have a place in the development of livestock production systems in this region. This forms the subject of a separate ILCA paper (see Section Six).
The International Bank for Reconstruction and Development is financing a livestock development project in the Lower Middle Belt of Nigeria that promotes improved methods of beef cattle production by nomadic and semi-nomadic graziers, small subsistence farmers, larger commercial farmers, and the public sector.
Although it covers both the semi-arid and semi-humid regions, its main emphasis is on the development of livestock in the more humid areas. A more detailed description of this project is given in Section Five.

In conclusion, this area has an considerable potential for the future expansion of the West Africa livestock industry. Expansion will probably come from two main directions:

a) sedetarisation of pastoralist societies, forced out of the more arid regions; and

b) investment in ranch development by both the government and the private sector.

Annex 2: State of Knowledge

The land resources of Nigeria have been described over approximately two thirds of the country by the Land Resources Division of the British Ministry of Overseas Development. Not covered by this study are some of the Western provinces of the Middle Belt. Throughout the region a considerable amount of work has been done on pasture establishment and fodder production (Akinola 1974).

As far as the presently practicable approaches to the tsetse and trypanosomiasis problems are concerned (tsetse clearance through insecticide application, bush clearing, etc.., the use of trypanocidal drugs), the biotechnical drawbacks and advantages are well known. The crucial and under-researched problem is how to combine and implement these measures in the context of overall land use planning, for the maximum lasting economic and social benefit to country.

A thesis by Olutogun (1976) gives detailed information on the performance of the N'Dama breed on the Upper Ogun Ranch, and includes also a review of pertinent literature on the production parameters of this breed. Regarding the pastoralist societies of the north, the Fulani have been described by De St. Croix (1972) and van Raay (1974), who give special attention to the settlement problems of pastoralists in the north. Livestock production parameters of Zebu cattle in the north under different systems were collected by Lamorde (1973). The Federal Livestock Department of Kaduna is sponsoring a study by the University of Ibadan on the problems related to sedentarisation in the more humid Western Provinces of Nigeria: a report is due at the beginning of 1977.

The economics of pasture establishment and maintenance have received little attention, and the potential of artificial versus natural pasture also needs to be studied from an economic point of view.

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Annex 3: Methodology

a) Economics of Different Approaches to the Tsetse Problem

A published study on this topic in East Africa is the major reference for the structure of the exposed programme. In cooperation with the Tsetse and Trypanosomiasis Division at Kaduna, a detailed costing of tsetse control measures will be undertaken in such a way that the results can be integrated in an economic analysis. Information on the economics of keeping animals with drugs will be collected. The overall patterns of land-use and land-use planning in Nigeria will then be analysed in relation to the economics of tsetse control. Typical land-use forms for areas affected by or cleared from tsetse will be identified, quantified and described.

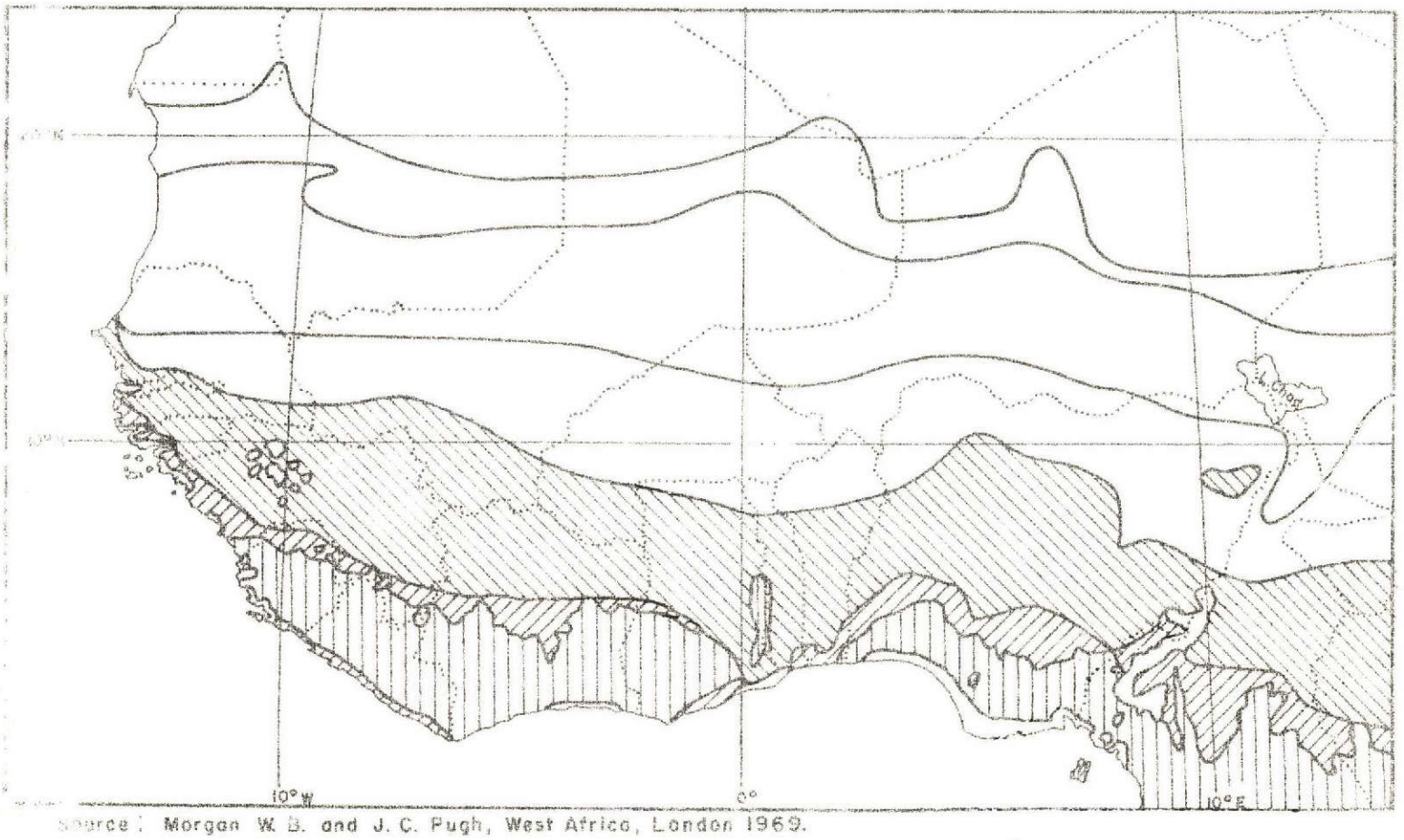
b) Problems Related to the Regularisation of Sedentarisation Processes Among Migratory Pastoralists.

The general mechanisms of sedentarisation are known, but additional information is required for prognoses about how sedentarisation can be stimulated, facilitated, and improved. The study will have an estimated duration of 6 months and will need one anthropologist and 4 assistants. As a second step, the adaptation of settled pastoralists in the north will be studied, in order to define their constraints and the potential for sedentarisation in this region (3 months of field work by same personnel).

As a third step, the adaptation of settled nomads in the south will be studied: their adaptation in a foreign natural environment (farming systems, husbandry practices, sources of income, etc.,) and their reactions to other social groups will form an important part of the study (competition of animal husbandry and cropping, symbiosis, changes in consumption needs). Approximately 9 months will be needed for this study, using the same personnel as before. During the study, land availability for further sedentarisation will be determined, using existing information on land-use.

c) Cooperation with other institutes: several institutes are working in the different fields mentioned in this paper, and close cooperation will be established with them although all initial contacts will be made through the Federal Livestock Department at Kaduna. In this context, the study on sedentarisation in the north will be in cooperation with Ahmadu Bello University at Zaria and the National Animal Production Research Institute at Shika, whereas for the study on the adaptation of settled pastoralists in the Lower Middle Belt cooperation will be sought with the University of Ibadan.
The economics of different approaches to tsetse control will be studied in cooperation with the Tsetse and Trypanosomiasis Division and in coordination with F.A.O.

WEST AFRICA : VEGETATION ZONES



Source : Morgan W. B. and J. C. Pugh, West Africa, London 1969.

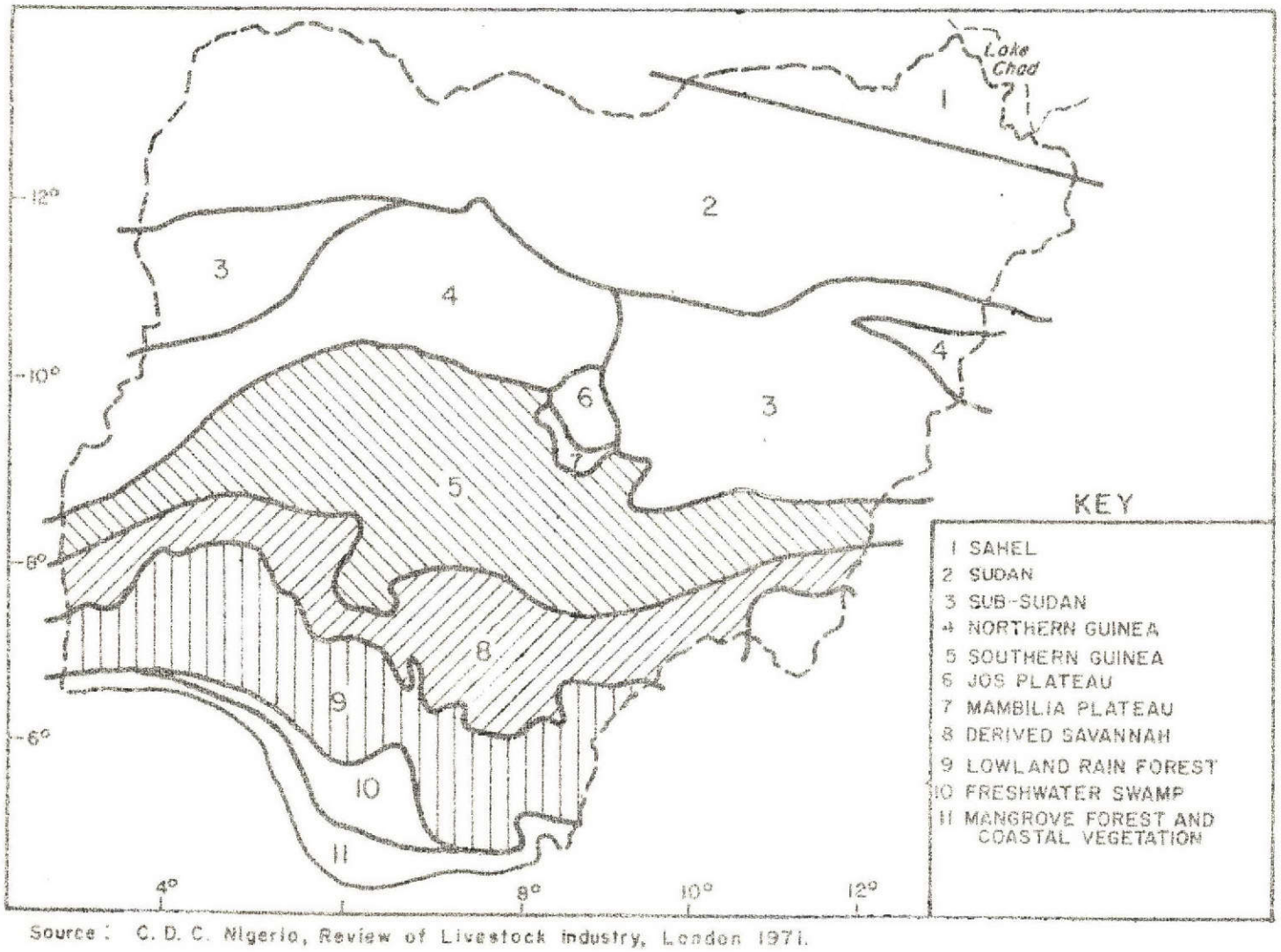
0 100 200 300 400 500 miles
0 200 400 600 800 km

MOIST FOREST

FOREST – SAVANNA MOSAIC

SAVANNA

APPROXIMATE BOUNDARIES OF ECOLOGICAL ZONES IN NIGERIA



Source : C. D. C. Nigeria, Review of Livestock Industry, London 1971.

