Folder Title:	Consultative Group on International Agricultural Research [CGIAR] - G-3 - International Maize and Wheat Improvement Center [CIMMYT] - 1972 / 1974 Correspondence - Volume 2
Folder ID:	1760372
Series:	Central Files
Dates:	03/01/1973 - 12/31/1974
Fonds:	Records of the Consultative Group on International Agricultural Research (CGIAR)
ISAD Reference Code:	WB IBRD/IDA CGIAR-4177S
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G - 3 CIMMYT

1972/74

Vol. 2

This file is closed as of
December 31, 1974
For further correspondence,
please see 1975/77 files.

G-3

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

CIMMYT

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

December 30, 1974.

Dr. John K. Coulter
Agricultural Officer
Consultative Group Secretariat
I B R D
1818 H. Street N. W.
Washington, D. C. 20433

Subject: Agroclimatology

Dear Dr. Coulter:

Your letter ragarding the above subject arrived to this office while Dr. Finlay is out of the country. He is expected back on January 23rd, 1975.

Thank you very much for your information which will be very helpful to Dr. Finlay.

Sincerely yours,

Maricela Bustamante
Secretary to:
Dr. Keith W. Finlay,
Deputy Director General.

mb

C-3

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COMMUNICATIONS
SECTION

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G26 Mr Cuffaut Mr Haarjer Ub

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1 Mr Dennison

2 File Research - mexico.

C I M M Y T

1975 BUDGET REQUEST

In reviewing this document, the 1972 CIMMYT Annual Report has also been consulted for more background information. This review raises some points which have probably been covered in previous discussions and in the CIMMYT Program Review, 1973-74, but nevertheless they appear of sufficient importance to be noted here.

THE RESEARCH PROGRAM

CIMMYT has an outstanding record of success in breeding cereal varieties that give spectacular yield increases under favourable soil fertility and moisture conditions. The work now in hand, and needed for the forseeable future, is designed to maintain these yields where the effects of pest and disease attack, drought and low soil fertility are damaging. These adverse conditions are mostly beyond the control of the farmer and present many serious challenges, for neither the disease situation nor the lack of soil moisture can be predicted from year to year with any degree of certainty. Furthermore there are interactions between pest and disease organisms and climate which are imperfectly understood and thus impossible to predict. Breeding new varieties of cereals, which will tolerate these pests and diseases, demands full understanding, not only of the crop but of the pests and diseases as well and much of the CIMMYT program is devoted to this. There is obviously no end in sight and indeed it is probable that the research needs will increase as continuous cultivation, more nitrogen fertilizer and more expensive inputs generally, enhance the importance of losses due to pests and diseases. Furthermore diseases of minor impact in one farming system can assume serious proportions in another within a very short period.

The budget review rightly emphasises the importance of drought; the best yield increases have obviously been in irrigated agriculture but far more of the world's farmers depend on rain-fed agriculture.

...../The

The term 'drought' covers a very wide range of conditions in which moisture deficiency occurs and farmers themselves have evolved many cultural methods for evading its worst effects. Some of these methods, like the planting of 'reserve' areas, the use of water receiving rather than water shedding sites and, of course, over-season on-farm storage of grain come under increasing pressure as numbers of farmers and livestock increase. Population pressure also means that cereal growing is extending into more marginal rainfall areas, and some countries, in a policy for self-sufficiency, are growing wheat where none was grown before. Agronomic techniques for drought amelioration are location-specific but the basic principles of many techniques are the same. Studies on these and on methods to improve the definitions of the types of drought and rainfall patterns will be an important task for international agricultural research regardless of the crop with which it is concerned.

Wheat

Breeding for disease tolerance in the bread wheats is receiving major emphasis in the CIMMYT program. The appearance of new races of fungi in India and the increased seriousness of diseases, possibly of minor importance in the past, e.g. Septoria in Brazil, endorses the need for this emphasis. Thus the program for crossing winter and spring wheats to achieve drought tolerance and disease resistance is of great importance.

However, the increasing attacks of a number of diseases also raises other questions to which CIMMYT will require answers if the breeding program is to keep ahead of these attacks. The study of the epidemiology of cereal diseases in the countries in which CIMMYT is operating requires scientists to identify, assess the yield losses and define the conditions of these attacks. Was the attack of Septoria in Brazil, in 1972, for instance, aggravated by interactions with adverse climatic conditions, by the advent of new races of the fungus or by infertile soil conditions due to aluminum toxicity?

CIMMYT's unique experiences in breeding for wide adaptibility helps to overcome these problems but it would appear nevertheless, that

many more well-trained plant pathologists will be needed in these countries to support CIMMYT work. Provision of these is obviously a country responsibility rather than a CIMMYT one.

The program, as outlined in the 1975 Budget request, deals mainly with leaf fungal diseases and from this it appears that soil-borne pathogens and virus diseases are relatively much less important in the major wheat producing areas with which CIMMYT is concerned. But the soil-borne pathogens have a habit of becoming more important as cereal cropping is intensified, often requiring, for example, a break in the cereal rotation for their control. Increased resources may need to be put into research on these diseases in future.

Barley

As the report points out, barley growing is equated with impoverished people living in a hostile environment. Improved wheat varieties have probably benefitted large farmers more than small ones but improved barley varieties will have the greatest impact on the small farmer. These farmers are often in isolated areas with difficult access to fertilizer supplies, irrigation is unlikely in the forseeable future and the short growing seasons at high elevations are not susceptible to amelioration, so better varieties provide one of the few ways of improving their yields. Due to the generally hostile environment in which this crop is grown, absolute increases in yield may not be very great but even modest increases, combined with the improvement in protein quality, should bring great benefits.

The program, which began only in 1972 is now well under way with a large number of varietal accessions but it may be that, in the next 2-3 years, the introduction of extra research resources into this program would shorten the time for improved varieties to reach the important areas.

Triticale

The work on triticale illustrates the rapidity with which a man-made plant, with many desirable qualities, can be evolved. Problems of grain size and quality have now been overcome and the protein in triticale is of better quality than that in wheat. Though widely tested, triticale is not

...../yet

yet commercially grown in the developing countries; until it is grown fairly widely, assessment of the importance of pest and disease problems in these environments is difficult.

Because of its wider adaptability, triticale presumably will be grown in the more marginal wheat lands or used to extend cultivation into areas, presently uncultivated. The role of triticale in the future should emerge more clearly now that CIMMYT has solved many of the production problems. The level of research input in the future should be re-examined once this role has been defined.

Maize

The germ plasm bank at CIMMYT is a source of material for maize breeders around the world and, as with other cereals, the CIMMYT breeders plan to achieve maximum adaptability in their selections. Thus the objectives are short, disease and pest-resistance plants with high quality protein and a tolerance for adverse climatic regimes.

Amongst the major problems on which CIMMYT is working in the tropical areas are resistance to pest and disease attack and the unfavourable ratio of grain to leaf and stalk. Studies on the physiology of maize are aimed at elucidating the reasons for this unfavourable ratio. An improvement in this would make very significant contributions to maize yields in the lowland tropics and the program on maize physiology should provide some of the keys to this.

Maize suffers from a wide range of pests and diseases in the tropics, but the production methods for the crop are such that only a relatively small proportion of the farmers, and then mostly the larger ones, can make use of plant protection techniques. Breeding for tolerance and/or resistance is thus of major importance. Other methods of biological control of pests are likely to be importance too and though often location-specific are likely to be well worth attention.

Economics

The ultimate success of the scientific programs at CIMMYT depends

...../on

on how well their materials fit into the farming systems of the countries concerned. Until new technology is available it is impossible to say how well such technology will be accepted by the farmers, hence the great importance of follow-up studies of the nature reported in the Budget review. Case studies and careful monitoring of the progress of agricultural development, resulting from the inputs of new technologies, provide valuable information to the scientists for designing new research programs. This information is also of great value to governments in planning support services for agricultural development. for it demonstrates the level of input needed, not only on major services such as farm credit, but also on the need for minor services like soil testing.

As these are collaborative studies and as they involve mainly the organization of local staff in each of the countries concerned, there should be opportunities to extend this work at relatively small expense.

Training

The training programs at CIMMYT have made an outstanding contribution to advances in agricultural production. Trainees have to work on the complete cycle of crop production, work with others of different experience and background and work in an atmosphere of enthusiasm for agricultural improvement; consequently they return with more than just a good technical knowledge. However, as tropical agricultural production is intensified more and more trained people will be needed and facilities at CIMMYT cannot be increased indefinitely. This probably means increased emphasis on regional training. Though regional training centres might not have all the facilities and the atmosphere at CIMMYT, nevertheless there would be some conpensating advantages, as for example, the opportunity to emphasise pest and disease and other production problems of more local or regional importance.

A broad interpretation of training may be applied to the several thousand visitors who come to CIMMYT each year. Giving these visitors the opportunity for achieving maximum benefits from their visits whilst, at the same time protecting the scientific staff of the institute from interminable interuptions to their work is obviously a technique which CIMMYT has mastered.

G3

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INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

December 26, 1974

Dr. Robert H. Cunningham
O. D. M.
Foreign and Commonwealth Office
Stagplace, London
SW1, England.

A405.
NRR236/29/01 LBU.
IRRI A425
9/1

Dear Bob:

We have just received John Coulter's letter concerning the possible interest and availability of Peter Walker for posting to CIMMYT as a biometrician.

Considering our staff travel, we would like to suggest he plan to arrive for the initial 2-3 week initial planning visit on Sunday, January 26, if this is convenient for him. If that date is not convenient we would suggest his arriving on Sunday, February 9.

Please advise us of his scheduled arrival whenever it is, so we may make the necessary arrangements. For this initial visit I suggest he arrange for a tourist visa - he should not mention to the Mexican Embassy anything about working with CIMMYT during this initial visit.

Best personal regards.

Sincerely yours,

Robert D. Osler
Deputy Director General
and Treasurer.

RDO/asl.

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G-10
G-3

23 December, 1974.

Dr. John Coulter
Agricultural Officer
Consultative Group Secretariat
IBRD
1818 H. Street N. W.
Washington, D. C. 20433

Dear John,

I am attaching a report by Mr. Edward D. Carter entitled " The potential for increasing cereal and livestock production in Algeria".

Mr. Carter was employed as a consultant to CIMMYT with funds provided by the Ford Foundation through its grant to CIMMYT for assistance to Tunisia and Algeria.

I hope this report will be of value to you, particularly with regard to the planning for the International Center for Agricultural Research of Dry Areas (ICARDA).

Kind regards,

Yours sincerely,

Keith W. Finlay,
Deputy Director General.

KWF'm.

Files

December 23, 1974

John K. Coulter

Visit to International Maize and Wheat Improvement Center (CIMMYT) November 25 - 27, 1974

During this familiarization visit discussions were held with Mr. Haldore Hanson, Director General, Dr. Keith Finlay, Deputy Director, Outreach and Special Programs, Dr. Ernest Sprague, Director, International Maize Programs, Dr. Peter Goldsworthy, Agronomist, Maize Program, Dr. Evangelina Villegas, Biochemist, Dr. Donald Winkleman, Economist and Mr. John Stewart, Head Experiment Station Operations.

Programs

2. Outreach programs

CIMMYT's staff in outreach programs is distributed as follows:

Wheat	Algeria	4 scientists
	Lebanon	2 "
	Tunisia	3 "
	Turkey	2 "
Maize	Egypt	1 "
	Nepal	1 "
	Pakistan	2 "
	Tanzania	2 "
	Zaire	3 "

3. In addition Mr. Hanson gave us the following details for travel by headquarters staff in 1973 to the different regions.

South and Southest Asia	271 man-days
North Africa and Near East	434 "
Tropical Africa	172 "
Latin America	536 "
North America	436 "
Western Europe, Japan, Australia	422 "
Eastern Europe and USSR	26 "
Total	2,297 man-days

4. The offices of USAID and the Ford Foundation are used in the initial administration of these projects. During discussions on the outreach/delivery systems of the centers, the point was made that the centers need to have such programs not only for testing their materials but also to keep their

scientists in close contact with the real problems of the countries with which they are concerned. Within this program it was suggested that the Centers could orient their delivery systems to:

(a) Improve the agriculture in certain target areas e.g. the lowest 40% or the areas with the greatest deficiencies in food supply

(b) Areas with prospective food surpluses so that improved technology could provide such surpluses for feeding deficit areas of the world.

(c) Countries where center scientists had good contacts e.g. through training programs and which therefore i issued invitations to center scientists to participate in country programs. Such countries might not fall in either category (a) or (b).

5. The question of the absence of CIMMYT outreach staff in Latin America was discussed. The Director pointed out that the figures for staff stationed in the various countries were not truly representative of the work going on there, since about 7 man years of consultancy were provided by travel of headquarters staff (paragraph 3). Furthermore several countries e.g. some of those in South America and India did not welcome staff posted there though they did welcome consultants on short term visits. Thus some form of regional representation might prove the best way of handling the work in these countries; this is the pattern in the Lebanese program, the staff there being attached to ALAD.

6. However, even when the additional support to different countries through the travel of headquarters staff is taken into account, the staffing pattern of the delivery system program is still heavily biased towards Africa and in particular to those countries under <.

7. Whilst scientist to scientist contacts are an excellent basis for building up mutual confidence, such contacts can rarely form the basis of institution building and without this, programs are likely to collapse as soon as the supporting scientists are withdrawn. Both scientific contacts and institution building are necessary and mutually supporting and whilst the Centers are ideally suited for the former they are not designed to do the latter. Furthermore if the majority of the LDC's need this sort of imput for the major crops then their needs far exceed the capacity of the Centers to supply them.

8. It appears that CIMMYT has been able to build up a particularly good relationship with Algeria and the Government there looks upon it as technical advisor for its agricultural development program. Thus the Center has provided the services of Mr. John Stewart, Head of the Experiment Station Operations for a visit to Algeria to advise the government on the organization and layout of their experiment stations. Furthermore the Algerian project is a co-operative one between CIMMYT, responsible for research, FAO, responsible for extension and demonstration and French technical assistance, responsible for organising three pilot zones.

9. Although CIMMYT states that it is not involved in farming systems research, in fact part of the program in Tunisia deals with rotation studies aimed at introducing an Australian type farming system with a cereal-annual forage legume rotation which, in its simplest form is one year of forage and one year of cereal. This development of farming systems would probably be an ideal starting point for work by the new Middle East Center[sic] it is obvious that research on farming systems is likely to be much more readily applicable when it includes an already successful commodity improvement program.

10. CIMMYT staff pointed out that one of their major advantages in managing outreach programs in host countries was the rapidity with which they could arrange for programs to start because of their independent funding. This is in strong contrast to FAO whose programs were often delayed for months or even years whilst funding and staffing were being arranged.

11. Research Programs:

Only a minimal time was available for discussion on the research programs. Whilst some of the headquarters research staff regard visits to other countries as a major part of their work, others would prefer to concentrate their efforts in the stations in Mexico. Some expressed the view that more attention should be given to more intensive studies on the reaction of the maize and wheat crops to different environmental factors.

12. The present research plans for maize and wheat are based on the strategy of using the plant to integrate the effects of both physical and biological environments. The yield is thus a measure of these effects whilst the scores for pests and diseases give a measure of the effects of these. However no measurements are made of the effect of the physical environment on the plant's reaction so that it is not possible, for example, to extrapolate from one region to another on this basis. On-going physiological research promises to elucidate some of the environmental factors, like temperature, which affect plant growth and this will be valuable in predicting crop reaction in different regions. CIMMYT is thus interested in having a better definition of the environmental i.e. climatic conditions, where its selections will be used.

13. In this connection the work of the economics section, has shown the importance of agro-climatic regions in the adoption of new varieties and new techniques. This work has also indicated, what could of course be anticipated, that those regions with the most favourable climate, soil and terrain adopt the new techniques most readily. This has been easily illustrated by the example of Kenya where the farmers in the high elevation, high rainfall areas readily adopted the new varieties of maize with their concomitant imputs whilst those in the low elevation, low rainfall areas did not. CIMMYT is putting considerable emphasis on adoption studies, having such investigations in Mexico (Plan Puebla), El Salvador, Colombia, Turkey, India, Tunisia and Kenya. These studies are organized in collaboration with local social scientists and economists working for government or the universities. These adoption studies, in addition to pointing out the importance of a favourable environment in speeding up the adoption of new imputs, have shown that farm size is sometimes important, that absence

of strong extension services may not always be a barrier and that the tolerance of the new varieties to local diseases is very important.

14. A good deal of attention is being given to protein quality in maize, using the gene for high lysine (opaque-2 gene) and the service laboratory has directed its activities towards evolving some simple methods which could be used in laboratories throughout the LDC's and in training staff from those countries to use the techniques.

15. In a discussion on the activities of the Genes Board, CIMMYT staff, like those at CIP, expressed their interest in the activities of the Board, particularly regarding wheat and maize. CIMMYT is responsible for the world maize collection which is duplicated at Fort Collins, Colorado. They do not regard an active collection program as essential since most of the material which has not been collected is in very inaccessible areas and therefore under little pressure.

16. In basic research CIMMYT is benefitting from research programs in developed countries. Examples are the winter x spring wheat program at Oregon State, testing for drought tolerance at Washington State, wide crosses at Kansas State, cold tolerance at Cornell and other work on wheat at the Plant Breeding Institute, Cambridge.

17. CIMMYT has four experimental stations, El Batan the headquarters station near Mexico City with 65 ha., Alizapan near Toluca with 84 ha. Poza Rica, Vera Cruz with 70 ha. and Tlaltizapan in Morelos State with 33 ha. The Poza Rica station suffered severe damage from floods following a hurricane, the river cutting across the station causing severe gullying and erosion. Estimates are $32,000 to repair the damage and $45,000 to build up the levee to protect the farm in future. Full protection by a large levee is however estimated to cost about $460,000.

18. The scientists at CIMMYT work to a very tight schedule of planting summer and winter crops with only a very few weeks for preparation of the land and planting the crop. Consequently close supervision is essential and the farm managers must have adequate operating machinery at their disposal. The experiment station budget is approximately $500,000.

CC: Messers Lejeune
Graves
Cheek
Gavino

JKCoulter:sdo'c

OFFICE MEMORANDUM

G 2(b)

TO: Files

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FROM: John K. Coulter jnc.

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CC: Messers Lejeune
Graves
Cheek
Gavino

JKCoulter:sdo'c

G26

December 18, 1974

Dear Keith:

Subject: Agroclimatology

I promised to suggest names of people who might be of help to your proposals to set up studies for defining more clearly the physical environment in which CIMMYT is working or expects to work with its major crops.

My colleagues in the U.K. have suggested that Dr. L. P. Smith of the Meteorological Office, Bracknell, Berks., would be a useful contact. He has taken a special interest in agricultural meteorology in the U.K. and should be able to suggest someone who could spend some time at CIMMYT.

FAO/UNDP have organized an "expert consultation on the use of improved technology for food production in rainfed areas of tropical Asia" and J. J. Basinski of CSIRO, whom you probably know, has given a paper on "Weather analysis and its application to production strategy in areas of climatic instability". Thus he might be a useful contact.

I enclose a copy of a paper by Les Manning, formerly with the Bank, now retired but recently working as a consultant in Mexico. I don't know whether this will be of any direct use to you but you may find it of some interest. Please treat it as confidential as it has not been officially released. Sr. F. Gonzalez, Co-ordinator General, Plan Nacional Hidraulico is the person in Mexico dealing with this.

During our discussion we mentioned briefly the work of WMO on this subject; I am also following this up in view of the interest of several centers in agrometeorology. I think that this interest is going to increase as the centers become more concerned about explaining the behaviour of their materials in different environments and in extrapolating from one area to another. Perhaps we could get WMO to organize a small seminar which could formulate ideas and recommendations to the centers about the most useful lines to pursue.

When I get any further ideas on the subject I will let you know.

With best regards,

Yours sincerely,

JKCoulter:apm

John K. Coulter

Enclosure

Mr. Keith Finlay
International Maize and Wheat Improvement Center
Apdo Postal 6-641, Londres 40
Mexico 6, D. F.

G2 b

December 18, 1974

Mr. Haldore Hanson
Director General
International Maize and Wheat Improvement Center
Londres 40, Mexico 6, D.F.

Dear Hal:

Thank you for your letter of December 3 about CIMMYT's attention to the various developing regions and the scope of your economic work. My "remarks" were intended more as questions than comments and I am indeed very glad to have the information and explanations you have given me.

I also have received your letter of December 2 on cost of living and hardship allowances. I have spoken to the people in the Bank's Personnel Department about giving you the information and evaluation you ask for. I hope you will have it very soon. I appreciate that you need it in good time.

Thank you for a most interesting and informative time at CIMMYT. Even though it was a brief first get-acquainted visit, we learned a lot. You were kind to give us so much of your time. I enjoyed your beautiful house and view. The luncheon was a great opportunity to see and enjoy them both and to meet with so many interesting people. Many thanks to you both.

As ever,

Michael L. Lejeune
Executive Secretary

MLLejeune:ph

G-3

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

December 13, 1974

Mr. Michael Lejeune
Secretary
Consultative Group on
International Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Mike:

You asked to be notified of the Presentation Program at CIMMYT, when available. I enclose a preliminary program, and renew the invitation for yourself and John Coulter to attend. We need a definite reply in February, in order to make reservations in Mexico.

Cordially,

Haldore Hanson

Haldore Hanson
Director General

Enclosure: Program

cc. Dr. John Coulter, IBRD, Washington

Preliminary Program
CIMMYT Presentation Week
March 31-April 4, 1975

Sunday March 30	Participants arrive Mexico City by own flight plan. CIMMYT will meet participants at airport. All can be accommodated at CIMMYT housing facilities in El Batan, the night of March 30. Elevation at CIMMYT 7300 feet; noon temperature in 60s F. Drinks and dinner starting 6 p.m.
Monday March 31	Breakfast in cafeteria 7-8. Leave El Batan at 8 a.m. by CIMMYT bus for the Poza Rica tropical station near Mexico's east coast. Arrive Poza Rica at noon after dramatic descent from 10,000 feet to sea level. CIMMYT will make reservations for participants at Hotel Santander, Poza Rica, a city in the center of Mexico's major oil producing area. Sandwich lunch at research station. Dr. E.W. Sprague and maize staff are in charge of briefings for the next 24 hours. If time permits, visit pyramids at El Tajin , outside Poza Rica.
Tuesday April 1	Bus leaves for El Batan 11 a.m. Lunch at Mi Ranchito, a restaurant enroute. Dinner at El Batan.
Wednesday April 2	Leave El Batan by CIMMYT bus for airport at 6:00 a.m. Fly Mexico City to Obregon (07:30-10:00). CIMMYT vehicles will meet the plane and take participants to Motel in Ciudad Obregon, where CIMMYT will hold reservations. Obregon is in the irrigated farming area of northwest Mexico, on the Pacific Coast, similar to southern California. Dr. N.E. Borlaug and wheat staff will arrange briefings from lunch Wednesday through lunch Thursday. The Mexican national research station CIANO, used by CIMMYT is 10 Km. outside the City.
Thursday April 3	Leave motel for airport 4 p.m. Fly Obregon-Mexico City. Return to CIMMYT campus by bus about 10 p.m.
Friday April 4	Morning tour and briefing at CIMMYT Headquarters including: Protein laboratory Machinery center Seed house and cold storage of germ plasm Board room review of week's observations. Closing luncheon at Guest House 1 p.m. Afternoon free for trip to Teotihuacan pyramids (30 minutes from CIMMYT) or Anthropological Museum in Mexico City.
Saturday-Monday April 5-7	Those remaining for the opening day of the CIMMYT Trustees meeting, Monday, April 7, will be accommodated at El Batan, and trips can be arranged for the weekend.

G26

December 12, 1974

Dear Keith:

When passing through London last week I spoke to Bob Cunningham and also to Peter Walker, the biometrician at Rothamsted who would be available for posting to CIMMYT; Peter Walker is well known to Peter Goldsworthy.

The way to approach this is for you to write to Bob; Peter Walker could probably make a 2-3 week initial visit to CIMMYT to confer with your staff and arrangements could proceed from there. I did make the point that you would like to make an appointment as soon as possible.

I also made some inquiries on agroclimatology and I will be writing to you about this soon.

With best regards,

Yours sincerely,

John K. Coulter

Mr. Keith Finlay
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

cc: Dr. R. K. Cunningham, ODA
Mr. Peter Walker, Rothamsted Experimental Station, Harpenden, Herts.

JKCoulter:apm

COPY

G3 File: ~~CIMMYT~~ ~~Rockefeller Found~~

THE ROCKEFELLER FOUNDATION
111 West 50th Street
New York, N. Y. 10020

Mr Gaarino
See Mr Cheek's questio
re

December 4, 1974

Dear Haldore:

I am glad to be able to inform you that the Trustees of The Rockefeller Foundation have authorized the officers to make available a total of $625,000 to the International Maize and Wheat Improvement Center (CIMMYT) toward its basic operating costs during 1975. This amount, as in the past, will consist of one portion to be retained by the Foundation to cover the cost of salaries and salary-related perquisites for Rockefeller Foundation staff members assigned to CIMMYT; $331,600 which is available upon your request as a cash payment to your institute; and $50,000 which will be held by the Foundation until October 1, 1975, for any final-quarter adjustment of staff costs and cash contribution. The appropriate portion of this $50,000 will be paid to CIMMYT sometime after October 1, 1975.

OK

The amount of the Rockefeller Foundation contribution to CIMMYT for 1975 was based upon requirements as indicated in the budget previously submitted to the Foundation and upon consultation with other donors. It is our understanding that contributions from other donors will cover remaining needs of CIMMYT for next year.

Funds will be released by the officers upon receipt of a request from you as Director General of the International Maize and Wheat Improvement Center.

Very sincerely yours,

John A. Pino
Director

Mr. Haldore Hanson
Director General
International Maize and Wheat
Improvement Center
Londres 40
Mexico 6, D. F., MEXICO

cc: Mr. Michael Lejeune

JAP:pe

FORM 453

THE ROCKEFELLER FOUNDATION
111 West 50th Street
New York, N. Y. 10020

December 4, 1974

Dear Haldore:

I am glad to be able to inform you that the Trustees of The Rockefeller Foundation have authorized the officers to make available a total of $625,000 to the International Maize and Wheat Improvement Center (CIMMYT) toward its basic operating costs during 1975. This amount, as in the past, will consist of one portion to be retained by the Foundation to cover the cost of salaries and salary-related perquisites for Rockefeller Foundation staff members assigned to CIMMYT; $331,600 which is available upon your request as a cash payment to your Institute; and $50,000 which will be held by the Foundation until October 1, 1975, for any final-quarter adjustment of staff costs and cash contribution. The appropriate portion of this $50,000 will be paid to CIMMYT sometime after October 1, 1975.

The amount of the Rockefeller Foundation contribution to CIMMYT for 1975 was based upon requirements as indicated in the budget previously submitted to the Foundation and upon consultation with other donors. It is our understanding that contributions from other donors will cover remaining needs of CIMMYT for next year.

Funds will be released by the officers upon receipt of a request from you as Director General of the International Maize and Wheat Improvement Center.

Very sincerely yours,

John A. Pino
Director

Mr. Haldore Hanson
Director General
International Maize and Wheat
Improvement Center
Londres 40
Mexico 6, D. F., MEXICO

cc: Mr. Michener

JAP:pe

FORM NO. 75
(7–73)

WORLD BANK GROUP

ROUTING SLIP	DATE

NAME	ROOM NO.
Gene.	

	APPROPRIATE DISPOSITION		NOTE AND RETURN
	APPROVAL		NOTE AND SEND ON
	COMMENT		PER OUR CONVERSATION
	FOR ACTION		PER YOUR REQUEST
	INFORMATION		PREPARE REPLY
	INITIAL		RECOMMENDATION
	NOTE AND FILE		SIGNATURE

REMARKS

Please make a Xerox of this and send it to Dorothy Murphy.

Done 12/18/74 SMT

FROM	ROOM NO.	EXTENSION

D1026

G-3

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

CIMMYT

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

December 2, 1974

Mr. Michael Lejeune
Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Michael:

Subject: UN Cost of Living allowances and Hardship post differential

I have been asked by the Directors of the International Centers to lead a discussion, at IITA in February 1975, on the standardization of outreach perquisites.

One of the major topics will concern the use of the cost of living allowance and hardship post differential.

Several of the centers now use the U.S. Department of State C.O.L. and hardship allowances, with various modifications. One center -- ILCA -- uses UN allowances.

Could you ask the appropriate person in the personnel office of IBRD to send me information on IBRD experience including:

(1) Does the IBRD use the UN cost of living allowance and hardship post differential, or does it have a set of allowances of its own?

(2) Can the personnel office of the Bank offer any comment on the differences between UN allowances, U.S. Department of State allowances for C. O.L. and Hardship, and the present practices of the IBRD?

For background it can be said that outreach personnel of the International Centers are provided no import or commissary privileges, and most are stationed at places remote from national capitals, in Africa and Asia.

Sincerely yours,

Hal Hanson

Haldore Hanson
Director General

G3

Ilca - Memo of Agreement Authorization

CGIAR

NOV. 28, 74

BAUDOUIN

ROI DES BELGES

A tous, présents et à venir,

SALUT

BOUDEWIJN

KONING DER BELGEN

Aan allen die nu zijn en hierna wezen zullen,

ONZE GROET

Désirant arrêter un Accord entre la Banque internationale pour la Reconstruction et le Développement et les Etats fondateurs du Centre international pour l'élevage en Afrique, à ces causes et Nous confiant entièrement en la capacité, le zèle et le dévouement de Monsieur W. VAN CAUWENBERG, Grand-Officier des Ordres de la Couronne et de Léopold II et Commandeur de l'Ordre de Léopold, Notre Ambassadeur à Washington, l'avons nommé, commis et député et, par ces présentes, le nommons, commettons et députons Notre Plénipotentiaire à l'effet de négocier et de conclure ledit Accord, Nous réservant d'approuver et de ratifier ce que Notre dit Plénipotentiaire aura stipulé, promis et signé en vertu des pré-

Wensende een Overeenkomst te sluiten tussen de Internationale Bank voor Wederopbouw en Ontwikkeling en de Staten die het Internationaal Centrum voor veeteelt in Afrika hebben gesticht, te dien einde en geheel betrouwend op de bevoegdheid, de ijver en de toewijding van de Heer W. VAN CAUWENBERG, Grootofficier in de Kroonorde en in de Orde van Leopold II en Commandeur in de Leopoldsorde, Onze Ambassadeur te Washington, zo hebben Wij deze benoemd, aangesteld en afgevaardigd, zoals Wij hem bij deze brief benoemen, aanstellen en afvaardigen tot Onze Gevolmachtigde, ten einde over gezegde Overeenkomst te onderhandelen en ze te sluiten, Ons het recht voorbehoudende goed te keuren en te bekrachtigen wat

G3

sents pleins pouvoirs, conformément aux instructions dont il est muni.

En foi de quoi, Nous avons ordonné que les présentes fussent revêtues du sceau de l'Etat.

Donné à Bruxelles, le 28 novembre 1974.

Onze voornoemde Gevolmachtigde zal vastgesteld, beloofd en ondertekend hebben, krachtens de onderhavige volmachten, overeenkomstig de voorschriften waarvan hij is voorzien.

Ter oorkonde waarvan Wij bevolen hebben dat deze brief met 's Lands zegel zal worden bekleed.

Gegeven te Brussel, op 28 november 1974.

PAR LE ROI :
Le Ministre des Affaires étrangères et de la Coopération au Développement,

VAN KONINGSWEGE :
De Minister van Buitenlandse Zaken en van Ontwikkelingssamenwerking,

H3.2 B
26-11

G2b

November 27, 1974

Dear Dr. Hardin:

Following our telephone conversation this morning on CIMMYT's core and capital requirements for 1975, attached are two letters from CIMMYT to Mr. Graves regarding changes in its 1975 budget.

The September 21st letter with attached Table III reflects revisions in CIMMYT's 1975 budget submitted in July for the Consultative Group meeting. Using Table III's revised figures, the October 29 letter shows further changes, e.g., the inflation allowance of 12% was raised back to 20%.

The UNDP grant increase of $84,000 is already built in the $1,054,000 figure you have mentioned and not additional, as I inadvertently told you.

I trust that the two letters would clarify the question that you have raised.

With best regards,

Sincerely,

Carlos B. Gavino

Enclosures Letters to Harold Graves from Haldore Hanson of Sept. 21 and Oct. 29, on budget.

Dr. Lowell S. Hardin
Program Adviser, Agriculture
The Ford Foundation
320 East 43rd Street
New York
New York 10017

CG:apm

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

G3

November 22, 1974

cy 12/9

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

Our CIMMYT financial report at the end of 1974 will show we received from the German Government 1,170,000 DM, which converts to US$440,000 at exchange rates on the dates of receipt.

This is more than we expected but Werner Treitz assures us there was no mistake (see his letter October 1 enclosed).

CIMMYT will follow your advice, given me in Washington October 23, that we report the funds against our 1974 budget, both operating and capital.

The gains from German conversion will be used first to meet the full cost of the capital items moved forward from 1975 to 1974. These will cost more than the $188,000 estimated one year earlier.

Any balance will be applied to the 1974 operating budget which we are trying to hold in balance, but with the surge of inflation following the September rise of minimum wages in Mexico, we expect some deficit by December 31.