SECTION FIVE

1) Title : Monitoring Animal Production Systems in Development Schemes

2) The Problem : Many well-known biotechnical recipes for improving livestock production systems exist and have been tested (e.g. control of many epizootics, stock route development, tsetse control, dip installations, feedlotting, etc.). However, appropriate techniques for their implementation in different socio-economic environments and their combination with suitable organizational innovations are often lacking [1]. With the equivalent of hundreds of millions of US dollars being invested in Africa's livestock industries, it is of paramount importance to study the factors of failure and success in development schemes.

It is for this reason that ILCA is setting up a network to monitor such livestock development schemes.

The term monitoring as used in the context of this paper refers to exercises of detecting and following changes in livestock production systems due to an inherent dynamism and/or organized development efforts.

3) Objectives :

a) To test the socio-economic and biotechnical hypotheses underlying livestock development plans and projects.

b) To help implement livestock development plans by providing information about the progress of the development schemes.

c) To contribute to the design and planning of future development schemes through comparative analysis of several contrasting schemes already operational.

d) To contribute to ILCA's understanding of the principal livestock production systems in Africa.

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[1] For example, the hypothesis that animals dipped regularly in a fluid of a certain acaricide strength can be kept clean both of ticks and the disease they carry has been well tested and it can be accepted as a working basis. Much more vague socio-economic hypotheses exist about how to implement successfully such a programme over large pastoral areas, and these remain to be tested.

e) To prepare where appropriate exercises of more in-depth research or longer term monitoring.

4) Location : Work will tend to be concentrated in the countries in which ILCA is already or is planning to become engaged in the study of animal production systems, i.e. Ethiopia, Kenya, Mali, and Nigeria (see sections 1,2,3,4, and Annex 1). In addition, the evaluation of the development scheme in Botswana will be part of the monitoring network (see Annex 2).

5) Description of the Areas : These countries give a contrasting range of socic-economic and ecological conditions and have features (e.g. land reform) of special interest in their development schemes, Ecologically they include dry countries with limited stratification possibilities (Mali and Botswana), countries that are developing huge tsetse-infested savanna belts (Nigeria and Kenya to some extent) and countries with pronounced stratification possibilities (Kenya and Ethiopia), important meat and livestock exporting ecomomies (Kenya and Ethiopia) where a growing domestic demand has to be satisfied while the export potential remains. Finally, a deficit country (Nigeria) is included, where import substitution is the prime goal of development efforts. More detailed descriptions of these livestock development schemes are given in Annexes 1 and 2.

6) State of Knowledge : The available literature on development schemes is generally focussed on theoretical and methodological questions of project evaluation. Little attention has been paid to the analysis of factors in conception and implementation that determine overall success or failure. Most attempts that have been made to learn from development projects[1/] have not dealt with the livestock sector and have been primarily based on ex-post analyses, as opposed to on-going comparative evaluation[2/].

1/ Perhaps the two most widely known examples are the studies by de Wilde (1967) and by Uma Lele (1975). Noteworthy are several internal studies of the World Bank.

2/ There is an example of monitoring livestock development for a farming situation in Mexico (Stoops and Schmidt in 1974).

A particular constraint has been the lack of data, and even the sharpest ex-post evaluator has been forced to resort to hunches, guesstimates, and generalities because of the lack of systematic information derived from a well-designed monitoring machinery.

7) Methodology and Time Schedule : Once agreement is reached with the government concerned that ILCA engage in the monitoring, the monitoring system is implemented in several phases. In the first phase a system of data collection and evaluation is set up, and this involves (1) an advisory role in setting up project accounts and reporting procedures [1/], (2), the selection of key socio-economic and biotechnical indicators and the design of sampling prodedures for assessing progress, and (3) the computerization of the herd development components. This first phase is followed by the routine supply and analysis of information and regular visits during the implementation period of about 5 years. During this period the incoming information will be used to the overall progress of the scheme (economic, social, ecological etc.), to identify critical variables, to carry out sensitivity analyses and to feed this information back to the Project Management and to the Governments concerned, so that they have an up-to-date picture of the development scheme at all times. Additional short studies will be carried out on such single components as "veterinary measures", "marketing", "infrastructure", etc. depending on their special relevance for the project concerned.

The methodology is elaborated in more detail in Annex 3.

[1/] It cannot be stressed too strongly that ILCA's monitoring function has nothing to do with the policing of funds; that no responsibility is assumed for accounting or reporting; and that ILCA has absolutely no service function for donor agencies.

8) Resources : The initial setting up of the monitoring network will require a heavy input of staff time during the first two years of the network's operation (1977-79). An ILCA staff member, working full-time, will be responsible for coordinating the overall network, for setting up the monitoring system, and supervising the collection and analysis of the relevant data for each country, and for the preparation of reports.

The responsibility for the implementation of the monitoring program in each country will be with an ILCA staff member stationed there, who will normally devote only a minor proportion of his time to this duty.

The following two examples illustrate resource requirements. The case of Ethiopia is typical of the countries where ILCA has operations in addition to the monitoring, while Botswana is a country where the monitoring represents the major ILCA input.

a) Ethiopia

The cost monitoring system and the reporting procedures for the Ethiopian project have already been developed in cooperation with the Livestock and Meat Board (LMB), which has put them into operation. Tha major herd development components have been computerized. The system for benefit monitoring is in the design stage and is expected to be finalized and approved by LMB by mid-1977. The initial setting up of these systems will then have taken up about six man-months. The whole routine monitoring (supervision of data collection, visits from headquarters, data analysis etc.) will require about four man-months per year. During the implementation period an additional four man-months is required for special studies.

b) Botswana

The ILCA monitoring operation in Botswana is of importance because the Botswana livestock development scheme reflects a major change in a traditional beef production system, specifically involving land tenure reform.

The Botswana Government has introduced a national policy on tribal grazing land which removes constraints imposed by the traditional communal grazing system on communal lands and involves a massive programme of consultation with and training of the livestock owners. In particular it allows stock owners security

of tenure and so encourages investment in grazing areas to halt overgrazing and increase productivity. The whole project represents a semi-arid laboratory where an attempt is being made to devise a "system" for meeting the next large scale drought.

One senior staff member will be provided by ILCA to act as Monitoring Manager in Botswana, with support as required from ILCA Headquarters, representing approximately four man-months per year. He will supervise the duties of a monitoring team of three scientists, to be recruited by the Government of Botswana on the advice and with the asistance of ILCA. This work will start in July 1977. Annex 2 lays out more details of contacts with the Botswana Government ; the present livestock management situation in the country ; the livestock development scheme; ILCA's involvement in the scheme; and the expected benefits from including this scheme in ILCA's monitoring network.

9) Expected Reports and Publications :

1) Outline of a system to monitor livestock development schemes (early 1978)

2) The status of the livestock development project in ... (internal annual report for each project).

3) A comparative analysis of livestock development projects
- drafts of certain parts will be ready from 1979 on ;
- comprehensive report in 1983.

10) Expected Benefits : Three major benefits can be expected from this program :

a) In 5 or 6 years ILCA will produce a comparative assessment of several contrasting schemes covering the major issues in livestock development. This information will assist future planning and so improve the effectiveness of future investments in the livestock industry of Africa. The analyses of on-going schemes will include the major socio-economic and biotechnical factors which help to increase or limit the success of such schemes.

b) A great deal of information will be collected about the principal livestock production systems in Africa which will greatly assist ILCA's other activities, particularly the Seminar, Conference, and Training Programme.

c) The involvement with on-going development schemes will stimulate ILCA's research and help to keep it relevant and practical.

Annex 1 : The Livestock Development Schemes to be monitored in Ethiopia, Kenya, Mali and Nigeria.

A. Ethiopia

1) The Appraisal Report [1/]

The Appraisal Report for the Ethiopian Rangelands Development Project was released in 1975 and gave the following summary of the development scheme :

a) Background :

The livestock subsector represents an important force in the future economic development of Ethiopia. The rengelands in particular have an immense potential for the sustained production of livestock and livestock products, and they are unique in that this potential could be exploited with only relatively small additional capital inputs. In the past, however, the total investments have not been commensurate with the magnitude of the development potential, and insufficient account has been taken of the need for a balanced investment program. This has reinforced the normal cyclical overstocking and over-grazing of the range areas brought about by traditional nomadic range and livestock management practice practices. Priority therefore has been given by Government to the development of a large-scale program aimed at the expansion of livestock production, and the rationalization and modernization of the traditional livestock sector.

b) Project Description :

The project would over a five-year period provide for the development and rehabilitation of three lowland range areas inhabited mostly by nomadic pastoralists engaged in extensive livestock production. The project would consist of three separate and distinct sub-projects, each with its own organizational structure. These sub-projects - the Southern Rangelands, Jijiga and Northeast Rangelands Development Projects - would each provide an integrated program of range management and veterinary services along with improved roads and water facilities. Through the establishment of ranches, a feedlot and smallholder fattening programs they would also aid in the stratification of the Ethiopian livestock industry, thus helping to lay the foundation for the sound future development of the livestock economy in the range areas. Finally, provision

would also be made for a program of trials and studies and for training of Project staff, livestock owners and tribal leaders in the short term the Project would attempt to restructure the traditional system of extensive livestock production, thus substantially raising the value of marketed livestock production and resulting in significantly increased incomes for the nomadic producers. One of the primary goals would be the eventual establishment of a comprehensive system of range use controls under which the nomads would voluntarily adjust their overall stock numbers to meet the carrying capacity of the ranges. As all the three areas differ markedly with regard to geographic and climatic conditions and are inhabited by peoples with widely varying languages and tribal customs, the individual sub-projects would necessarily adopt a slightly different strategy in each region. The overall objective would in each case remain the same, however, and in all three areas a concerted effort would be made to actively involve the nomads in the planning and execution of Project activities.

c) Project Execution :

Overall direction of the Project would be the responsibility of the Livestock and Meat Board. Each of the three sub-projects would have a separate organizational unit based at a headquarters within the individual project areas. These units - The Southern Rangelands Development Unit (SORDU), The Jijiga Rangelands Development Unit (JIRDU), and The Northeast Rangelands Development Unit (NERDU) - would each be under direction of a Project Manager directly responsible to the head of LMB's Rangeland Development Department. The Project Manager would have immediate responsibility for the coordination of all Project development activities in his area. In order to ensure coodination of these activities with other programs currently underway, each Manager would set up a Project Development Committee, whose membership would include the Head of the (Awraja) Administration, other local representatives, as well as representatives from the livestock owners in the area. LMB would

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1/ The Appraisal Report refers in all cases to the grey-covered report prepared by World Bank staff. This is the basic document for all projects receiving financial assistance from the Wold Bank Group.

help coordinate the activities of all three projects and would provide certain centralized administrative and technical services through its headquarters its headquarters in Addis Ababa.

d) Cost Estimates and Financial Arrangements :

An IDA credit of US $ 27.0 million is proposed which would cover about US $ 14.0 million of the foreign exchange component of the Project and 54% of local costs over the five year period. This would represent 63% of total Project costs of Eth $ 88.8 million (US $ 42.9 million), including import taxes and duties estimates at Eth $ 0.6 million (US $ 0.3 million). The proposed Africa Development Fund (ADF) contribution would total 5.0 million African Development Fund units of account (about US $ 5.5 million) ; this would finance the remaining US $ 2.9 million of the Project's foreign exchange costs and US $ 2.6 million of local costs. Together the ADF and the IDA contributions would finance 76% of total Project costs, and the remaining 24% would be contributed by Government. In addition, farmers participating in the smallholder fattening program would make a small cash contribution toward the cost of fattening and purchase of each animal ; these contributions, totalling about US $ 0.40 million over the five year period, were not included in the cost estimates. The ADF, IDA and Government contributions would be channelled directly by Government to LMB, which would establish separate bank accounts for each of the three sub-projects. Procurement of vehicles would be subject to international competitive bidding. Headquarters buildings and senior staff housing would be constructed accordingto normal Government procedures. All other buildings and field constructions would be built by the Project's own resources through force account or by local contractors hired by LMB. Veterinary equipment, medicines, and fertilizer would be procured through normal commercial channels.

e) Benefits and Justifications :

At full development (year 7) the Project would result in increased marketed production from the ranges of 100,000 head of cattle, 48,500 sheep and goats, and 3,000 camels annually. In addition to this increased offtake, the ranches, feedlot and smallholder fattening programs would result in significant increases

in total marketed meat production. The total incremental meat production attributable to the Project at full development would be equivalent to 15,000 tons of meat, representing about 14% of present estimated meat production. The Project would also result in increased production of milk from range cattle totalling 7.8 million litres of mild annually at full development. Finally. incremental crop production from the water spreading program in the Northeast Rangelands area would total about 1.1 million kg of cotton, 320,000 kg of sorghum or maize, and 120,000 kg of groundnuts annually at full development. The total annual value of incremental production attributable to the Project at full development would be Eth $ 23.6 million.

The overall economic rate of return for the Project over twenty years is estimated at 24%. Individual rates of return were calculated for each of the three sub-projects - these are estimated at 22% for Southern Rangelands, 25% for Jijiga, and 26% for Northeast Rangelands. Rates of return were also calculated for certain specific components within these sub-projects - these were estimated at 17% for the ranches, 29% for the feedlot and 13% for the water spreading/irrigation program. The project would ensure both permanent (500 persons) and (about 4,000) temporary employment. Overall the Project would affect an estimated 100,000 families in the rangeland areas - the average per capita income of these pastoralists would be increased from Eth $ 60 (US $ 29) to about Eth $ 85 (US $ 41) over the life of the Project, thus substantially raising the incomes of one of the poorest segments of Ethiopia's population.

2) Present Status

The Project became effective in early 1976. At the same time an agreement was signed between the Government of Ethiopia and ILCA to formally endorse ILCA's monitoring function. The development of the monitoring system as outlined in Annex 3 is proceeding according to schedule and in step with the implementation of the Project.

B. Kenya

1) The Appraisal Report

The Second Livestock Project was appraised in 1972 with the report being released in 1974. Similar in concept to the successful first project, it was designed as a broadly based 5-year integrated program to increase Kenya beef production and improve range infrastructure ; it was also designed to contain a wildlife development component. The following sections are taken from the appraisal report.

a) Background :

Livestock represents a major national resource in Kenya. The livestock population comprises about 9.5 million cattle (including 0.5 million dairy cows) and about 8 million sheep and goats. About half are concentrated in the densely populated agricultural areas and the other half are widely scattered over the sparsely populated rangelands. About 0.5 million head are found on large-scale commercial ranches ; these are the main source of quality beef production. Growth in the national herd has averaged about 2% over the past decade. About 800,000 head of cattle are slaughtered annually, a total offtake rate of about 9%. However, only about 285,000 head are marketed through commercial channels, resulting in a commercial offtake rate of about 3%, about half of which comes from commercial farms and ranches and half from traditional pastoral areas. Domestic per capita beef consumption (about 13 kg) is high in comparison with that of other countries in Eastern Africa. Exports of livestock were valued at about US $ 24 million in 1972 and US $ 17 million in 1971 and represented significant increases over the previous five years when beef exports averaged US $ 8 million.

In view of Kenya's high potential for livestock development, the Government continues to give high priority to the improvement of the livestock production, marketing and distribution system. Particular emphasis has been placed on the development of ranches, communal range grazing, disease control, and wildlife resources.

b) Project Description :

The project would be the second IDA credit for livestock development in Kenya. The first credit, for US $ 3.6 million in 1968, assisted beef production on ranch enterprises and communally grazed rangeland. It also provided improved facilities for livestock movement and marketing, in part by providing credit to traditional pastoralists.

The proposed Project would develop about 60 group ranches, 100 commercial ranches, 21 company or cooperative ranches and three feedlots. It would also provide for the development of seven million acres of communal grazing land in Northeast Province and about three million acres in Isiolo district by providing water facilities and access roads. Marketing facilities would also be extended : 30 cattle markets would be established, existing holding grounds would be improved, and stock routes would be improved with the setting up of 80 new holding grounds. Transportation facilities would be augmented with the provision of five cattle trailers and 10 cattle trucks. Three wildlife areas would be developed to help overcome the resource competition with livestock; livestock census and monitoring units would also be included in the Project to improve technical knowledge in this field. Finally, the Project would provide for technical services, training, Project monitoring and evaluation, and for future project preparation.

c) Project Execution :

A Project Coordination Unit would be established in the Ministry of Agriculture to coordinate and supervise implementation of the Project ; personnel would include a Project Coordinator, an Assistant Project Coordinator and supporting staff. Technical services would also be provided to assist AFC and the Livestock Marketing Division (LMD) of the Ministry of Agriculture to implement the Project.

Procurement procedures under components financed by U.S., U.K. and Canadian aid would be in accordance with those countries' respective procurement regulations. Due to the fact that operations would be scattered over a wide area, ranch and other infrastructures within components financed by IDA would be constructed by local contract or force account.

Beef prices would be decontrolled within a three-year pasing plan. Current prices are about 25% below export levels.

d) Costs and Financial Arrangements :

Total Project cost over the five-year period from 1974 to 1979 would be about US $ 60 million. Foreign credits of about US $ 34 million (including an IDA credit of US $ 21.5 million) would finance foreign exchange costs of US $ 19 million and about 35% of local currency costs of about US $ 41 million. U.S. financing - US $ 7.3 million - would finance water development and some ranch development. Canadian financing - US $ 2.4 million - would finance water development and the wildlife census and monitoring unit. U.K. financing - US $ 3.7 million - would finance the livestock marketing component. The Agricultural Finance Corporation (AFC) would be the lending channel for loans to Project beneficiaries for ranch development and feedlots. Government lends finance to AFC for a term of 20 years, including a grace period of five years ; interest would be at 3% per annum, the rate under the First Livestock Project. AFC onlending terms would not exceed 10 years with a grace period of three years, and the interest rate would be 9% per annum. Funds for communal grazing schemes, livestock marketing, wildlife development and technical services would be invested by the Government directly.

e) Benefits and Justification :

The estimated financial rate of return on the beneficiaries incremental investments would range from 12 to 23%, while the rate of return to the Kenya economy would be about 25%. The Project at maturity (1985) would increase annual beef production by about 23,000 m tons, a 50% increase over present marketed levels. The net foreign exchange generated by the Project at full development is estimated at US $ 7 million annually. At full development the Project would create about 5,000 new jobs in addition to engaging 10,000 families totalling 50,000 people on the ranches. Communal range water development would benefit about 90,000 pastoralists.

The Project would directly benefit poor pastoralists and other small cattle owners and wage employees on commercial and company ranches, in meat marketing, meat processing, wildlife and range water development. In addition, higher prices for beef would transfer income from relatively prosperus urban consumers to the poorer rural producers.

2) Present Status

The Project became effective in December 1974. From the outset, various factors resulted in extremely slow project implementation. By the end of September 1975 the World Bank had only disbursed US $ 28,500 compared with an appraisal estimate of US $ 6.3 million.

In view of these issues an in-depth review paying particular attention to Project organization and management, the current economics beef production, and the escalation of Project costs was recommended and carried out in February/March 1976. An ILCA staff member participated in this review.

This reappraisal report has been produced, distributed and discussed. The changes in comparison with the appraisal report are not radical and it may be expected that the reappraisal report will be adopted in the very near future with the Project getting into full swing by mid-1977. The resident ILCA staff member responsible for the implementation of the Kenya Project has been recruited and assumes his duties on February 1.

C. Mali

1) The Appraisal Report

The resident Mission for West Africa of the World Bank identified the Project in October 1970, and subsequently prepared it, supported by FAC - financed SEDES and IEMVT Studies and relevant Malian Services. The Project was appraised in January/February 1974. The appraisal report which was released in January 1975 summarized the Project as follows :

a) Background :

The Government of Mali has requested IDA assistance in financing a livestock project. The location would be the 5th Region, Mali's most important and high potential livestock area (89,000 km^2, 1.12 million people), which during the 1972/73 drought lost about 25 percent of its 1.7 million cattle and 10 percent of its 2.2 million sheep. It would be IDA's first livestock operation in Mali, and the first comprehensive effort in West Africa to increase range livestock production by pastoralists in the Sahelian zone.

b) Project Description

i) The Project would aim at the rational use of land and water in the 5th Region and would help about 100,000 pastoralist families to rebuild and improve their herds and to protect them against future droughts. An essential feature of the project would be to develop effective grazing control, which offers the only means of creating and maintaining the conditions in which efficient and stable livestock production can be developed on the 5th Region's rangeland.

ii) A combination of incentives, regulation and education is needed to make grazing control effective - regulation without education would mean friction between pastoralists and authorities ; education alone would produce results too slowly ; and neither would have any lasting effect in the absence of strong incentives. The incentives and measures used would be adapted to the different areas covered by the project.

iii) In three special areas - one of about 5,000 km^2 and the other two about 1,000 km^2 together - permanent watering facilities would be provided, along with animal health and extension services. Pastoralists in these areas would have user rights to land and watering facilities which would be granted and safeguarded by the Government. This would provide the pastoralists with an incentive to use their land and facilities properly and an opportunity to invest in further developments such as fencing and additional watering facilities. To facilitate regulation and control, the project would aim at setting up pastoralists as legally constituted groups. Other areas amounting to about 10,000 km^2 would be provided with seasonal ponds and improved animal health services. The location of the ponds would be designed to increase the pasture available at the beginning of the dry season and thereby reduce the pressure on the dry season pastures in the Niger Delta. As the areas to be provided with permanent and seasonal watering facilities only cover about 20% of the 5th Region, and since the methods of introducing grazing control are new and untried, emphasis would be placed on the preparation of a second-phase project based on the experience provided by the first.