This letter calls for no action, but I want your files to reflect the correct German payments.

Cordially,

Haldore Hanson

Haldore Hanson
Director General

Enclosure:
Copy of Treitz letter October 10, 1974

G2b

November 20, 1974

Mr. Haldore Hanson
Director General
International Maize and Wheat
Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

Dear Hal:

By now you will have received a telegram from Michael Lejeune, the new Executive Secretary of the Consultative Group, concerning the total of grants from Consultative Group members that will be available to CIMMYT in 1975 to finance the Center's core and capital expenditures. The purpose of this letter is to provide further details.

The Secretariat records your core and capital requirements for 1975, net of earned and special income, at $7,375,000. Of this, $7,330,000, in round figures, is for purposes described in your program and budget document for 1975, as amended by your first letter to me of September 21 and your further letter of October 29. The remaining $45,000 is to finance repairs of the flood damage at Poza Rica and to compensate for the loss of earned income there.

Against this total and for these purposes, the Secretariat records intended grants from donors as listed below (rounded to the nearest $5,000 at exchange rates of October 30):

Canada (C.I.D.A.)	$835,000	(Can$ 835,000)
Denmark	150,000	
Ford Foundation	650,000	
Germany	290,000	(DM 750,000)
IDRC	80,000	(Can$ 80,000)
Rockefeller Foundation	625,000	
United Kingdom	110,000	(£ 48,000)
UNDP	1,055,000	
	$ 3,795,000.	

In addition, while the final amounts have yet to be settled, the Secretariat expects that three other donors will make grants to CIMMYT totaling about $3,470,000: The Inter-American Bank, after negotiations with the Center, intends to make a grant of about $1,685,000; and USAID is contemplating a

grant of about $1,765,000. The United Nations Environment Programme (UNEP), a new member of the Consultative Group, has indicated an interest in CIMMYT, and the Secretariat estimates that perhaps $20,000 may be available to the Center from that source. A representative of the Secretariat will visit UNEP later this month, and we may have a firmer and different figure for you when he returns in the first part of December.

If all these figures are realized, it would still remain to cover a balance of about $110,000; the exact figure, of course, would depend on the final figures reached by IDB, USAID and UNEP. The management of the International Development Association (IDA) of the World Bank Group will recommend to the Association's Board of Directors that IDA cover this balance of about $110,000.

The funds from the Ford Foundation (on a quarterly basis), the Rockefeller Foundation and USAID (on a quarterly basis), are expected to be available on or soon after January 1, 1975. Funds from Canada, Denmark, the Netherlands and the United Kingdom (on a trimester basis) should be available beginning in the month of April. IDA's funds will be transferred as soon as it is clear what balancing item is needed to complete the financing of your budget. In the case of other donors, we have no reliable information about times of availability.

I had hoped that it might be possible to find a donor willing to cover the costs of your flood repairs before the end of 1974, but so far no such donor has been found. The staff of the Inter-American Development Bank is considering the matter, but it seems unlikely that anything will eventuate there before next January.

Let me report to you that in their meeting at the end of October, the members of the Consultative Group confirmed their wish that the Secretariat be promptly informed of revisions in the 1975 budgets of the Centers in the international research network. If your Executive Committee or your Board of Trustees approves a further revision of your 1975 budget, therefore, the Secretariat would expect to be informed promptly, and to receive from you a brief statement concerning the changes. The attached paper, accepted by the Consultative Group in its meeting last month, gives a further explanation of this matter, particularly in paragraphs 6 and 7.

Sincerely yours,

Harold Graves

Enclosure — Variations from Planned Expenditures

HGraves:apm

Form No. 27
(3-70)

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

TO: HANSON
CENCIMMYT
MEXICO CITY

DATE: NOVEMBER 11, 1974

CLASS OF SERVICE: LT / RLX

COUNTRY: MEXICO

Ext. 3592

TEXT:
Cable No.:

GLAD TO INFORM YOU FOLLOWING RECENTLY CONCLUDED CONSULTATIVE GROUP MEETING THAT DONORS HAVE PLEDGED TO PROVIDE 7.375 MILLION US DOLLARS TO CIMMYT IN 1975 FOR ITS CORE AND CAPITAL EXPENDITURES. THIS COVERS YOUR CORE AND CAPITAL REQUIREMENTS FROM THE CONSULTATIVE GROUP AND INCLUDES 44,000 DOLLARS TO COVER FLOOD DAMAGE AND LOSS OF SPECIAL INCOME AT POZO RICO. LETTER FOLLOWING

REGARDS

LEJEUNE

G2d

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME: Michael L. Lejeune

DEPT.: CGIAR Secretariat

SIGNATURE: _____
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE:

ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

CLEARANCES AND COPY DISTRIBUTION:

CG

CG/HG:mcj

For Use By Communications Section

Checked for Dispatch: _____

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

TO: HANSON
CENCIBEMEX
MEXICO CITY

DATE: NOVEMBER 11, 1974

CLASS OF SERVICE: LT

Ext. 3592

COUNTRY: MEXICO

TEXT:

Cable No.:

GLAD TO INFORM YOU FOLLOWING RECENTLY CONCLUDED CONSULTATIVE GROUP MEETING THAT DONORS HAVE PLEDGED TO PROVIDE 7.375 MILLION US DOLLARS TO CEMEX IN 1975 FOR ITS CORE AND CAPITAL EXPENDITURES. THIS COVERS YOUR CORE AND CAPITAL REQUIREMENTS FROM THE CONSULTATIVE GROUP AND INCLUDES 44,000 DOLLARS TO COVER FLOOD DAMAGE AND LOSS OF SPECIAL INCOME AT RIO. LETTER FOLLOWING

REGARDS

LEJEUNE

NOT TO BE TRANSMITTED

AUTHORIZED BY: Michael L. Lejeune

NAME: Michael L. Lejeune

DEPT.: CGIAR Secretariat

SIGNATURE:

REFERENCE:

ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

CLEARANCES AND COPY DISTRIBUTION: For Use By Communications Section

Checked for Dispatch

DISPATCHED

COMMUNICATIONS SECTION

NOV 11 10 32 PM 1974

G2D

November 8, 1974

Dear Dick:

Thank you for your letter of October 29 itemizing the damage at CIP caused by the earthquake and describing the steps you are taking to make repairs, relocate facilities and replace equipment. It was most helpful, too, to have your cable of estimated costs totalling some $100,000 in time for the Consultative Group meetings.

The Group was informed of the damage and your plans and members freely endorsed the increased financial support needed. This decision was cabled to you on November 4, including the point that some funds could be made available in December. On this, you could perhaps let us know what arrangements would suit you and we shall try to make them promptly.

With best wishes,

Sincerely,

Bruce M. Cheek

Dr. Richard L. Sawyer
General Director
Centro Internacional de la Papa
Apartado 5969
Lima, Peru

L

G26

November 7, 1974

Dear Hal:

Thank you for your letter of October 29, 1974 to Harold Graves informing us of revisions to CIMMYT's budget.

We have noted the changes, and as agreed between Harold and Dr. Osler, we are adding $44,000 to CIMMYT's net core operations and capital budget to cover flood losses. The new total figure is then $7,375,000 instead of $7,331,000.

I have now taken over from Harold as Executive Secretary, so you will be hearing from me from time to time. And John Coulter and I are looking forward to paying you a quick visit on our way home from Peru on November 26 and 27.

Best wishes,

Sincerely yours,

Michael L. Lejeune

Mr. Haldore Hanson
Director General
International Maize and
Wheat Improvement Center
Londres 40, Mexico 6, D. F.

CGavino/MLLejeune:klw

cleared with: Harold Graves

G2D

November 7, 1974

Dear Mr. Pritchard:

I am writing to acknowledge and thank you for your letter of October 21 concerning budget and accounting procedures at the international centers. We particularly appreciate your action in having your comments and suggestions ready for John Coulter to bring back prior to both the meeting of the Consultative Group, where the subject was on the agenda, and to the CIMMYT meeting for which Bill Lewis was glad to have your comments in advance.

We are now revising the budget and accounting paper of July 11, 1974 partly in the light of your CIMMYT session which we are reviewing with Bill Lewis and with the benefit of the comments received from the centers.

With best wishes,

Sincerely,

Bruce M. Cheek

Mr. D. L. C. Pritchard
OYO Road
P. M. B. 5320
Ibadan, Nigeria

BMC/klw

cc: W W Lewis

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Files

DATE: November 4, 1974

FROM: Harold Graves

SUBJECT: CIMMYT

On the telephone on October 29, Dr. Osler of CIMMYT and I agreed that the Center's 1975 core and capital requirements, net of unexpended balances and earned income, would be considered to be $7.331 million, plus $.044 million to repair the flood damage at Poza Rica and to compensate for the loss of earned income; this gives a total of $7.375 million required from the Consultative Group. Details of the $7.331 million calculation are contained in a letter from Dr. Osler which is on its way to the Secretariat.

HGraves:apm

FORM NO. 75
(7–73)

WORLD BANK GROUP

ROUTING SLIP	DATE 11-6-74
NAME	ROOM NO.
~~1. Mr Gomes~~ Hdq	
2. Mr Grisso (for info and prepare acknowledgement for my signature)	

	APPROPRIATE DISPOSITION		NOTE AND RETURN
	APPROVAL		NOTE AND SEND ON
	COMMENT		PER OUR CONVERSATION
	FOR ACTION		PER YOUR REQUEST
	INFORMATION		PREPARE REPLY
	INITIAL		RECOMMENDATION
	NOTE AND FILE		SIGNATURE

REMARKS

I take it you already have this information. Unless you have something of substance to say in reply, I suggest Carlos just draft an acknowledgement for me to sign.

FROM	ROOM NO.	EXTENSION

FORM NO. 249
(7–74)

NOV – 4 1974

WORLD BANK GROUP

INCOMING MAIL

DATE:

	Mr. H. Adler	A1042		Mr. Knox	A813
	J. Adler	E624		Mr. Krieger	B906
	Mr. Alter	A908		Mr. Lari	D1032
	Mr. Bart	F718	(2)	Mr. Lejeune	A1013
	Mr. Baum	E1023		Mr. McNamara	E1227
	Mr. Bell	A613		Mr. Muller	N436
	Mr. Benjenk	E723		Mr. North	D1032
	Mr. Broches	E923		Mr. Nurick	E915
	Mr. Cargill	E1236		Mr. Paijmans	C702
	Mr. Chadenet	E1204		Mr. Rayfield	N434
	Mr. V. C. Chang	E516		Mr. de la Renaudiere	C302
	Mr. Chaufournier	A313			
	Mr. Chenery	E1239		Mr. Rotberg	E427
	Mr. Wm. Clark	E823		Mr. Thalwitz	A210
	Mr. Clarke	D1029		Mr. Tims	D428
	Mr. Damry	A1219		Mr. Twining	N635
	Mr. D. A. de Silva	N635		Mr. Van der Meer	A507
	Mr. Diamond	C502		Mr. Van der Tak	E1023
	Mr. Fowler	A1219		Mr. Votaw	C602
	Mr. Gabriel	E516		Mr. Wapenhans	A712
(1)	BNC 11/5.			Mr. Weiner	A513
(3)	Mr. Graves	E1039		Mr. Wiehen	C1001
	Mr. Gulhati	D530		Mr. Wiese	A837
	Mr. Hittmair	E427		Mr. Willoughby	G1050
	Mr. Hoffman	E823		Mr. Wright	A307
	Mrs. Hughes	D529	(4)	JC	
	Mr. Husain	A1136	(5)	CG	(6) CJ
	Mr. Kirmani	A610			
	Mr. Knapp	E1227			

FROM: Incoming Mail Unit, Room F–126, Extension 2023

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

October 29, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

Subject: CIMMYT's 1975 budget.

You asked me recently in Washington how CIMMYT now calculates its required funds for 1975, in view of:

An allowance for price changes of 20%.
Changes in the UNDP grant.
A recheck on whether the IDRC grants under discussion are "bilateral".

We have revised our 1975 budget to take account of the following factors:

(1) Increase from 12% to 20% the factor for price changes in core unrestricted budget, excluding capital. This is calculated: 8% of $4,626,000 or $370,000.

(2) Increase the UNDP core restricted grant from $970,000 to $1,054,000. Details are given in Attachment A to this letter.

(3) Add earned income from special grants, $113,000. This item had been omitted inadvertently from all previous 1975 budget documents.

(4) There is no change in the IDRC regional program grants, now under negotiation for East Africa (wheat) and Andean zone (wheat).

We have talked to George Dion and Frank Mes by telephone about these IDRC grants. They state that in legislative language Canada treats these grants as "bilateral" and not "multilateral". But CIMMYT and the

Consultative Group will classify them in whatever way the donors agree to treat regional activities. CIMMYT classifies these as core restricted, for reasons presented to the CG Secretariat in our Centers Week documents.

(5) There are no other changes in core restricted grants, other than the UNDP grant reported in item (2) above. This does increase the total for restricted core in Table III from $2,157,000 to $2,241,000.

Overall changes in the CIMMYT budget for 1975 are therefore as follows:

Gross core operations and capital budget: Increase by $454,000 from $7,436,000 to $7,890,000.*

This is calculated as follows:

Add $370,000 for price changes (item 1 above).
Add $84,000 for increase in UNDP grant (item 2 above).
Total $454,000.

Net core operations and capital budget: Increase by $326,000 from $7,005,000 to $7,331,000.*

This is calculated as follows:

Add $370,000 for price changes (item 1 above).
Add $84,000 for UNDP grant (item 2 above).
Subtract $15,000 for earned income on UNDP grant (see Attachment A).
Subtract $113,000 for earned income on special grants (item 3 above).
Net increase: $326,000.

We have dictated this letter to your secretary by telephone, and will mail the letter as confirmation.

Cordially,

Haldore Hanson
Director General

Attachment (1)

cc. Mr. W. Lewis, CGIAR, Washington

* To this total, the Secretariat has agreed to add $44,000 for flood losses. Harold

Attachment A

Basis of UNDP grant changes

Item	Centers Week Budget July 1974	Hanson letter to Graves Sept. 21, 1974	Agreement with UNDP, CIMMYT letter Sept. 27, 1974
Program	$ 656,230	$ 734,000	$ 744,000
Provision for price increases	28,770 1/	88,000 2/	147,000 3/
Administrative charges	123,300	148,000	163,000
Total	$ 808,300	$ 970,000	$ 1,054,000

1/ 7% increase in salaries only.

2/ 12% of program ($734,000).

3/ 20% of program ($734,000).

Mr. Baum

October 24, 1974

Harold Graves

CIMMYT: Inflation Factor

Attached is a paper from CIMMYT analyzing the impact of rising prices on CIMMYT's expenditures between October 1, 1973, and October 1, 1974. It presents figures to show that the rise, when weighted for specific categories of expenditures, amounts to 26.5 per cent for that period.

The figures are presented to show that an inflation allowance of 20 per cent for the CIMMYT budget in 1975 is justified. Since the 1974 budget contained an inflation factor of only 7 per cent, an increase of about 19 per cent would be needed to adjust for actual 1974 price increases. Any price increases for 1975 would be in addition to the 19 per cent. In view of the economies CIMMYT is effecting, however, the Center is proposing simply an increase of 20 per cent for 1975 above the budgeted 1974 price level. CIMMYT makes no claim for the further rise in prices which will occur in 1975.

Mr. Lewis of the Program and Budgeting Department has examined the paper, and he and I both believe (despite minor questions about some of the figures) that CIMMYT presents a persuasive case. As for a devaluation of the peso which might offset the rise of domestic prices, the Bank's Mexican desk (Mr. Kapur) does not believe that one will occur in 1975.

A further point: of the salary disbursements made to CIMMYT employes in U. S. dollars, one-third are to Mexican employes, to whom a rate of more than 20 per cent (if that figure is accepted) would apply. Another third are to citizens of countries other than the United States, in which inflation rates (although in some cases offset to some degree by floating exchange rates) are generally higher than in the United States. A final third of disbursements are to American citizens. Some part of the final third is converted to pesos and spent in Mexico, and to the remainder, a U. S. inflation rate of 12 per cent might be considered to apply. Over-all, the inflation figure for these dollar disbursements would not be appreciably less than 20 per cent, and it might be more.

With an inflation allowance of 15 per cent (which is the figure discussed in the informal meetings with donors), CIMMYT's budget would be $6.74 million. With a 20 per cent allowance, the figure would be $7.03 million, an increase of $290,000.

The total sum appears to be within donor capabilities. It would imply an IDA contribution of about $250,000, as against a contribution of around $100,000 that would be implied by a 15 per cent figure.

Attachment

cc: Mr. Lewis
Mr. Ruddy

G-2b

HGraves:apm

October 22, 1974

Dear Bob:

I was glad to have your letter of October 7 regarding the number of copies of the CGIAR Brochure which CIMMYT could use, including a good distribution in Spanish and some in French.

We have been in touch with the UNDP which is responsible for both the printing and the distribution. It just won't be possible for them to split off the mailing in the way you suggest: they can't handle the mailing to outreach projects. I appreciate this means additional work - and getting the materials out to the staff in outreach work is important to the successful use of the brochure - but it is not practicable for UNDP to take responsibility for the diffuse distribution requirements of the various members of the CGIAR system. I'm sure you'll understand this position from their point of view.

With best wishes,

Sincerely yours,

Harold Graves

Dr. Robert D. Osler
Deputy Director General
CIMMYT
Londres 40
Mexico 6, D. F.

cc: Mr. Gavino
BMC/HG:mcj

G26

G-3

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

El Batan, Mexico
October 21, 1974

Document to the Consultative Group:

Subject: Price changes in Mexico during 1974 which affect CIMMYT's 1975 budget

Submitted by:

Virgilio Barco
Chairman
Board of Trustees

Haldore Hanson
Director General

CONTENTS

ATTACHMENTS:

Background

In July 1974 CIMMYT submitted to the Consultative Group its 1975 budgets, with approval of the Board of Trustees.

These documents estimated that price changes in Mexico during 1974 would increase the cost of CIMMYT's program by 20% on an annual basis, and thus the 1975 budgets would need to use unit costs 20% higher than the 1974 budgets.

Our estimate of price change was questioned by the Secretariat of the Consultative Group. It suggested that inflation in Mexico during 1973 (official price index rose 25.2%) and during the first half of 1974 (official price index rose 9.9%) was unlikely to continue at those rates.

The Secretariat invited CIMMYT to submit a further report on price changes for use by the Consultative Group at its meeting in October 1974.

The present paper was prepared for that purpose.

Method of reviewing prices

By actual expenditure, CIMMYT spent 21.6% more in 1974 (January-September) than it did in the same period the year before. However, such a comparison does not reveal whether increases were caused by program change or price change.

We therefore asked the CIMMYT accounting staff to analyze the unit prices in all disbursement vouchers during January-September 1974,

and compare this information to the unit prices of January-September 1973.

This study was made by accounting codes (for example, comparing salaries, allowances, travel, vehicle operations etc.)

In some program areas it was not feasible to analyze all unit costs (for example, auto spare parts consumed in vehicle maintenance). For those codes we identified the commodities which are consumed in the largest quantity (such as auto tires and batteries) and calculated a weighted average of price changes.

We found it unrealistic to use January 1, 1974 as the starting point of this study. During the last quarter of 1973 the Government of Mexico had ordered very large changes in minimum wages, and raised the government controlled prices on utilities, petroleum products and payroll taxes. These changes occurred after CIMMYT's 1974 budget was completed and approved. Yet the price increases of the last quarter 1973 affected our expenditures for the entire year 1974. We therefore decided to treat price changes during the last quarter of 1973 as occurring in January 1974.

This study has produced a mass of detailed price information, more than 25 pages of data, which are presented in Attachments 1, 2 and 3 of this paper.

We stress: this is not a report on future price changes. The changes reported have already occurred.

Moreover, this report is not based upon Government of Mexico

price indices. The Government uses a weighting system based on the national economy. In this paper all price levels and ratios are derived from our own expenditure vouchers in 1974, compared to vouchers of 1973.

Summary of price changes 1974

Based on the above pricing information, we prepared a summary table. To weight the price changes in accord with CIMMYT program, we used the 1974 operating budget as the weighting guide. The results of this summary are presented in Table 1 (next page). The table shows that the average of all price increases affecting CIMMYT during 1974, compared to 1973, is 26.5% (see Table 1, column 8, bottom line).

Price changes affecting capital budget

Price changes for capital budget are of lesser importance at CIMMYT because the primary headquarters facilities are completed.

Nevertheless, our Controller looked up the price changes for principal factors of construction, and found:

Item	CIMMYT costs 1973	CIMMYT costs 1974	Percentage increase
Bricks laid, per M^2	₱ 53.20	₱ 78.55	↑ 47%
Reinforced concrete installed, per M^3	₱ 1785	₱ 2372	↑ 33%
Overall construction cost, per M^2 including plumbing, electricity etc.	₱ 1600	₱ 2100	↑ 31%

In general, CIMMYT's construction costs are up 31% in 1974, compared to 1973.

TABLE 1. Price change index for CIMMYT Core Operating Budget 1974

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Budget Code	Item	Core Budget unrestricted	Core Budget restricted	Total Core Budget	% of Core budget in each line of Col. 5	Weighted price change for each code	Weighted price change index (Col. 6 x Col. 7)
100	Salaries	1,684,120	292,290	1,976,410	36.5	+ 28.4%	10.37
200	Benefits	687,895	141,815	829,710	15.3	+ 27.9%	4.27
300	Travel	324,510	85,160	309,670	5.7	+ 24.5%	1.40
400	Training (direct costs)	346,055	244,035	590,090	10.9	+ 14.6%	1.59
500	Field and Laboratory expenses	610,220	244,670	854,890	15.8	+ 28.0%	4.42
600	Office related expenses	349,285	8,970	358,255	6.6	+ 26.3%	1.74
700	Vehicle expenses	197,695	20,545	218,240	4.0	+ 27.7%	1.11
800	Information services (General Expenses)	77,800	-	77,800	1.4	+ 36.9 %	0.52
900	General program expenses	104,675	90,485	195,160	3.6	+ 29.9 %	1.08
	Total	4,282,255	1,127,970	5,410,225	100.0	-	+ 26.50 %

Conclusions:

(1) Weighted average price change for each accounting code appears in Column 7.

(2) Weighted average price change for all codes appears in Column 8, bottom line.

How CIMMYT met the prices of 1974

CIMMYT management has allocated $768,000 to meet price increases in 1974. These funds were obtained as follows:

(1)	Provision in the 1974 core operating budget for price increases (7% of 1973 operating budget)	$352,000
(2)	Supplemental funds from IBRD to meet inflation (carryover from 1973)	166,000
(3)	Personnel funds reallocated, by keeping seven senior posts vacant	156,000
(4)	Drawdown of working capital accumulated in 1972 and earlier years	94,000
		768,000

These funds were sufficient to meet average price increases up to 15.3%.

In addition, economy measures have enabled us to meet some cost increases without curtailing program. For example:

Electricity: The 20.6% rise in cost per kilowatt hour has been largely offset by darkening 80% of the streetlights at El Batan at night, and by extinguishing office lights as soon as an office is not in use.

Travel: Maize staff who spend many weeks per year in Poza Rica hotels are now sleeping two scientists per double room and four scientists per suite. This has offset part of the 42.2% rise in hotel rates.

Gasoline: The 54.5% rise in gasoline prices has been offset in part by more car pooling among CIMMYT staff travelling to the various experimental stations and from Mexico City to El Batan. This has cut by one third the number of cars in use. All carburetors of CIMMYT pool

cars have been checked for gas consumption and many carburetors have been replaced for greater efficiency.

Finally, part of the 26.5% price change index reported in Table 1 will have its full impact only in 1975. For example, the salary increases ordered by the Government of Mexico effective September 1, 1974 will cost CIMMYT only 1/3 of a year's increase in 1974, (i.e. the last four months) but a full year's payments will be made in 1975.

Gains from currency exchange rates

Chairman Baum of the Consultative Group has asked that studies of price changes should include an estimate of gains from currency fluctuations or devaluations, since such gains can be used to offset inflation.

CIMMYT received no gains from currency exchange rates in 1974. (Details in Attachment 4.)

Expenditures outside Mexico

The Secretariat of the Consultative Group has asked CIMMYT to what extent our Center makes expenditures outside Mexico, in areas with lower inflation rate.

CIMMYT's procurement outside Mexico is less than 0.5% of operating budget.

We disburse salaries and some benefits to international staff through an agent in New York (14% of core budget) but the agent distributes the payments to individual bank accounts in Mexico and in home countries. (Details in Attachment 5.)

Forecast of price increases during 1975

Mexico will experience additional price increases in 1975. These are expected to be substantially lower than the 26.5% encountered by CIMMYT in 1974, but the inflation rate will definitely be higher than the annual increase of 4-5% which Mexico experienced during two decades 1952-72.

Several economic factors will be pulling against each other:

(1) The 22% increase in the minimum wage law which became effective September 1, 1974 will cause a chain reaction of commodity price increases over a period of at least six months (last quarter of 1974 and first quarter 1975).

(2) Some goods and services used by CIMMYT showed no price increase in 1974 but are expected to rise in 1975. These include:

Mexico Rail Freight rates.
International air express rates.
Mexico postal rates.
Insurance rates.
Postgraduate tuition rates in Mexico.

(3) CIMMYT Trustees will conduct their annual review of salaries in December 1974 and make adjustments for 1975. There will definitely be an increase for international staff who have received no salary adjustment since January 1, 1974; and their last salary increase averaged 8%, compared to a rise in the Mexico cost of living index of 25% during 1973.

(4) The Government of Mexico established a price control administration in September 1974, which should help slow down price changes. Major

manufacturers and merchants are now authorized to increase prices only when their production costs have risen 5% and they can substantiate these increases to the Government. The Government will then authorize price increases proportionate to costs.

CIMMYT prefers not to make a forecast of price changes in 1975, and is not asking funds from the Consultative Group to meet price changes which occur beyond 1974.

Conclusion: CIMMYT's request

The study of prices presented in this paper fully justifies an estimate of 20% for price rise in the 1975 budget, above the prices used in the 1974 budget.

This means that the Consultative Group, in making pledges for 1975, should accept CIMMYT's estimate of $1,159,000 to meet price changes in 1975.

Any lesser financing will result in some cutback of the 1975 program for research, training, and outreach.

Attachment 1.

Increase of CIMMYT salaries, 1974

Salaries comprise 37% of CIMMYT's operating budget.

Normally, salary increases are determined annually by the Board of Trustees, and made effective January 1.

In addition, whenever the Government of Mexico modifies its minimum wage law, CIMMYT applies the changes to the applicable Mexican staff.

Table 2 shows the CIMMYT operating budget for salaries in 1974, and changes in salary levels during 1974.

Overall, CIMMYT's salaries rose 28.4% during 1974, on an annual basis. This will affect the 1975 expenditure for salaries by a like percentage.

In January 1974 the Board of Trustees approved a tapered pay increase for CIMMYT staff as follows:

Labor subject to minimum wage law	35%
Support staff in a range $2000-5000 a year	20%
Support staff in a range $5000-8500 a year	15%
Support staff over $8500 a year	10%
International staff	8%

On October 8, 1974 the Government of Mexico again raised the minimum wage by 22%, the third increase in approximately 12 months. These increases were as follows:

Date	Minimum wage Increment	Cumulative increase compounded
September 17, 1973	18%	18%
December 29, 1973	14%	35%
October 8, 1974	22%	64.7%

None of these increases was included in CIMMYT's 1974 budget as presented at International Centers Week, August 1973. All occurred by Government order after the 1974 budget had been approved by the Board of Trustees and the Consultative Group.

The most recent 22% raise was requested by the Government to be retroactive to September 1, 1974; to apply at 22% to the first $5000 in wages for all employees above the minimum wage.

CIMMYT applied the Government formula to its labor and support staff, effective September 1, 1974, but deferred pay increases for international staff until December 1974 when the Trustees will make their annual review.

CIMMYT international staff have experienced a sharp drop in purchasing power of their salaries during 1973 and 1974. Mexico's official cost of living index has risen 40% during 1973-74, whereas the CIMMYT international staff have so far received salary increases averaging 8% since January 1973.

The Trustees will take up this problem in December 1974, and whatever decisions are then made will be applied in 1975.

TABLE 2.

Salary budget (Col. 100) and salary increases during 1974
(Numbers in parenthesis in columns 2, 3 and 4 denote numbers of employees)

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Personnel class	74 Core budget unrestricted 1/	74 Core budget restricted 1/	Total 74 Core budget Cols. 2 +3	% in each line of Col. 4	% salary increase approved by Trustees 1-74	% salary increase 9-74(annual basis)	Total % salary increase. Col. 6 + 7 compounded
International Staff							
IIE Expatriates 2/	(13) 260,000	(6) 115,000	(19) 375,000	19.0	8 %	nil	8 %
IIE Nationals 2/	(12) 256,000	(0) -	(12) 256,000	12.9	8 %	nil	8 %
Subtotal	(25) 516,000	(6) 115,000	(31) 631,000	31.9	8 %	nil	8 %
RF assigned 3/	(5) 163,000	(0) -	(5) 163,000	8.2	8 %	nil	8 %
Misc. Consultants	- 11,000	- -	11,000	0.6	nil	nil	-
Subtotal	(30) 690,000	(6) 115,000	(36) 805,000	40.7	8 %	nil	8 %
Support Staff							
Minimum wage labor 4/	(123) 145,000	(27) 32,000	(150) 177,000	9.0	35 %	22 %	64.7%
Above minimum wage to 5000 P/mo.	(190) 481,000	(29) 75,000	(219) 556,000	28.1	20 %	22 %	46.4%
5000-8500 P/mo.	(40) 243,000	(10) 58,000	(50) 301,000	15.2	15 %	17.4%	35 %
Above 8500 P/mo.	(12) 125,000	(1) 12,000	(13) 137,000	7.0	10 %	10.1%	21.1%
Subtotal	(365) 994,000	(67) 177,000	(432) 1,171,000	59.3	20.3%	19.4%	43.6%
TOTAL, full time employees in Mexico	(395) 1,684,000	(73) 292,000	(468) 1,976,000	100 %	15.2% 5/	11.5% 5/	28.4%

Explanatory footnotes for Table 2

1/ Revised expenditure plans approved by CIMMYT Trustees January 1974.

2/ IIE refers to Institute of International Education, New York, which serves as payroll agent for some CIMMYT international staff. "Expatriates" refers to non-Mexican nationals. "Nationals" refers to Mexican nationals.

3/ "RF assigned" refers to Rockefeller Foundation staff assigned to CIMMYT.

4/ "Minimum wage labor" refers to CIMMYT full-time employees whose earnings are subject to Mexico's minimum wage law, including unskilled labor and some semi-skilled labor. Generally, this group comprises those who earn less than $2000 per year.

5/ Last line of columns 6, 7, and 8 shows weighted average percentage of salary increase for all employees.

Changes in cost of CIMMYT benefits (Code 200), 1974

Half of CIMMYT's personnel benefits are tied to salary, and half are not. Those benefits which are not tied to salary are administered by a formula defined by the Mexican Government labor laws, or by CIMMYT Trustees.

For example, one benefit tied to salary; CIMMYT's life insurance benefit for international staff specifies that each insurance policy will have face value three times annual salary. Therefore, whenever salary rises 1%, the cost of insurance to CIMMYT rises a like percent.

An example of a benefit not tied to salary: the vehicle allowance for international staff is defined by the Trustees as a flat $1000 per family per year.

In Table 3, seventeen benefits are listed, and analysis shows how much these were raised in 1974 by changes in salaries; and how much by changes in the formula for each benefit.

The overall increase in allowances was 27.9% (Table 3, Column 11, bottom line.

TABLE 3. Price Rises for Personnel Benefits (Code 200) 1974

Col. 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	
Sub-code	Item	Eligible group	74 Budget unrestricted	74 Budget restricted	Total 74 Budget Col. 4 + 5	% of Col. 6 in each line	% increase in benefits due to salary increase	% increase in benefits due to other factors footnoted	Total price increase Cols. 8 +9 compounded	Price change index (Col. 7 x Col. 10)	Footnotes
201	Mexico Social Security	All Mexican nationals	157,270	37,350	194,622	23.4	36.7%	9.6%	49.8%	11.7	201/
202	Mexico education tax	All direct hire employees	33,845	8,015	41,860	5.0	28.4%	nil	28.4%	1.4	202/
203	CIMMYT group insurance	Support staff higher grades	13,270	3,125	16,395	2.0	10.1%	nil	10.1%	0.2	203/
204	Aguinaldo	All Mexican nationals	71,005	16,975	87,980	10.6	43.6%	9.4%	53 %	5.6	204/
205	Vacation allowance	All Mexican nationals	7,300	1,765	9,065	1.1	43.6%	18.8%	62.4%	0.7	205/
206	US Social Security	US nationals direct hire	4,645	-	4,645	0.6	8 %	nil	nil	nil	
207	IIE Insurance	International staff direct hire	24,555	5,840	30,395	3.7	8 %	nil	8 %	0.3	207/
208	IIE Retirement	International staff direct hire	68,350	16,300	84,650	10.2	8 %	0.8%	9.4%	1.0	208/
209	IIE Fees	International staff direct hire	9,290	2,310	11,600	1.4	nil	nil	nil	nil	209/
210	Education allowance	Expatriate international staff	25,215	5,975	31,190	3.8	nil	17 %	17 %	0.6	210/
212	Living allowance	Expatriate international staff	21,900	5,295	27,195	3.3	nil	nil	nil	nil	212/
213	Housing allowance	Expatriate international staff	40,480	9,645	50,125	6.0	nil	37 %	37 %	2.2	213/
214	Home leave travel	Expatriate international staff	25,880	6,110	31,990	3.9	nil	12.3%	12.3%	0.5	214/
215	Allowances assigned staff	Assigned staff	88,920	-	88,920	10.7	8 %	nil	8 %	0.9	215/
216	Vehicle allowance	International staff direct hire	24,300	6,000	30,300	3.6	nil	nil	nil	nil	216/
220	Mexican housing tax	All direct hire employees	59,725	14,260	73,985	8.9	28.4%	nil	28.4%	2.5	220/
219	All other	Miscellaneous	11,945	2,850	14,795	1.8	nil	15 %	15 %	0.3	
	Total		687.895	141.815	829,710	100 %	-	-	-	+ 27.9%	

Footnotes on price changes in allowances (numbers of footnotes correspond to numbers of line items in Table 2.)