The project would be carried out over the five years 1975-79 and would comprise :

- introducing livestock extension services and grazing control in three special development areas :
- providing improved animal health services throughout the 5th Region ;
- construction 70 wells and 50 ponds ;
- constructing and managing an abattoir and hide-drying facilities at Mopti-Sevare ;
- constructing and managing five livestock markets ;
- establishing and managing a 150 ha livestock and pasture trial station ;
- providing personnel training and testing a functional literacy program for pastoralists , and
- preparing a second-phase livestock project.

c) Project Execution

1) The Government would establish the Operation de Developpement de l'Elevage de la Région de Mopti (ODEM), which would be a branch of the Ministry of Production responsible for all livestock development in the 5th Region and for the execution of the proposed project. ODEM would have legal authority to grant user rights to grazing lands and watering facilities and to prescribe conditions for their use. It would include a planning and range management unit, and services for livestock extension, animal health, livestock marketing and processing. It would employ 12 senior staff and about 500 support staff. In the absence of qualified and experienced Malians, expatiates would probably need to be recruited for at least the following : Deputy Director, Range Management Officer, Water Development Officer, and Pasture Agronomist. They would be replaced after four or five years by Malians who would have been trained within the project and abroad. The project would also provide for eighteen man-months of consultant services for studies related to project implementation and preparation of a second-phase project.

a) Cost Estimates and Financial Arrangements

The project cost for the five-year period, 1975-79, including taxes and duties is estimated at US $ 17.3 million. Taxes and duties account for about 14% of project costs before contingencies. It is proposed that an IDA Credit of US $ 13.3 million be made to the Government on standard terms, covering 77% of project costs. The Credit would finance the project's foreign exchange costs (US $ 9.0 million) and 52% (US $ 4.3 million) of local currency cost. The remaining 48% (US $ 4.0 million) of the latter would be met from Government budgetary allocations (US $ 3.4 million), ODEM's revenues (US $ 0.4 million), and livestock owners (US $ 0.2 million).

The IDA Credit would be disbursed over five years.

b) Benefits and Justification

The principal direct benefits from the project would be incremental annual livestock production worth MF 3.5. billion (US $ 7.8 million) in 1974 terms, yielding net foreign exchange earnings of the order of MF 1.7 billion (US $ 3.8 million). Some 100,000 pastoral families would increase their average cash incomes from livestock production from MF 65,000 (US $ 144) to MF 100,000 (US $ 222), and almost 400 jobs would be created.

The economic rate of return of the project is estimated at 51%, and is not very sensitive to increased costs or reduced benefits.

Without the changes that would be introduced under the project, it is likely that the 5th Region would continue to deteriorate as a grazing resource, as more and more rangeland would be destroyed by overgrazing and degraded by shifting millet and rice cultivation.

The appraisal report went on to spell out in some detail the risks the Project involved, namely (1) the degree to which pastoralists will respond to the grazing control measures introduced by the project ; (2) the degree to which other pastoralists will be prevented from encroaching on the grazing rights of participating groups: and (3) the frequency and extent of future droughts. It concluded that the potential benefits of the Project were so important that the risks were worth being taken.

c) Present Status

The implementation of the Project has commenced and while the initial stages of implementation are as usual slow it would be high time to start developing a monitoring system if the Government of Mali finds this desirable. ILCA has concluded an agreement with the Government of Mali concerning the study of livestock production systems in the fourth region only.

Assuming that the Government of Mali requests ILCA to be involved in the monitoring a resident staff member of ILCA could immediately be charged with initiating the setting up of the monitoring system.

D. Nigeria

1) The Appraisal Report

The project was appraised in July/August 1972. Cost estimates were updated as of early 1974. The appraisal report which was released in October 1974 summarized the project as follows :

a) Background

Nigeria has some 11 million beef cattle, 30 million sheep and goats and 70 million poultry. Except for a highly commercialized and modern poultry industry serving the main urban centers, and apart from better disease control, the subsector has remained unchanged for at least a century. Government has recently accorded high priority to livestock development, stimulated by the rapid rise of beef prices in recent years and the fact that domestic production meets only about 70% of consumption. Increased human population presently estimated at some 80 million and improved living standards will further intensify demand, and increase prices and the need for imports.

b) Project Description

i) The proposed project would (a) establish or improve seven bredding and two fattening ranches owned by Federal and State Government companies ; (b) provide credit and technical support for commercial farmers to establish about 50 medium-sized breeding and fattening ranches and for up to 1,500 smallholders to take up fattening ; (c) establish for about 1,500 nomadic herdsmen and their families some 1,600 sq mi of grazing reserves, appropriately equipped and staffed ; (d) establish and carry out

pasture improvement research programs ; and (e) provide training in beef cattle production for Government employees, private ranchers, smallholders and herdsmen.

ii) The project would provide the funds needes to build up breeding herds totalling about 100,000 head, improve about 21,000 ac of pasture, build 100 dams for watering cattle, and construct 2,000 miles of roads and firebreaks.

c) Project Execution :

A Livestock Project Unit (LPU) would be set up in the Federal Ministry of Agriculture and Natural Resources to coordinate project implementation and to (a) prepare development plans for the Federal, State,and privately owned ranches ; (b) operate as agent for the Nigerian Agricultural Bank (NAB), the credit scheme for beef cattle fattening by smallholders ; (c) provide technical supervision of borrowers for these ranches on behalf of NAB; (d) develop and manage the grazing reserves ; and (e) be directly responsible for training and research and for pasture seed production. NAB would be the credit channel for ranch development loans ; loans to smallholders for cattle fattening would be made by LPU on behalf of NAB. Consultants would be appointed to make regular evaluations of project progress, and to carry out project-related studies.

d) Costs and Financial Arrangements

i) Total project cost is estimated at US $ 42.0 million over an investment period of eight years. A bank loan of US $ 21.0 million is proposed, which would cover the project's foreign exchange costs,which amount to 50% of project costs. The remaining project costs would be financed as follows : Federal Government 14%, State Governments 19%, NAB 12%, and private ranches and smallholders 5%.

ii) The Borrower would be the Federal Government, and the loan would be made for a term of 20 years, including a grace period of six years on principal. The Bank loan, together with a Federal Government contribution of N 3.9 million (US $ 5.9 million), would be deployed as follows : the Borrower would on-lend N 8.6 million (US $ 13.1 million) to NAB, which in turn would lend to the ultimate borrowers at an appropriate interest rate

varying between 5% and 9-1/2%. Of the balance : N 1.1 million (US $ 1.7 million) would be passed on to the North East and North Central States as grants in aid for its development of the grazing reserves ; N 4.4 million (US $ 6.7 million) would meet the costs of the Livestock Project Unit ; N 0.5 million (US $ 0.8 million) would be invested as equity in the federally owned ranching company ; and N 3.0 million (US $ 4.6 million) would remain to be allocated.

e) Benefits and justification :

At full development, which would be reached in the tenth year of the project, incremental annual production would comprise about 4,200 t carcass weight of beef (equivalent to some 4% of current domestic production) ; about 11,000 breeding heifers and 700 breeding bulls, 75% of which would be of the scarce trypano-tolerant N'DAma breed. The value of this production would be of the order of US $ 10 million a year.

The economic rates of return from the direct investments in the production components of the project are as follows : ranching companies 13% - 18% ; private ranches 13%; and smallholder fatteners 15%. These rates of return are before charging LPU costs ; when these are taken into account, the overall rate of return for the project is about 11%.

The other benefits of the project would be varied and important. The project would introduce modern techniques of livestock production and train Nigerian stockmen, extension staff and project managers in the use of such techniques. Livestock credit facilities would be developed. The development of grazing reserves and use of improved pastures should increase carrying capacities, thereby helping to ease the confrontation between herdsman and agriculturalists in the heavily populated areas of the north. The smallholder cattle fattening component would provide a source of additional income by integrating livestock into the traditional crop production system. Studies on livestock taxation and development of land cleared of tsetse-fly sponsored by the project may well set the stage for a better institutional framework for livestock development and profitable investment in livestock production.

2) Present Status

The Project is completing its first preparatory year (year zero). The Government of Nigeria has expressed an interest in ILCA undertaking the monitoring of the project. At the same time ILCA is planning to set up additional research operations in Nigeria. Assuming that agreement can be reached with the Government of Nigeria on both accounts a resident ILCA staff member could take over responsibility for the monitoring as early as mid-1977.

Annex 2 : Monitoring in Botswana

A. Background to Botswana Government contacts with and proposals to ILCA

Having studied the brochure which lays out how ILCA intends to develop close linkages with national organizations, the Government of Botswana first approached ILCA in July 1976. In July and October 1976 they sent a senior official to ILCA for discussions and showed particular interest in being able to use ILCA's technical expertise in the broad field of development evaluation. Finally in November 1976, the Botswana Government asked ILCA to evaluate the effects of a major livestock development project and offered to supply a major portion of the inputs required for this programme.

B. Present situation related to livestock management and grazing control in Botswana.

The Republic of Botswana is a land-locked country approximately the size of France, lying between latitudes 18 degrees and 27 degrees south. It is bounded on the south and east by the Republic of South Africa, on the west and north by South West Africa (Namibia) and on the northeast by Rhodesia (Zimbabwe). At a point between South West Africa (Caprivi Strip) and Rhodesia it touches Zambia.

In east-west cross section, Botswana resembles a saucer filled with sand stretching westward into Namibia, with an eastern lip of low hills rising above the average 1,000 meters altitude of the sand veld. The eastern lip sheds rainfall that recharges aquifers on the base of the saucer that are exploited by more than 3,000 boreholes that enable the habitation and use of vast areas with no surface water. The sand fill is characteristically so fine that direct rainfall is retained in the top 6 meters and is available for plant use. Thus, although the rainfall is low, averaging 450 millimeters, (ranging from 250 in the south-west to over 550 in the extreme north and south-east), the herbage cover is better than might be expected. However, the top layer of soil is extremely fragile and the vegetation can be easily degraded. This susceptibility to abuse is compounded by the high degree of seasonal

variability of rainfall which ranges from 30% in the north to 80% in the south-west. Much of the range is already degraded and, in many areas, the people are dependent on more livestock than can be sustained without further degradation of the range.

Though the livestock industries proportional contribution to the nation's total export earnings have dropped from 80% in 1969 to 45% in 1974, actual earnings have risen from R10.2 million to R34.7 million over that period (U.S.$11.7 - U.S.$39.9).

The National Herd may have risen to approaching 3 million by the first quarter of 1976 but the last available census gave a total of 2,121,000 in 1972. Approximately 89% of these were owned by Botswana on tribal and state land. With controlled stocking on freehold farms, most of the increase in numbers occurs on the tribal lands.

The sheep and goat populations totalled about 350,000 and 875,000 head respectively in 1970 and were estimated at about 420,000 and 1,350,000 respectively in 1975.