201/ Government of Mexico social security tax: CIMMYT is required to pay this tax for all Mexican employees. The law defines the tax as a percentage of salary, up to a cutoff point. In 1974, CIMMYT's Mexican employees whose salaries are below the social security cutoff point, received pay increases which averaged 36.7%, causing a corresponding increase in social security taxes. In addition, the Government raised the level of salary on which tax must be paid. The old rate averaged 13.1% of the first $6341 in salary. The new rate is 13.1% of the first $16,141 in salary. This caused a further increase of 9.6% in the taxes paid by CIMMYT. Combining these two changes, CIMMYT's social security taxes rose 49.8%.

202/ Government of Mexico education tax: CIMMYT is required to pay a flat payroll tax of 1% on both national and expatriate employees, to support education in Mexico. There was no change in the tax rate in 1974, but the tax payments rose 28.4% reflecting the overall increase in CIMMYT payroll in 1974. (See table 1).

203/ CIMMYT group insurance: CIMMYT purchases life, accident and medical insurance for its higher-paid support staff, under a formula approved by CIMMYT Trustees. There was no change of rates in 1974, but since the salaries of this group rose 10.1%, there was a corresponding increase in the insurance costs.

204/ Statutory year-end bonus: The Government of Mexico requires that Mexican employees be paid an annual year-end bonus equal to one-half of one month's salary. CIMMYT's Mexican support staff received average pay raise of 43.6%, and this caused a like increase in the year-end bonus.

In addition, prior to 1974 CIMMYT had not paid the year-end bonus to Mexican nationals on its international staff. Labor lawyers advised CIMMYT that this policy was incorrect. Therefore CIMMYT extended this year-end bonus to 12 nationals on the international staff, which increased the payments under this benefit by an additional 9.4%.

205/ Statutory vacation allowance: The Government of Mexico requires that Mexican employees be paid an annual vacation allowance equal to 1/8 of one month's salary. Since salaries of Mexican support staff rose 43.6% in 1974, the cost of this bonus was raised equally, on an annual basis. In addition, prior to 1974, CIMMYT had not paid this vacation bonus to Mexican nationals on its international staff. On advice of labor lawyers, CIMMYT extended the bonus to 12 nationals on its international staff, thus increasing the cost of this benefit by 18.8%.

207/ IIE insurance package: Under policies established by the Trustees, CIMMYT purchases life, accident, and medical insurance for its international staff. The cost of this insurance package rises in approximate proportion to salaries. In 1974, salaries for this group rose 8%. There were minor changes in insurance provisions, but the changes in insurance rates were non-significant.

208/ IIE Retirement allowance: Retirement allowance is tied both to salary level and to age. Each year about 20% of the CIMMYT international staff pass an age barrier which requires CIMMYT to pay a higher level of retirement benefits. The age groups and the retirement contributions by CIMMYT are:

Age group	Percent of salary contributed
28-31	6%
32-34	8%
35-39	12%
40-44	16%
45-64	20%
Above 65	0

The average annual increase in retirement benefits caused by increased age level is 0.8%.

209/ IIE Administrative fees: CIMMYT pays to IIE a fixed fee per international direct-hire staff member. In 1974 that fee was unchanged but an increase from $325 to $400 per employee, per year, or 23%, has been announced for January 1975.

210/ Dependent education allowance: CIMMYT pays 75% of tuition and school fees for dependents of international staff attending primary or secondary schools in Mexico.

Charges to CIMMYT by schools in Mexico City rose an average 17% in 1974, following earlier price increases of 11% in 1973 and 6.6% in 1972.

212/ This allowance for expatriate international staff was absorbed into salary, as a one-time adjustment, in 1974, and will no longer appear as a CIMMYT benefit.

213/ Housing allowance for expatriate international staff: CIMMYT reimburses part of the cost of housing rental and utilities

for international expatriate staff. During the period 1970-74 rental rates in Mexico City area rose by an average 40-50%, and utilities by more than 100%, but CIMMYT gave no increase in housing allowance in that period. In 1974 the CIMMYT Trustees approved a new housing allowance formula which raised the ceiling and reduced the floor of the allowance. The total cost of housing allowances increased in 1974 by 37% on an annual basis.

214/ Home leave travel is paid for international expatriate staff, and varies by location of permanent residence, by number of dependents, and by cost of international air fares.

The average distance of the home place from Mexico, and the average number of dependents tends to remain constant from year to year, regardless of changes in personnel.

International air fares rose an average of 12.3% since the summer of 1973, thus affecting home leave travel by this amount in 1974.

215/ Allowances of assigned staff: This line item covers reimbursement of the retirement benefits, insurance programs, and savings plan of the five Rockefeller Foundation employees assigned to CIMMYT. These benefits rise in approximate relationship to base salaries, which were increased 8.0 % in 1974.

216/ Vehicle allowance: No change in 1974 for this allowance to international staff.

220/ Government of Mexico housing tax: This is a statutory 5% payroll tax, with a cutoff point, designed by the Government to raise housing investment funds. There was no change in the formula in 1974, but salaries subject to this tax rose 28.4%.

Miscellaneous benefits: CIMMYT's benefits include a number of budget items of minimum cost, not related to salary, and not occurring at any fixed time period, including:

Line 217. Emergency Medical expenses.
Line 218. Physical examinations.
Line 219. Shipment of household effects at beginning and end of staff assignment to Mexico.
Line 221. Compassionate leave travel.
Line 222. Spouse travel on official business.
Line 223. Deaths within staff.

We have assigned to this group of benefits an arbitrary average price increase of 15% in 1974.

CIMMYT's non-personnel costs, and price increases experienced in 1974

CIMMYT now spends 48% of its core operating budget on non-personnel items.

For the year 1974 this involves $2,604,000.

In order to analyze price increases during 1974, it is necessary first to break the non-personnel costs into seven accounting codes:

TABLE 4. Breakdown of CIMMYT's non-personnel expenditures core budget, 1974

Column 1	Column 2	Column 3	Column 4	Column 5
Code	Item	74 operating budget unrestricted	74 operating budget restricted	Total core operating budget Col. 3 + Col. 4
Code 300	Travel	324,510	85,160	309,670
Code 400	Training (direct costs)	346,055	244,035	590,090
Code 500	Field and lab expenses	610,220	244,670	854,890
Code 600	Office related expenses	349,285	8,970	358,222
Code 700	Vehicle expenses	197,695	20,545	218,140
Code 800	Info. services general expenses	77,800	-	77,800
Code 900	General program expenses	104,675	90,485	195,160

Each of the above codes will be analyzed separately for price increases in 1974.

Code 300. Travel

CIMMYT's travel costs of $309,000 in 1974 were budgeted to cost 42% for travel within Mexico, and 58% for travel outside Mexico.

A review of expense accounts for staff travel during the period January-September 1974, shows the following increases in prices above the same type of travel in 1973:

Domestic travel:

Air fare prices	+	16.5%
Hotel rooms per day	+	42.2%
Average meal prices per day	+	35.0%
Weighted average increase, all domestic travel prices	+	33.0%

International travel:

Air fare prices	+	12.3%
Hotel rooms per day	+	34.8%
Average meal prices per day	+	25.0%
Weighted average increase, all international travel prices	+	24.5%

Combining the domestic and international travel, on a weighted basis, CIMMYT has experienced an increase of travel prices of 28.4% during 1974.

Code 400. Training, direct costs.

Most participants in CIMMYT training receive fellowships awarded from special grants.

But the cost of the CIMMYT trainers, training materials, and other general expenses for training are charged to core budget, together with a few fellowships to maintain flexibility in the program. These expenditures are listed under Code 400, "Training, direct costs".

A review of CIMMYT accounts for January-September 1974 shows that prices of training have increased as follows, compared to the same activities in 1973:

In-service training: Stipends were raised by CIMMYT management in January 1974 from $300 per month, to $400, or 33%.

Postdoctoral fellowships: Total cost of fellowships per year increased 8% because of a change in housing allowance in 1974.

Postgraduate student fellowships: No change in university tuition or allowances in 1974. A substantial increase is expected in 1975.

Visiting scientists: These awards consist mainly of per diem for hotels and meals in Mexico, for which CIMMYT has increased the per diem by 25% in 1974.

Short-term visitors: These awards consist mainly of per diem in Mexico, raised 25% in 1974.

International travel, for all of above awardees: prices are up 24.5% (See code 300.)

Domestic air fares, for all of above awardees: prices are up 16.5%. (See code 300.)

Vehicle services for postdoctoral fellows: prices are up 27.7%. (See code 700.)

The weighted average of all price changes for training in 1974 is calculated in Table 5, Column 8, bottom line; that is 14.6%.

TABLE 5. Price changes for training program, 1974 (Code 400, core budget)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Sub-code	Item	74 Core budget unrestricted	74 Core budget restricted	Total 74 core budget	% in each line of Col. 5	% of price increase reported in text	Price change index (Col. 6 x Col. 7)
401	Stipends, in-service	26,400	24,700	51,100	8.7	33	2.9
402	Stipends, Grad. students	55,650	17,160	72,810	12.3	nil	nil
403	Stipends, post-doctorals	77,000	57,420	134,420	22.8	8	1.8
404	Stipends, visiting scientists	30,600	52,440	83,040	14.1	25	3.5
405	Stipends, short-term visitors	4,650	540	5,190	0.9	25	0.2
406-10	Domestic travel	18,800	21,020	39,820	6.7	16.5	1.1
411-15	International travel	35,800	29,785	65,585	11.1	24.5	2.7
416-20	Visas, insurance, etc.	56,145	31,610	87,755	14.9	nil	nil
421-25	Vehicle costs, post-doctorals	41,010	9,360	50,370	8.5	27.7	2.4
	Total	346,055	244,035	590,090	100 %	-	+ 14.6%

Code 500. Field and laboratory expenses.

This code covers the operating cost of CIMMYT's experimental stations and laboratories in Mexico.

Total cost is $854,890 in 1974.

A review of expenditures made during January-September 1974 shows the following changes in unit prices, compared to the same type of expenditures in 1973:

Sub-code 501. Replacement of equipment. Purchase of agricultural tractors and implements are the principal items in this account. The price of John Deere tractors of the size purchased by CIMMYT rose 22.7%, and tractor attachments 62%. On a weighted basis, prices for this account are up 32.5% in 1974.

Sub-code 502. Equipment maintenance. This account consists mainly of spare parts, since the labor is charged to code 100. Tires, the most common replacement part, are up 33.5% in price, and batteries 9%, for 1974 compared to 1973. On a weighted basis, prices in this account have risen 24%.

Sub-code 503. Supplies for field and laboratory. The three most common supplies in this account have risen as follows:

Nitrogen fertilizer	↑	8.7%
Maize pollinating bags	↑	13.3%
Field tags	↑	7.2%

On a weighted basis, prices for this account are up 9.5%.

Sub-code 504. Seed shipments outside Mexico. International air freight from Mexico shows no price change in 1974. Cost of tin containers is up 12% and gummed paper mailing labels up 72%.

On a weighted basis, prices for this account are up 1%.

Sub-code 505. Statistical services, research use. This account covers computer card punching and verifying, computer time, and consulting services for computer programming. There has been no price change in 1974. Increases are expected in 1975.

Sub-code 506. Temporary labor. The minimum wage law has increased the wages of temporary labor 64.4%, the same as for full-time labor. (See Code 100.)

Sub-code 507. Machinery operations. This account consists mainly of tractor operations in the field. Diesel fuel of the grade used by CIMMYT has risen in price from Pesos 0.33 per liter to Pesos 0.52 per liter, or 57.6%.

Sub-code 509. Shipping costs. No change in rail shipping rates in Mexico during January-September 1974.

Truck shipping between CIMMYT's eight research stations in Mexico has increased in price, varying by route, but no increase is less than 20%.

No change has occurred in 1974 in customs clearing charges or insurance rates on freight.

On a weighted basis, unit price for shipping has increased 10%.

Sub-code 511. Maintenance of buildings for experiment stations and laboratories. Paint is the largest single component of this account. Labor for maintenance is charged to code 100. One drum of the grade of paint most used by CIMMYT has increased in price from Pesos 303 in 1973 to Pesos 414 in 1974, or 36.6%.

A summary of 1974 price increases for Code 500 is given in Table 6.

On a weighted basis, the price change index for this code is 28%. (See Table 6, Column 8, bottom line.)

TABLE 6. Price changes in 1974 for Field and Laboratory Expenses (Code 500)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Sub-code	Item	74 Core budget unrestricted	74 Core budget restricted	Total 74 Core budget	% of Col. 5 in each line	Price increases reported in text above	Price change index (Col. 6 x Col. 7)
501	Replacement of equipment	49,620	69,080	118,700	13.9	32.5%	4.5
502	Equipment maintenance	42,425	4,155	46,580	5.4	24 %	1.3
503	Supplies	203,415	76,780	280,195	32.7	9.5%	3.1
504	Seed shipment costs	48,105	24,300	72,405	8.5	1.0%	0.1
505	Statistical services, research use	37,240	12,895	50,135	5.9	nil	nil
506	Temporary labor	162,650	52,470	215,120	25.2	64.4%	16.2
507	Machinery operations	25,550	-	25,550	3.0	57.6%	1.7
509	Shipping costs, customs, insurance	23,105	4,990	28,095	3.3	10 %	0.3
511	Maintenance of buildings	18,110	-	18,110	2.1	36.6%	0.8
	Total	610,220	244,670	854,890	100 %	100 %	+ 28.0%

Code 600. Office related expenses.

CIMMYT's 1974 core budget provides $358,255 for office-related expenses.

A review of expenditures during January-September 1974 shows the following increases occurred in unit costs in that period, compared to the same type of activities in 1973:

Sub-code-601. Rent. CIMMYT pays rent only for its Mexico City office, and there was no change in that price in 1974.

Sub-code 602. Electricity. For CIMMYT's headquarters, the price of one kilowatt hour was 0.41 in 1974 compared to 0.34 in 1973, an increase of 20.6%.

Sub-code 603, Telephone. Local telephone rates for CIMMYT headquarters were increased 41.7% in 1974.

Sub-code 604. Office building maintenance. Price increase 36.6%. See Code 511.

Sub-code 605. Fire and theft insurance. No rate change in 1974.

Sub-code 606. Office supplies. Prices of stationery and other paper goods used by offices rose 78% in unit prices in 1974. Pencils, staples, and other non-paper goods, consumed in the office, rose 35.2% in unit price.

Overall, prices in this account have increased 60% in 1974, above 1973.

Sub-code 607. Xerox service. No change in rental rate for the photocopy machine but the cost of letter-size xerox paper rose from Pesos 39 to 68.50 per 1000 sheets, or 76%.

On weighted average, prices for this account rose 18% in 1974.

Sub-code 608. Audit and legal fees. No change in legal fees. Audit fees rose 10%. Overall, prices rose 6% for this account in 1974.

Sub-code 609. Mail. Mexico has made no change in its postal rates since 1972. A change is expected in 1975.

Sub-code 610. Replacement of office equipment. One IBM electric typewriter, the standard office equipment, increased in price from 10,500 Pesos in 1973 to 11,300 Pesos in 1974, or 7.6%.

Sub-code 611. Janitorial services. The price of the service contract increased 14% in 1974.

Sub-code 612. Security guards. No change in costs.

Sub-code 614. Computer services, administration. No change in price. See Code 505.

All price changes for Code 600 are summarized in Table 7.

On a weighted basis, price changes in Code 600 rose 26.3% in 1974 (See Table 7, Column 8, bottom line).

TABLE 7. Price changes in CIMMYT Office Related Expenses (Code 600), 1974

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Sub-code	Item	74 Core budget unrestricted	74 Core budget restricted	Total 74 Core Budget	% in each line of Col. 5	Price changes reported in text	Price change index (Col. 6 x Col. 7)
601	Rent	9,000	-	9,000	2.5	nil	nil
602	Electricity	54,515	-	54,515	15.1	20.6%	3.1
603	Telephone	68,530	2,770	71,300	19.9	41.7%	8.3
604	Office building maintenance	14,210	-	14,210	4.0	36.6%	1.5
605	Fire & theft insurance	22,800	-	22,800	6.4	nil	nil
606	Office supplies	58,815	4,175	62,990	17.6	60 %	10.6
607	Xerox service	19,610	1,650	21,260	5.9	18 %	1.1
608	Audit and legal fees	11,300	-	11,300	3.2	6 %	0.2
609	Mail	14,935	325	15,260	4.3	nil	nil
610	Replacement office equipment	17,500	50	17,550	4.9	7.6%	0.4
611	Janitorial services	29,270	-	29,270	8.2	14 %	1.1
612	Security guards	22,100	-	22,100	6.1	nil	nil
614	Statistical service, accounting	6,700	-	6,700	1.9	nil	nil
	Total	349,285	8,970	358,255	100 %	-	+ 26.3%

Code 700. Vehicle expenses.

CIMMYT's core budget provides $218,240 for vehicle expenses in 1974.

A review of vehicle expenditures for the period January-September 1974 shows the following increases in unit costs, compared to 1973:

Sub-code 701. Vehicle purchase. CIMMYT has standardized its vehicle purchases on the following five vehicle models and makes:

Sedans -- Dodge Dart and Datsun.
Pickups -- Chevrolet and Datsun.
Carryalls -- Chevrolet.

For 17 vehicles purchased in 1974, CIMMYT paid a weighted average of 21% higher prices than the same types of vehicles cost in 1973.

Sub-code 702. Vehicle operations. This account consists mainly of gasoline purchases. The two grades of gasoline used by CIMMYT vehicles have increased in price as follows:

	1973 price per liter	1974 price per liter	Percent increase
Lower grade	Peso 1.00	1.40	40%
Higher grade	Peso 1.20	2.00	67%

Based on ratio of consumption, CIMMYT gasoline prices are up 54.5% in 1974, compared to 1973.

Sub-code 703. Vehicle maintenance. This account consists mainly of replacement parts, since labor for repairs is charged to Code 100.

The price of auto tires used by CIMMYT is up 18.9% in 1974 (from Pesos 808 in 1973 to 961 in 1974); and the price of batteries is up 20% (from Pesos 387 to 465). Other replacement parts are comparable. A weighted average would be 19%.

Sub-code 704. Vehicle insurance. No change in vehicle insurance rates.

Sub-code 705. Vehicle registration. No change in government registration fees.

Price changes in Vehicle expenses are summarized in Table 8.

The price change index for all vehicle expenses is 27.7% for 1974 (See Table 8, Column 8, bottom line).

TABLE 8. Price changes for vehicle expenses (Code 700), 1974

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Sub-code	Item	74 Core budget unrestricted	74 Core budget restricted	Total 74 Budget Col. 3 + 4	% in each line Col. 5	Price changes reported in text	Price change index Col. 6 x Col. 7
701	Vehicle purchases	44,500	nil	44,500	20.4	21 %	4.3
702	Vehicle operations	65,715	11,275	76,990	35.3	54.5%	19.2
703	Vehicle maintenance	42,540	5,695	48,235	22.1	19 %	4.2
704	Vehicle insurance	36,865	2,600	39,465	18.1	nil	nil
705	Vehicle registration	8,075	975	9,050	4.1	nil	nil
	Total	197,695	20,545	218,240	100 %		+ 27.7 %

Code 800. Information services, general expense.

Some of CIMMYT's information services are charged to the wheat or maize programs, if the information relates only to one crop; but if the information relates to CIMMYT's work as a whole, it is charged to Code 800, for general expenses of the information services.

CIMMYT has assigned $77,800 to this account for 1974.

A review of expenditures charged to this account during January-September 1974 shows the following increase of unit prices, compared to 1973:

Code 801. Library procurement. The average wholesale price of trade books is up 12.5%.

Code 802-5. Publications edited by CIMMYT and printed in Mexico. Paper used for CIMMYT publications has risen in price from Pesos 39.1 per 1000 sheets in 1973 to Pesos 78.2 in 1974, or 78.2%.

Printing charges for typesetting and press run have risen 40% per page, excluding paper.

The overall price increase for publications is 55%.

Sub-code 806-7. Photographic services. The price of color film has risen 8.1% in Mexico during 1974, and photo enlargement paper has risen 23.7%. Overall, the price changes of photo services at CIMMYT have risen 18%.

Sub-code 808-9. Postage. No change. (See Code 609.)

The above price changes are summarized in Table 9. The price change index for Code 800 works out at 36.9%. (See Table 9, Column 8, bottom line).

TABLE 9. Price changes in CIMMYT's information services (Code 800), 1974

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Sub-code	Item	74 Core budget unrestricted	74 Core budget restricted	Total 74 Core Budget	% in each line of Col. 5	Price changes reported in text	Price change index (Col. 6 x Col. 7)
801	Library procurement	9,000	-	9,000	11.6	12.5%	1.4
802-5	Publications	47,250	-	47,250	60.7	55 %	33.4
806-7	Photo services	8,300	-	8,300	10.7	20 %	2.1
808-9	Postage	13,250	-	13,250	17.0	nil	nil
	Total	77,800	-	77,800	100 %	-	+ 36.9%

Code 900. General program expense.

This account provides $195,000 in 1974 for a miscellany of program activities including:

International symposia.
Miscellaneous travel grants.
Representation.
Contingency funds
Special publications
Special reference books

CIMMYT's 1974 expenditures reveal the following changes in prices compared to 1973:

Sub-code 901. Symposia. Expenses charged here are almost totally for international travel of participants; hence the price rise in 1974 is 24.5%. (See notes on Code 300.)

Sub-code 902. International cooperation. (Miscellaneous grants.) Here again the primary expenses are for international travel, and the price increases in 1974 have been 24.5%.

Sub-code 904. Representation. This account provides funding for official guest expenses at El Batan, where the general level of cafeteria and guest house prices was raised 40% in January 1974.

Sub-code 906. Miscellaneous. This account provides a contingency item, which is not subject to price change.

Sub-code 907. Special publications. Publications charged to this account have risen 55 % in production cost, the same as Codes 802-5.

Sub-code 908. Special references. Books charged to this account reflect the 12.5% increase in wholesale book prices, as shown in Code 801.

Overall, the price increases for Code 900 show a weighted average of 29.9%, (see Table 10, Column 8, bottom line).

TABLE 10. Price increases for General Program Expense (Code 900), 1974

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Sub-code	Item	74 Core budget unrestricted	74 Core budget restricted	Total 74 Core Budget	% in each line of Col. 5	Price increases reported in text	Price change index (Col. 6 x Col. 7)
901	Symposia	10,045	46,640	56,685	29.0	24.5%	7.1
902	Miscellaneous travel grants	16,745	215	16,960	8.7	24.5%	2.1
904	Representation	14,375	3,305	17,680	9.1	40 %	3.6
906	Contingency	27,215	10,665	37,880	19.4	nil	nil
907	Special publications	29,685	29,060	58,745	30.1	55 %	16.6
908	Special references	6,610	600	7,210	3.7	12.5%	0.5
	Total	104,675	90,485	195,160	100 %	-	+ 29.9%

Attachment 4.

Gains from Currency Exchange Rates

Some international centers gain from currency fluctuations or devaluation. These gains can be used to offset inflation. CIMMYT made no gains from currency fluctuations in 1974.

The Government of Mexico has maintained a fixed exchange rate between the peso and the U.S. dollar for more than 20 years.

CIMMYT received its 1974 operating and capital budgets in five currencies, shown below, and the results of currency fluctuations are shown in the right-hand column:

Currency received	Amount stated in U. S. Dlls.	Percentage of receipts	Gains/losses from fluctuations
U.S. dollar	4,639,000 1/	76.4	nil
Canadian dollar	457,000	7.5	nil
Mexian peso	780,000	12.8	nil
German Deutsch Mark	188,000 2/	3.1	nil
U.K. pound sterling	12,000	0.2	nil
Total	6,076,000 2/	100.0	nil

1/ Payments to CIMMYT in U.S. dollars are received from IBRD, UNDP, U.S. Government. Ford and Rockefeller Foundations, Denmark, and miscellaneous income.

2/ A supplemental payment by Germany for $186,000 is omitted pending confirmation of exchange rate.

Attachment 5.

Expenditures outside Mexico

CIMMYT's procurement of supplies and equipment outside Mexico is non-significant (less than 0.5% of core operating budget).

CIMMYT pays its international staff through the Institute of International Education in New York City, in U.S. dollars, but the IIE transfers the CIMMYT funds to individual bank accounts in Mexico, and throughout the world. All headquarters staff members maintain bank accounts in Mexico, to pay living costs. Most staff members whose nationality is not Mexican also maintain a second bank account in their home country. Nationalities of CIMMYT international staff are as follows (October 1974):

Nationality	Number	Percentage
Mexico	12	33.3
USA	9	25.0
India	3	8.3
Australia	2	5.6
Canada	2	5.6
Chile	2	5.6
Costa Rica	2	5.6
U.K.	2	5.6
Bolivia	1	2.7
Netherlands	1	2.7
Total	36	100.0

Some CIMMYT staff are of nationalities whose home countries have higher inflation rate than Mexico (Bolivia, Chile, India), and some from lower inflation rate areas (U.S., Canada).

7x6 CIMMYT

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

October 21, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International Agricultural Research
Washington, D. C. 20433

Dear Harold:

The Consultative Group Secretariat asked that CIMMYT send you a copy of our report on price changes in Mexico in 1974. This information influences the size of CIMMYT budget for 1975, and may be discussed at the Consultative Group Meeting in Washington, October 30-31.

Sincerely,

Hal

Haldore Hanson
Director General

Attachment (1)

Form No. 27
(3-70)

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

626

TO: NICKEL
TROPFOUND
IKEJA

DATE: OCTOBER 18, 1974

CLASS OF SERVICE: LT / RLA

Ext. 3454

COUNTRY: NIGERIA

TEXT:
Cable No.:

REFERENCE YOUR LETTER SEPTEMBER SIXTEEN ON BUDGETING AND ACCOUNTING WOULD APPRECIATE KNOWING STATUS OF PRITCHARDS COMMENTS ON BUDGET TABLES STOP COULD YOU TAKE UP MATTER WITH LEJEUNE AND PREFERABLY PROVIDE THESE COMMENTS FOR HIM TO BRING BACK PRIOR TO CGIAR AND PSROSS ~~XXX~~ CIMMYT MEETING AT ~~XXX~~ END OCTOBER

REGARDS

CHEEK

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME: Bruce M. Cheek

DEPT.: Agriculture & Rural Development

SIGNATURE: B M Cheek
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE:

ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

CLEARANCES AND COPY DISTRIBUTION:

cc: Mr. Lewis

BMC:mcj

For Use By Communications Section

Checked for Dispatch:

Form No. 27
(3-70)

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

TO: MALONE
INTBAFRAD
ADDIS ABABA

DATE: OCTOBER 16, 1974

CLASS OF SERVICE: telex

Ext. 3454

COUNTRY: ETHIOPIA

TEXT:
Cable No.: 391

PLEASE INFORM PAGOT IN RESPONSE HIS OCTOBER FIFTEEN CABLE THAT ACCOUNTANTS AND CONTROLLERS MEETING IS AT CIMMYT HEADQUARTERS BEGINNING MORNING OF TUESDAY OCTOBER TWENTYNINE AND ENDING AFTERNOON OF FRIDAY NOVEMBER ONE

REGARDS

CHEEK

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME Bruce M. Cheek

DEPT. Agriculture & Rural Development

SIGNATURE _____
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE:

ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

CLEARANCES AND COPY DISTRIBUTION:

cc: Mr. J. Hendry

BMC:mcj

For Use By Communications Section

Checked for Dispatch: _____

INTERNATIONAL DEVELOPMENT ASSOCIATION

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

TO: MALONE
INTAFRAD
ADDIS ABABA

DATE: OCTOBER 16, 1974

CLASS OF SERVICE: telex

Ext. 3434

COUNTRY: ETHIOPIA

TEXT:

Cable No.:

PLEASE INFORM PAGOT IN RESPONSE HIS OCTOBER FIFTEEN CABLE THAT ACCOUNTANTS AND CONTROLLERS MEETING IS AT CLEMMY HEADQUARTERS BEGINNING MORNING OF TUESDAY OCTOBER TWENTYNINE AND ENDING AFTERNOON OF FRIDAY NOVEMBER ONE REGARDS

CLERK

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME: Bruce N. Oleck

DEPT.: Agriculture & Rural Development

SIGNATURE:

(Signature of individual authorized to approve)

ORIGINAL (File Copy)

CLEARANCES AND COPY DISTRIBUTION

CONFIRMING ACTIONS: Mr. J. Hendry

Oct 15 2 PM 1974

Cleared by Communications Section

Dispatched

Checked by Originating Section

INCOMING TELEX

RECEIVED

G3

OCT 15 1 55 PM 1974

COMMUNICATIONS SECTION

Distribution:
Agric. & Rural Dev.

IBRD ADDIS

OCTOBER 15, 1974

392 HAROLD GRAVES

NEED DATE AND LOCATION IDRC SPONSORED MEETING CIMMYT. MCAULEY WILL ATTEND. REPLY TELEX SOONEST THROUGH IBRD ADDIS. REGARDS

PAGOT

1. CIMMYT HQ
2. 9 a.m. Tues. Oct 29
→ p.m. Fri Nov 1.

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Files

DATE: October 10, 1974

FROM: Harold Graves

SUBJECT: CIMMYT Budget

Frank Mes of C.I.D.A. told me on the telephone this morning that while the total Canadian contribution in 1975 may be $837,000, $300,000 of this is for a program yet to be negotiated (a written proposal from Glenn Anderson is awaited). In any case, the $300,000 is for outreach programs and would not come out of multilateral funds; part of it in fact would take the form of a bilateral grant, and would clearly be a special project. The Canadians do not consider the $300,000 to be available for CIMMYT's core program, and they do not want the amount shown as being available for core (restricted or otherwise).

Under a letter of September 21, Haldore Hanson sends new budget tables which show the net core and capital funds required from the Consultative Group as $7,005 thousand. After the reclassification of $300,000 is taken into account, the amount becomes $6,705 thousand.

cc: Mr. W. W. Lewis
~~Dr. Guy Baird, USAID~~

HGraves:apm

BANCO INTERNACIONAL
DE RECONSTRUCCION Y FOMENTO
ASOCIACION INTERNACIONAL DE FOMENTO
CORPORACION FINANCIERA INTERNACIONAL

For information

Con saludos de
Virgilio Barco
Director Ejecutivo

G-2(1)

10/8/74

NOVEDADES
EL MEJOR DIARIO DE MEXICO

SABADO 28 DE SEPTIEMBRE DE 1974

Termina la Huelga en la Volkswagen; Obtienen los Trabajadores el 22 %

Concluyó ayer la huelga que desde el día 20 existía en la empresa Volkswagen de México, del estado de Puebla, después de una serie de pláticas en las que intervinieron las autoridades del trabajo de dicha entidad y de la Federación.

Los trabajadores obtuvieron el 22 por ciento de aumento en los salarios para los que perciben hasta cinco mil pesos mensuales y un mil 188 pesos para quienes ganen mas de esta ultima cantidad. Los beneficios seran aplicados con retroactividad al 1o. de septiembre.

El sindicato convino, por otra parte, que con el citado aumento, tendrá por efectuada la revisión de salarios que, al entrar en vigor las reformas legislativas sobre el particular, tendría que efectuarse en junio de 1975. Por tanto, la próxima revisión salarial será hasta el 30 de junio de 1976, al termino de la vigencia del actual contrato.

Precisaron que lo anterior no constituye renuncia de ningun derecho, ya que estan recibiendo los trabajadores el aumento correspondiente.

La huelga era por demanda de aumento extraordinario de salarios, para compensar el poder de compra perdido por la inflación.

La empresa cubrirá los salarios de la semana que concluyó el 22 del actual, y el 50 por ciento de los correspondientes a los días de huelga de esta semana.

El convenio fue firmado en la secretaría del Trabajo y las partes en pugna se comprometieron a ratificar el pacto ayer mismo ante las autoridades de la Junta Local de Conciliación y Arbitraje del estado de Puebla.