Farmers on Tribal Lands normally graze their stock during the seven months dry period on communal pastures surrounding wells and boreholes and move their cattle further afield in the wet season to graze around natural catchments and ephemeral water holes. Communal grazing grounds surrounding permanent sources of water are invariably overstocked and deteriorating. Damage is marked by disappearance of grass, dominance of weed, and encroachment of bush. Areas opened up by the sinking of boreholes in recent years can often be dated by the uniform height and age of the predominating bush. Around older boreholes and wells the general pattern is one of near complete devastation within a radius of two or three kilometers from permanent sources of water, with damage decreasing gradually until natural range is reached some 12 - 15 kilometers away.

C. <u>The livestock development project</u>

The major project components include:

1. credit for the development of 150 ranches and 12 communal grazing units collectively covering over one million hectares of range land;
2. the establishment of a ranch development training centre;

3. development of trek routes, railway handling facilities and fire control unit;
4. the establishment of service companies;
5. the possible development of an Agricultural Division in the National Development Bank;
6. the development of a technical and economic monitoring capability.

Major contributions to this second livestock development project come from the World Bank and the European Development Fund.

D. ILCA's involvement in and expected benefits from the monitoring component.

ILCA will provide the following specific inputs:

- provide information about financial and physical progress of the Project;
- evaluate the Project after the disbursement period of five year;
- contribute to the establishment of a long-term monitoring system beyond the 5 year period;
- contribute to an assessment of project conception and planning in the long run as a result of several monitoring exercises;
- contribute to the design of follow projects;
- strengthen the local research capacity.

Involvement in Botswana would thus be part of ILCA's monitoring network and would have several advantages additional to the monitoring information directly obtained.

1. It would give ILCA the opportunity to have access to a vast amount of data on a new, well-planned approach to pastoral development, e.g. consultation with the people-reports on 2,900 separate radio learning groups involving 49,000 citizens and assessment of their reactions to the proposed policy.
2. The greater the number and variety of projects monitored the more useful will be the monitoring network.
3. A working arrangement with Botswana will give access to a considerable amount of range and animal production data and documentation both from within Botswana and from the rest of Southern Africa.

Annex 3 : Some Details on the Methodology of Evaluation

Differences in the monitoring systems will be made according to the number of agencies involved in project implementation. In Ethiopia only one implementing agency is involved (Livestock and Meat Board) whereas in Kenya a relatively large number of agencies is involved. The monitoring systems will reflect these differences to the extent that different reporting formats will be utilized. Additionally, differences in the monitoring systems will be necessary according to the relationships between benefits and costs in the areas undergoing development. In those areas where ranches are planned the monitoring system may consist largely of setting up recording systems on farms and ranches. Such a system would clearly be inappropriate in those areas where the projects focus on infrastructural investments in a pastoral setting.

Four separate components of monitoring systems can be identified. These are :

1. On ranch/farm monitoring: A recording system is set up such as done by Stoops and Schmidt in Mexico [1/]. Such a system will allow financial control and economic evaluation for the rancher and at the same time be structured to fit into the overall cost and benefit monitoring system. ILCA will only play an advisory role in the setting up of formats and will have no responsibility for accounting or reporting.
2. Overall cost monitoring: Disbursement and cost monitoring systems for all implementing agencies are set up. This involves the putting together in cooperation with the Project Manager of a quarterly and annual reporting procedure taking into account :

1/ D. Stoops and J. Schmidt: Guideline for Farm/Ranch-Level Monitoring of Agriculture and Livestock Enterprises using Bank/IDA Financing. World Bank, June 1974.

- the financers' reporting demands ;
- the availability of accounting and technical support staff;
- the need to have cost data that lend themselves for economic analysis as well as financial control.

It goes without saying that the cost (as well as the benefit) monitoring system provides from the start for a distinction between prices and physical quantities. Once the formats are set up the accounting and reporting is done by ordinary project staff. Normally, there is hardly any additional work involved.

Again it must be stressed that ILCA's role is only advisory and that no responsibility for cost accounting or reporting can be assumed.

3. Overall benefit monitoring : A benefit monitoring system is set up for the different components of the development scheme covering all expected benefits and effects of the project that are not included in ranch records. This exercise starts by identifying the key indicators (socio-economic and biotechnical) which are of greatest relevance for effects and benefits of the scheme. In most cases this then calls for the design of a sampling procedure to follow these indicators over time. It is here that other disciplines have to be called upon heavily to ensure comprehensiveness and consistency of the sampling procedure and to ensure that the schemes' effect on the environment (e.g. range trend) and on livestock productivity (e.g. fertility, mortality liveweight gain, offtake) are duly taken into account. The data collection in the field is to be carried out by staff of the development scheme supervised by an ILCA staff member permanently residing in the country concerned. Additional manpower is necessary to a limited degree only.

4. Computerization : In all cases a quantitative framework is drawn up which allows putting together the cost and the benefit indicators, be it from the farm/ranch level or from the project or national level, and to calculate at any point in time for a given set of assumptions and indicators the corresponding major benefit indicators over the project life, normally assumed to be some fifteen years. This includes e.g. incremental meat production, incremental herd size, financial and economic rate of return. For the sake of ease and speed of calculation the quantitative framework

is computerized. The models used are simple, straightforward and transparent. They serve to test assumptions for consistency, to show the relative importance of the different factors contributing to production and to point to critical aspects that require more in-depth examination and/or monitoring.

Sets of runs and sensitivity analysis are produced annually and in addition when necessary for management decision.

SECTION SIX

1) Title: The Use and Potential of Trypanotolerant Livestock.

2) The Problem: There is considerable research and development under way involving trypanotolerant livestock on which there is little or no published information. A detailed study of (1) existing publications and (2) current and planned research by national and international institutions is essential, and should be undertaken by ILCA. At the same time, unanalysed data existing at national institutions should be analysed in cooperation with the countries and/or institutions concerned.

3) Objectives: Phase 1) To prepare a status-of-knowledge report on trypanotolerant animals, and research and development involving such animals.

Phase 2) To develop a long-term programme, in the light of Phase 1 above, to encourage the most effective use of trypanotolerant breeds and crosses in livestock development schemes in the humid and semi-humid tropics. This would cover both the improvement of the production potential of trypanotolerant animals through management, nutrition, selection and crossbreeding, and the dissemination of breeding stock using both natural and artificial breeding programmes.

4) Location: ILCA headquarters, with missions to countries where trypanotolerant livestock are being used for research and/or development and to other organisations that have relevant information and data.

5) Description of the Areas: African animal trypanosomiasis covers approximately 10 million km^2 of tropical Africa. This disease is a grave constraint to increasing animal production, in some thirty-five African countries (see Annex 1).

6) State of knowledge: Considerable information about animals which appear to have some tolerance to trypanosomiasis exists in the literature. A review entitled Trypanotolerant Animals and Trypanotolerance is being prepared by ILCA. However, research on trypanotolerant livestock (mainly cattle), and development programmes utilizing trypanotolerant livestock are currently under way in several African countries. ILCA is only partially aware of these

activities since progress reports either are not widely distributed or have not been made. In addition, it is known that data exist in several countries but have not been analysed.

7) Methodology and Time Schedule: In Phase 1, the general steps will be:

- Make contact with all international organisations concerned in any way with trypanotolerant livestock.
- Complete the review of available literature on trypanotolerant animals and trypanotolerance by March 1, 1977.
- Carry out missions to countries in Africa where it is known that current research and/or development programmes are currently underway or have been completed, and to those countries or organisations which have sponsored or supported such programmes and who may have available data and/or information which would be useful to the study. These missions would be carried out between April 1, 1977 and December 31, 1977.
- Complete status of knowledge report by mid-1978 and make recommendations to Programme Committee on future potential research and development proposals concerning the use and potential of trypanotolerant livestock.

The status-of-knowledge report would include basic information on trypanotolerant livestock according to the following points:

Demography and performance:

(1) Numbers, density, and settlement areas of the herds of cattle, sheep, and goats.

(2) Animal characteristics and performance
- Weights at periodic intervals
- Mature weights of all classes
- Reproductive performance
- Viability
- Carcass characteristics
- Milk production
- Draught characteristics

(3) Management and its influence on trypanotolerance

(4) Herd/flock composition and structure

(5) Herd/flock offtakes

Economic evaluation:

(1) The economic importance of trypanotolerant livestock to the semi-humid areas of Africa.

(2) Appraisal of existing data and information to ascertain the economic potential of raising trypanotolerant livestock in semi-humid areas compared to non-trypanotolerant animals reared under chemo-therapeutic regimes. To make this comparison, some specific data on non-trypanotolerant livestock will have to be collected.

(3) The potential of increasing the numbers of trypanotolerant livestock through natural breeding and/or artificial insemination techniques.

This detailed methodology and schedule have been arrived at after consultation with ILRAD, FAO and other International institutions, with whom continued close contact will be maintained.

The general steps of Phase 2 will be determined by the results of Phase 1.

8) Resources: In Phase 1:

(a) Guidance of study - ILCA staff member - 2 man-months from March 31, 1977 to July 31, 1978.

(b) Consultant for one year. August 1, 1977 to July 31, 1978.

(c) Six missions of 1 to 2 months' duration each by ILCA staff members.

Some of these missions can be combined with other ILCA missions, especially those concerned with the comparison of indigenous African breeds and crosses.

(d) Analyses of data collected on mission - 2 man-months of computer services.

(e) Editing and printing of report.

9) Expected Reports and Publications: (a) Draft review of literature on trypanotolerant animals and trypanotolerance - mid January, 1977.

(b) Completed status-of-knowledge report on trypanotolerant animals and trypanotolerance - July 31, 1978.

10) Expected Benefits: The Phase 1 study will enable ILCA to determine:

(a) Whether further research on trypanotolerant animals and trypanotolerance is appropriate and necessary.

(b) Whether such research should be carried out by ILCA.

(c) What resources will be required for such research.

Annex 1: Areas to be studied

The following geographical regions will be considered in Phase 1:

(a) North East Africa
- Ethiopia
- Sudan

(b) East Africa
- Kenya
- Uganda
- Tanzania

(c) Southern Africa
- Angola
- Mozambique
- Rhodesia

(d) Central Africa
- Central African Empire
- Gabon
- Rwanda
- Congo
- Zaire
- Sao Tome and Principe
- Equatorial Guinea

(e) West Africa
- Upper Volta
- Mali
- Senegal
- Gambia
- Guinea Bissau
- Guinea
- Sierra Leone
- Liberia
- Ghana
- Ivory Coast
- Togo
- Dahomey
- Nigeria

In West Africa the main research and production stations to be contacted, or the areas of origin to prospect, are the following:

Mali - The Yanfolila region (at Dana)

Upper Volta - The stations at Mataurkou and Markove

Ivory Coast - The ranches of Abokou Amekko and Sipilou, the zootechnic station of Bouake-Minankro and the Odienner region.

Senegal - Trypanotolerant cattle are raised in the south of the country, in Sine Saloum and in the Keodugou region.

The "Djakore" breed (13/16 N'Dama and 3/16 Gobra) is being developed at the Bambey Research Station.

Ghana - Information on N'Dama, W.A. Shorthorn and Sanga herds is available at various centres: Ars Nunga; Ars Kpong; Farm University of Kumasi; Expt. Farm. Pong. Tamaie and the Demow and Tadzewv stations.

Guinea - The areas of origin of the N'Dama lie in Mamou and Labe.