El licenciado Porfirio Muñoz Ledo, secretario del Trabajo intervino en las pláticas conciliatorias, así como el subsecretario de Previsión Socoal, licenciado Agustín Alanís Fuentes. El convenio fue firmado, asimismo, por el gobernador de Puebla, señor Guillermo Morales Blumenkron.

A nombre del sindicato suscribió el documento, Gonzalo Jiménez Castillo, secretario del trabajo, y, por la empresa, el licenciado Salvador Laborde, apoderado general.

G2b

No. 139

September 23-27, 1974

EL BATAN INFORMA

Possible capital addition !!

FLOOD DAMAGE AT POZA RICA

Due to heavy rains following hurricane Fifi, CIMMYT's experiment station suffered extreme flood damage beginning on Saturday, Sept. 21. The full extent of the damage is still undetermined, but:

1. All the top soil was removed from most of the two ranges of blocks nearest our irrigation reservoir and deposited on other areas of the station.

2. A new channel, about 1 1/2 meters deep, was cut through the experimental land blocks, D3, E3 and F3.

3. The maize still in the field is a total loss. Fortunately, all yield trials involving progeny of advanced units, the disease and insect nursery of advanced units, five back-up pools and some opaque-2 materials had been harvested by Friday, September 20.

However, none of the experimental agronomy and physiology trials had been harvested. All were lost.

4. The first flood was estimated to be three meters deep in the main experimental blocks. A second flood on Monday, Sept. 23 was 2 1/2 meters deep.

5. A great deal of damage was done to fences and although the grain silos are still in position, considerable damage was done to them, and the grain in them, to the dryers and associated equipment, and to the meteorological station.

Farmers along the river and the Pemex refinery in Poza Rica suffered extensive damage and the main highway from Texcoco to Poza Rica was closed by landslides at several points. Gas and crude oil pipelines were also severely damaged in certain areas.

KILLING FROSTS HIT EL BATAN AND TOLUCA, SEPTEMBER 8-9

Killing frosts hit both El Batan and Toluca areas on the nights of September 8 and 9, 1974, doing extensive damage to CIMMYT's experimental crops at both locations, and causing widespread damage to the corn and bean crops of millions of Mexican farmers, over an area reported to cover a quarter of Mexico.

Long time farmers in El Batan area say this was the earliest killing frost since 1917, a span of 57 years.

Normally, frosts are expectable at El Batan from the end of September to the end of April, with the severity of frost greatly diminished during the one month period at the beginning and end of that period. In other words, a reasonable freedom from killing frosts would normally be expected in April-October.

For Toluca, the range of frost period is usually about the same as El Batan, but severe frosts are more expectable in September and April. Light frosts occur almost every summer season at Toluca but cause little damage.

CIMMYT's weather stations at El Batan and Toluca showed the following temperatures in the recent frost nights:

	September 8	September 9
El Batan	-2.0 C	-1.4 C
Toluca	-3.0 C	-3.0 C

Losses to CIMMYT research materials in the frosts of September 8-9 are estimated as follows:

El Batan:	Maize 80%.
	Wheat and triticale 0-30%
	Barley 0-20%
Toluca:	Maize 100%
	Wheat and triticale 60-80%
	Barley, slight.

These crop losses will greatly alter the work plans of both the wheat and maize staffs for the next few months. Some of the wheat staff had most of their materials at Toluca and may have nothing to harvest, and no data to analyze. The durums were particularly hard hit. Barley harvest will be 80% normal, because most materials were at El Batan. The maize staff have lost all materials at Toluca and 80% at El Batan.

Historically, Poza Rica is always frost free; Tlaltizapan has rare, light frosts, CIANO station in Sonora State has occasional frosts, but never killing, in CIMMYT's experience.

One minor gain from the killing frost of 1974 was the opportunity to observe frost tolerance in each of the plant species with which CIMMYT works.

Bread wheats and triticale both showed genetic variability for frost tolerance in both Toluca and El Batan, and staff members in these two crops are taking readings on which lines proved partially tolerant. This information will be added to the record data. No general superiority on frost tolerance could be observed between triticale and bread wheats.

Durums were 100% killed at Toluca and showed no genetic variability for frost tolerance under the severe conditions of this recent period.

Maize showed no genetic variability for frost tolerance under Toluca conditions this year, but some was observable at El Batan, although not enough to permit reliable readings.

A "light frost" is defined as a period when the temperature drops slightly below 0° C. (for example -1.0°C.) for a few hours, such as midnight to 4 a. m. causing a burning to some plant leaves, which may die, but is not severe enough to kill the flowering parts (tassels and silks in corn, anthers in wheat).

A "killing frost" is one which falls low enough and long enough (for example, at or below -2°C. and generally lasting at least 4-6 hours) killing the flowering parts at flowering time, or killing the neck of the wheat plant, which prevents further grain filling; or killing the stem of the ear on the corn plant, if the ear has formed. Any of these happenings can destroy the total yield, depending on when the frost occurs. If the ear of wheat or corn has formed, and the grain is half or more filled, the maturing process may continue, but there usually would be some loss of yield.

CIMMYT has received no report on the crop losses suffered by Mexican farmers surrounding El Batan and Toluca, or in Mexico as a whole, as a result of the frost of September 8-9, but the losses are serious both to farmers and to the national food supply.

Corn farmers around Toluca and El Batan appear to have suffered approximately the same losses as CIMMYT--that is 100% loss to corn in Toluca area and 80% in El Batan area. The Mesa Central of Mexico (central highlands) produces at least 1/4 of the national corn crop.

Many dairy farmers around El Batan have been using field choppers to convert their frost damaged corn crop into silage or green fodder for immediate use, rather than letting it dry with no grain. This will salvage a small part of the crop's feed value.

BORLAUG: CHINA MAY HAVE ITS LARGEST HARVEST IN HISTORY

The following article was written by Joseph Lelyveld for the New York Times and appeared in Excelsior of September 24, 1974.

Hong Kong, September 23. China's efforts to increase food production were rewarded today by reports from a group of distinguished U.S. scientists who made a tour of various agricultural institutions and some communes.

"It was difficult to find a field which was not well sown," said Dr. Norman E. Borlaug, 1970 Nobel Peace Prize winner.

The Chinese would not give an estimate of possible harvest figures, but the general impression was that it would be exceptionally good, possibly the best China has had.

This view should be considered seriously, since the ten scientists forming the delegation are veteran agronomists with vast knowledge and experience in Asia.

"The rice harvest is really first class," said Dr. Sterling Wortman, Vice President of the Rockefeller Foundation (CIMMYT Trustee) and leader of the delegation.

Strong contrasts between old and new agricultural methods in Southeast Asia are unknown in China. Everyone is being trained in the more modern agricultural techniques.

The delegation took "half a trunk load" of samples of different crop varieties, including 30 to 35 varieties of rice seed. They were surprised by the new advances made by the Chinese to obtain and disseminate new rice varieties, similar to the "miracle rice" developed at the International Rice Research Institute at Los Baños, Philippines.

PLEASING MAO PART OF CHINA BIRTH CONTROL

The Mexico City NEWS of September 23 reports from Washington:

A congressional report says China has developed a highly effective birth control program using mass-motivation techniques that would not work anywhere else.

The study released Sunday by the House Committee on Foreign Affairs says China, the world's most populous country, will likely become the first major developing nation to reduce population growth below one per cent per year.

Ornitóteles, el Pájaro Filósofo

During my visit to El Batan I found this circulated by the staff association. It was not prepared editorially for the CF!!

October 1, 1974

Dear Hal:

This will confirm a point in our telephone conversation of last Friday: As far as the Secretariat is concerned, the $92,000 which CIMMYT put into a working capital fund before the establishment of such funds had been accepted and standarized in the Consultative Group can be spent by CIMMYT for any purpose (other than a special project) authorized by its Board of Trustees within core and capital development programs accepted by the Consultative Group.

You asked in an earlier letter about the status of the suggested 10 per cent limitation on variations from Center budgets. This suggestion was not accepted by the Consultative Group.

Sincerely,

Harold Graves

Mr. Haldore Hanson
Director General
International Maize and Wheat
Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

cc: Mr. W. W. Lewis

HGraves:apm

G2b

G26

September 25, 1974

Mr. Baum

Harold Graves

CIMMYT Inflation Allowance

I have checked again with the regional desk (Mr. Kapur) on the question of an inflation allowance for CIMMYT's 1975 budget. You remember that when Bruce Cheek checked this in June, we were told that something on the order of 10 to 12 per cent would be adequate.

The judgment now is that a figure of 15 per cent would be more realistic. This would compare to 15 per cent being allowed in the case of IRRI and 14 per cent in the case of CIP. The new estimate from the regional desk takes no account of the possibility of a devaluation of the Mexican peso.

If the new figure were used for CIMMYT, it would add $175,000 to the 1975 budget of that Center, and bring the total funding needed by the Center to $7.245 million. I believe this money could be found without difficulty.

Would you be willing to accept the higher figure now recommended? If so, would you make it a flat allowance, and eliminate the option of letting CIMMYT draw on its working capital in the event that the inflation allowance accepted by the Secretariat proved to be insufficient, or would you let that option stand? Would you want to make some provision for impounding any windfall that might result from the devaluation of the peso?

HGraves:apm

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

September 21, 1974

Mr. Harold Graves
International Bank for Reconstruction
and Development
1818 H. Street, N.W.
Washington, D.C. 20433
U. S. A.

Dear Harold:

I am enclosing two copies of revised 1975 budget tables I through VI.

I hope they meet your needs, although in our judgment the inflation rate is inadequate.

In our new tables we've revised downward the provision for price increases from 20% recommended by CIMMYT to the 12% level recommended by the secretariat.

We shall submit to you a further report on inflation for distribution to the Consultative Group at its meeting in October.

The Mexican Presidency has stated that it is preparing an executive order raising the minimum wage by 22%, effective September 1, 1974, and that no change will be made in the exchange rate between the peso and the dollar. The Mexican Government has already applied the 22% pay increase, effective September 1, 1974, to all government employees up to a salary level of US$4,800 per year, and a flat salary increase of about US$1,000 a year to all government employees who earn more than US4,800 a year.

CIMMYT feels compelled to follow any change in the minimum wage law, and we shall probably apply the government salary decisions to our "support staff" since we must remain competitive in the same Mexican labor market as the Government agricultural agencies at Chapingo.

. . . 2

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
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CIMMYT feels compelled to follow any change in the minimum wage law, and we shall probably apply the government salary decisions to our "support staff" since we must remain competitive in the same Mexican labor market as the Government agricultural agencies at Chapingo.

Lewis

. . . 2

By the time we submit the new report on inflation to you next month, these decisions will be reached, and we will thus know one of the major cost factors for CIMMYT in 1975. It is probable that our October inflation report will show CIMMYT's increase in prices for 1975 is already above 20%, and even drawing down our working capital will not permit us to carry out the approved program.

Sincerely yours,

Haldore Hanson

Haldore Hanson
Director General

Encls. a/s.

HH/asl.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

September 19, 1974

Mr. Harold Graves
The CG Secretariat
International Bank for Reconstruction
and Development
1818 H. Street, N.W.
Washington, D.C. 20433

Dear Harold:

In response to your circular of Sept. 13 to Center Directors, asking information on outreach projects, I enclose a worksheet on CIMMYT's present bilateral assistance projects financed by Special Grants.

Let me know if you need more information.

Sincerely yours,

Robert D. Osler
Deputy Director General
and Treasurer.

Encl.
RDO/asl.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, México 6, D. F.
Apdo. Postal 6-641
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and Treasurer.

RDO\asl.
Encl.

CIMMYT Bilaterial Assistance Projects (Outreach Projects) 1974, Financed by Special Grants.

Country	Crops[2/]	Assigned CIMMYT Staff 1974	Donor	Duration to present
Algeria-Tunisia[1/]	W-B-T	8	FF, USAID	1968-
Argentina	Maize, W-B-T	0	FF	1968-
Egypt	Maize	1	FF	1968-
Lebanon	W-B-T	2	FF	1973-
Nepal	Maize	1	USAID	1972-
Pakistan	Maize	2	FF	1965-
Pakistan	Wheat	1	FF	1974-
Tanzania	Maize	2	FF, USAID	1973-
Turkey	W-B-T	2	RF	1970-
Zaire	Maize	4	Gov't. of Zaire	1972-
		23		

1/ Combined grants, Algeria-Tunisia.

2/ W-B-T equals wheat-barley-triticale.

Seen by BC HG + ML

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

CIMMYT

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

September 19, 1974

Dr. John K. Coulter
Consultative Group Secretariat
International Bank for Reconstruction
and Development
1818 H Street N. W.
Washington, D. C. 20433

Dear John:

"Presentation Week" (March 30-April 4, 1975) would be your best opportunity to get a meaningful picture of CIMMYT, after October.

In December we shall be planting wheat at Sonora, northwest Mexico, but there will be no crop to see. There is no crop of any kind at El Batan in the winter season. Maize crops will be 30-60 days old in December at our lowland and intermediate stations (Poza Rica and Tlaltizapan) but that stage doesn't give us much to show.

If you or Mike LeJeune should overfly CIMMYT during November-March on your way to CIAT or CIP, we can always show you the offices, laboratories, and landscape at El Batan, one hour from Mexico City airport, and offer you a warm supper in the guest house, but we hope you come when there are crops.

I will put both your names on the tentative guest list for Presentation Week, and check with you early in 1975.

Cordially,

H. Hanson

Haldore Hanson
Director General

cc. Dr. Michael LeJeune, IBRD, Washington

OFFICE MEMORANDUM

TO: Files

DATE: September 19, 1974

FROM: Harold Graves

SUBJECT: CIMMYT Budget

Bob Osler, at my request, telephoned from CIMMYT today with the latest version of the CIMMYT 1975 budget. The budget has been revised to take account of prospective increases in the contributions of three donors, as follows:

Canada - from $575,000 to $837,000,

IDRC - from $ 65,000 to $102,000, and

UNDP - from $810,000 to $970,000.

This is a total increase in availabilities (matched by a corresponding increase in the CIMMYT core-restricted budget) of $459,000. The total CIMMYT 1975 budget for core plus capital, net of earned income, is $7.067 million.

HGraves:apm

G 2

APARTADO AEREO: 67-13
CABLES: CINATROP
CALI - COLOMBIA

CENTRO INTERNACIONAL DE AGRICULTURA TROPICAL

DIR-969

September 17, 1974

File CIAT

Dear Harold:

This is in reply to your letter of September 3, 1974 in which you make reference to CIAT special projects supported by the UK and IDRC.

Enclosed you will find a table which shows all special projects which CIAT has under way at the present time. You will also see a list of special projects which are under consideration and which will require approval of the CIAT board before they are financed and put into operation. The enclosed list does not, of course, include the IDRC restricted core money in support of the swine and cassava programs.

I hope that this information removes any doubt you may have, but I will be happy to give further explanation if necessary.

Sincerely yours,

U. J. Grant
Director General

Mr. Harold Graves
Secretary
CGIAR
1818 H. St. N. W.
Washington, D. C. 20433
USA

encl.

cc. Mr. A. V. Urquhart

APARTADO AEREO 6713
CABLES: CINATROP
CALI-COLOMBIA

CENTRO INTERNACIONAL DE AGRICULTURA TROPICAL

DIR-989

September 17, 1974

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Director General

Mr. Harold Graves
Secretary
CGIAR
1818 H. St. N. W.
Washington, D. C. 20433
USA

encl.

cc. Mr. A. V. Urquhart

CIAT SPECIAL PROJECTS 1974 - 1976

ACTIVE

Date	Title and Description	Code	Funding Agency	Total	Estimated Expenditures 1973	1974	1975	1976	Final Paymert	Retained by donor	Dur-ation yrs.
3.1.73	ICTA- Guatemala	7821	R.F.	236, 171	72,057	46,000	106,114			12,000	3
2.2.73	Cassava Inf. Center	7811	IDRC	57,500	21,500	8,000				28,000	2
1. 1.74	Swine Outreach - Phase 2 - Nigeria, Costa Rica, Bolivia	7802	IDRC	195,000		105,000	60,000	6,500	14,131	9,639	3
12.5.73	Entomology - Animal Health ± 18,000	7804	CDA	43,200		43,200					1
12.5.73	Cassava Storage ± 12,000	7805	CDA	28,800		28,800					1
2.1.74	Cedeal - Economics Doc. Cent. for L.A. Agriculture	7807	FORD	86,000		43,000	43,000				2
11.16.74	Cassava Growth Physiology	7812	IDRC	43,815		43,815					1
3.16.74	Cassava Outreach - Peru	7813	IDRC	35,000		18,700	13,800			2,500	2
4.1.74	Cassava Outreach - Brazil	7814	IDRC	28,000		25,500				2,500	1 mo

CIAT SPECIAL PROJECTS 1974-1976 (co...)

ACTIVE (cont.)

Date	Title and Description	Code	Funding Agency	Total	Estimated Expenditures 1973	1974	1975	1976	Final Payment	Retained by donor	Duration yrs.
1.11.74	Workshop on Economics of the Beef Industry	7841	FORD	7,500		7,500					
	Texas A&M*		AID	150,000		150,000					
	Post Doctoral -Beans - Hayakawa	7870	R.F.	18,400		15,000	3,400				
2.4.74	Monograph on Bean Diseases	7871	R.F.	18,000		18,000					6 mo
	Post Doctoral Beans -	7872	R.F.	15,000		7,500	7,500				
	Post Doctoral Entomology - Belloti	7873	R.F.	15,500		11,500	4,000				
8.2.74	Training Livestock		BID	439,500		439,500					1 mo
8.2.74	Bean Outreach		BID	400,000		400,000					

* Texas A&m Hemoparasites USAID with CIAT but paid to Texas A&M net 0 to CIAT budget

CIAT·SPECIAL PROJECTS 1974-1976 (cont.)

UNDER CONSIDERATION

Date	Title and Description	Code	Funding Agency	Total	Estimated Expenditures 1973	1974	1975	1976	Final Payment	Retained	Duration
2.15.74	Nitrogen Fixation in Grasses. Hardy-Dupont (financed but delayed)	7874	R.F.	4,500		4,500					
	Swine Outreach-Peru		AID	90,000							
	Pasture & For. Outreach Peru		AID								
	Bean-Rhizobium Studies		AID				91,375	87,875			
	Bean-Endogene Project		ODA				42,000				
	Germplasm collection with Int. Board		under discussion								

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

yellow

TO: Mr. S. S. Kapur

DATE: September 14, 1974

FROM: Harold Graves (Executive Secretary, Consultative Group on International Agricultural Research)

SUBJECT: Price Levels in Mexico

G2b

You may have noticed that the Bank is the leader of a Consultative Group on International Agricultural Research, whose principal function is to mobilize funds to support international agricultural research programs. The Bank also provides the Secretariat of the Group; and one of the functions of the Secretariat is to evaluate the financial needs of the research programs being supported by the Group.

The Secretariat would be grateful to have your guidance on a question concerning the budget of the Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT), a research institute based in Mexico.

Cimmyt believes that in order to maintain the value of its expenditures in real terms, its 1975 budget must be 20 per cent higher than its 1974 budget. The Center's calculation is based on the circumstance that in the first half of 1974, the general price index in Mexico was rising at an annual rate of more than 20 per cent. The Secretariat, up to now, has not accepted the Center's position on this question.

The Center makes most of its expenditures in Mexican pesos and receives most of its income in United States dollars. We would therefore be grateful to know what you would consider to be a reasonable estimate of the ratio between the general level of prices in Mexico in 1975 and in 1974; and we would also appreciate learning what you believe would be a reasonable expectation concerning the rate of exchange between the peso and the United States dollar in 1975.

It would be especially helpful if I could have your views on this matter by Friday, September 20.

G26

September 12, 1974

Dear Hal:

Many thanks for your letter of August 15, inviting us to CIMMYT.

However, Mike Lejeune is now committed to a meeting of European donors in London on October 16, so the week beginning October 14 is out. I return from my visit to WARDA only on October 5, and as I need the following week to work on my report, a visit one week earlier is out for me.

I realize that this is the ideal time to see the wheat program, but under the circumstances we had better say no to this invitation as Mike and I would like to visit at the same time.

We would like to make an early visit to CIMMYT but because of changes in our Secretariat we are still in the process of planning next year's program. However, tentative dates are early December or Presentation Week (March), the latter suggested as a possibility by Keith when we talked about this during Centers Week.

Perhaps you could let us have your reaction to these suggestions.

With best regards,

Yours sincerely,

John K. Coulter

Mr. Haldore Hanson
Director General
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

JKCoulter:apm

cc: Mr. Lejeune

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

CIMMYT

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

September 9, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
IBRD
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

Subject: Standard perquisites for outreach personnel.

You inquired in your letter of September 3, whether I could send you the paper which was to be written by Hanson-Nickel-Athwal for the Directors meeting, last July, on standard perquisites for outreach staff.

The paper was never completed, and discussion has been postponed until the meeting at IITA February 4-7, 1975.

I circulated a draft of CIMMYT outreach perquisites to Athwal and Nickel. Neither of them ever replied. And since our 2-day Director's meeting at IBRD was cut in half by the encroachments of TAC (one-half day) and the CG (one-half day), there was no time for discussion of this topic.

Cordially,

Haldore Hanson
Director General

cc. Dr. R. D. Osler

G2b

September 4, 1974

Dear Herb:

Many thanks for your note inviting someone from the Bank's Programming and Budgeting Department to participate in the meeting to be held with the Ross representatives at CIMMYT next month. I'm glad to report that Bill Lewis will be able to be present.

Sincerely,

Harold Graves

Dr. H. R. Albrecht
Director
International Institute of Tropical Agriculture
Oyo Road, P.M.B. 5320
Ibadan
Nigeria

cc: Mr. Haldore Hanson, CIMMYT
Mr. Lewis

HGRAVES:apm

File CIMMYT

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

September 2, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

Subject: CIMMYT's 1974 payments.

I asked Robert Osler to re-calculate CIMMYT's pledges and payments for 1974, and Osler prepared the enclosed worksheet.

In the enclosure, Column II, the IBRD Group contribution is shown at $412,000. That figure is taken from our 1975 budget submission to CG, Table III, Column headed "Revised 1974", line 1 a)4.

To arrive at the $412,000, we used the IBRD as the residual donor to our approved 1974 budget, plus the $166,000 carryover of IBRD funds from 1973.

In Column III of the enclosure, the IBRD "residual role" has been reduced by $16,000, because some economic conferences which we budgeted are now to be financed by IDRC direct expenditure, and not through CIMMYT budget.

I am writing to ask whether the $412,000 in Column II and the $396,000 in Column III are consistent with your understanding, and whether we should anticipate that the Bank Group will pay to CIMMYT $230,000 during 1974 (that is, $396,000 minus the $166,000 which you paid to us in 1973, and which was subsequently carried over.)

This is $30,000 more than you pledged.

simby

I do not want to appear to bite the hand. On the other hand, if we need to absorb that $30,000 by a reduction in expenditures, in the last quarter, we will have to allocate the reduction soon.

Cordially,

Hal

Haldore Hanson
Director General

P.S. The revised 1975 budget which you requested, incorporating the commitments for restricted and special grants since last June, should be ready later this month.

Enclosure (1)

This letter was answered in a telephone conversation with Dr. Oslen. The answer was that IDA had completed its allocations when this letter was received and had no way of providing CIMMYT with another $30,000.

Hal

CIMMYT
September 2, 1974

Comparison of revised 1974 core unrestricted budget and pledges

Column:	I	II		III	
	Source	Table III 1975 Budget		Actual	
1)	BID	750,000		750,000	
2)	Denmark	150,000		150,000	
3)	F.F.	750,000		750,000	
4)	W. Germany	180,000		368,000	3/
5)	IBRD Group	412,000	1/	396,000	4/
6)	R.F.	750,000		750,000	
7)	U.S. AID	1,350,000		1,350,000	
8)	Earned Income	367,000		367,000	
	Total	4,709,000	2/	4,881,000	5/

1/ IBRD contribution of $412,000, shown in Column II includes $166,000 which IBRD paid to CIMMYT in 1973, which proved redundant, and was carried over. With approval of the CG Secretariat, CIMMYT has used the $166,000 to meet inflation, adding the $166,000 to various line items in core budget which had suffered most from increased prices. CIMMYT Trustees approved this action.

2/ Total of $4,709,000 for Column II is taken from CIMMYT's 1975 budget document, as presented to Centers Week, July 1974; see Table III, revised 1974 column, line 1 a) 9. This includes the $166,000 mentioned in footnote 1/.

3/ West Germany paid to CIMMYT, after Centers Week of July 1974, a supplemental contribution of $188,000 toward CIMMYT's capital budget for 1974. By agreement with the CG Secretariat, CIMMYT would move $188,000 of its 1975 capital budget to calendar year 1974, and make a corresponding reduction in CIMMYT's budget request for 1975.

4/ IBRD Group contribution in Column III is reduced by $16,000 because IDRC is now financing $16,000 in economic workshops which had previously been budgeted by CIMMYT in its core program for economics. IDRC will disburse the workshop funds directly from its office, not through CIMMYT. Since IBRD is treated in this document as the residual donor, this reduction is applied to IBRD.

5/ The new total of $4,881,000 at the bottom of Column III reflects two changes compared to Column II:

a) Increase of $188,000, described in footnote 3/.
b) Reduction of $16,000, described in footnote 4/.

COPY

CIMMYT
México 6, D.F.
Londres 40 - 1er. Piso

August 15, 1974

Mr. John Coulter
Consultative Group Secretariat
International Bank for Reconstruction
and Development
1818 H Street N. W.
Washington, D. C. 20433

Dear John:

Norman Borlaug says there will still be harvest work going on at the wheat fields near Toluca the week starting October 14, but the work will be nearly completed by the end of that week.

The maize program can show you one of their stations that week; it is best to decide which station at a later date.

All activities at El Batan will be available that week.

I suggest you and LeJeune plan to come that week if it will fit your other commitments.

The time schedule would include:

El Batan 1 day.
Toluca wheat harvest 1 day.
Maize station, 2 days for trip to tropical lowland station at Poza Rica, or 1 day to intermediate elevation station at Tlaltizapan, near Cuernavaca.

CIMMYT can also arrange whatever other interests you may have in Mexico City, or the pyramids. The environment in which we work is important.

The Mexican Minister of Agriculture, Dr. Oscar Brauer, is President of the CIMMYT Assembly and an appointment might be arranged if he is in Mexico City at the time of your visit.

CIMMYT
Apdo. Postal 6-641
Londres 40 - 1er. Piso
México 6, D.F.

COPY

August 15, 1974

Mr. John Coulter
Consultative Group Secretariat
International Bank for Reconstruction
and Development
1818 H Street N. W.
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at Tlaltizapan, near Cuernavaca.

CIMMYT can also arrange whatever other interests you may have in Mexico City, or the pyramids. The environment in which we work is important.

The Mexican Minister of Agriculture, Dr. Oscar Brauer, is President of the CIMMYT Assembly and a meeting [illegible] might be arranged if he is in Mexico City at the time of your visit.

COPY

CIMMYT
México 6, D.F.
Londres 40 - 1er. Piso

Michael may prefer to attend only part of the program that we lay out for you, John.

Let me know your plans, I would prefer to see both of you visit CIMMYT in October rather than postpone the visit until the next harvest in April 1975.

Cordially,

Hal Hanson

Haldore Hanson
Director General

cc. Mr. Michael LeJeune, IBRD.

HH/mph

Files

August 14, 1974

Harold Graves

UNDP allocations for 1975

William Mashler of UNDP telephoned yesterday with information about UNDP allocations to international agricultural research activities for 1975 and thereafter.

ICRISAT had re-calculated the impact of inflation on the sorghum and millet work being financed by UNDP. As a result, UNDP would increase its supplemental grant from $445,000 to $480,000.

CIMMYT also had looked again at the impact of inflation on the high-lysine program being financed by UNDP. Whereas CIMMYT at one time had said it would not need any supplemental grant to offset this impact, it now conceded that this statement was a mistake. It would submit new figures shortly, and UNDP would enlarge its contribution accordingly.

ILCA was preparing a proposal for financing by UNDP: a 3-year study of transhumance, based in Mali and costing about $1.2 million. Dr. Pagot was expecting to complete the drafting of his proposal by Labor Day.

cc: ICRISAT file, CIMMYT file and
ILCA file

HGraves:apm

926.

July 25, 1974

Dear Hal:

Thank you for your quick comment on the draft paper on Budgeting and Accounting Practices. We invite you to give us any further comment you may have by September 25, and after that we will put together another version. Sometime before then, Bill Lewis or I will respond to the points you raise in your note of July 20.

Sincerely,

Harold Graves

Mr. Haldore Hanson
Director General
International Maize and
Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves

cc: Mr. Lewis

HGraves:apm

440098 IBRD UI

JUL 19 1974

INTBAFRAD PARIS

1370 GRAVES

INCOMING TELEX

Re CIMMYT HG

Distribution: G

Mr. Graves
Agricultural & Rural Dev.

REUR 1083 TREITZ SAYS CIMMYT PAYMENT TRANSFER DELAYED DUE TO HIS VACATIONING RECENTLY. THERE ARE NO BUDGET DIFFICULTIES, ONLY EXCHEQUER FORMALITIES.

IN FEW DAYS 188 REPEAT 188 THOUSAND DOLLARS (EQUIVALENT DM 670,000) WILL BE TRANSFERRED TO THE INSTITUTE, PLUS DM 200,000 WHICH REMAINED FROM LAST YEAR'S ONE HALF MILLION ALLOTMENT.

THUS TOTAL PAYMENTS DUE CIMMYT NEXT FEW DAYS WILL AMOUNT TO DM 870,000 REPEAT DM 870,000, ACCORDING PHONED INFORMATION FROM TREITZ, BONN. REGARDS

STROBL

CJ

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

1818 H St., N.W. Washington, D.C. 20433 U.S.A.
Telephone (Area Code 202) 477-3592
Cable Address – INTBAFRAD

ICW/74/8/(c)

July 15, 1974

TO: Participants in International Centers Week

FROM: Executive Secretariat

SUBJECT: Program and Budget of the International Livestock Center for Africa (ILCA); CIMMYT.

1. Attached for information of members of the Consultative Group and of the Technical Advisory Committee is a paper giving the Secretariat's observations on the 1975 program and budget presentation of the International Livestock Center for Africa (ILCA). The paper is intended for use in the forthcoming International Centers Week, in particular with respect to Item 8 (Discussion of Center Programs) of the Consultative Group's Provisional Agenda, which was circulated on June 10.

2. The Secretariat wishes also to call the attention of participants in International Centers Week to the issuance of an additional document by CIMMYT: "CIMMYT Review 1974."

Attachment

1975 Program and Budget of the International Livestock Center for Africa (ILCA)

Observations of the Consultative Group Secretariat

1. This paper is presented in line with the recommendations of the Consultative Group Subcommittee on Center Review Procedures, dated November 1973.

2. The International Livestock Center for Africa (ILCA) has described its plans for next year and following years in its paper, "1975 Programme and Budget." Another basic document concerning ILCA is "Animal Production and Research in Tropical Africa," dated March 1973. This is the report of the task force which constitutes the basic prospectus for ILCA that was accepted by TAC and the Consultative Group.

3. This brief Secretariat paper is intended to be read in company with the basic documents.

I. Present Status of ILCA

4. The objectives and origins of ILCA are fully described in the Center's Programme (Section 1).

5. Arrangements have been made for the Memorandum of Agreement on the establishment of ILCA to be signed in Addis Ababa on July 15 or 16 by representatives of the World Bank (acting for the Consultative Group) and the Government of Ethiopia. The Memorandum is being submitted to the Ethiopian parliament, and ILCA will become a legal entity when the Agreement is ratified by Parliament.

6. Parliament is now in extraordinary session. Whether it will consider routine matters, and whether it could consider the ILCA Agreement during the extraordinary session, is not known. If it does not, the Agreement presumably will be considered in a session which is to begin on November 2.

7. Members of the Consultative Group have paid or pledged the equivalent of $950,000 for the fund established for the initial stage of ILCA. The fund is administered by the World Bank on behalf of the donors. In addition, the International Development Research Centre (IDRC) has set aside Can.$150,000 for the purposes of ILCA, and these funds have been the principal source from which current disbursements have been made. IDRC's special role is mentioned in paragraph 13 of the ILCA Programme.

8. Pending the formal establishment of ILCA, initial members of the Center's Board of Trustees were chosen by the African Livestock Subcommittee in August 1973; in accordance with the provisions of the Memorandum of Agreement, other members have since been appointed by the Government of Ethiopia and by the Trustees. The Trustees (Dr. Ralph Hodgson, Chairman) are listed in the Programme.

9. The Board has been fully active. Since October 1973 the full Board has met twice and its Executive Committee once. (Representatives of the Consultative Group Secretariat participated by invitation at selected points in the agenda of these meetings.) A member of the Board, Dr. Jean Pagot has been chosen Project Development Officer, and will become Director of ILCA when the Center is formally established. He took up his duties full-time in March 1974.

10. A great deal of useful preparatory work has been done. Sites have been chosen for the headquarters in Addis Ababa and a sub-station at Adama Tulu, Ethiopia. A detailed and comprehensive brief for the design of the physical facilities at headquarters has been prepared. Organizational tables have been drawn up and personnel regulations approved.

11. Planning of the program also has been begun. A documentation service, which is to be one of the principle activities of ILCA, is being designed (Programme, page 13). Expert seminars (Programme, page 15) are being planned which, among other things, will help ILCA determine its approach to selected topics of research. The Board has decided that ILCA will begin its research with investigation of two topics: (a) the relationship between drought, transhumance (the seasonal movement of livestock) and nomadism; and (b) the state of knowledge about the adaptation of foreign breeds of cattle in Africa (Programme, page 16).

12. Steps also have been taken toward drawing up cooperative programs with countries of Africa, designed to assist their research programs and animal production systems.

II. Program and Budget

13. The "1975 Programme and Budget" is the first program and budget to be presented by ILCA. As was expected at this stage, ILCA's program for 1975 and thereafter is still in the process of evolution. The Center has, however, laid out the progress of its staff recruitment and the development of its capital development program in some detail: and has projected its core and capital expenditures from 1975 through 1978.

14. The detailed figures are given in Table 3 following the text of the Programme, and are summarized on page 23 of the Programme:

	1974	1975	1976	1977	1978
Core ($'000)	694	2,251	3,600	4,175	5,032
Capital ($'000)	147	597	1,117	2,912	1,169
	841	2,848	4,717	7,087	6,201
Number of Senior Staff and Associates	34	67	90	101.	

Details of the 1975 figures are given on page 24 of the Programme and in the Tables which follow the narrative text.

The Core Budget

15. The core budget (p. 24) and the manning table (Table 2) indicate that the staff totals planned are within the figures accepted by TAC and the Consultative Group in the task force report of 1973. Recruitment, however, is to proceed more quickly: the staff would be almost 90 per cent complete by 1976.

16. The Secretariat observes that this acceleration is consistent with the discussions of the task force report by TAC and the Consultative Group. Both TAC and the Group expressed a desire for ILCA to become fully operational at a faster rate than the task force had proposed.

17. Projections of ILCA's core expenditures include small contingencies for rising prices (shown as "Others" in Table V). They do not seem to the Secretariat to be adequate. If, for example, price rises in 1975 amounted to 12 per cent and to 9 per cent a year thereafter, estimates of core expenditure would have to be increased considerably. As compared with ILCA's projections, they would amount to the following (in $'000):

	ILCA Projection	Revised Projection
1974	694	694
1975	2,251	2,425
1976	3,600	4,155
1977	4,175	5,025
1978	5,032	6,370.

18. The more pressing question about the core budget for the moment, however, is about the date when the ILCA Agreement will be ratified and staff apppointments can become effective. The personnel figures imply that professional staff appointments could begin in August/September 1974. That expectation may be optimistic, and delays may occur which would affect the rate of staff recruitment both in 1974 and 1975.

The Capital Budget

19. ILCA's capital development plan is described on pages 10-12 of the Center Programme. The schedule of facilities corresponds closely to that accepted by the Consultative Group's African Livestock Subcommittee in June 1973. There are two departures:

(a) The area of outbuildings (sheds, workshops and farm facilities) would be increased. The Secretariat believes that this addition is needed.

(b) Provision is made for houses for eight members of the staff: the Director, some junior researchers and some members of the security and maintenance staff. While there are good reasons for some 24-hour attendance at an animal research station, the Secretariat believes that the construction of a house for the Director is of low priority.

20. ILCA expects that a firm of architects can be selected in October 1974, and that construction can be completed between March 1976 and the end of 1977. The Center has agreed to keep donors informed of the status of design work and estimates throughout the proceedings.

21. The Secretariat believes that the proposed schedule of design and construction can be met. It believes that further study by ILCA of allowances for price rises and physical contingencies in the capital budget would be useful; at $0.85 million, they seem about $0.3 million too low.

Finance

22. At July 1, 1974, ILCA had a balance of about $1 million in cash and receivables. These funds were available to be applied against ILCA's needs in 1974 and 1975, estimated by the Center at $3.7 million. The Secretariat believes that the expenditures needed to cover the items budgeted for 1974 and 1975 may be slightly higher, at around $3.9 million.

23. The maximum additional funds needed by ILCA to carry it to the end of 1975 therefore may be around $2.9 million, or about the same as the expenditures estimated in the Center's Programme. The position would be affected, however, by delays in the ratification of the Memorandum of Agreement. Those

might reduce the Center's possibilities of expenditures by $100,000 or more a month in 1974, with corresponding increases in the cash carryover to 1975. The Secretariat therefore proposes to obtain a new estimate of ILCA's requirements, and to circulate it to interested members of the Consultative Group, around October 1, 1974.

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

1818 H St., N.W. Washington, D.C. 20433 U.S.A.
Telephone (Area Code 202) 477-3592
Cable Address – INTBAFRAD

ICW/74/8/(g)

July 12, 1974

TO: All Participants in International Centers Week

FROM: Executive Secretariat

SUBJECT: Commentary on 1975 Program and Budget of CIMMYT

1. Attached for information of members of the Consultative Group and of the Technical Advisory Committee is a paper giving the Secretariat's observations on the 1975 budget request of the International Maize and Wheat Improvement Center (CIMMYT). The paper is intended for use in the forthcoming International Centers Week, in particular with respect to Item 8 (Discussion of Center Programs) of the CG's Provisional Agenda, which was circulated on June 10.

2. Please note that the Chairman and Director-General of CIMMYT have commented on the question of what is an appropriate allowance for price increases in the CIMMYT 1975 Budget. Their statement is attached to the Secretariat paper.

Attachment

1975 Program and Budget of the International Maize and Wheat Improvement Center (CIMMYT)

Observations by the Consultative Group Secretariat

1. The Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT - the International Maize and Wheat Improvement Center) is one of the oldest and best established of the programs being supported by the members of the Consultative Group. It has an outstanding record of success in breeding and spreading the cultivation of cereal varieties that give spectacular yield increases under favorable conditions of soil fertility and moisture.

2. CIMMYT is a complex operation. Within its host country of Mexico, it works at its headquarters at El Batan (near Mexico City) and at seven other locations, chosen to provide a variety of conditions for breeding and testing; and in addition, it has highly developed systems of field trials which involve more than 60 developing countries.

3. Part of the work done by CIMMYT (23 per cent, measured by cost) falls outside the direct purview of the Consultative Group and the Secretariat: it consists of cooperative programs within individual countries, financed as special projects by donors acting bilaterally. These programs currently exist in nine countries: Nepal, Pakistan and Turkey; Algeria, Egypt, Lebanon and Tunisia; and Tanzania and Zaire.

II. Programs and Budgets

4. In recent years, CIMMYT has been carrying out its core program within quite steady limits of finance and personnel. The number of authorized senior positions has not changed since 1973, and the level of running costs, apart from price rises, has not changed substantially.

5. Little change is proposed, for the most part, in staff or, in constant prices, in expenditure levels for 1975. Proposals are being brought forward with the 1975 budget, however, which have interesting implications for future programs and costs. Price inflation has become a major factor in the level of planned expenditures.

6. While running costs have remained level, there has been considerable fluctuation in capital expenditures. CIMMYT has been carrying out a long-range (1966-78) capital development program, concerned since about 1971 largely with land acquisition and the improvement of experiment station facilities at headquarters and other locations in Mexico.

1973

7. Actual core expenditures last year corresponded quite closely to the program and budget approved by the Trustees of CIMMYT and accepted by the Consultative Group for that year. The over-all difference was about 3 per cent, and variations within the constituent elements of the Center's activities were in nearly all cases less than 10 per cent. The differences are shown in Annex 1 to this paper.

8. To keep within expenditure limits required an adjustment to offset the impact of rising prices, and this was made by slowing down recruitment. Not all the staff additions that had been planned for 1973 were accomplished.

9. Earned income, on the other hand, exceeded expectations by $120,000. This amount, combined with the small saving on core expenditures, created a surplus of $207,000. With the approval of the Trustees, $106,000 of this was put into a working capital fund, intended by CIMMYT as a reserve against delays in receipts of contributions from donors. The remaining $101,000, with the authorization of the Trustees, was applied to capital items already approved within CIMMYT's long-range capital development program.

1974

10. For 1974 CIMMYT proposed at International Centers Week in 1973 to carry on its core activities at nearly the same level of expenditures as in 1973. The planned expenditure level was $5,300,000 as against $4,860,000, with more than half the 9 per cent increase due to rising prices rather than increased program levels. No senior positions and no new programs were authorized; seven senior positions remained unfilled from the year before.

11. In the spring of 1974, CIMMYT Trustees revised the Center's core budget upwards by about $100,000 to approximately $5,400,000. They were able to do so because more funds were available, including restricted-core contributions to CIMMYT's training and conference program.

12. The 1974 revised budget is compared with actual 1973 expenditures in the table which appears as Annex 2. Two items decline: the phasing out of Plan Puebla (an on-the-farm experiment in maize production systems) continues to completion; and the cost of some activities in Economics are lower because of slower staff recruitment than originally projected. Three items of increase are of some interest: the increase in training and conference activity already has been referred to; additions to expenditures for general administration reflect steps being taken to carry out some of the recommendations of an expert task force which surveyed the administration of CIMMYT in 1972; and an increase of 30 per cent in station operations largely reflects rising wages of field labor and the increased prices of fertilizer and other materials.

13. Appropriations to capital purposes are very much reduced. More than half the amount is devoted to an increase in CIMMYT's working capital fund, which by this time has been endorsed by a general Consultative Group decision (in August 1973) to permit the international agricultural research programs to accumulate up to 40 days of cash-flow requirements as a safeguard against unscheduled delays in their receipt of donor contributions.

1975: The New Program and Budget Proposal

14. That CIMMYT has conducted its programs with stable levels of staff and expenditures in constant prices by no means indicates a static program of research. The seriousness with which staff and Trustees consider that program, and the wide range of alternatives considered in modulating and developing it from year to year, are suggested in the Report of the Trustees Program Committee which is attached to CIMMYT's 1975 program and budget proposal.

15. The proposed 1975 program would carry on well established lines of research seeking to improve yields and nutritional quality of cereals. It also suggests interesting investigations which are of recent origin or are new altogether: Some of these (for instance, in winter-spring wheat crosses and in barley) are intended to develop new varieties that will particularly help farmers who do not have access to high inputs of fertilizer and water; others are concerned with new efforts to protect cereals against attacks by diseases and insects; and the most novel of all seek to develop new crosses between different families of cereals.

16. In levels of expenditure at constant prices, CIMMYT's proposed core budget for 1975 correspond closely to those in the revised core budget for 1974. The figures are shown in Annex 3. The principal differences, in terms of program expenditures, are small: Plan Puebla disappears, more attention is devoted to Economics; there is a slight reduction in Conference and Information activity; and the strengthening of the Administration continues.

17. Appointments to seven senior positions (total man-years in 1975: 6.3) are provided for -- the same number as had remained unfilled since 1973. They are for: a winter wheat breeder (see page 4 of CIMMYT's 1975 budget request); a maize associate director, a maize pathologist and two maize agronomists (page 8); an associate economist (page 11); and a personnel officer (page 14).

18. The Consultative Group Secretariat believes that these increases are appropriate and justified in the context of the CIMMYT program.

III. Issues

19. CIMMYT's 1975 Budget Request brings forward three issues to which the members of the Consultative Group may wish to pay particular attention.

20. One is the proposal that an addition of 20 per cent should be made to the Center's budget to cover rising prices in 1975. An acceleration of inflation, in fact, began to influence CIMMYT's expenditures as early as 1972; and the pressure of rising costs, as noted earlier in these pages, led CIMMYT to postpone appointments to authorized senior posts in 1973. The rate of inflation continued high in 1974: in the first five months of the year, the general price index rose at an annual rate of 24 per cent.

21. A pronounced inflation in Mexico is now more than two years old, putting a strain both on the domestic economy and the international balance of payments. In the circumstances, it is realistic to expect that the Government will take effective action to reduce inflation or the rate at which Mexican pesos are exchanged for United States dollars will have to decline in favor of the dollar.1/ In either case, CIMMYT -- which receives most of its income in dollars -- would have relief from inflationary pressure.

22. In the circumstances, a 10 to 12 per cent increase for inflation in 1975 would be a fair allowance. To set the allowance there, however, involves a prediction; and if the prediction is wrong, the burden of error will fall entirely on CIMMYT.

23. In the circumstances, the Secretariat makes two recommendations. First, the factor allowed should be on the high side of the range -- that is, 12 per cent rather than 10. Second, if this rate is exceeded, donors should expect that CIMMYT will draw down its working capital fund (which is expected to amount to $356 thousand at the end of 1974) to meet expenditures; and they should expect to replenish this fund fully with contributions to meet CIMMYT's needs in 1976.

24. On the basis of a 12 per cent figure, CIMMYT's allowance for inflation would be $695,000.

25. A second matter, for which CIMMYT requests specific Consultative Group consideration, is a proposal for development in the structure of CIMMYT's research activities. Under the proposal, in two instances CIMMYT would carry out what it calls "collaborative research" in partnership with national organizations outside Mexico but would propose to fund these extensions as part of its core program.

26. The two instances are

> (1) testing wheat - barley germ plasm for resistance to wind-borne diseases in the Mediterannean and Near East region (CIMMYT Budget Request, p. 7); and

---

1/ On June 26, the Mexican Government ordered a price freeze on all basic consumer products until January 1, 1975.

(2) testing maize germ plasm for resistance to certain disease and disease conditions in Africa, southeast Asia and Central America (CIMMYT Budget Request, p. 10).

In each case it is proposed to participate in research outside Mexico because the diseases and disease conditions in question do not exist, or are not significant, in Mexico and cannot be studied there.

27. In so far as location may be an issue, it is not a new one for the Consultative Group. The Group already has accepted the principle that it may be desirable to conduct core research outside the host country of an international center. For example, with the support of the Consultative Group, the International Potato Center, based in Peru, always has included in its core budget the cost of collaborative research carried on in Mexico in the Toluca Valley. That Valley is superior to any other location for the study of blight, the most serious disease affecting potatoes, and TAC has urged the importance of continuing this work.

28. Further questions in each case concerns the degree of priority and scientific merit of the proposals, and whether the proposals present tasks which cannot be dealt with adequately on a national basis. On this question, the Consultative Group no doubt will wish to have the advice of its Technical Advisory Committee (TAC).

29. A third question, also raised specifically by the Trustees of CIMMYT, concerns the concept of staffing and financing services outside the host country for the purpose of what CIMMYT calls "regional services to national programs" (CIMMYT Budget Request, Part II, pp. 10-14). The services involved would include advice and assistance to national research, training and other activities; and these services, although rendered by CIMMYT personnel stationed outside Mexico, would be charged to the core program. CIMMYT does not include proposals for such activities in the 1975 program, but asks the Consultative Group for a decision in principle, for the guidance of CIMMYT in the preparation of future programs and budgets.

30. A pattern such as is now hypothecated by CIMMYT already exists in the case of the International Potato Center. In the 1974 core program of that Center, the Group agreed to finance the posting of personnel overseas to stimulate and cooperate with national programs of research and training. If this pattern became more general in the international agricultural research network, however, it would involve quantum increases in the financing which the Group would be expected to provide for the network. The Group may therefore not wish to consider the individual case of CIMMYT, but to consider the question more generally, as there will be an opportunity to do after discussions currently being conducted by the Center Directors and by TAC on the question of relationships between national and international programs of research and training.

IV. After 1975

31. Apart from "collaborative research" and "regional services to national programs," CIMMYT expects the costs of its core programs, in constant prices, to continue to run level, and capital expenditures, after an outlay of $0.5 million in 1976, would become insignificant. Inflation, however, would continue as a major factor, with the result that the cost of core programs in current dollars would continue to rise. If (to cite notional figures) a 12 per cent inflation rate in 1975 were followed by a level 9 per cent rate thereafter, for instance, CIMMYT's core and capital budget in the final year of the period 1975-78 would exceed $8 million.

32. If the Consultative Group confirmed its willingness in principle to consider projects for "collaborative research" and "regional services to national programs," CIMMYT would bring forth additional projects under these two headings. In the 1975 budget, $100,000 already is proposed for collaborative research, as indicated in Annex 3 to this paper. In the next five years, CIMMYT expects, such proposals might expand to an annual range of $400,000-$800,000, and regional services might grow to a cost ranging between $1 million and $1.5 million a year.

Annex 1

CIMMYT Estimated and Actual Expenditures, 1973 ($'000)

	1973 Budget[a/]	1973 Actual
Core Operations		
Wheat	$ 1,046	$ 1,010
Maize (including Plan Puebla)	1,397	1,374
Economics	177	137
General Service Laboratories	94	71
Experiment Station Operations	431	436
Training, Conferences, Information	884	805
General Administration	994	1,027
Total Core	$ 5,023	$ 4,860
Capital		
Expenditures	$ 1,198	$ 1,299
Working Capital Fund	-	106
Total Capital	$ 1,198	$ 1,405
Other		
Indirect Costs[b/]	-	$ 166
Grand Total	$ 6,221	$ 6,431

a/ These figures are from the revised budget approved by CIMMYT's Trustees in April 1973; they differ only slightly from the figures in the budget presented to the Consultative Group in July 1973.

b/ These are the costs of core staff and activities needed for the support of special projects. They are offset from the funds made available by individual donors for special projects, so that finance for them is not sought from the Consultative Group.

Annex 2

CIMMYT Actual 1973 and Proposed 1974 Expenditures
($'000)

	1973 Actual	1974 Budget
Core Operations		
Wheat	$ 1,010	$ 1,172
Maize (including Plan Puebla)	1,374	1,132
Economics	137	103
General Service Laboratories	71	89
Experiment Station Operations	436	563
Training, Conferences, Information	805	1,163
General Administration	1,027	1,201
Total Core	$ 4,860	$ 5,423
Capital		
Expenditures	$ 1,299	$ 160
Additions to Working Capital Fund	106	250
Total Capital	$ 1,405	$ 410
Other		
Indirect Costs	$ 166	$ 180
Grand Total	$ 6,431	$ 6,013

Annex 3

CIMMYT Proposed 1974 and 1975 Expenditures
($'000)

	1974	1975
Core Operations		
Wheat (p. 4)[a/]	$ 1,172	$ 1,296[b/]
Maize (p. 8)	1,132	1,173[c/]
Economics (p. 11)	101	155
General Service Laboratories (p. 12)	89	91
Experiment Station Operations (p. 12)	563	577
Training, Conferences, Information (p. 13)	1,163	1,066
General Administration (p. 14)	1,201	1,275
Total Core	$ 5,423	$ 5,633
Capital		
Capital Expenditures	$ 160	$ 286
Additions to Working Capital	250	-
Total Capital	$ 410	$ 286
Other		
Price rises	-	$ 1,159
Indirect costs	$ 180	161
Total Other	$ 180	$ 1,320
Grand Total	$ 6,013	$ 7,239

a/ Numbers in parentheses are the pages on which the discussion of these activities appears in CIMMYT's 1975 Budget Request.

b/ Includes $70,000 for a new program of "collaborative research."

c/ Includes $30,000 for a new program of "collaborative research."

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

CIMMYT

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

Comment by CIMMYT to the Consultative Group Secretariat

1. CIMMYT consulted Mexican Government Bank and International lending agencies in Mexico before submitting an estimate for price changes which will occur in 1974 and which will therefore increase CIMMYT's budget for 1975. On the basis of their data, we have estimated 20% rise in cost. If this degree of inflation should prove correct, CIMMYT would require $1,159,000 in 1975 to cover rise changes which occurred in 1974. We regard this estimate as conservative. In fact, the Mexican National Institute of Agricultural Research (INIA) is using an estimate of 25%.

2. The Consultative Group Secretariat recommends that CIMMYT use an inflation rate of 12%, which would require $695,000 for price increases in the 1975 budget. To protect CIMMYT, the Secretariat recommends that if price rises in 1974 exceed 12%, CIMMYT should draw upon its working capital ($450,000) and that donors would fully restore the working capital in 1976.

3. CIMMYT regards the estimate of 12% to be unrealistic. But the arrangement is fair if CIMMYT is permitted to draw upon its working capital.

4. For each of the years 1976, 1977 and 1978, the Secretariat uses a notional figure of 9% for price increases. CIMMYT's projections are higher; they are shown in Table IV of the "1975 Budget Request."

5. CIMMYT will submit to the Secretariat in October 1974 another report on price changes in Mexico which are affecting CIMMYT. This report will again be based upon official price information in Mexico. We will ask that the report be circulated to the Consultative Group at its meeting in November 1974.

Virgilio Barco
Chairman of Board of Trustees

P. Haldore Hanson
Director General

G2b

July 12, 1974

Dear Hal:

I deeply appreciate the decision you and Virgilio Barco made yesterday on the question of the price-rise factor in the CIMMYT budget. We will do our best here to see that it all works out.

Sincerely,

Harold Graves

Mr. Haldore Hanson
Director General
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves:apm

Yellow

G2b

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

1818 H St., N.W. Washington, D.C. 20433 U.S.A.
Telephone (Area Code 202) 477-3592
Cable Address – INTBAFRAD

ICW/74/8/(g)

July 12, 1974

TO: All Participants in International Centers Week

FROM: Executive Secretariat

SUBJECT: Commentary on 1975 Program and Budget of CIMMYT

1. Attached for information of members of the Consultative Group and of the Technical Advisory Committee is a paper giving the Secretariat's observations on the 1975 budget request of the International Maize and Wheat Improvement Center (CIMMYT). The paper is intended for use in the forthcoming International Centers Week, in particular with respect to Item 8 (Discussion of Center Programs) of the CG's Provisional Agenda, which was circulated on June 10.

2. Please note that the Chairman and Director-General of CIMMYT have commented on the question of what is an appropriate allowance for price increases in the CIMMYT 1975 Budget. Their statement is attached to the Secretariat paper.

Attachment

1975 Program and Budget of the International Maize and Wheat Improvement Center (CIMMYT)

Observations by the Consultative Group Secretariat

1. The Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT - the International Maize and Wheat Improvement Center) is one of the oldest and best established of the programs being supported by the members of the Consultative Group. It has an outstanding record of success in breeding and spreading the cultivation of cereal varieties that give spectacular yield increases under favorable conditions of soil fertility and moisture.

2. CIMMYT is a complex operation. Within its host country of Mexico, it works at its headquarters at El Batan (near Mexico City) and at seven other locations, chosen to provide a variety of conditions for breeding and testing; and in addition, it has highly developed systems of field trials which involve more than 60 developing countries.

3. Part of the work done by CIMMYT (23 per cent, measured by cost) falls outside the direct purview of the Consultative Group and the Secretariat: it consists of cooperative programs within individual countries, financed as special projects by donors acting bilaterally. These programs currently exist in nine countries: Nepal, Pakistan and Turkey; Algeria, Egypt, Lebanon and Tunisia; and Tanzania and Zaire.

II. Programs and Budgets

4. In recent years, CIMMYT has been carrying out its core program within quite steady limits of finance and personnel. The number of authorized senior positions has not changed since 1973, and the level of running costs, apart from price rises, has not changed substantially.

5. Little change is proposed, for the most part, in staff or, in constant prices, in expenditure levels for 1975. Proposals are being brought forward with the 1975 budget, however, which have interesting implications for future programs and costs. Price inflation has become a major factor in the level of planned expenditures.

6. While running costs have remained level, there has been considerable fluctuation in capital expenditures. CIMMYT has been carrying out a long-range (1966-78) capital development program, concerned since about 1971 largely with land acquisition and the improvement of experiment station facilities at headquarters and other locations in Mexico.

1973

7. Actual core expenditures last year corresponded quite closely to the program and budget approved by the Trustees of CIMMYT and accepted by the Consultative Group for that year. The over-all difference was about 3 per cent, and variations within the constituent elements of the Center's activities were in nearly all cases less than 10 per cent. The differences are shown in Annex 1 to this paper.

8. To keep within expenditure limits required an adjustment to offset the impact of rising prices, and this was made by slowing down recruitment. Not all the staff additions that had been planned for 1973 were accomplished.

9. Earned income, on the other hand, exceeded expectations by $120,000. This amount, combined with the small saving on core expenditures, created a surplus of $207,000. With the approval of the Trustees, $106,000 of this was put into a working capital fund, intended by CIMMYT as a reserve against delays in receipts of contributions from donors. The remaining $101,000, with the authorization of the Trustees, was applied to capital items already approved within CIMMYT's long-range capital development program.

1974

10. For 1974 CIMMYT proposed at International Centers Week in 1973 to carry on its core activities at nearly the same level of expenditures as in 1973. The planned expenditure level was $5,300,000 as against $4,860,000, with more than half the 9 per cent increase due to rising prices rather than increased program levels. No senior positions and no new programs were authorized; seven senior positions remained unfilled from the year before.

11. In the spring of 1974, CIMMYT Trustees revised the Center's core budget upwards by about $100,000 to approximately $5,400,000. They were able to do so because more funds were available, including restricted-core contributions to CIMMYT's training and conference program.

12. The 1974 revised budget is compared with actual 1973 expenditures in the table which appears as Annex 2. Two items decline: the phasing out of Plan Puebla (an on-the-farm experiment in maize production systems) continues to completion; and the cost of some activities in Economics are lower because of slower staff recruitment than originally projected. Three items of increase are of some interest: the increase in training and conference activity already has been referred to; additions to expenditures for general administration reflect steps being taken to carry out some of the recommendations of an expert task force which surveyed the administration of CIMMYT in 1972; and an increase of 30 per cent in station operations largely reflects rising wages of field labor and the increased prices of fertilizer and other materials.

13. Appropriations to capital purposes are very much reduced. More than half the amount is devoted to an increase in CIMMYT's working capital fund, which by this time has been endorsed by a general Consultative Group decision (in August 1973) to permit the international agricultural research programs to accumulate up to 40 days of cash-flow requirements as a safeguard against unscheduled delays in their receipt of donor contributions.

1975: The New Program and Budget Proposal

14. That CIMMYT has conducted its programs with stable levels of staff and expenditures in constant prices by no means indicates a static program of research. The seriousness with which staff and Trustees consider that program, and the wide range of alternatives considered in modulating and developing it from year to year, are suggested in the Report of the Trustees Program Committee which is attached to CIMMYT's 1975 program and budget proposal.

15. The proposed 1975 program would carry on well established lines of research seeking to improve yields and nutritional quality of cereals. It also suggests interesting investigations which are of recent origin or are new altogether: Some of these (for instance, in winter-spring wheat crosses and in barley) are intended to develop new varieties that will particularly help farmers who do not have access to high inputs of fertilizer and water; others are concerned with new efforts to protect cereals against attacks by diseases and insects; and the most novel of all seek to develop new crosses between different families of cereals.

16. In levels of expenditure at constant prices, CIMMYT's proposed core budget for 1975 correspond closely to those in the revised core budget for 1974. The figures are shown in Annex 3. The principal differences, in terms of program expenditures, are small: Plan Puebla disappears, more attention is devoted to Economics; there is a slight reduction in Conference and Information activity; and the strengthening of the Administration continues.

17. Appointments to seven senior positions (total man-years in 1975: 6.3) are provided for -- the same number as had remained unfilled since 1973. They are for: a winter wheat breeder (see page 4 of CIMMYT's 1975 budget request); a maize associate director, a maize pathologist and two maize agronomists (page 8); an associate economist (page 11); and a personnel officer (page 14).

18. The Consultative Group Secretariat believes that these increases are appropriate and justified in the context of the CIMMYT program.

III. Issues

19. CIMMYT's 1975 Budget Request brings forward three issues to which the members of the Consultative Group may wish to pay particular attention.

20. One is the proposal that an addition of 20 per cent should be made to the Center's budget to cover rising prices in 1975. An acceleration of inflation, in fact, began to influence CIMMYT's expenditures as early as 1972; and the pressure of rising costs, as noted earlier in these pages, led CIMMYT to postpone appointments to authorized senior posts in 1973. The rate of inflation continued high in 1974: in the first five months of the year, the general price index rose at an annual rate of 24 per cent.

21. A pronounced inflation in Mexico is now more than two years old, putting a strain both on the domestic economy and the international balance of payments. In the circumstances, it is realistic to expect that the Government will take effective action to reduce inflation or the rate at which Mexican pesos are exchanged for United States dollars will have to decline in favor of the dollar.1/ In either case, CIMMYT -- which receives most of its income in dollars -- would have relief from inflationary pressure.

22. In the circumstances, a 10 to 12 per cent increase for inflation in 1975 would be a fair allowance. To set the allowance there, however, involves a prediction; and if the prediction is wrong, the burden of error will fall entirely on CIMMYT.

23. In the circumstances, the Secretariat makes two recommendations. First, the factor allowed should be on the high side of the range -- that is, 12 per cent rather than 10. Second, if this rate is exceeded, donors should expect that CIMMYT will draw down its working capital fund (which is expected to amount to $356 thousand at the end of 1974) to meet expenditures; and they should expect to replenish this fund fully with contributions to meet CIMMYT's needs in 1976.

24. On the basis of a 12 per cent figure, CIMMYT's allowance for inflation would be $695,000.

25. A second matter, for which CIMMYT requests specific Consultative Group consideration, is a proposal for development in the structure of CIMMYT's research activities. Under the proposal, in two instances CIMMYT would carry out what it calls "collaborative research" in partnership with national organizations outside Mexico but would propose to fund these extensions as part of its core program.

26. The two instances are

> (1) testing wheat - barley germ plasm for resistance to wind-borne diseases in the Mediterannean and Near East region (CIMMYT Budget Request, p. 7); and

---

1/ On June 26, the Mexican Government ordered a price freeze on all basic consumer products until January 1, 1975.

(2) testing maize germ plasm for resistance to certain disease and disease conditions in Africa, southeast Asia and Central America (CIMMYT Budget Request, p. 10).

In each case it is proposed to participate in research outside Mexico because the diseases and disease conditions in question do not exist, or are not significant, in Mexico and cannot be studied there.

27. In so far as location may be an issue, it is not a new one for the Consultative Group. The Group already has accepted the principle that it may be desirable to conduct core research outside the host country of an international center. For example, with the support of the Consultative Group, the International Potato Center, based in Peru, always has included in its core budget the cost of collaborative research carried on in Mexico in the Toluca Valley. That Valley is superior to any other location for the study of blight, the most serious disease affecting potatoes, and TAC has urged the importance of continuing this work.

28. Further questions in each case concerns the degree of priority and scientific merit of the proposals, and whether the proposals present tasks which cannot be dealt with adequately on a national basis. On this question, the Consultative Group no doubt will wish to have the advice of its Technical Advisory Committee (TAC).

29. A third question, also raised specifically by the Trustees of CIMMYT, concerns the concept of staffing and financing services outside the host country for the purpose of what CIMMYT calls "regional services to national programs" (CIMMYT Budget Request, Part II, pp. 10-14). The services involved would include advice and assistance to national research, training and other activities; and these services, although rendered by CIMMYT personnel stationed outside Mexico, would be charged to the core program. CIMMYT does not include proposals for such activities in the 1975 program, but asks the Consultative Group for a decision in principle, for the guidance of CIMMYT in the preparation of future programs and budgets.

30. A pattern such as is now hypothecated by CIMMYT already exists in the case of the International Potato Center. In the 1974 core program of that Center, the Group agreed to finance the posting of personnel overseas to stimulate and cooperate with national programs of research and training. If this pattern became more general in the international agricultural research network, however, it would involve quantum increases in the financing which the Group would be expected to provide for the network. The Group may therefore not wish to consider the individual case of CIMMYT, but to consider the question more generally, as there will be an opportunity to do after discussions currently being conducted by the Center Directors and by TAC on the question of relationships between national and international programs of research and training.

IV. After 1975

31. Apart from "collaborative research" and "regional services to national programs," CIMMYT expects the costs of its core programs, in constant prices, to continue to run level, and capital expenditures, after an outlay of $0.5 million in 1976, would become insignificant. Inflation, however, would continue as a major factor, with the result that the cost of core programs in current dollars would continue to rise. If (to cite notional figures) a 12 per cent inflation rate in 1975 were followed by a level 9 per cent rate thereafter, for instance, CIMMYT's core and capital budget in the final year of the period 1975-78 would exceed $8 million.

32. If the Consultative Group confirmed its willingness in principle to consider projects for "collaborative research" and "regional services to national programs," CIMMYT would bring forth additional projects under these two headings. In the 1975 budget, $100,000 already is proposed for collaborative research, as indicated in Annex 3 to this paper. In the next five years, CIMMYT expects, such proposals might expand to an annual range of $400,000-$800,000, and regional services might grow to a cost ranging between $1 million and $1.5 million a year.

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CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
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Cable: CENCIMMYT

Comment by CIMMYT to the Consultative Group Secretariat

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4. For each of the years 1976, 1977 and 1978, the Secretariat uses a notional figure of 9% for price increases. CIMMYT's projections are higher; they are shown in Table IV of the "1975 Budget Request."

5. CIMMYT will submit to the Secretariat in October 1974 another report on price changes in Mexico which are affecting CIMMYT. This report will again be based upon official price information in Mexico. We will ask that the report be circulated to the Consultative Group at its meeting in November 1974.

Virgilio Barco
Chairman of Board of Trustees

P. Haldore Hanson
Director General

BAP

520

Form No. 27
(3-70)
INTERNATIONAL DEVELOPMENT ASSOCIATION

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

TO: HANSEN
~~CENCIMMYT~~ Centro Internacional de Mejoramiento de Maiz y Trigo
MEXICO CITY

DATE: JULY 8, 1974

CLASS OF SERVICE: FULL RATE

COUNTRY: MEXICO

Rc.