Togo - Avetonou station

Dahomey - the Okpara and Krinnou stations

Nigeria - Various ranches (Upper Ogun)

SECTION SEVEN

1) Title : Documentation : Information Retrieval and Dissemination

2) Problem : Documentation activities are important insofar as information precedes research and supports it at every stage. Information concerning livestock production in Africa is scattered through many sources, published and unpublished, and in French and English. ILCA has a special responsibility to retrieve and collate all relevant material and, where required, make it available in French and English.

3) Objectives

a) to collect, collate, analyse and disseminate all relevant information on animal production and development in Africa.

b) to provide information for livestock scientists and planning authorities in Africa.

c) to publish bibliographies and reviews on particularly important topics.

d) to collect statistics relating to animal production in Africa.

e) to cooperate closely with national and international organisations also operating in this field of documentation.

4. Methodology : For procedures related to acquisition, registration, cataloguing and indexing see Annex 1. The flow of documentary units (books, periodicals, microfiches, etc.) within the ILCA system is represented by the chart in Annex 2.

.../...

The dissemination of information involves photocopying microfiches, bibliographical bulletins, indexes and contents lists, according to the nature of the information being handled.

Annex 1 : Operations Presently Observed Throughout the Documentary Chain

A. Acquisitions

The main activity has so far been to collect documents- monographs, periodicals, offprints, reports, and research material: directories, dictionaries, indexes, bibliographies and acquisition lists of other libraries.

Close collaboration has been established with leading booksellers, suppliers and other libraries, universities, research centres and bureaux throughout the world. The main difficulty has been the logistical problem of shipment, postage, etc.

When on field missions all ILCA staff take appropriate opportunities to retrieve and collect material which may be relevant to ILCA's activities.

Exchange arrangements are being made with a number of national and international institutions.

The microfiche unit has so far filmed 2403 documents from Senegal, Kenya, Ethiopia and Mali. The International Development Research Centre (I.D.R.C.) of Canada has offered to assist ILCA by providing additional help for microfilming in the field.

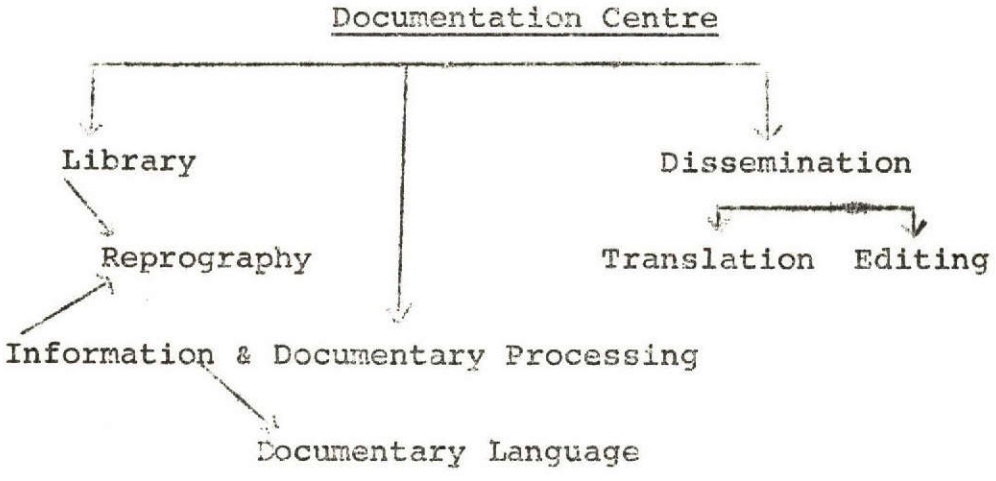
Inevitably there is a lag between collection, cataloguing and indexing. Steps recently taken to recruit more staff should alleviate this problem.

B. Documentation Techniques

Upon receipt, all documents, including periodicals, are registered, catalogued, and filed. Lists of new acquisitions are periodically circulated to the staff.

Books are borrowed on short- and long-term loan. The library staff attempts to locate documents not immediately available in the ILCA collection.

Annex 2 : Flow Chart



Documentation has three sections : Library; Information and Documentary Processing Section; and Dissemination. In addition there are four units : Translation ; Editing ; Documentary Language (a committee); and Reprography.

The Library is responsible for the acquisition, cataloguing, and storage of books, periodicals and other reference materials, and for assisting the ILCA staff in obtaining needed publications.

The Information and Documentary Processing Section deals with so-called non-conventional literature and works exclusively in microfiche. The functions of this section are : the processing of documentary units ; storage; and classification.

Dissemination has the task of selectively distributing ILCA's documentary units both internally and externally, in response to the needs of the international scientific community.

The Documentary Language Unit's function is to compile a "thesaurus" of terms to be used in interdisciplinary indexing, within the framework of the AGRIS Tropical Animal Production network. This thesaurus will appear in four languages, i.e. English, French, German and Spanish.

.../...

The Translation Unit serves ILCA's bilingual needs by providing both French and English versions of working papers, publications, etc.

The Editorial Unit is responsible for the technical quality of ILCA's publications, i.e. style and presentation.

The Reprography Unit films, files and duplicates all documents of interest to ILCA, and maintains an archive for reference and exchange purposes.

Annex 3 : Personnel

Section or Unit	Senior Staff	Supporting Staff
Administration	1	3
Library	3 (2)	7 (4)
Information and Documentary Processing	5 (3)	4 (4)
Dissemination	1	1 (1)
Translation	2 (1)	1
Editing	2 (1)	2 (2)
Reprography	3 (3)	4 (3)
Total	17 (10)	22 (14)

Note : The numbers in brackets indicate those positions which have yet to be filled. Since the Documentary Language Unit is actually a committee composed of members of the Documentation Centre, there are no personnel requirements.

SECTION EIGHT

1) Title: Seminars, Conferences and Training

2) The Problem: A serious limit to African research and development efforts is set by the availability of trained staff. This situation will continue for many years, even in the face of the ever-increasing numbers of well-trained African scientists[1/]. African research and planning staff wish to improve further their scientific and technological expertise, and it is particularly important to broaden the disciplinary bases and practical orientation of Africans engaged in livestock development and research. For example, the present preponderance of personnel in the animal health field needs to be balanced by scientists trained in the production disciplines of animal and range science, livestock economics and marketing, and production sociology. All programs need to be closely coordinated with and complementary to ILCA's research mandate in systems of livestock production.

3) Objectives: To fulfill its mission, the ILCA Seminar, Conference, and Training Program will cater for the needs of three levels of clientele:

a) the highest level of governmental officials responsible for planning programs and development strategies, by means of colloquia and workshops of short duration;

b) the senior and administrative level scientists, by means of workshops, conferences, and training sessions; and

c) the junior and intermediate level scientists, by means of on-the-job training.

4) Methodology: (a) Planning Strategy Seminars for Government Officials

This seminar program will serve the needs of government officials,e.g. ministers and permanent secretaries charged with national livestock policies and animal industry development. In this way, ILCA plans to stimulate increased awareness of the possibilities for efficient livestock productivity. Short

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1/The term "scientist" is used throughout this paper in a broad sense to include professionals of all types concerned with livestock development (e.g., socio-economists, planners)

duration seminars will provide excellent opportunities for communication at the international level and the sharing of experiences in livestock development. Seminars will be repeated in different areas of Africa, in order to bring together groups compatible in terms of circumstances, problems, and national development. There will be a close relationship between these seminars and ILCA's research programs, particularly the monitoring network (see Section 5).

It is envisaged that the series will include such topics as:

Land reform practices and policies
Water resource development strategies
Sedentarization of pastoral nomads
Marketing of livestock and livestock products

Specialists will be retained on a consultancy basis to "key-note" each workshop.

(b) Technical Workshops and Conferences

To meet the specific needs of senior level scientists, intensive workshops are planned to cover key subjects of vital interest. Guidelines governing such short courses, conferences and workshops are as follows:

1. Orientation: the courses will cater for intermediate and senior level scientists and for administrative level personnel such as directors of research stations, directors of veterinary services, and others charged with the direction of programs in their respective countries.

2. Duration: courses will vary from a few days possibly to several weeks.

3. Location: courses will be held mainly in Addis Ababa, but conferences will also be conducted in other parts of Africa, or even on other continents, if convenient or appropriate.

4. Subject Matter: courses will be mainly scientific in nature, dealing with topics such as experimental design, aerial monitoring techniques, and evaluation procedures for development projects. Emphasis will be given to the special

topics in which ILCA has a particular concern, and will therefore stress applied problems of a multidisciplinary nature.

5. Course Leaders: speakers and discussion leaders will frequently be drawn from the ILCA Staff, Board, or Program Committee. Consultants will also be engaged to plan, develop, and execute particular programs, thus bringing to each program the best expertise which can be obtained.

6. Funding: will generally be provided by ILCA, especially in the initial years. Participants will receive travel expenses and per diem allowances. It is envisaged that special courses may be underwritten in whole or part by other agencies, some of whom have already expressed interest in such ventures.

As an example, a conference is being held in Addis Ababa for five days, beginning January 31, 1977, entitled "Techniques and Methodology of Collection of Research Information on Animal Production Systems". Ten countries are sending senior scientists and research directors. Primary objectives of the conference are to discuss efficient means of data collection, analysis, and interpretation, which will in turn allow increased standardization between countries so that a broader applicability of research results will ensue. Participants will present most of the papers in workshop arrangement, but ILCA staff members will also lead discussions, and several members of the ILCA Program Committee will present papers or participate in panel discussions.

Several other conferences are in various stages of planning:

1. In cooperation with the Economics Development Institute (EDI) of the World Bank, a course entitled "Techniques of Preparation, Implementation, and Appraisal of Livestock Development Projects" will be given in October - November 1977. This will be a contribution to increasing the efficiency of the investments being made in livestock projects

in Africa, and may be offered on a continuing basis.

2. To familiarize ILCA staff and selected African scientists with the systems approach to animal production, negotiations are under way with USAID, Texas A & M University, and the Government of Mali for a workshop on "Systems Modelling". This will be held in Mali during 1977, and will involve the ILCA program based at Niono.

3. Consideration is now being given to special courses on i) "The Aerial Monitoring of Livestock Numbers, Land Use Patterns and Potential" and ii) "A Refresher Course on Statistics and Experimental Design".

(c) Program for Junior and Intermediate Level Scientists

The program will be flexible and will cater for the training needs of promising young African scientists. The emphasis will be given to on-the-job training to improve the competence of scientists who already have an advanced degree, through working in intimate contact with senior research scientists; where possible and appropriate to the individual's needs this on-the-job experience will be provided by ILCA staff working in ILCA's field programs. Briefly, the guidelines for the program are as follows:

1. Recruitment: primarily African students will be recruited, with a small percentage of non-Africans, e.g., Asians or South Americans, to broaden the international scope. Nominations will be sought from research institutions, university departments, government institutions, ministries, etc.

2. Level: postgraduate, with as much research or planning experience as possible. Preference will be given to scientists who have already completed an M.S. or Ph.D.

3. Terms: adequate stipends will be determined according to individual circumstances, and will include travel costs. Perquisites such as insurance programs will also be provided.

4. Program of work: preferably should lie within the general framework of ILCA's research program, particularly the field programs. Principal concern is to match the

training and research experience to the trainee's competence and field of future interest.

5. Duration: 1-3 years. Shorter courses for specific purposes (e.g., national staff working in cooperative programs) will also be provided.

6. Location: preferably within one of ILCA's locations, but may be funded to work at other stations in Africa, and if necessary, on other continents. However, all activities should be related to the urgent practical needs of livestock development in Africa.

The Seminars, Conferences, and Training program will establish liaison with all appropriate universities and research institutes, especially on the African continent, but also on the European, Australian and American as well. ILCA already has an impressive array of contacts, with working relationships in various stages of development with many institutions on several continents. Cooperative ventures are already available: the Governments of Belgium, Holland, and Germany have requested our participation in their program of "Associate Experts", and negotiations are under way with several candidates. The Government of the United States has recently amended its funding provisions for international programs: ILCA has been contacted by several "Land Grant Universities" that favor expanding their international involvement through cooperation with the International Centers; the Training program would appear to offer great opportunity for cooperative endeavor, whereby trainees could take formal courses of study in the U.S. while completing the research aspects of their training with ILCA.

5) Resources: A reasonable estimate of the manpower needs is:

Director	12-man-months
Assistant to Director	12-man-months
Training Officer-Anglophone	12-man-months
Training Officer-Francophone	12-man-months
Consultants	24-man-months

SECTION NINE

1) Title: Specialist Studies

2) The Problem: In addition to the studies of animal production systems described in Sections 1 to 6, there is a need for specialist reviews or studies that do not necessarily fit into any of the other sections of ILCA's programme but which may be important to all or some of them. Such studies may be specialised or multidisciplinary; they may be desk studies (e.g., literature reviews), or they may require travel and the use of consultants. Others may involve the analysis of data in cooperation with national institutions and may require field study or laboratory analyses for short periods of time.

Several such studies have already been initiated within ILCA, for example:

Guidelines for the economic evaluation of livestock development projects;

Study of the performance of indigenous cattle breeds and crosses in Africa;

A comparison of Maure and Peul cattle breeds and their crosses;

Livestock sector reviews;

The numerical status of livestock production in Africa;

The collection of routine animal production statistics.

3) Objective: To carry out specialist studies required by or related to ILCA's programme on animal production systems.

4) Location: Most desk studies and reviews of literature will be carried out at ILCA headquarters. However, some specialist studies will need to be undertaken at other locations in cooperation with national or international institutions.

5) Methodology: The methodology of each study will be determined according to its particular circumstances.

6) Resources: These studies will generally be supervised by ILCA staff, but they may involve the services of consultant(s).

It is suggested that this programme might appropriately be limited to some 5% of ILCA's total manpower budget.

7) Expected Reports: Completed studies will normally be published.

8) Expected Benefits: Critical reviews of existing knowledge and other specialist studies are essential, to avoid duplication of research effort, to highlight gaps in knowledge, and to produce discrete items of information of particular importance. ILCA will draw upon diverse sources of information and produce specialist publications of value to scientific and development agencies.

SECTION TEN

Title:

Allocation of Resources

In the foregoing conception of ILCA's scientific, documentation and training sections which comprise its total programme, the uses of manpower have not been stated in detail, but the following broad implication can be drawn.

Manpower (in manyears)		1977	1978	1979	1980
Research programmes		MY	MY	MY	MY
1. High potential highland regions		2.8	4.8	5.2	5.2
2. Arid & semi-arid zones		24.9	24.9	24.9	24.9
3. Small animal systems & humid tropics		2.0	5.3	5.1	5.1
4. Semi-humid tropics		1.6	3.6	2.3	5.3
5. Monitoring		2.7	3.0	3.0	3.0
6. Trypanotolerant livestock	(1)	1.0	1.0	---	---
7. Specialist studies		5.0	5.0	5.0	5.0
(See also Chart of Allocation of Funds)		40.0	47.6	45.5	48.5
Scientists at H.Q.	(2)	10.0	12.0	12.0	14.0
Research support	(3)	4.5	6.0	7.0	7.0
Total Research		54.5	65.6	64.5	69.5
Seminars, Conferences and Training	(2)	3.0	6.0	7.0	7.0
Documentation	(3)	12.0	14.0	16.0	16.0
Administration	(3)	8.0	8.0	8.0	8.0
		77.5	93.6	95.5	100.5
Revised budget, 1977		70.4	91.0	101.0	105.0
Manyears in (excess) short of 1977 budget forecasts	(4)	(7.1)	(2.6)	5.5	4.5

(1) Further research on trypanotolerant livestock will be planned later.

(2) These scientists carry out the functions of coordinating all the programmes, and supervising reports. In the papers no estimations were made for them.

(3) These estimations are in accordance with the revised 1977 budget and still seem to be generally valid, especially in accordance with the papers for Conference and Training and Documentation.

(4) Not all programmes in the papers were fully forecast through to the end of 1980, and these figures are thus only generally indicative.

If we consider the research programmes 1 to 7 in terms of the percentage of manyears relating to the disciplines involved:

	1977 %	1978 %	1979 %	1980 %
Animal Science	22	24	23	27
Plant Science	18	19	20	21
Human Science	13	15	14	14
Economists	22	21	21	18
Integrated Survey	9	8	9	8
Project Managers	16	13	13	12
	100	100	100	100

It seems possible to conclude that, if manyears are diminished in 1977, possibly in the areas where we have no activity at present, in Sidamo and the North Eastern Rangelands in Ethiopia, and in the Integrated Survey team, we could generally say that the present outline of ILCA's activities for the next four years is within the manyear projections of the revised 1977 budget.

The report of the CGIAR Review Committee suggests that the operating budgets of ICRISAT, ILCA and ICARDA could be allowed to grow at the rate of US$1 million annually, in real terms. Thus if we look at the financial implications we find:

Revised 1977 budget
(See also chart for operation costs)

US$ '000'	OPERATING COSTS Approved	PROJECTIONS		
	1977	1978	1979	1980
Before inflation	4,941	6,846	7,569	8,064
Yearly increase		1,905	723	495

Our 1977 budget has been approved and therefore, if the CGIAR follows the above quoted suggestion of the Review Committee (and it must be concluded that it will, in view of the known present shortage of funds in the CGIAR system), then for the year 1980 our operating costs should be in the region of US$8 million. Our long range forecast is thus reasonable. However, for 1978 our operating costs should be approximately US$6 million and they exceed this by some US$800,000. It is obvious that reductions must be made in our 1978 operating budget.

Capital expenditure for the research programmes 1 to 7 is considered to be basically in accordance with the 1977 revised budget, with additional items for the highland regions and monitoring projected as follows:

US$'000'	1977	1978	1979	1980	Total
High Potential Highland Regions	40	40	45	33	158
Monitoring	30	15	15	15	75
	70	55	60	48	233

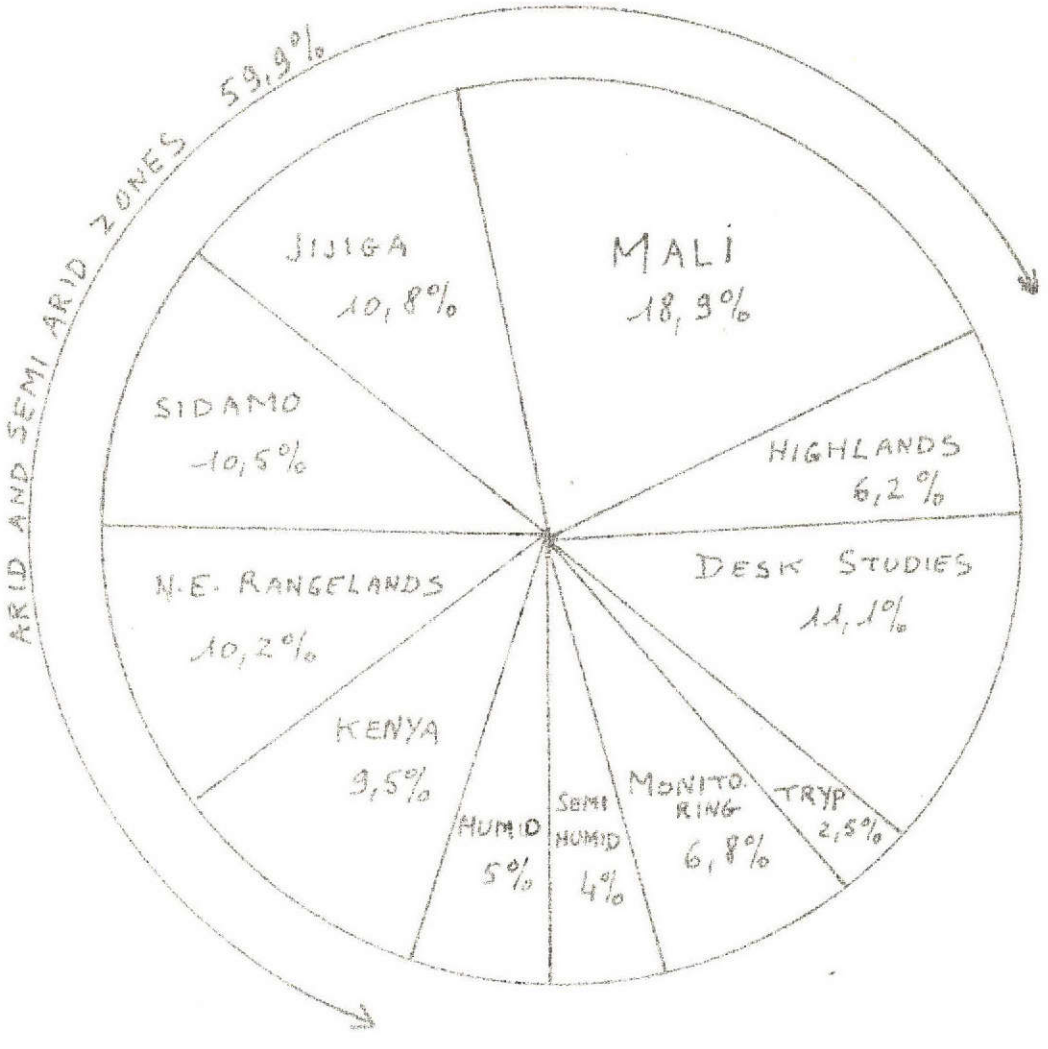
There is attached a chart showing the percentage of operation costs and the capital costs.

The foregoing comments raise other issues among which may be mentioned:

1. Management and organisational capacity to control the operations of the various programmes. (see also graph).

2. Possible reductions in capital expenditure on buildings and laboratory equipment at the Centre and on residences in Addis Ababa.