Ext. 3592

TEXT:
Cable No.:

MAILED YOU LAST WEEK A REDRAFT OF SECTION THREE OF SECRETARIAT COMMENTARY ON YOUR BUDGET PAPER. HOPE YOU WILL HAVE RECEIVED IT AND WE MAY DISCUSS IT ON TELEPHONE BY JULY TEN. IF UNRECEIVED BY THEN PLEASE TELEPHONE AND WE WILL DICTATE TEXT. REGARDS.

GRAVES

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME Harold N. Graves, Jr.

DEPT. Agriculture & Rural Development

SIGNATURE Harold N. Graves, Jr.
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE: HGraves:apm

ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

CLEARANCES AND COPY DISTRIBUTION:

For Use By Communications Section

Checked for Dispatch: /

DISPATCHED

Jul 8 2 02 PM 1974

COMMUNICATIONS SECTION

GRAVES

WILL DICTATE TEXT. REGARDS.

ON TELEPHONE BY JULY 7TH. IF UNRECEIVED BY THEN PLEASE TELEPHONE AND WE

ON YOUR BUDGET PAPER. HOPE YOU WILL HAVE RECEIVED IT AND WE MAY DISCUSS IT

MAILED YOU LAST WEEK A REDRAFT OF SECTION THREE OF SECRETARIAT COMMENTARY

COUNTRY: MEXICO

EXT. 3283

SERVICE: TELL RATE

MEXICO CITY

CLASS OF

TO: HANSEN

DATE: JULY 8, 1974

D22
cc: G2b.

July 1, 1974

Dear Joel:

Haldore Hanson at CIMMYT has raised a question, the answer to which might affect other centers as well. The question concerns the base on which the USAID contribution to the international research centers is calculated. At the present time, the base for each center is the center's core and capital budget, less earned or special income. As you probably know, Hanson would like to have the earned or special income included in the base, since that would give a bigger base and presumably enlarge the potential size of the USAID contribution. His argument is that the figure of interest to USAID should be the total requirements figure, and the part of the figure met from earned income should not be struck from the base simply because it is provided by the center.

Could you give me a reaction to this thought? Perhaps you'd rather talk about it on the 'phone than write a letter.

Sincerely,

Harold Graves

Dr. Joel Bernstein
Assistant Administrator
Technical Assistance Bureau
United States Agency for
International Development
320 - 21st Street, N. W.
Washington, D. C. 20523

HGraves:apm

G2b

Form No. 27
(3-70)
INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OUTGOING WIRE

TO: HANSON
~~CENXXXXXXX~~ CENTRO INTERNACIONAL DE MEJORAMIENTO
MEXICO CITY DE MAIZ Y TRIGO

DATE: JUNE 26, 1974

CLASS OF SERVICE: ~~TELEX~~ CT

COUNTRY: MEXICO

TEXT:
Cable No.:

IN TEXT OF SECRETARIAT COMMENTARY ON ITS WAY TO YOU, PLEASE TRANSFER SECOND AND THIRD FULL PARAGRAPHS ON PAGE FIVE TO APPEAR ABOVE THE HEADING ON PAGE FOUR. AS PER OUR TELEPHONE CONVERSATION OF YESTERDAY I CAN NOW CONFIRM THAT THERE WILL BE A NEW DRAFT OF LANGUAGE ON THE INFLATION ISSUE.

REGARDS

GRAVES

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME Harold N. Graves, Jr.

DEPT. Agriculture & Rural Development

SIGNATURE Harold N. Graves, Jr.
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE:

HGraves:apm
ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

CLEARANCES AND COPY DISTRIBUTION:

For Use By Communications Section

Checked for Dispatch: _____

TO: HANSON

DATE: JUNE 26, 1974

CLASS OF SERVICE: ~~TELEX~~

MEXICO CITY CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

COUNTRY: MEXICO

TEXT:

Cable No.:

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REGARDS

GRAVES

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME: Harold N. Graves, Jr.

DEPT.: Agriculture & Rural Development

SIGNATURE:

REFERENCE:

HGraves:apm

ORIGINAL (File Copy)

G2b.

June 23, 1974

Dear Hal:

With this letter I am sending you two copies of a draft of the commentary which the Secretariat, under the Bell Report, is supposed to make on your 1975 Budget Request. I hope that you or Bob Osler can find time to look at this very quickly and then let me have your corrections and comments by telephone. The text, incidentally, is not intended to be read independently from your own document.

Please notice that on the last text page, I am asking for some figures. The other numbers are mostly copied from special tables that Bob Osler at one time or another in the last two weeks has been kind enough to provide.

We would like to get this paper, when revised, out to the Consultative Group during the first days of July. We are sending the draft as it is now to Sir John Crawford and the TAC Secretariat, but will be careful to call to their attention any critical revisions made on the basis of your inspection.

Sincerely yours,

Harold Graves

Enclosure

Mr. Haldore Hanson
Director General
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

cc: Sir John Crawford
Mr. Brian Webster

HGraves:apm

Mr Lewis

DRAFT
June 21, 1974

CIMMYT

The Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT - the International Maize and Wheat Improvement Center) is one of the oldest and best established of the programs being supported by the members of the Consultative Group. It has an outstanding record of success in breeding and spreading the cultivation of cereal varieties that give spectacular yield increases under favorable conditions of soil fertility and moisture.

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II. Programs and Budgets

In recent years, CIMMYT has been carrying out its core program within quite steady limits of finance and personnel. The number of authorized senior positions has not changed since 1973, and the level of running costs, apart from price rises, has not changed substantially.

Little change is proposed, for the most part, in staff or, in constant prices, in expenditure levels for 1975. Proposals are being brought forward with the 1975 budget, however, which have interesting implications for future programs and costs. Price inflation has become a major factor in the level of planned expenditures.

While running costs have remained level, there has been considerable fluctuation in capital expenditures. CIMMYT has been carrying out a long-range (1966-78) capital development program, concerned since about 1971 largely with land acquisition and the improvement of experiment station facilities at headquarters and other locations in Mexico.

1973

Actual core expenditures last year corresponded quite closely to the program and budget approved by the Trustees of CIMMYT and accepted by the Consultative Group for that year. The over-all difference was about 3 per cent, and variations within the constituent elements of the Center's activities were in nearly all cases less than 10 per cent. The differences are shown in Annex 1 to this paper.

Not all the staff additions that had been planned for 1973 were accomplished. This was the principal reason for a shortfall in core expenditures, most of which occurred in Economics and in General Laboratory Services.

Earned income, on the other hand, exceeded expectations by $120,000. This amount, combined with the small saving on core expenditures, created a surplus of $207,000. With the approval of the Trustees, $106,000 of this was put into a working capital fund, intended by CIMMYT as a reserve against

delays in receipts of contributions from donors. The remaining $101,000, with the authorization of the Trustees, was applied to capital items already approved within CIMMYT's long-range capital development program.

1974

For 1974 CIMMYT proposed at International Centers Week in 1973 to carry on its core activities at nearly the same level of expenditures as in 1973. The planned expenditure level was $5,300,000 as against $4,860,000, with more than half the 9 per cent increase due to rising prices rather than increased program levels. No senior positions and no new programs were authorized: seven senior positons remained unfilled from the year before.

In the spring of 1974, CIMMYT Trustee revised the Center's core budget upwards by about $100,000 to approximately $5,400,000. They were able to do so because more funds were available, particularly from special contributions to fellowships within CIMMYT's training program.

The 1974 revised budget is compared with actual 1973 expenditures in the table which appears as Annex 2. Two items decline: the phasing out of Plan Puebla (an on-the-farm experiment in maize production systems) continues to completion; and the cost of some activities in Economics which take place within the Center's training program are being charged to the latter program. Three items of increase are of some interest: the increase in training activity already has been referred to; additions to expenditures for general administration reflect steps being taken to carry out some of the recommendations of an expert task force which surveyed the administration of CIAT in 1972; and an increase of 30 per cent in station operations largely reflects wages of field labor and the rising prices of fertilizer and other materials.

Appropriations to capital purposes are very much reduced. More than half the amount is devoted to an increase in CIMMYT's working capital fund, which by this time has been endorsed by a general Consultative Group decision (in August 1973) to permit the international agricultural research programs to accumulate up to 40 days of cash-flow requirements as a safeguard against unscheduled delays in their receipt of donor contributions.

1975: The New Program and Budget Proposal

That CIMMYT has conducted its programs with stable levels of staff and expenditures in constant prices by no means indicates a static program of research. The seriousness with which staff and Trustees consider that program, and the wide range of alternatives considered in modulating and developing it from year to year, are suggested in the Report of the Trustees Program Committee which is attached to CIMMYT's 1975 program and budget proposal.

The proposed 1975 program would carry on well established lines of research seeking to improve yields and nutritional quality of cereals. It also suggests interesting investigations which are of recent origin or are new altogether: Some of these (for instance, in winter-spring wheat crosses and in barley) are intended to develop new varieties that will particularly help farmers who do not have access to high inputs of fertilizer and water; others are concerned with new efforts to protect cereals against attacks by diseases and insects; and the most novel of all seek to develop new crosses between different families of cereals.

In levels of expenditure at constant prices, CIMMYT's proposed core budget for 1975 correspond closely to those in the revised core budget for 1974. The

figures are shown in Annex 3. The principal differences, in terms of program expenditures, are small: Plan Puebla disappears, more attention is devoted to Economics: there is a slight reduction in Conference and Information activity; and the strengthening of the Administration continues.

Appointments to seven senior positions are provided for -- the same number as had remained unfilled since 1973. They are for: a winter wheat breeder (see page 3 of CIMMYT's 1975 budget request); a maize associate director, a maize pathologist and two maize economists (page 6); an associate economist (page 8); and a personnel officer (page 11).

An acceleration began to be a factor influencing CIMMYT's expenditures as early as 1972; and the pressure of rising costs was one factor which led CIMMYT to postpone appointments to authorized senior posts in 1973. In 1974, inflation is even more of a factor; even the levels of the revised expenditure budget will be exceeded.

The final figure for core operations of the year is now calculated by CIMMYT at $5,600,000. The excess of $180,000 will be financed from funds made available through the circumstance that some finance was received unexpectedly in 1973 and too late in the year to be budgeted for that year. The exact allocation of this amount to various types of expenditure is yet to be determined; but it is clear that it will be used for purposes approved by CIMMYT's Trustees within the 1974 program accepted by the Consultative Group.

The Consultative Group Secretariat believes that these increases are appropriate and justified in the context of the CIMMYT program.

III. Issues

CIMMYT's 1975 Budget Request brings forward three issues to which the members of the Consultative Group may wish to pay particular attention.

One is the proposal that an allowance of 20 per cent should be made to cover rising prices in 1975. In 1973, consumer prices rose by more than this proportion, and in the first months of 1974, they are continuing to rise, at an annual rate of 24 per cent.

If a considerable part of CIMMYT's expenditures were expected to be made outside Mexico, it could be argued that a different and perhaps lower figure, reflecting these expenditures, should be calculated. If a large part of CIMMYT's income were in currencies not linked with the Mexican peso, it could be argued that an allowance should be made for some gains which CIMMYT might make in exchange rates. In the 1975 budget, however, these circumstances apply only to a minor extent: Some proportion of CIMMYT salaries are paid in foreign exchange to accounts outside Mexico, and for these, a lower rate of increase might be argued: and a small part of the Center's income in 1975 will be received in currencies which might be expected to appreciate against the Mexican peso.

A 20 per cent allowance for inflation, covering nearly all of an estimated rise of 24 per cent, may therefore be defended. Donors will not make final decisions setting the level of CIMMYT income for 1975 until several more months have passed; and trends in that time and further calculations may suggest whether, in fact, the proposed inflation allowance could be reduced without threatening CIMMYT's program.

A second matter, for which CIMMYT requests specific Consultative Group consideration, is a proposal for a development in the structure of CIMMYT's

research organization, outlined in attachment __ to the Center's 1975 Budget Request. Under the proposed, what CIMMYT refers to as "collaborative research" would be conducted outside Mexico but would be considered to constitute part of the Center's core program. The case for conducting this research outside Mexico is that it is devoted to the study of conditions which are important to the crops for which CIMMYT is responsible but which do not exist ~~outside~~ inside Mexico.

The Consultative Group Secretariat does not believe that the matter of a location outside the host country presents the Group with a new question. When the Group at International Centers Week in 1973 accepted the Secretariat paper, "Budgeting and Accounting Procedures and Practices of International Agricultural Research Centers," it accepted the statement (perhaps inadvertently) that "work for a core program may ... be carried on outside the host country of an institute."[1/] In the case of the International Potato Center, the principle already is well established in actual practice.

A perhaps more troublesome aspect of the matter is the extent to which "collaborative research" may involve some degree of subsidy to national programs cooperating in research. This is a matter involving judgments about what constitutes a proper division of functions between a national program and a cooperating international center. In specific cases involving these judgments the Consultative Group no doubt will wish to have the advice of its Technical Advisory Committee.

A third question, also specifically raised by the Trustees of CIMMYT, concerns the concept of staffing and financing bases outside the host country for the purpose of "regional services to national programs." The concept is described in Attachment 2 to CIMMYT's 1975 budget request. The

---

1/ "Budget and Accounting Procedures"; June 18, 1973; p. 2.

services involved would include advice and assistance to national research, training and other activities; and the nub of the matter, again, is that these services, although based outside the Center's host country, would be charged to the core program. CIMMYT does not include proposals for such activities in its 1975 program, but asks the Consultative Group for a decision in principle; for the guidance of CIMMYT in the preparation of future programs and budgets.

Here again, the Secretariat does not believe that a new question is involved. In the 1974 program of the International Potato Center, the Group already has accepted a quite similar proposal in accepting a network of outreach programs for which personnel, chargeable to core, would be based outside the host country of the institute. The Secretariat believes that it is open to CIMMYT or any other Center to make such a proposal for consideration by TAC and the Consultative Group as would be the case with any other proposal for an addition to a core program.

IV. After 1975

Apart from "Collaborative research" and "regional services to national programs," CIMMYT expects the costs of its core programs, in constant prices, to continue to run level, and capital expenditures, after an outlay of $0.5 million in 1976, would become insignificant. Inflation, however, would continue as a major factor, with the result that the cost of core programs in current dollars would continue to rise. Total budgets for core and capital would look somewhat as follows in the years 1975-78 (in $ millions):

1975	$ 7.08
1976	
1977	(PLEASE SUPPLY THESE FIGURES)
1978	

If the Consultative Group confirmed its willingness in principle to consider projects for "collaborative research" and "regional services to national programs," CIMMYT would bring forth additional projects under these two headings. In the 1975 budget, $100,000 already is proposed for collaborative research, as indicated in Annex 3 to this paper: in the next five years, CIMMYT expects that such proposals would expand to an annual range of $250,000-$500,000. Regional services by 1980 would grow to a cost ranging between $1 million and $1.5 million a year.

Annex 1

CIMMYT Estimated and Actual Expenditures, 1973 ($'000)

	1973 Budget[a/]	1973 Actual
Core Operations		
Wheat	$ 1,046	$ 1,010
Maize (including Plan Puebla)	1,397	1,374
Economics	177	137
General Service Laboratories	94	71
Experiment Station Operations	431	436
Training, Conferences, Information	884	805
General Administration	994	1,027
Total Core	$ 5,023	$ 4,860
Capital		
Expenditures	$ 1,198	$ 1,299
Working Capital Fund	-	106
Total Capital	$ 1,198	$ 1,395

a/ These figures are from the revised budget approved by CIMMYT's Trustees in April 1973; they differ only slightly from the figures in the budget presented to the Consultative Group in July 1973.

Annex 2

CIMMYT Actual 1973 and Proposed 1974 Expenditures
($'000)

	1973 Actual	1974 Budget
Core Operations		
Wheat	$ 1,010	$ 1,172
Maize (including Plan Puebla)	1,374	1,232
Economics	137	103
General Service Laboratories	71	89
Experiment Station Operations	436	563
Training, Conferences, Information	805	1,163
General Administration	1,027	1,201
Total Core	$ 4,860	$ 5,423
Capital		
Expenditures	$ 1,299	$ 160
Additions to Working Capital Fund	106	250
Total Capital	$ 1,395	$ 410

Annex 3

CIMMYT Proposed 1974 and 1975 ~~Figures~~ Expenditures
($'000)

	1974	1975
Core Operations		
Wheat (p. 3)[a/]	$ 1,172	$ 1,296[b/]
Maize (p. 6)	1,132	1,173[c/]
Economics (p. 8)	108	155
General Services Laboratories (p. 9)	89	91
Experiment Station Operations (p. 9)	563	577
Training, Conferences, Information (p. 10)	1,163	1,066
General Administration (p. 11)	1,201	1,275
Total Core	$ 5,423	$ 5,633
Capital		
Capital Expenditures	$ 160	$ 286
Additions to Working Capital	250	-
Total Capital	$ 410	$ 286
Other		
Price rises		$ 1,159
Unallocated	$ 180	
Total Other	$ 180	$ 1,159
Grand Total	$ 6,013	$ 7,078

a/ Numbers in parentheses are the pages on which the discussion of these activities appears in CIMMYT's 1975 Budget Request.
b/ Includes $70,000 for a new program of "collaborative research."
c/ Includes $30,000 for a new program of "collaborative research."

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

Yellow

G26.

OFFICE MEMORANDUM

TO: Mr. Lewis

DATE: June 21, 1974

FROM: Harold Graves HWG

SUBJECT: CIMMYT 1975 Budget: New Inflation Factor

1. Haldore Hanson telephoned from CIMMYT late yesterday to say that he had just completed a poll of his Trustees, and they had approved the use of an inflation factor of 20 per cent in his 1975 budget. The decision was taken in view of a rise, in the first five months of 1974, of 10 per cent in the price index for all goods and services in Mexico and of 11 per cent in the price index for consumer goods. Some Trustees thought the increase in the inflation factor too low and one (Lowell Hardin) thought that perhaps it was too high, at least in relation to other centers.

2. Section II in the CIMMYT budget narrative has been changed accordingly.

The first sentence now reads: "CIMMYT requests an operating budget in 1975 totaling $6,953,000, compared to $5,603,000 in 1974. The increase is ($1,350,000 or) 24 per cent."

The table explaining the differences between the 1974 and 1975 core budgets also has been changed. It now reads as follows:

(a)	1974 core budget	$5,603,000
(b)	Cost of full-year operation in 1975 at level of activities assumed for 1974 in 1974 budget	5,654,000
(c)	Plus inflation (estimated 20% above costs in 1974)	1,159,000
(d)	Plus salaries and benefits, 9 man-months each, for 7 positions approved in 1973 and vacant through 1974 because of fund shortage caused by inflation	156,000
(e)	New activities (i.e., "collaborative research")	100,000
(f)	Total, 1975 core budget	7,069,000
(g)	Minus discontinuation of Plan Puebla	116,000
	Net, 1975 core budget	6,953,000.

The new activities for collaborative research, you may remember, are divided between $70,000 for wheat/barley and $30,000 for maize.

3. There are consequent changes, also, in Table I.

On line 5, the 1975 figures for Core Unrestricted, Core Restricted and Total Core become 5,531, 1,402 and 6,953, respectively.

On line 6, the corresponding changes are to 925, 234 and 1159.

At your suggestion, also, a figure of 161 is being introduced into item 6 for indirect income.

HGraves:apm

G2b.

Mr. Harold Graves

June 21, 1974

T.M.C. Asser

ILRAD Memorandum of Understanding

I refer to your note of June 19. It is my recollection that the parties who signed the Memorandum on November 9, 1973 took an original signed copy with them, notwithstanding the fact that the signing had not yet been completed. I am not certain, since I did not supervise the signing. If my recollection is correct, however, then the parties who signed on November 9 need, of course, not receive execution copies.

I am sending the Memoranda back to you for distribution to those who signed later.

Attachments

TMCAsser/mr

G2b.

June 20, 1974

Dear Hal:

As you well remember, the Consultative Group Secretariat is supposed to do an annual review of center program and budget proposals. You will also remember that, up here, we decided against another exercise at CIMMYT of the type that George Dion carried out there last year. On the other hand, since John Coulter of Rothamsted had paid CIMMYT a visit not very long before we were discussing this matter in the Secretariat, we asked him if he would give us a paper on his impressions.

He did give us a paper, and, although he himself would take a very modest view of it, I nevertheless thought you might be interested in what he said. A copy of his paper is attached.

This paper will not be circulated to the Consultative Group, although we will send a copy to Sir John Crawford.

Sincerely yours,

Harold Graves

Enclosure

Mr. Haldore Hanson
Director General
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

cc with attachment to: Sir John Crawford
Mr. Peter A. Oram

HGraves:apm

D15

cc: 926.

June 19, 1974

Dear Werner:

When you kindly received me in Bonn earlier this month, you mentioned that it would indeed be possible to consider an additional grant to CIMMYT in 1974 for capital expenditures that might be taken out of CIMMYT's longer-term plans and advanced into this year.

The purpose of this note is to indicate that CIMNYT could use about $188,000 equivalent of additional funds in this way in 1974. This amount of expenditure, originally planned for 1975, actually could be made in 1974. The detail is shown in the attached memorandum from CIMMYT.

You also indicated that similar action might be possible in the case of the International Rice Research Institute. I am now getting in touch with that Institute to see what might be an appropriate figure to suggest.

Sincerely yours,

Harold Graves

Enclosure

-- Letter to Mr. Graves from Dr. Osler on CIMMYT's Plans for advancing Trustee approved capital items for 1975 to 1974 if additional funding can be obtained -- dated May 7, 1974

Dr. Werner Treitz
Ministry for Economic Cooperation
Friedrich Eberstrasse 114
Bonn
Germany

cc: Mr. Hanson/Dr. Osler, CIMMYT

HGraves:apm

Jan 8W

BAP 926

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

June 6, 1974.

Mr. Harold Graves, Executive Secretary
Consultative Group on International
Agricultural Research
1818 H. Street, N.W.
Washington, D. C. 20433
U. S. A.

Dear Mr. Graves:

Enclosed please find one copy of the Price Waterhouse Audit Report on CIMMYT's financial operations for the year ending December 31, 1973.

Would you please be so kind as to forward this copy to the appropriate person in the West Germany Government?

Very truly yours,

M. Domínguez
Controller

Encl. (1)

MDP/alma

BAP

52b

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Mr. Cheek
Mr. Graves
Agriculture & Rural Development.

June 6, 1974

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

1818 H STREET N.W.

WASHINGTON DC 20433(DLVR INTRAFRAD WASHINGTON)

CHEEK TWENTY FIVE COPIES AUDIT REPORT MAILED TODAY

TO MR GRAVES STOP

DOMINGUEZ - CENCIMMYT

COL 20433

926.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

June 6, 1974.

Mr. Harold Graves, Executive Secretary
Consultative Group on International
Agricultural Research
1818 H. Street, N.W.
Washington, D.C. 20433
U. S. A.

Dear Mr. Graves:

We take pleasure in sending you 25 copies of the Price Waterhouse Audit Report on CIMMYT's financial operations for the year ending December 31 1973.

Very truly yours,

M. Domínguez
Controller

Encl. (25)

MDP/alma

Record Removal Notice

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File Title	Barcode No.
Consultative Group on International Agricultural Research [CGIAR] - G-3 - International Maize and Wheat Improvement Center [CIMMYT] - 1972 / 1974 Correspondence - Volume 2	1760372

Document Date	Document Type	
May 20, 1974	Letter	

Correspondents / Participants
To: IBRB
From: K. Georg Gabrial, Controller

Subject / Title
grant to IDA

Exception(s)
Financial Information iv

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.

Withdrawn by	Date
Sherrine M. Thompson	April 12, 2021

B41

926.

May 16, 1974

Dr E.J. Wellhausen
CIMMYT
Calle-Londres 40
Mexico 6, DF
Mexico

Dear Ed:

Herewith a copy of the EMBRAPA report "Termos de Referencia para Organizacao E Localizacao de Unidades Basicas de Pesquisa" about which we briefly spoke by telephone today. To me, this document is adequate proof that its authors (Cabral-Gastal-Vera?), and perhaps EMBRAPA management, do not have the slightest understanding of crop-oriented, interdisciplinary team research and its advantages in solving problems limiting production. We appear to have a real difference in research philosophy and approach.

Please note particularly the Introduction(pages 1 - 3) and the Organograms on pages 31, 32, 33 and 42 and the discussion of them on pages 18 - 48. It could make a "grown man cry". It would seem that the important issue to EMBRAPA (and IICA) is that of a sophisticated administrative bureaucracy, in this case one of three levels -- national, regional and state, to which they will forceably adjust and subordinate technical programs.

When they speak of projects in this report, I assume they mean something like the maize project we visited while in Pernambuco. Certainly, the organization, staffing and leadership is to be provided in the same way. Therefore, to me, much of what the report discusses already exists and they merely intend to perpetuate it. We must, therefore, hold firmly to our position that a prerequisite to continued interest and assistance is that the research network, including its operating policies, would be determined and developed as an integral part of the technical crop/livestock program preparation.

I will be interested to learn your reaction. Please call me collect when you wish to comment.

Best personal regards,

James M. Fransen
Agricultural Economist

Attachment

cc: ARA Files - Brazil
JMFransen:if

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

May 15, 1974.

Mr. Harold Graves
Associate Director
Development Services Dept.
Room E 1039
1818 H Street N. W.
Washington, D. C. 20433
U. S. A.

Dear Harold:

I am enclosing a copy of our attachment 2 which went to our Trustees in April and lists the seven vacant positions noted on page 3, subhead (d) of the 1975 CIMMYT budget document you have.

Sincerely yours,

Robert D. Osler.
Deputy Director General,
and Treasurer.

RDO:cc
Encl.

Attachment 2

ESTIMATED COST OF 1975 VACANT SENIOR STAFF OR SUPERVISORY POSITIONS TO BE FILLED FOR AVERAGE OF 9 MM DURING YEAR.

		Salaries	Allowances
1.	Winter Wheat Breeder (18,000)	13,500	8,100
2.	Maize Associate Director (25,000)	18,750	11,250
3.	Maize Pathologist (18,000)	13,500	8,100
4.	Associate Economist (22,000)	16,500	9,900
5.	Maize Agronomist (18,000)	13,500	8,100
6.	Maize Agronomist (18,000)	13,500	8,100
..	Personnel Officer (12,000)	9,000	3,900
	TOTALS:	98,250	57,450

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

M E M O R A N D U M

May 7, 1974.

TO: HAROLD GRAVES

FROM: R. D. Osler

SUBJECT: CIMMYT's Plans for advancing Trustee approved capital items for 1975 to 1974 if additional funding can be obtained.

The present 1975 Capital plan as reviewed and approved by CIMMYT's Trustees during its recent meetings on April 1 and 2, of this year is as noted below. The footnote numbers at the left margin are the same as those included in the draft 1975 budget as sent to you earlier. We have noted in the right hand column the amounts we would propose advancing to 1974 if the additional funds mentioned in the subject of this memo are made available.

You will note the total budget for advancement to 1974 is: $ 188,000 U. S. Dlls.

	Approved 1975 Budget	For Advancement to 1974
6/ Field and Laboratory Equipment, 1975, $ 45,000		
Two additional growth cabinets	20,000	20,000
Small Field and Laboratory Equipment	25,000	---

... 2

	Approved 1975 Budget	For Advancement to 1974
7/ Construction of Buildings, 1975, $ 196,000		
El Batán		
General Warehouse	25,000	25,000
Field Superintendent's house at Station	25,000	25,000
Visitors facility -- Additional exhibits	5,000	---
Insect mass rearing facility	100,000	77,000
Toluca		
Alterations to wheat drying area roof	25,000	25,000
Alterations to entrance gates	2,000	2,000
Alterations to roof over wheat office and storage area	12,000	12,000
Tlaltizapán		
Alterations to workers' bathrooms	2,000	2,000
8/ Roads Utilities and Furnishings, 1975.	7,000	---
Additional office furnishings and equipment for additional post and pre-doctorals.		
9/ Additional program vehicles, 1975.	28,000	---
Seven vehicles as transport for additional post and pre-doctorals.		
10/ Library Acquisitions, 1975.	10,000	---
Additional books and publications.		
Totals :	$ 286,000	$ 188,000

RDO:cc

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

May 7, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
IBRD
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

CIMMYT Trustees approved our budget submission for 1975 on April 2, 1974 with three provisos:

(1) That we would submit a supplemental memorandum which would ask a "test budget" for "collaborative research", outside of Mexico, constituting a legitimate part of the CIMMYT core program. And along with that test budget -- a memo explaining CIMMYT's proposed regional services, outside Mexico, and asking whether these would properly fall within CIMMYT's core budget, or how they should be financed.

(2) That CIMMYT Trustees Executive Committee review about mid-June, the estimate for inflation rate in Mexico. Our submission to you now shows a 12% inflation rate (which means Mexico will have an inflation rate of 12% in 12 months of 1974). In the first three months of 1974, the official price index of the Banco de Mexico has risen 10.3% at wholesale and 5.0% at retail. I will enclose a graph of the trend of inflation during 1971-74.

(3) That CIMMYT Management ask the CG Secretariat whether CIMMYT Trustees can authorize CIMMYT to draw upon its working capital "to sustain the on-going program" if the inflation rate in Mexico exceeds the estimate in our budget, and jeopardizes the completion of the approved program for 1975.

You now have our budget for 1975.

I am delivering with this letter the supplemental memoranda mentioned in proviso (1) above.

I expect our Trustees to meet (or consult by telephone) in the period June 15-20 to decide whether to revise the 12% inflation rate shown in our 1975 budget submission to you -- proviso (2) above.

You and Osler can discuss proviso 3 when he delivers these papers.

I enclose a copy of my letter of April 5 to you, which you indicated you did not receive.

Cordially,

Hal

Haldore Hanson
Director General

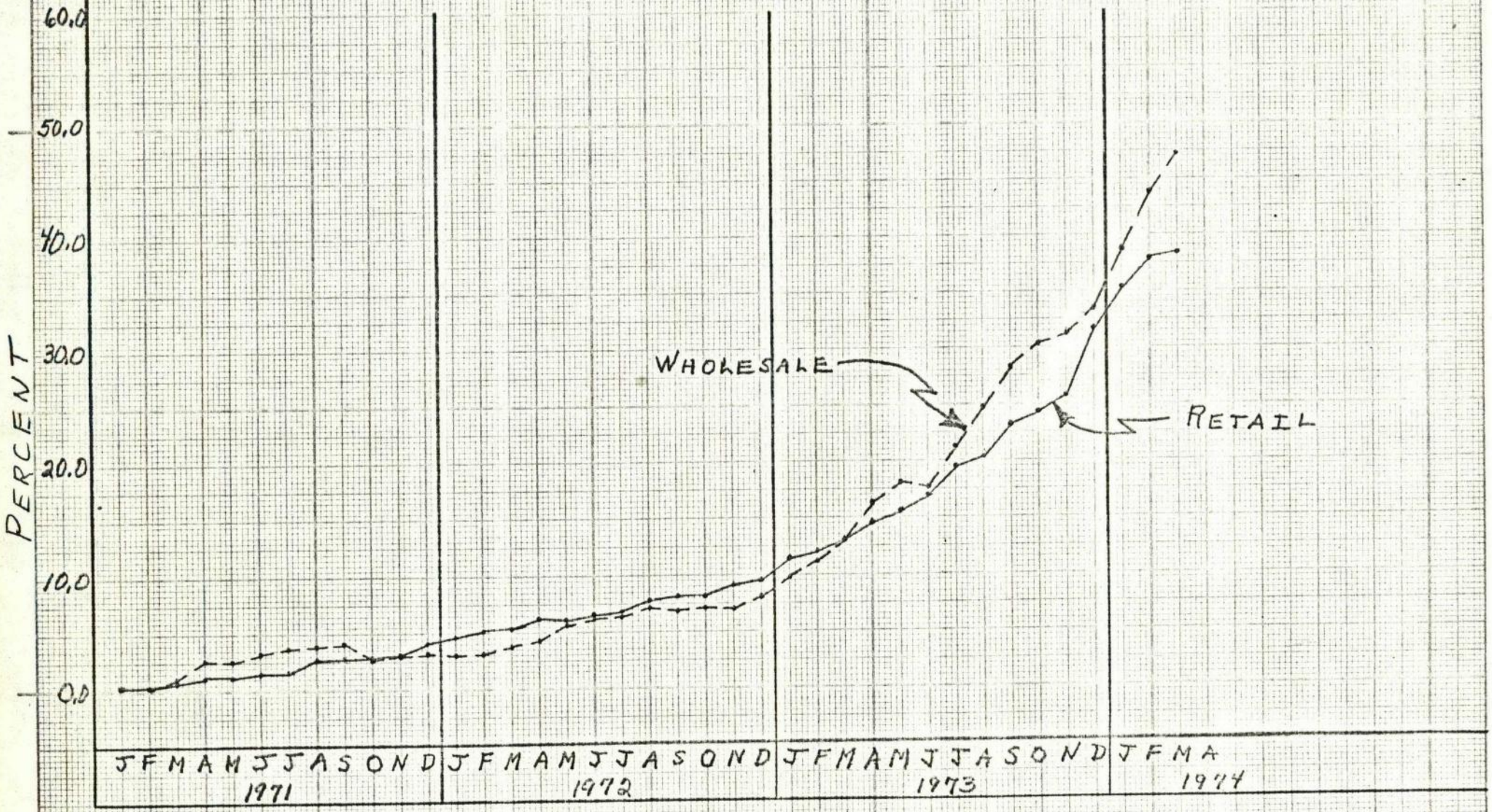
Attachments:

Supplemental memoranda for "collaborative research" in 1975, and question on financing, "regional services".
Official price index in Mexico (graph).
Copy of letter, Hanson to Graves, April 5, 1974.

cc. Dr. R. D. Osler

CUMULATIVE % CHANGE: WHOLESALE PRICE INDEX (CONSUMER ITEMS) AND RETAIL CONSUMER PRICE INDEX *

(MEXICO, D.F., 1971-74)



* SOURCE: INDICADORES ECONOMICOS, BANCO DE MEXICO, S.A. VOL. II

April 5, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433
Dear Harold:

Subject: CIMMYT's 1975 budget.