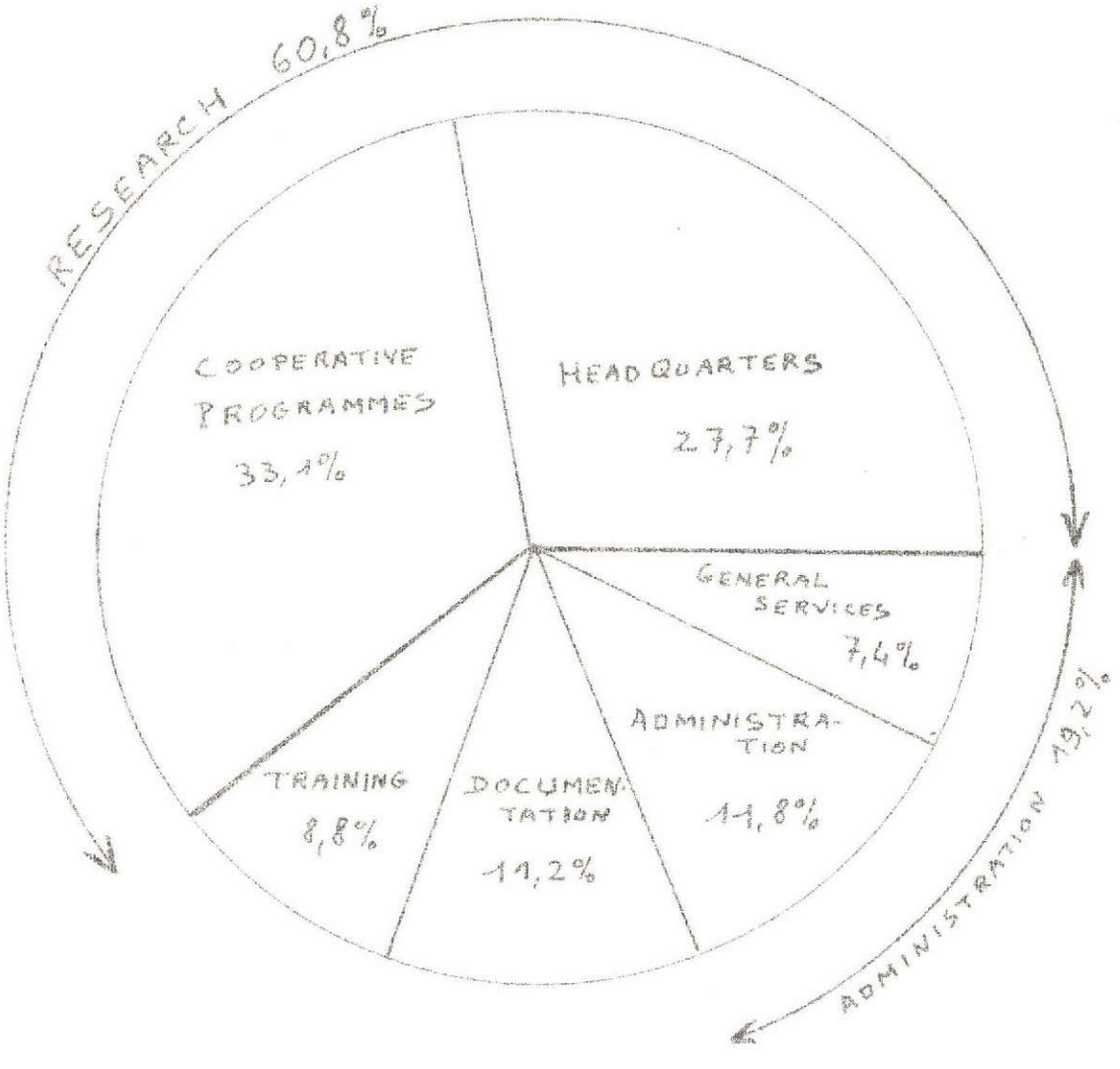
3. The possibility of the transfer of funds between operational and capital budgets.



ALLOCATION OF FUNDS

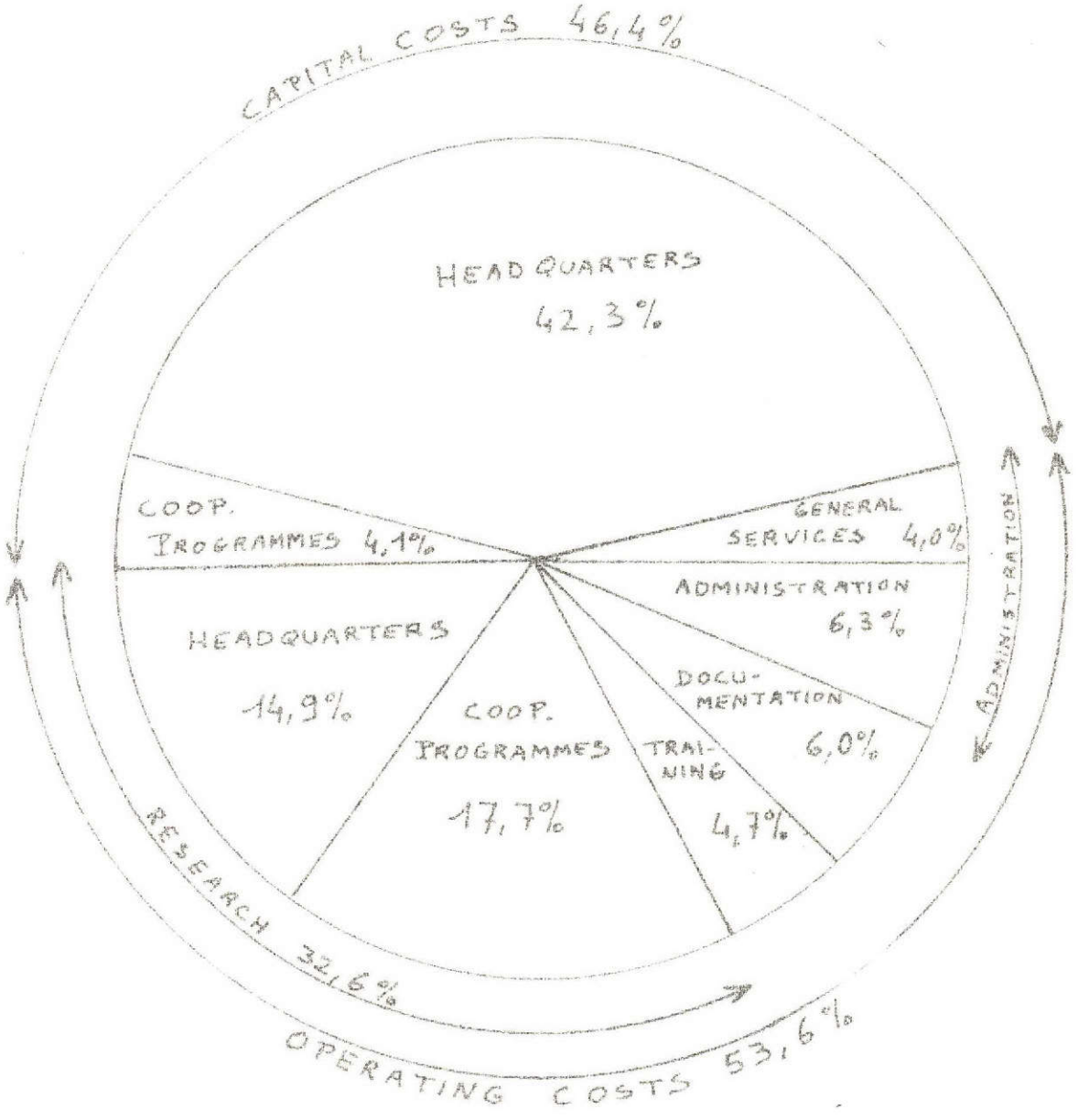
PROPOSED RESEARCH PROGRAMMES

FOR 1977



OPERATION COSTS

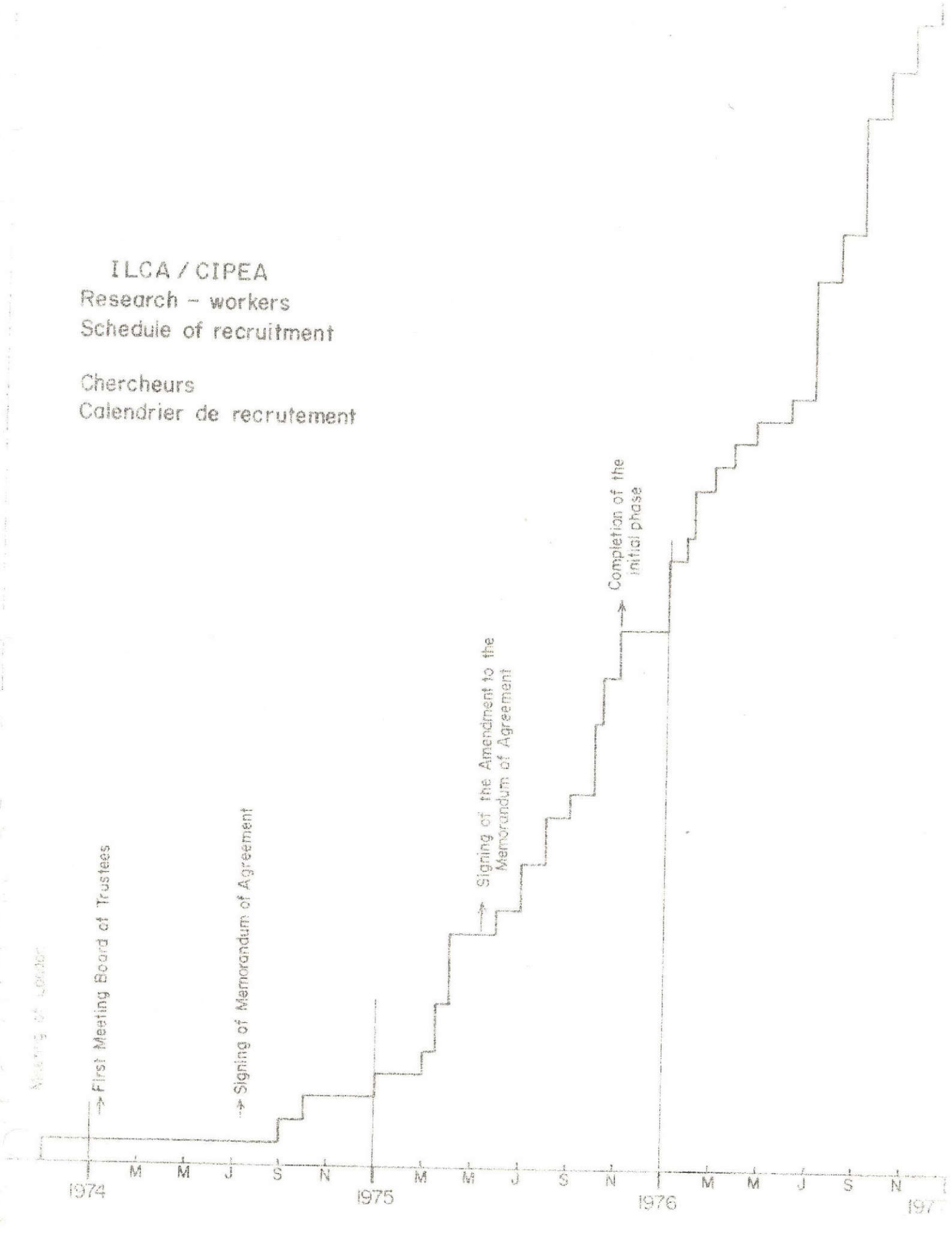
BUDGET 1977



BUDGET FOR 1977

ILCA / CIPEA
Research – workers
Schedule of recruitment

Chercheurs
Calendrier de recrutement



ILCA

BOARD OF
TRUSTEES
MEETING

ADDIS ABABA,
ETHIOPIA

16-19 MAR. 1977

WORLD
BANK