CIMMYT's Trustees, in their annual meetings in Mexico March 31-April 2 requested changes in our budget, our auditor's report, and our Report on Staff Program Review, which has delayed our sending these papers to you.

To get you started on the budget, I am now enclosing a copy of our budget narrative and Tables I, II, V, and VI. The entire budget will come to you next week in clean form.

One important element is still missing: the Trustees requested that CIMMYT draft a budget proposal for "collaborative research outside Mexico", and for "regional services outside Mexico", which would enable the CG-TAC to give CIMMYT a clear determination whether these services are acceptable in the core program.

It is our intention to draft a supplemental proposal, asking $100,000 for collaborative research outside Mexico, which we request be included under core budget; and to outline "regional services outside Mexico, without a request for core budget. We hope the "regional services" will be treated as "core restricted".

Our Auditor's report is being revised in format, and will come to you by the end of April.

The "annual report" you request will be based on the Staff Program Review. We presently estimate it will go to the Printer by May 15, and be distributed in the last half of June from Mexico.

You will note on the cover of the enclosed draft budget, the Trustees propose to review the rate of Mexican inflation in June 1974 before they authorize that this 1975 budget is final. The meeting of the Trustees Executive Committee is scheduled about June 15.

Sorry for the delays, but these developments are as new to us as they are to you.

Cordially,

Haldore Hanson
Director General

Enclosures.

HH/mph

ROTHAMSTED EXPERIMENTAL STATION
Harpenden, Herts. AL5 2JQ
Telephone: 058 27 63133

~~Head of Pedology Department~~:
~~C. Bloomfield, D.Sc~~.

4th May, 1974.

Dear Mr. Graves,

With reference to your letter of 22nd April, I enclose a review of the CIMMYT 1975 Budget Request on research and training.

This review is necessarily limited as the budget request is, in itself, a compressed document and though the CIMMYT Program Review 1973-74 contains more background information, I did not have a copy of this.

In this review I have indicated areas where I think that more resources will be needed in future and those areas from which some re-allocation may be possible, but I found it impossible to quantify these in any way. In fact I think itwould be possible to do so only after detailed examination in collaboration with CIMMYT's scientists. Even then I believe it can be a mistake to look at one research sector in isolation.

Yours sincerely,

John K. Coulter.

(John K. Coulter)

Mr. Harold Graves,
Executive Secretary,
Consultative Group on International
Agricultural Research,
1818 H St., N.W.
Washington, D.C. 20433 ,
U.S.A.

sent to - May 8/74

cc: Mr. Gudelmund / Mr Darnell
Mr. John Blasell
Mr Derek Haynes
Mr Robert Picciotto

C I M M Y T

1 9 7 5 BUDGET REQUEST

In reviewing this document, the 1972 CIMMYT Annual Report has also been consulted for more background information. This review raises some points which have probably been covered in previous discussions and in the CIMMYT Program Review, 1973-74, but nevertheless they appear of sufficient importance to be noted here.

THE RESEARCH PROGRAM

CIMMYT has an outstanding record of success in breeding cereal varieties that give spectacular yield increases under favourable soil fertility and moisture conditions. The work now in hand, and needed for the forseeable future, is designed to maintain these yields where the effects of pest and disease attack, drought and low soil fertility are damaging. These adverse conditions are mostly beyond the control of the farmer and present many serious challenges, for neither the disease situation nor the lack of soil moisture can be predicted from year to year with any degree of certainty. Furthermore there are interactions between pest and disease organisms and climate which are imperfectly understood and thus impossible to predict. Breeding new varieties of cereals, which will tolerate these pests and diseases, demands full understanding, not only of the crop but of the pests and diseases as well and much of the CIMMYT program is devoted to this. There is obviously no end in sight and indeed it is probable that the research needs will increase as continuous cultivation, more nitrogen fertilizer and more expensive inputs generally, enhance the importance of losses due to pests and diseases. Furthermore diseases of minor impact in one farming system can assume serious proportions in another within a very short period.

The budget review rightly emphasises the importance of drought; the best yield increases have obviously been in irrigated agriculture but far more of the world's farmers depend on rain-fed agriculture.

...../The

The term 'drought' covers a very wide range of conditions in which moisture deficiency occurs and farmers themselves have evolved many cultural methods for evading its worst effects. Some of these methods, like the planting of 'reserve' areas, the use of water receiving rather than water shedding sites and, of course, over-season on-farm storage of grain come under increasing pressure as numbers of farmers and livestock increase. Population pressure also means that cereal growing is extending into more marginal rainfall areas, and some countries, in a policy for self-sufficiency, are growing wheat where none was grown before. Agronomic techniques for drought amelioration are location-specific but the basic principles of many techniques are the same. Studies on these and on methods to improve the definitions of the types of drought and rainfall patterns will be an important task for international agricultural research regardless of the crop with which it is concerned.

Wheat

Breeding for disease tolerance in the bread wheats is receiving major emphasis in the CIMMYT program. The appearance of new races of fungi in India and the increased seriousness of diseases, possibly of minor importance in the past, e.g. Septoria in Brazil, endorses the need for this emphasis. Thus the program for crossing winter and spring wheats to achieve drought tolerance and disease resistance is of great importance.

However, the increasing attacks of a number of diseases also raises other questions to which CIMMYT will require answers if the breeding program is to keep ahead of these attacks. The study of the epidemiology of cereal diseases in the countries in which CIMMYT is operating requires scientists to identify, assess the yield losses and define the conditions of these attacks. Was the attack of Septoria in Brazil, in 1972, for instance, aggravated by interactions with adverse climatic conditions, by the advent of new races of the fungus or by infertile soil conditions due to aluminum toxicity?

CIMMYT's unique experiences in breeding for wide adaptibility helps to overcome these problems but it would appear nevertheless, that

...../many

many more well-trained plant pathologists will be needed in these countries to support CIMMYT work. Provision of these is obviously a country responsibility rather than a CIMMYT one.

The program, as outlined in the 1975 Budget request, deals mainly with leaf fungal diseases and from this it appears that soil-borne pathogens and virus diseases are relatively much less important in the major wheat producing areas with which CIMMYT is concerned. But the soil-borne pathogens have a habit of becoming more important as cereal cropping is intensified, often requiring, for example, a break in the cereal rotation for their control. Increased resources may need to be put into research on these diseases in future.

Barley

As the report points out, barley growing is equated with impoverished people living in a hostile environment. Improved wheat varieties have probably benefitted large farmers more than small ones but improved barley varieties will have the greatest impact on the small farmer. These farmers are often in isolated areas with difficult access to fertilizer supplies, irrigation is unlikely in the forseeable future and the short growing seasonsat high elevations are not susceptible to amelioration, so better varieties provide one of the few ways of improving their yields. Due to the generally hostile environment in which this crop is grown, absolute increases in yield may not be very great but even modest increases, combined with the improvement in protein quality, should bring great benefits.

The program, which began only in 1972 is nowwell under way with a large number of varietal accessions but it may be that, in the next 2-3 years, the introduction of extra research resources into this program would shorten the time for improved varieties to reach the important areas.

Triticale

// The work on triticale illustrates the rapidity with which a man-made plant, with many desirable qualities, can be evolved. Problems of grain size and quality have now been overcome and the protein in triticale is of better quality than that in wheat.// Though widely tested, triticale is not

...../yet

yet commercially grown in the developing countries; until it is grown fairly widely, assessment of the importance of pest and disease problems in these environments is difficult.

Because of its wider adaptability, triticale presumably will be grown in the more marginal wheat lands or used to extend cultivation into areas, presently uncultivated. The role of triticale in the future should emerge more clearly now that CIMMYT has solved many of the production problems. The level of research input in the future should be re-examined once this role has been defined.

Maize

The germ plasm bank at CIMMYT is a source of material for maize breeders around the world and, as with other cereals, the CIMMYT breeders plan to achieve maximum adaptability in their selections. Thus the objectives are short, disease and pest-resistance plants with high quality protein and a tolerance for adverse climatic regimes.

Amongst the major problems on which CIMMYT is working in the tropical areas are resistance to pest and disease attack and the unfavourable ratio of grain to leaf and stalk. Studies on the physiology of maize are aimed at elucidating the reasons for this unfavourable ratio. An improvement in this would make very significant contributions to maize yields in the lowland tropics and the program on maize physiology should provide some of the keys to this.

Maize suffers from a wide range of pests and diseases in the tropics, but the production methods for the crop are such that only a relatively small proportion of the farmers, and then mostly the larger ones, can make use of plant protection techniques. Breeding for tolerance and/or resistance is thus of major importance. Other methods of biological control of pests are likely to be importance too and though often location-specific are likely to be well worth attention.

Economics

The ultimate success of the scientific programs at CIMMYT depends

...../on

on how well their materials fit into the farming systems of the countries concerned. Until new technology is available it is impossible to say how well such technology will be accepted by the farmers, hence the great importance of follow-up studies of the nature reported in the Budget review. Case studies and careful monitoring of the progress of agricultural development, resulting from the inputs of new technologies, provide valuable information to the scientists for designing new research programs. This information is also of great value to governments in planning support services for agricultural development, for it demonstrates the level of input needed, not only on major services such as farm credit, but also on the need for minor services like soil testing.

As these are collaborative studies and as they involve mainly the organization of local staff in each of the countries concerned, there should be opportunities to extend this work at relatively small expense.

Training

The training programs at CIMMYT have made an outstanding contribution to advances in agricultural production. Trainees have to work on the complete cycle of crop production, work with others of different experience and background and work in an atmosphere of enthusiasm for agricultural improvement; consequently they return with more than just a good technical knowledge. However, as tropical agricultural production is intensified more and more trained people will be needed and facilities at CIMMYT cannot be increased indefinitely. This probably means increased emphasis on regional training. Though regional training centres might not have all the facilities and the atmosphere at CIMMYT, nevertheless there would be some conpensating advantages, as for example, the opportunity to emphasise pest and disease and other production problems of more local or regional importance.

A broad interpretation of training may be applied to the several thousand visitors who come to CIMMYT each year. Giving these visitors the opportunity for achieving maximum benefits from their visits whilst, at the same time protecting the scientific staff of the institute from interminable interuptions to their work is obviously a technique which CIMMYT has mastered.

BMC
HG
CJ

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

April 22, 1974.

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433
U. S. A.

File
CIMMYT

Dear Harold:

Subject: CIMMYT's 1975 Budget.

As Hal mentioned in his letter of April 5, I am forwarding a clean copy of the budget you received with that letter. Please destroy that copy as we have corrected a few errors in footnotes or typing errors on each one of the tables you received earlier. Since our xerox machine was working properly, we were able to reproduce tables I and II on one page per table.

We still do not have the supplemental proposal mentioned in Hal's letter of April 5 for Collaborative research outside Mexico and for regional services outside Mexico.

Sincerely yours,

Robert D. Osler.
Deputy Director General
and Treasurer.

RDO:cc
cc: Mr. H. Hanson
Dr. K. W. Finlay
Mr. M. Domínguez

G2b.

April 22, 1974

Dear Mr. Coulter:

It was most pleasant to meet you on your recent visit to Washington, and I am glad that George Darnell was able to persuade you to undertake an assignment for us in reviewing the research and training program of CIMMYT.

While you and George already have discussed the assignment, the form here requires that we give you terms of reference. I have drafted some (you can see they allow you plenty of leeway!) and they are attached. I look forward to having your paper.

Sincerely,

Harold Graves
Executive Secretary

Attachment

Mr. John Coulter
11 Sellcroft Way
Harpenden
Herts.
England

cc: Mr. Darnell

HGraves:apm

April 22, 1974

TO: Mr. Coulter

FROM: Harold Graves

SUBJECT: Terms of Reference for CIMMYT Review

1. You are asked to prepare a commentary on the document entitled "CIMMYT 1975 Budget Request," and especially on the discussion of research and training in that document (pp. 1-10). The commentary is intended especially for officials in governments and organizations who are recommending or approving grants for international agricultural research, most of whom are not agricultural scientists or technicians. It also is intended, to a lesser degree, for the members of the Technical Advisory Committee (TAC) of the Consultative Group on International Agricultural Research (CG).

2. The paper should be between 750 and 3000 words long. You will, if requested by the Group's Executive Secretariat, prepare a second draft of your paper on the basis of comments made on the first draft. It may be circulated to members of the Consultative Group and of TAC in its original form, or it may be used as a basis for another paper, integrating your comments with those of a budget programming person from the Bank staff who already has visited CIMMYT.

3. The first draft of the paper should be in the hands of the Secretariat of the CG by May 6.

4. In general, the paper should contain any comment which you feel would be of assistance to persons considering action on possible grants to CIMMYT. Among other things, it might

(a) indicate any results of special interest which were achieved in the CIMMYT research and training programs in 1973 or early 1974 (for instance, in triticale research) or any setbacks experienced in these programs;

(b) identify and comment on any significant changes of emphasis or any new directions proposed for these programs in 1975 (for instance, the expansion of research work in barley) or foreseen for later years;

(c) indicate if any research results of special promise are expected in 1974 or 1975 and, if so, what;

(d) accepting the objectives and scientific content of the research and training programs as given, comment on the appropriateness of the allocation of staff and funds to the various programs, taking into account the relative importance of various crops and the return to be expected from the programs in terms of increased food production.

926.

April 15, 1974

Mr. Robert D. Osler
Deputy Director General
Resident Research
International Maize and Wheat
Improvement Center
Londres 40
Mexico 6, D.F.

Dear Bob:

I have been out with the flu most of the time since my return from Mexico; otherwise I would have responded sooner to your telephone call and letter of April 3rd.

The information you supplied is exactly the kind of material that we need in connection with fund-raising for the proposed Mid-East Center. Thanks very much for assembling it on short notice. Information on trainees and visitors would also be very helpful when you can provide it.

Please give my best regards to Hal Hansen, and my apologies to you and your colleagues for not being able to take a proper farewell on the last day.

Best wishes,

Sincerely,

Warren C. Baum

Warren C. Baum
Vice President, Projects Staff

WCBaum:rma

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

April 3, 1974.

Mr. Warren C. Baum
Vice President
Projects Staff
IBRD
1818 H Street N. W.
Washington, D. C. 20433
U. S. A.

Dear Mr. Baum:

In reply to your questions re CIMMYT support to North Africa and Middle East, I am mailing three kinds of information today, as I mentioned during my telephone conversation with your secretary on Wednesday, April 3. In view of the erratic mail service, I decided to call to give you a summary of the information contained in the tables. To reiterate, I gave the following information to your secretary.

I. First - A table listing CIMMYT staff man days of travel within individual countries during 1972 - 73.

1.1 Total Man days for the two years = 858
1.2 Involving 35 different International CIMMYT staff and 12 countries.
1.3 Of the 858 total - 63 days were in Iran by 11 different staff members.

- 5 days in Saudi Arabia by 1 man.

II. Second - A table listing International wheat and maize nurseries shipped to the region during the three year period 1971 - 73.

2.1 Total of 17 countries and 625 separate nurseries.
2.2 Of the 625 total - 49 were sent to Iran.
- 6 were sent to Saudi Arabia.

III. Third - A table listing CIMMYT staff man years posted in six countries of N. Africa and Middle East. This shows a total of 55.0 man years during the period 1968 -73.

... 2

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

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... 2

Mr. Warren C. Baum
Vice President
Projects Staff
IBRD
1818 H Street, N. W.
Washington, D. C. 20433
U. S. A.

April 3, 1974.

I had planned to send you a similar tabulation of trainees and visitors. However, a secretary out with the flu has delayed finalization of this information.

Please let me know what other information would be of value to you.

Sincerely yours,

R D Osler

Robert D. Osler.
Deputy Director General
Resident Research.

RDO:cc

Enclosures.

MAN YEARS OF CIMMYT SCIENTIFIC STAFF
STATIONED IN COUNTRIES OF NORTH
AFRICA & MIDDLE EAST SINCE 1968-73

	YEAR						
Country	1968	1969	1970	1971	1972	1973	Total
Algeria	-	-	-	1.0	3.3	4.0	8.3
Egypt	1.0	1.0	1.0	1.0	1.0	1.0	6.0
Lebanon	-	1.0	1.0	0.5	-	0.7	3.2
Morocco	0.3	1.4	3.0	3.0	3.0	1.2	11.9
Tunisia	0.9	4.0	4.0	4.0	5.0	3.5	21.4
Turkey	-	-	-	0.2	2.0	2.0	4.2
Totals	2.2	7.4	9.0	9.7	14.3	12.4	55.0

SUMMARY OF CIMMYT INTERNATIONAL NURSERY TRIALS SENT TO VARIOUS COUNTRIES OF NORTH AFRICA & THE MIDDLE EAST, 1971 - 73.

Country	Y E A R			Total
	1971	1972	1973	
Afghanistan	2	1	3	6
Algeria	9	24	40	73
Cyprus	3	2	13	18
Egypt	7	13	47	67
Iran	10	14	25	49
Iraq	4	11	7	22
Israel	7	10	11	28
Jordan	4	8	8	20
Lebanon	20	18	32	70
Libya	2	6	12	20
Morocco	16	6	27	49
Saudi Arabia	2	2	2	6
Syria	4	2	2	8
Tunisia	22	25	27	74
Turkey	26	36	39	101
Yemen (PDR)	-	-	3	3
Yemen (Arab Republic)	1	1	9	11
Totals	139	179	307	625

CIMMYT STAFF TRAV. ON OFFICIAL BUSINESS TO N. AFRICA AND AR AND MIDDLE EAST OUTSIDE POSTED COUNTRY IN 1972 AND 1973.

(Statistics in Man days)

Program Unit & Staff Member	Afghanistan '72	Afghanistan '73	Algeria '72	Algeria '73	Egypt '72	Egypt '73	Iran '72	Iran '73	Israel '72	Israel '73	Jordan '72	Jordan '73	Lebanon '72	Lebanon '73	Libya '72	Libya '73	Morocco '72	Morocco '73	Saudi Arabia '72	Saudi Arabia '73	Tunisia '72	Tunisia '73	Turkey '72	Turkey '73	Total '72	Total '73	Days '72 & '73
Maize																											
Dhawan	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-	13	-	13
Golds-worthy	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	7
Hart	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
Izuno	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	18	18
Johnson	-	-	-	-	10	11	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	11	25
Ortega	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	10
Palmer	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	6
Pandey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Splitter	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	6
Sprague	-	-	-	-	13	3	-	6	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	13	13	33	46
Villena	-	-	-	-	-	5	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	7	7
Violic	-	-	-	-	9	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	7	9	8	17
Sub-Totals	-	-	-	-	64	19	4	6	-	-	-	-	13	14	-	-	-	-	-	-	-	-	-	38	81	77	158
Wheat																											
Amaya	-	-	-	6	-	4	-	2	-	-	-	-	-	3	-	-	-	-	-	-	-	7	-	7	-	29	29
Anderson	4	3	9	4	6	3	7	11	-	2	-	-	13	5	-	-	4	5	-	-	6	8	13	4	62	45	107
Borlaug	-	-	3	3	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	3	3	-	7	14	13	27
Dodette	-	-	3	5	-	-	-	5	-	-	-	-	6	4	-	-	-	-	-	-	-	-	-	-	9	14	23
Fischer	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	8	-	8
Floyd	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	11	-	-	-	-	-	-	-	16	-	16
Fuentes	-	-	-	-	-	-	-	-	6	-	-	-	5	-	-	-	-	-	-	-	-	-	8	-	19	-	19
Kingma	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	5	-	-	-	-	-	10	10
Klatt	3	-	-	-	-	-	9	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	24	-	24
Lindt	-	-	-	-	-	-	-	11	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	7	-	20	20
Lyons	-	-	-	3	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5	3	8
McCuistion	-	-	-	-	-	-	-	-	-	-	-	-	4	3	-	-	7	-	-	-	28	11	-	6	39	20	59
Nelson	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	22	7	-	-	27	7	34
Plouin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	7	7
Prescott	-	-	-	8	-	-	-	4	4	-	-	-	8	2	-	-	-	-	-	-	7	4	-	-	19	18	37
Quiñones	-	-	-	5	-	-	-	-	-	-	-	-	-	4	-	-	-	4	-	-	-	10	-	8	-	31	31
Varughese	-	-	5	-	-	-	-	-	-	-	-	-	19	9	-	-	4	-	-	-	-	-	-	-	28	9	37
Wilhelmi	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	4	-	-	-	-	-	-	-	13	-	13
Zillinsky	-	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1	10	-	20	6	26
Sub - Totals	7	3	29	39	6	7	16	33	10	2	-	5	99	32	-	-	30	9	-	5	75	58	31	39	303	232	535
Other																											
Finlay	-	-	3	8	-	-	-	10	-	-	-	-	-	-	6	-	-	-	-	-	12	12	-	-	21	30	51
Hanson	-	-	-	8	-	4	-	1	-	-	-	-	-	3	-	-	-	-	-	-	-	4	-	4	-	24	24
Stewart	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	25	25
Winkelmann	-	-	-	-	-	-	-	13	-	-	-	-	5	-	-	-	-	2	-	-	10	15	4	16	19	46	65
Sub- Totals	-	-	3	36	-	4	-	24	-	-	-	-	5	3	6	-	-	2	-	-	22	31	4	25	40	125	165
GRAND TOTALS	7	3	32	75	70	30	20	63	10	2	-	5	117	49	6	-	30	11	-	5	97	89	35	102	424	434	858

G2b

Mr. Yudelman April 15, 1974

Harold Graves

CIMMYT Program and Budget Paper

Attached is the CIMMYT Budget Request for 1975. CIMMYT, you will remember, is one of the centers for which it is proposed to write a desk review rather than to have a field visit from Evans. George Darnell has suggested that a Mr. Coulter, a British (Rothamstead) scientist who recently visited CIMMYT, might undertake this task as a consultant.

In any case, I would hope that we could have a draft by May 6.

Attachment

cc: Mr. Darnell

HGraves:apm

Record Removal Notice

The World Bank Group Archives & Records Management

File Title	Barcode No.
Consultative Group on International Agricultural Research [CGIAR] - G-3 - International Maize and Wheat Improvement Center [CIMMYT] - 1972 / 1974 Correspondence - Volume 2	1760372

Document Date	Document Type	
April 2, 1974	Note with attachment	

Correspondents / Participants
Compliments of Virgilio Barco

Subject / Title
Notes on the world fertilization situation

Exception(s)

Additional Comments
Declassification review of this record may be initiated upon request.

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.

Withdrawn by	Date
Sherrine M. Thompson	April 12, 2021

G2b.

March 22, 1974

Dear Hal:

It is kind and flattering of you to invite me to your Board meeting, and Judy will love you for your bathing-suit appraisal. Alas, however, there are too many pans bubbling on the stove here and too many dirty dishes in the sink for me to be able to come down.

Thank you for your note about the larger dollar amount of the German contribution. We will adjust our requirement and availability figures accordingly.

Sincerely yours,

Harold Graves

Mr. Haldore Hanson
Director General
International Maize and Wheat
Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves:apm

G.2b.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

March 11, 1974

Mr. Warren C. Baum
Vice President
International Bank for Reconstruction
and Development
1818 H Street N. W.
Washington, D. C. 20433

Dear Warren:

This is just a note on the meeting of the directors of the international agricultural centers, who spent four days together at Cali, March 4-7, 1974. There were about 20 at the meeting, including some deputy directors and research heads.

Monty Yudelman did a useful service in tying together for us the world food crisis, oil crisis, and fertilizer crisis. He was supported by Donald McCune of TVA on the fertilizer shortage and prospects for relief in supplies during the latter half of the 1970s. The Presentation of these two men led to a half-day discussion on what shifts in research strategy are needed, both shortrun or long-run, to take account of the fertilizer outlook.

In another session Yudelman reviewed the steps the Bank Group is taking in its loan programs to reach the hardcore poverty group in developing countries, and this led to a discussion of several hours on the extent to which present programs of the centers are benefiting the lower 40% of income groups, and what more can be done.

The Bank made an important contribution to our meeting by sparing Yudelman for several days. At the end of our meetings, the directors commented that Yudelman and McCune were the most important discussants on the agenda.

I look forward to your visit to CIMMYT at the end of March.

Cordially,

Hal Hanson

Haldore Hanson
Director General

cc. Mr. Robert McNamara
President, IBRD.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

March 1, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

I have placed on the agenda of the CIMMYT Trustees, for their annual meeting, a discussion of the CG-TAC proposals for program and administrative reviews, both annual and periodic.

If you are able to attend the Trustees meeting on Monday, April 1, you would be most welcome, and your wife would look well gracing our swimming pool. I understand Mary Hardin will be here also.

If no one from CG attends our Trustees meeting, I shall ask Lowell Hardin to give his interpretation of the Bell Committee report, and the present status of decisions.

Cordially,

Hal

Haldore Hanson
Director General

HH/mph

Form No. 27
(3-70)

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

G26.

OUTGOING WIRE

TO: PRICE WATERHOUSE
MEXICO CITY

DATE: FEBRUARY 22, 1974

CLASS OF SERVICE: TELEX 01772579 WV

COUNTRY: MEXICO

TEXT:
Cable No.:

REFERENCE CIMMYT CALENDAR 1973 BUDGET INTERNATIONAL DEVELOPMENT ASSOCIATION CONTRIBUTED ONE MILLION FIVE HUNDRED THOUSAND DOLLARS TO CORE AND CAPITAL BUDGET WITH NO CONTRIBUTION TO SPECIAL PROGRAMS STOP MILLION CONTRIBUTED IN JANUARY 1973 AND REMAINDER IN SEPTEMBER

chee

CHEEK
CONSULTATIVE GROUP SECRETARIAT
INTBAFRAD

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME: Bruce M. Cheek

DEPT.: Agriculture & Rural Development

SIGNATURE: _____
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE:

CLEARANCES AND COPY DISTRIBUTION:

cc: Mr. Robert Jones, Controller's

BMC:mcj

For Use By Communications Section

ORIGINAL (File Copy)

(IMPORTANT: See Secretaries Guide for preparing form)

Checked for Dispatch: SC

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COMMUNICATIONS

OUTGOING WIRE

INCOMING CABLE Log. 216

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PMS WASHINGTON DC

XDA002

UMNX CO MEME 032

Distribution

Mr. Graves O/R.
Agriculture & Rural Dev.

MEXICOCITY 32/31 21 2100 **- February 21, 1974**

MR HAROLD GRAVES

INTERNATIONAL BANK FOR RECONSTRUCTION

AND DEVELOPMENT 1818 H STREET N W

WASHINGTONDC20433

PLEASE CONFIRM DIRECTLY TO OUR AUDITORS PRICE WATERHOUSE

MEXICO TELEX 01772579 A BREAKDOWN OF YOUR CONTRIBUTION TO

CIMMYT CORE AND OR SPECIAL PROGRAMS FOR THE YEAR ENDED DECEMBER

31 1973 STOP

OSLER CENCIMMYT

G2b.

February 19, 1974

Mr. Haldore Hansen
Director General
CIMMYT
Londres 40, Mexico 6, D.F.
Mexico

Dear Mr. Hansen,

Before he left for Europe on Friday, Mr. Yudelman asked me to write and thank you for your letter of January 7, and to let you know that he will be attending CIMMYT's "Presentation Week".

I regret that it was not possible to let you know before February 15 of Mr. Yudelman's intention to attend. He plans to arrive in Mexico on Sunday, March 24 and leave in the afternoon of Friday, March 29. As soon as his travel schedule is confirmed, we will cable you his arrival time and flight number.

Sincerely,

Lesley K. Tillier
Administrative Secretary
Agriculture & Rural Development

:lkt

February 5, 1974

Dear Hal:

I am much obliged to you for your invitation to attend Presentation Week at CIMMYT next March. As you know, it is not likely that I can attend. If we can arrange it, however, we are likely to have someone coming down who is better equipped than I to benefit from the discussions of the scientific content of your program. I will let you know about this as soon as I can.

When I got back to Washington last week, I mentioned to AID your interest in having Joel Bernstein attend Presentation Week. I was told that this thought had already been the subject of considerable discussions but that it had been decided, regretfully, that Joel could not be present because of other travel obligations.

Sincerely yours,

Harold Graves

Mr. Haldore Hanson
Director General
CIMMYT
Londres 20
Mexico 6, D. F.

HG:mcj

Ti CIMMYT

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

February 4, 1974

Mr. Harold Graves
Consultative Group on International
Agricultural Research
IBRD
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

Subject: CIMMYT's carryover of IBRD funds, 1973 to 1974.

For reasons not clear, we received in the last week of January a deposit slip from our New York bank dated November 2, 1973, representing a deposit by the German Government to our account. We had previously carried this deposit on our books at an exchange rate which prevailed earlier in 1973. Now we learn that the exchange rate was better and the credit to CIMMYT was higher.

So ---- our carryover from 1973 to 1974, attributable to the redundant payments of IBRD and the German Government -- was $165,725, not $103,775.

Unless I hear from you to the contrary, CIMMYT will treat this carryover, corrected in amount, as you instructed us. It will show on the books as a carryover, and will be absorbed in a 1974 core budget which is higher by that amount.

I wish all our tardy mail brought favorable news.

Cordially,

Haldore Hanson
Director General

Enclosure:
Corrected 1973 record of German Government payments to CIMMYT.

HH/mph

GERMAN DEPOSITS

1973

Notification	Date of Deposit	DM	U. S. $
Jan. 31, 1973	Feb. 5, 1973	400,000	134,800
May 4, 1973	May 31, 1973	250,000	90,375
Sept. 19, 1973	Oct. 10, 1973	150,000	61,950
Oct. 17, 1973	Nov. 2, 1973	400,000	163,600
	Totals	1,200,000	450,725

RDO:cc

file CIMMYT

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

January 31, 1974

Dr. Harold Graves
Consultative Group on International
Agricultural Research
1818 H. St. N. W.
Washington, D. C. 20433, U.S.A.

Dear Dr. Graves:

Our Director General, Mr. Hanson, has given us a copy of the mailing list of Consultative Members, which you sent him. We have already proceeded to include names and addresses to our permanent mailing list for them to receive CIMMYT publications. Some of these people are already here.

We are also sending them our recent publications.

Thank you for helping us to keep up to date our mailing list.

Yours sincerely,

for R. M. Gregorio

Gregorio Martínez Valdés
Head, Communications Department

GMV:rmg

92b

January 21, 1974

Dear Don:

Thank you for your note. The study you mention seems still to be in work. Would you make a note on your calendar to write me again about it in August? It should be available by then.

Sincerely,

Harold Graves

Mr. Don Winkelmann
International Maize and Wheat Improvement Center
Londres 40, Apdo. Postal 6-641
Mexico 6, D. F.

HGraves:apm

Original letter kept by Mr. Baum

G2b

January 16, 1974

Mr. Haldore Hanson
International Maize and
Wheat Improvement Center
Londres 40
Mexico 6, D.F.

Dear Hal:

Your letter of January 4th apparently crossed mine of January 9th. Thank you very much for the invitation to "Presentation Week". It sounds ideal from my point of view, and I shall be very pleased to attend. At the moment I would hope to participate for the whole week, arriving on Sunday, March 24th and leaving on Friday afternoon. If there are any subsequent changes in my plans I will let you know.

I note that CIMMYT will make all hotel and travel reservations within Mexico, and I will therefore arrange only for my travel to and from Mexico City.

Looking forward to seeing you,

Sincerely,

Warren C. Baum

Warren C. Baum
Vice President, Projects Staff

cc: Mr. Yudelman
Messrs. Graves/Cheek

WCBaum:lb

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

January 14, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street, N. W.
Washington, D. C. 20433

Dear Harold:

CIMMYT is organizing an unusual briefing on its program for a small, invited list of visitors, March 25-29, 1974. Those invited include:

(1) Representatives of CIMMYT's 11 donors.
(2) CIMMYT Trustees.
(3) Consultative Group Secretariat.
(4) FAO Regional Office, Western Hemisphere.
(5) TAC members and Secretariat.

By this letter, CIMMYT invites you to attend this "Presentation Week". For donors, we invite any staff member designated by his organization.

In advance of your replies, we are anticipating a group of participants ranging 10-15.

For those who indicate they can come, CIMMYT will make hotel reservations in Mexico, arrange air travel within Mexico, and provide airport vehicle service.

As you will see on the enclosed schedule, Dr. Borlaug and his wheat staff are prepared to receive you at Obregón, Sonora state, on the Pacific coast, for a 24-hour visit; Dr. Sprague and his maize staff will receive the party at Poza Rica, the tropical lowland station in Veracruz state on the Atlantic coast; and our headquarters staff at El Batán, 45 kilometers from Mexico City, elevation 7300 feet, will brief you on their work on the high plateau.

You may attend part of the program and omit part.

We need to know by February 15 whether you are coming, in order to be sure of air transport and hotel space. If you let us know after February 15, we will try to arrange it, but we cannot be sure of accommodations within Mexico, especially the air schedule to Obregón.

So, we would like to hear from you. Your answer should include:

(1) Can you come?

(2) For donor agencies, will someone (name) from your organization come?

(3) Do you plan to stay for the entire program? If not, can you estimate the elements you plan to join?

After your flight schedule to Mexico has been determined, we need your arrival flight, in order to meet you at Mexico City airport.

Hope you can join us.

Sincerely yours,

Hal

Haldore Hanson
Director General

Enclosures:
Program.
Invitation List.

I hope someone from the Secretariat can attend, perhaps as part of the review. H

Program
CIMMYT Presentation Week
March 25-29, 1974

Sunday March 24	Participants arrive Mexico City by own flight arrangement. All can be accommodated at CIMMYT housing facilities in El Batan, night of March 24.
Monday March 25	Leave El Batan at 8 A. M. by bus for Poza Rica maize research station. Arrive Poza Rica at noon. Wear field clothes. Temperature will be in upper 80s. Lunch at Hotel Santander. All participants hold reservations at the hotel. Dr. E. W. Sprague and his staff are in charge of all arrangements for the next 24 hours.
Tuesday March 26	Bus leaves for Mexico City after lunch, and all participants hold reservations for this night at Airport Hotel, Mexico City. Dinner at the hotel.
Wednesday March 27	Leave the hotel by bus for the airport at 06:45, and take Aeroméxico flight 103 to Obregon (07:30-09:00). CIMMYT bus will meet plane in Obregon and take participants to Motel, where all hold reservations. Dr. N. E. Borlaug and his staff are in charge of program at Obregon, lasting through lunch next day.
Thursday March 28	Leave Motel for airport, 2:00 P. M. Fly Obregon-Mexico City 03:00-06:45 P. M. By CIMMYT bus to hotels in Mexico City, or to CIMMYT housing facilities at El Batan.
Friday March 29	CIMMYT vehicles will transport participants who are staying in Mexico City hotels, 08:00-09:00. Morning tour of CIMMYT El Batan Headquarters facilities, and final briefing session in the CIMMYT Board Room. Lunch at CIMMYT Guest House.
Sat.-Sun. March 30-31	Those wishing to stay for the Board of Trustees meeting on Monday April 1, can consult the CIMMYT Visitors' Service for suggestions on sightseeing in and near Mexico City, or visit to CIMMYT research station at Tlaltizapan, a one-day trip.

CIMMYT "Presentation Week", March 25-29, 1974.
Invitation List

(1) CIMMYT donors:

Canadian International Development Agency (CIDA)
Ian B. Robertson, or designee.

Danish International Development Agency
Bjorn Olsen, or designee.

Ford Foundation
Lowell S. Hardin, or designee.

Germany
Werner Treitz, or designee.

IBRD group
Warren Baum, or designee.

Inter-American Development Bank
Alfred C. Wolf, or designee.

International Development Research Center, Ottawa
David Hopper, or designee.

Rockefeller Foundation
John A. Pino, or designee.

UN Development Program
I.G. Patel, or designee

U.S. Agency for International Development
Joel Bernstein, or designee.

U.K. Government
W.A.C. Mathieson, or designee.

(2) CIMMYT Trustees

(3) Consultative Group Secretariat

(4) FAO Regional Office, Western Hemisphere
Armando Samper.

(5) TAC members and Secretariat.

Re CIMMYT

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

January 11, 1974

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

Subject: CIMMYT's 1974 needs, and donor pledges.

Following our telephone conversation of January 4, between Washington and New York, I gave the CIMMYT Trustees Executive Committee the enclosed table, which combines our 1974 core budget requirements (from Centers Week budget document, page 17, Table 3, column for 1974) and your information on pledges.

Since we discussed only pledges, and not your calculations on CIMMYT's total budget, I have left blank some line items in the right hand column of the attached table.

When you come to CIMMYT in January we should have no difficulty in arriving at a statement which reflects both your and our figures. Meanwhile, would you check your figures and come prepared to discuss the following:

(1) You said on the telephone you were prepared to ensure sufficient pledges to meet CIMMYT's requirements of $4,505,000. We don't have any figure precisely the same as that. Perhaps you have rounded some figures, and that explains a small difference. Can you clarify your number?

(2) Jose Soto Angli is here from BID now, discussing the $750,000 grant toward CIMMYT core budget. There appears to be no problem.

(3) You said on the telephone that IBRD group has now made a first pledge to CIMMYT of $200,000. I assume that includes the $103,000 carryover of IBRD funds from 1973. Is that correct?

(4) Your information on unrestricted core pledges shows a total of $4,150,000, compared to our request for $4,151,000 and therefore this part of the table balances.

(5) For "restricted core" pledges, you show $1,305,000 and we show $1,385,000. You can locate the differences in my enclosed table, under line 1b (5).

CIMMYT does not worry about these differences in restricted core, and will use your figures. Our budget for restricted core was made up in the spring of 1973, derived from the agreement for each project. The donor pledges to CG were made about six months later. There was no consultation in either case (by CIMMYT or the donor).

Our work plan for each restricted core project will be determined in 1974 between CIMMYT and the donor, and in any case, will be no larger than the funds available.

We shall try, when submitting our budget for 1975, to have an agreement between CIMMYT and donor on each restricted core project, so that the amount we estimate for budget is the same amount to be pledged. However, the six months gap between budget and pledge may still result in some differences.

If, during your visit to CIMMYT, we can reconstruct the entire table which I enclose, and arrive at identical records, that will be helpful.

Cordially,

Hanson

Haldore Hanson
Director General

Enclosure. Table

TABLE

CIMMYT's 1974 core budget, and pledges to January 4, 1974

(Note: This table follows the format of Table 3 included in CIMMYT's 1974 budget presentation at Centers Week, August 1973; and the last column at right has been added to reflect information from the Consultative Group Secretariat through January 4, 1974).

	Figures from CIMMYT 1974 budget at Centers Week July 1973	CIMMYT pledges and needs reported by CG Secretariat to January 4, 1974
	US$	US$
1. Core operations and capital		
a) Unrestricted:		
1) Rockefeller Foundation		750,000
2) Ford Foundation		750,000
3) USAID		1,350,000 2/
4) IBRD group		200,000 4/
5) Denmark		150,000
6) Germany		200,000 1/
7) BID		750,000 3/
8) Sub-Total, donors	4,151,000 5/	4,150,000 5/
9) Earned income	367,000	
10) Total unrestricted	4,518,000	
b) Restricted:		
a. 1) Rockefeller Foundation	0	0
2) UNDP (O_2maize)	772,000	700,000
3) IDRC sorghum	34,000 6/	50,000
3) CIDA triticale	546,000 6/	545,000
UK	0	10,000 7/
4) Miscellaneous	33,000 8/	0
5) Sub-Total, donors	1,385,000	1,305,000
6) Unexpended balance from previous year	250,000 9/	-
7) Total, restricted	1,385,000	-
c) Gross core operations and capital funds required (line 1a (10) plus line 1b (7))	5,903,000	
Less earned income	(367,000)	
Net core operating and capital funds required from CG	5,536,000	

Footnotes to Table

1/ German pledge to date is $200,000 (in DM). Harold Graves hopes to obtain a larger German pledge, and if received, this will reduce the amount shown from other sources, presumably from the IBRD group.

2/ USAID pledge does not match CIMMYT's earned income. However, there is no advantage to the CG for CIMMYT to press for more USAID funds, because USAID is already up to its ceiling of $7.0 millions for 1974.

3/ BID $750,000 is proposed in a BID document which awaits approval of the BID board in January, and negotiation thereafter with CIMMYT. If BID fails to make this contribution, Graves believes that the IBRD Group will pick up this amount as an additional IBRD pledge.

4/ IBRD is making a firm pledge of $200,000 at this time, as the residual donor, to balance CIMMYT's budget, on assumption that BID will contribute $750,000.

5/ CIMMYT's need for core unrestricted funds was shown at $4,151,000 in the 1974 budget, and current pledges are estimated by CG Secretariat at $4,150,000. Hence this item balances.

6/ CIMMYT budget at Centers Week showed restricted grants from CIDA-IDRC of $580,000. This total consisted of two items, CIDA at $546,000 (triticale) and IDRC at $34,000 (sorghum).

7/ The UK pledge of $10,000 was for a postdoctoral fellowship negotiated in October 1973, after the 1974 budget had been submitted. Therefore, this amount does not show in CIMMYT's restricted budget, but does show in the CG Secretariat figures.

8/ CIMMYT budgeted "Miscellaneous" $33,000 in its restricted core budget. This was an estimate of miscellaneous grants, mostly fellowships, that have been received each year in the past.

9/ CIMMYT estimated its unexpended balances for December 31, 1973 from core restricted projects to be $250,000. This means that donors paid to CIMMYT before December 31, 1973 approximately $250,000 more than was spent by that date. Conversely, it means that donors may pay to CIMMYT during 1974 about $250,000 less in new funds than they have pledged for 1974. Therefore the pledges for 1974 core restricted projects (line 1b (5)) and total restricted funds (line 1b (7)) are both shown here at $1,385,000.

G 26

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

January 8, 1974.

Mr. Harold Graves,
Executive Secretary,
Consultative Group on
International Agricultural Research,
1818 H. Street, N.W.
Washington, D. C. 20433.

Dear Harold,

The Zambia maize paper just arrived. Thanks for thinking of me.

Now, in a not-altogether-straightforward manifestation of the adage that one good turn deserves another, would you please send me what's been written up on RPO 289, described on page 28 of the August 73 version of the Bank's Abstract of Current Studies ?

Best regards.

Sincerely yours,

Don Winkelmann,
Economist.

DLW/agj.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

G2b Consideration for Trip

COPY

January 7, 1974

leave on 24
Sunday
return on
Friday
Jan. 29

Dr. Montague Yudelman
IBRD
1818 H Street N. W.
Washington, D. C. 20433

Dear Dr. Yudelman:

CIMMYT is organizing an unusual briefing on its program for a small, invited list of visitors, March 25-29, 1974. Those invited include:

(1) Representatives of CIMMYT's 11 donors.
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In advance of your replies, we are anticipating a group of participants ranging 10-15.

For those who indicate they can come, CIMMYT will make hotel reservations in Mexico, arrange air travel within Mexico, and provide airport vehicle service.

As you will see on the enclosed schedule, Dr. Borlaug and his wheat staff are prepared to receive you at Obregón, Sonora state, on the Pacific coast, for a 24-hour visit; Dr. Sprague and his maize staff will receive the party at Poza Rica, the tropical lowland station in Veracruz state on the Atlantic coast; and our headquarters staff at El Batán, 45 kilometers from Mexico City, elevation 7300 feet, will brief you on their work on the high plateau.

You may attend part of the program and omit part.

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After your flight schedule to Mexico has been determined, we need your arrival flight, in order to meet you at Mexico City airport.

Hope you can join us.

Sincerely yours,

Haldore Hanson
Director General

Enclosures:
Program.
Invitation List.

CIMMYT "Presentation Week", March 25-29, 1974.
Invitation List

(1) CIMMYT donors:

Canadian International Development Agency (CIDA)
Ian B. Robertson, or designee.

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Bjorn Olsen, or designee.

Ford Foundation
Lowell S. Hardin, or designee.

Germany
Werner Treitz, or designee.

IBRD group
Warren Baum, or designee.

Inter-American Development Bank
Alfred C. Wolf, or designee.

International Development Research Center, Ottawa
David Hopper, or designee.

Rockefeller Foundation
John A. Pino, or designee.

UN Development Program
I.G. Patel, or designee

U.S. Agency for International Development
Joel Bernstein, or designee.

U.K. Government
W.A.C. Mathieson, or designee.

(2) CIMMYT Trustees

(3) Consultative Group Secretariat

(4) FAO Regional Office, Western Hemisphere
Armando Samper.

(5) TAC members and Secretariat.

end of 1973

G3

PROGRESS REVIEW OF

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER (CIMMYT)

Table of Contents

PROGRESS REVIEW OF

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER (CIMMYT)

I. ORIGIN AND PURPOSES

1.01 CIMMYT had its origins in a cooperative venture of the Ministry of Agriculture of Mexico and The Rockefeller Foundation which began in the mid 1940s as a national program for Mexico. In 1963, it became the International Maize and Wheat Improvement Center, still as a joint Mexico-Rockefeller undertaking. In 1966 it was incorporated in its present form as the Centro Internacional de Mejoramiento de Maiz y Trigo as a civil partnership subject to Mexican law, with support from several donors.

1.02 The purposes of CIMMYT, as then stated, are, among others:

a) To promote and carry out, nationally and internationally, programs to improve in all its aspects maize and wheat production and, if advisable, the production of sorghum, rice, and other food crops, in order to obtain greater unit yields and better production and quality of these crops.

b) To carry out basic and applied research activities in order to achieve the purpose mentioned in the preceding point.

c) To prepare and distribute superior genetic material which will permit the achievement of higher yield standards and better quality of crops.

d) To carry out, locally and internationally, training programs for the preparation of scientists and technicians with the necessary experience in research and in the application of results, relevant to the activities of the Center.

e) To promote and participate in the conduct, locally and internationally, of all kinds of scientific and technical meetings and, of any activity directed to obtaining close cooperation among scientists engaged in programs for the improvement of cereal production ... in any part of the world.

f) To publish and distribute the results obtained from research programs and carry out what may be necessary to promote the immediate and efficient application of these results to the improvement of the quantity and quality of maize, wheat and other important food crops on a local and international level.

1.03 At present, CIMMYT carries on a vigorous and highly successful program, which is not only involved with spring wheats and durum wheats but also with Triticale, a species made by combining wheat and rye, and with barley in a modest way, and conducts a very promising maize program, whose results apparently are ready for widespread application. As part of the maize program, a small sorghum-breeding operation aimed at high altitude adaptation is being maintained, with the expectation that ICRISAT, the center in India having world responsibility for sorghum, will assume over-all responsibility for its future direction.

1.04 The materials produced by CIMMYT are progeny lines for breeding programs which are distributed to cooperating breeders in interested countries, and may be used by them either directly where they fit well, or further selected to produce national varieties with more specific local adaptation, or used in national breeding programs with local materials to produce new varieties having locally needed characteristics.

1.05 CIMMYT's training activities are well established, and its outreach activities are extensive. The Center has an authorized staff of 422 for 1973, which includes 39 senior scientific staff in Mexico on core programs, about 22 professionals serving outside Mexico on outreach programs, and about another 50 qualified scientists serving the breeding programs in various positions.

II. THE WHEAT PROGRAM, TRITICALE AND BARLEY

A. Wheat

2.01 Dr. Borlaug, the director of the wheat program, and his team have gone a long way beyond their initial successes which first transformed Mexico from a wheat deficit to a wheat exporting country, and then, with the same lines, helped work the changes in India and Pakistan which have been named the "Green Revolution." Part of the basis for the CIMMYT wheats were the parent Norin wheats from Japan; they provided dwarfing genes to give strong-strawed, fertilizer-responsive varieties resistant to lodging (falling over). Another part was the wheat team's discovery that by selecting those segregating lines (the offspring of crosses) which were resistant to the various disease and environmental challenges at a number of nursery sites, the team could in fact select for a wide combination of desirable characteristics, including a broader spectrum of disease resistance and day-length insensitivity.

2.02 It was this wide adaptation that made the wheats bred from cross 8156 in Mexico suitable for the conditions of Pakistan and India and resistant to the diseases in those countries. The lessons learned, of using the widest possible range of parental materials as inputs into the gene pool, providing they have characteristics needed, and of selecting only after testing under the widest variety of environments has provided the key to CIMMYT success.

2.03 Wheats with CIMMYT breeding have demonstrated their superiority under both irrigated and dryland conditions, which is often not realized. The CIMMYT wheats have been most spectacular under irrigation, as would be expected, since with sufficient water they can more nearly approach their higher production potential. Nevertheless, since of the 32 countries involved in the 120 nursery trials, 24 are without irrigation and more than 3/4 of all the nurseries are dry-land nurseries, selection pressure for high production without irrigation is intense. The same cross 8156 varieties which perform so well under irrigation in India and Pakistan also are among the highest yielding varieties under dry-land conditions in all the countries in the testing program.

2.04 The Spring Bread Wheats. The first semi-dwarf CIMMYT wheats were distributed in 1962; they immediately increased experiment-station yields from 4 to 8 tons per hectare under scientific management. That represented a new yield plateau which has not been improved on since 1962.

2.05 The early wheats, while they had a wide range of resistance to rusts, bunt, loose smut and mildew, were challenged by new pathogens in the new environments and by continually evolving new races of rust. The CIMMYT program has concentrated on yield stability -- that is, preventing losses by building in new sources of resistance from resistant parents from areas where the diseases are endemic. By continuing to maintain and broaden the wide spectrum of "horizontal" (multi-gene) resistance as well as "vertical" (single-gene) resistance, the aim is to make the breeding materials resistant (or less susceptible) to local disease epidemics, and, by selecting for "horizontal" (or physiological) resistance, to make the wheats less likely to succumb to new races of evolving pathogens.

2.06 Wheats with CIMMYT breeding are essentially resistant to the usual stem and leaf rusts which were previously so disastrous. While new sources of rust resistance are continually being introduced into the spring wheat gene pool, major attention is being given to other diseases which occur in the countries of the nursery network, and in particular Septoria leaf spot, mildew and scab, each of which can be devastating under appropriate environments.

2.07 In 1972, CIMMYT screened 12,000 lines of the world collection for new sources of resistance to incorporate into the gene pool. Resistant lines are used as parents in the 4 to 5,000 crosses made each year. These give rise to a large number of segregating lines which after the fifth generation, are reduced to the best 300 lines. From these, 75 sets are distributed to various national programs for testing in nursery trials against locally adapted varieties, and for selection on the basis of performance.

2.08 At this stage, the national programs pick up superior lines to distribute as their varieties or to use in further selection programs or breeding work. At the same time, CIMMYT not only selects

those that perform well over the range of nurseries, but also receives back for use as parents the local varieties which had resistance against local diseases or insects attacking the nursery.

2.09 The best of the segregating lines from the nursery trials and the new breeding materials of unusual promise are therefore continually broadening the gene pool of the "crossing block" -- the progenitors of the next year's single, double, three-way and back crosses. There is, of course, rigorous selection at CIMMYT's three wheat nurseries in Mexico in the early generations. Not only are plants discarded if they become infected after deliberate inoculation (1.5 to 2 million plants individually inoculated!) but also if they lack vigor and superior agronomic characters. At the end of the third generation and again after the fourth, rigorous selection is applied in addition for gluten strength, seed type and size, and baking quality. It is the materials surviving these challenges that are selected after the fourth, fifth and sixth generations for increase to give enough material for yield tests. These tests are carried out in the International Spring Wheat Yield Nurseries (ISWYN) at more than 100 locations through the wheat-growing world.

2.10 The wide network of national wheat breeders in the cooperating countries concentrate their own best lines and the best of the local varieties, so that the ISWYN is at the same time a trial to test new materials against old standards and also a means of identifying materials for local varieties or new lines which have valuable resistance to local races of diseases and pests. It is by means of this constant search, hybridization, testing and incorporation of new genetic material that lines are produced as the basis of varieties designed to stay ahead in competition with new races of wheat diseases.

2.11 The breeding program, the selection of only the best of each generation, the challenge by deliberate inoculation, by different environments in Mexico in early generations, and by a wide range of environments in the international nurseries is common to the spring wheat, durum wheat and the triticale program.

2.12 The present objectives of the spring wheat program and the means of attack are as follows:

2.13 Stability of yield. The objective is to incorporate into the wheat plant characteristics which make it resistant to epidemics of diseases and insect pests, and which would, it is hoped, make the crop more drought-tolerant under dryland conditions.

2.14 With the continual input into the gene pool of additional sources of resistance, the breeding program is apparently staying ahead of that major scourge, rust. Diseases of urgent concern at present are Septoria leaf spot, which is devastating in some countries, mildew and scab. Sources of resistance have been identified and incorporated into the breeding program with resistant lines now appearing in the pipeline.

2.15 Drought resistance, to give greater yield stability under conditions of dryland maintenance stress, is being tackled through crossing spring with winter types, since winter wheats have a deeper root crown, and could transfer a more vigorous root system. In addition, the winter wheats, which historically had much utilization in the improvement of spring wheats, could contribute cold tolerance, new genes for disease and insect resistance and a new range of maturity dates to the spring wheat types arising from crosses. Similarly, the winter wheat types could gain genes for dwarfing, nitrogen response and disease resistance from the spring wheat parents.

2.16 The winter-spring wheat-crossing program has been carried on by CIMMYT not only in Mexico but with the cooperation of two U.S. universities and of the Turkish national wheat program. Preliminary observations in Turkey and Lebanon indicate that some segregates from these crosses have greatly increased drought resistance, remaining green when other varieties were killed. It is expected that these materials could be of the greatest immediate value to Turkey, Iran, Afghanistan, Algeria, Argentina and Chile, as appropriate lines appear from the breeding program.

2.17 Improved Nutritional Quality. While the initial CIMMYT wheats were produced with a primary concern for high yield with acceptable quality, a major selection criterion at present is for improved bread-making ability (gluten quality). In addition, a serious search is being made by collaborating scientists at the University of Nebraska for genetically controlled variations in lysine in wheat; and variations do exist, but not as dramatic variations as with the Opaque 2 gene in maize. A long-term breeding program has been undertaken to incorporate genes for both higher protein levels and higher lysine levels, but it will be a lengthy process, since poor plant types are associated with higher levels. Whether these can in fact be incorporated into desirable wheat varieties remains to be seen.

2.18 Greater Yields. Physiological studies by CIMMYT are designed to find out what aspects of the wheat plant control its yielding potential and how these should be modified. While only in the second year, the studies already have established that the shorter plants not only give a higher yield because they can hold up a more heavily fertilized crop without lodging, but also that they give a higher yield when lodging is prevented, since there is in the short varieties a higher ratio of grain to total dry matter. Work has just begun on effects of shading, thinning, crowding and carbon-dioxide fertilization, as part of a program to identify yield-limiting processes, and to suggest desirable points of attack. Since still shorter plants are not a desirable modification, and straw strength in CIMMYT wheats is at least adequate, additional increments to yielding ability can only be identified by such studies.

2.19 Durum Wheats. The CIMMYT durum wheat program began in 1968, in an attempt to do for those countries raising durum wheat for pasta and cous-cous what had been done for the bread wheats. This is of prime importance to India, the countries of North Africa and the countries of the Middle East, as well as to other producers, including Argentina, U.S.A., Canada and the USSR.

2.20 The program has gone through 10 cropping cycles, and has produced lines incorporating the dwarf characteristic with good yield potential, better response to nitrogen fertilizers, and high resistance to lodging. Sources of disease resistance for the rusts, Septoria, mildew and scab are being incorporated, but no single line as yet has resistance to all these diseases. The new materials are being used because of their demonstrated superiority in yield trials: Tunisia released a new CIMMYT-based variety in 1972, and Algeria imported 15,000 tons of seed of a Mexican variety, Jori 69, which was based on CIMMYT materials.

2.21 The best experimental durum variety CIMMYT has produced thus far, Cocorit C 71, has yielded almost as well as the highest yielding bread wheats in widespread research trials, but it needs further improvement with regard to grain type and industrial quality before it is fully acceptable in the durum market. The new capacity of the ICMMYT milling and baking laboratory made it possible in 1972 to evaluate grain, milling, macaroni and cooking qualities of the durum wheats, and these criteria are now being applied for selection in the segregating progeny lines after the third and subsequent generations.

2.22 Progress in the five years of the durum program has been very rapid -- equivalent to that in the best five years of the much older spring wheat program -- and CIMMYT expects the release of fully acceptable high-yielding strong-strawed dwarf durums with a wide spectrum of disease resistance and good industrial quality, in the next few years.

B. Triticale

2.23 Triticale is the first man-made new food plant. It is the result of a crossing program between two different species, Triticum (wheat) and Secale (rye). CIMMYT's work began with a cooperative project with the program already under way at the University of Manitoba in Canada in 1965. The early material, while it appeared to be promising, presented a number of serious problems, including low fertility, tall weak straw, shriveled grain, low grian yield, and a narrow adaptation.

2.24 Rapid progress has been achieved: High fertility (number of seeds in the head) was solved by a fortunate accidental outcross to a Mexican bread wheat in 1968, providing a fertility factor used in all the highly fertile Triticale breeding lines, called for convenience Armadillo. Dwarfing was introduced first from the dwarfing gene of bread wheat, later from dwarf-type durums, and most recently from a dwarf rye found at the University of Georgia. As a result, some lines now will permit the use of 120 kg/ha of nitrogen without lodging, and yield in the range of 6-7 tons per hectare, approaching that of the highest-yielding wheat. Good plant type, considerable disease resistance and desirable agronomic characters which were identified in the Armadillo lines have been transferred to the various lines of the new species. The shriveled grain character has been less rapid in its response, but constant and heavy selection for plumper

seeds has produced materials which suggest that a few more cycles of selection will give acceptable grain quality.

2.25 Triticale is already being grown commercially in Canada for a distillery, in the United States as a fall and winter forage crop, and in eastern Europe for human food. There is significant interest in the crop in Ethiopia, Algeria, India, Spain and Pakistan. The most recent trials indicate that Triticale outyields the best bread wheats in Ethiopia. It appears that Triticale has cold and drought tolerance which may indicate a major place for it beyond the present borders of wheat cultivation. As far as quality is concerned, preliminary indications are that some lines may have higher protein and higher lysine than wheat. As to industrial use, acceptable bread and chappattis can be made from Triticale.

2.26 It would appear that success with Triticale is imminent, and that a new crop will be available to find its niche in the agricultural ecology and in the industrial world, as a feedgrain and as human food.

C. Barley

2.27 The Consultative Group agreed in 1972 that on an interim basis CIMMYT would carry on a small maintenance program with barley on a first-year budget of $40,000, in view of the importance of barley as a cereal for human consumption in areas where wheat does not do well because of low rainfall, high elevations, cooler temperatures and short growing seasons.

2.28 CIMMYT has a germ plasm collection of 4,000 lines which is being screened for desirable characteristics, and has identified sources of material for stiff straw, disease resistance, higher protein, higher lysine and naked kernels (for human food). Swedish material (Hyproly) is a source of high protein and high lysine for combination into desirable agronomic types. Four lines tested in 1972 had more than 20 per cent protein (as compared to approximately 15 per cent for wheat).

2.29 The wheat staff, who carry the barley program as part of their program, estimate that after 100 breeding cycles (5 years) CIMMYT should be able to demonstrate approximately the same level of improvement in barley as is being obtained with durum wheat, for instance. This development would have important implications for many difficult areas of Asia, Africa and South America.

D. Wheat Outreach

2.30 While the CIMMYT wheat program has been very successful in arranging a supporting network of wheat scientists throughout the world, this success poses logistical problems. CIMMYT sends out over 500 nursery trials for spring wheats, durum wheats and triticales to more than 60 countries, with observations by the collaborating scientists coming back co CIMMYT to be summarized in 5 annual publications. The returning flow of data does not always give enough information on weather and rainfall,

and on fertilizer usage; and inadequate ezperiment-station management contributes to large experimental errors. CIMMYT is working out ways of arranging regional reviews, as in the Mideast, and for specifications of the climatological data needed, which may require additional instrumentation. In addition, CIMMYT is making the head of its research stations available for a series of visits to cooperating research stations in Asia and Africa to advise on solutions to station management problems.

2.31 The original outreach programs for the wheat program were the very successful campaigns in India and Pakista, which have evolved to the point where these national wheat improvement programs are independent entities, cooperating with CIMMYT in nursery trials. They continue to extract new CIMMYT lines for national breeding programs when locally valuable materials appear, but otherwise they are not dependent in any technical way on CIMMYT. Such outreach programs represent the successful evolution from introduction through partnership and training to self-reliant, competent national organization.

2.32 At present, major outreach country programs involving CIMMYT staff are under way in Algeria, Morocco, Tunisia and Turkey, financed on a special-project basis by interested donors. Further expansion is foreseen to include programs in the Mediterranean region, eastern Europe, East Africa, southeast Asia, the Andean countries and five countries of other regions.

2.33 As part of the outreach program in Tunisia, the wheat staff there have involved themselves in exploratory work to assist Tunisia in finding a winter legume to rotate with spring wheat as a substitute for the present weedy fallow. The discovery of adapted (or adaptable) legumes, and the development of improved wheat farming systems for North Africa, is most important. This represents, however, a new aspect of CIMMYT's outreach which has not been a part of the traditional program. As an additional phase of CIMMYT's work, at a time when there is a shortage of staff for the growing number of wheat improvement programs, this new "systems" phase is being treated as a pilot project requiring serious consideration before it is accepted as a normal CIMMYT activity.

2.34 As part of outreach, training has represented a major activity. More than 200 young wheat research scientists and production agronomists from 36 countries have received in-service training at CIMMYT. At present, the normal number of trainees at CIMMYT has been pushed up to 30, with a maximum of 45 at one time, and considered judgment indicates this is too high, with the quality of training and the sense of involvement of the trainees suffering as a result. It is proposed to cut back somewhat on the number of trainees at CIMMYT, to involve them more directly with the particular section of concern to the individual trainees, and to meet the demand for additional spaces (over 80 in 1973) by developing some regional training facilities. However, the problem is still serious in 1973, with a total of 40, still considered too high, being accepted for the year. It is obvious that the scientific attitudes and the philosophy of team research absorbed by trainees during their 6-9 months at CIMMYT is a new and most valuable addition to their training and most important for their national programs.

2.35 The training and outreach programs of the wheat staff are straining their resources both with regard to headquarters personnel and to the availability of competent staff to operate in national outreach programs. Some problems arise also with respect to time and expenses of headquarters staff in the preliminary stages of outreach programs not yet ready for launching or for special program financing -- yet this is an essential step in ensuring that the wheat program at CIMMYT is in fact used where it will do the most good.

III. MAIZE (AND SORGHUM)

A. The Research Program

3.01 Maize is a staple food in both tropical and temperate parts of Asia, Africa and the Americas, and is particularly important for the millions of subsistence farmers for whom it is the main item of diet. The present maize program is the result of a beginning made in 1968. It produces improved maize "populations" composed of different varieties which can either be used as such by national programs, or from which more specifically adapted varieties can be selected, or which can be used as a basis for the production of hybrids. CIMMYT abandoned the hybrid approach after it became obvious that subsistence farmers would not willingly adopt a maize program that involved them in the expense of buying new seed each year.

3.02 In the execution of the breeding program, the maize staff has developed exceedingly efficient, highly coordinated systems of breeding, testing and screening, associated with production management, stage by stage, reducing the time for production of experimental varieties to 3-4 years, rather than the 10 or more years under traditional breeding systems. The essence of the hurry-up program is that all materials judged as being potentially useful are planted at the beginning of each season, so that they may be used as parents if the data from the previous growing season confirms their value -- if not, when this data is available they are discarded. As a result, breeding, testing and screening are carried out simultaneously rather than sequentially in different growing seasons, and the efficiency in terms of time is approximately tripled -- a very important consideration in a hungry world.

3.03 The maize program has four main objectives, as follows:

3.04 Shorter maize is necessary since tropical maize is tall (e.g. 3.5 meters), very leafy, and very susceptible to lodging as it matures because the heavy ear is high on the stalk (2.5 meters). A shorter plant has important virtues: It resists lodging, and therefore can be pushed to higher yields by increasing nitrogen applications; less of the dry matter production is required for stalk and leaves and a higher proportion goes into grain; the planting density can be increased from 50,000 to 100,000 plants per hectare, which means in turn better competition by the maize with weeds; and all of this means more harvested grain (plus 40 per cent) per unit area.

3.05 Three different breeding and selection methods are used, including the use of brachytic (dwarf-branched) material for crossing, and all three have succeeded in reducing the plant height by a meter and ear-height by the same amount -- in effect, cutting a meter from the bottom of the plant. Short maize population with the kernal types, white and yellow, flint, dent and floury that are preferred in different parts of the world have been developed and distributed in 1972, incorporating differences in maturity dates (95 days, 105 days and 115 days) so that national programs will be able to use these materials for varieties suited to their requirements.

3.06 Maize with wide adaptation is highly desirable for countries with wide ranges in climate. Maize, in the many centuries it has been domesticated, has been selected by farmers so as best to meet their particular environment. Adaptation therefore has been very narrow, with little or no transferability across latitudes (which determine day length) or between low and high altitudes or wet and dry climates. The maize team's effort is to deliberately build in the widest kind of adaptability, particularly day-length insensitivity. After beginning in 1970, materials are being moved into national programs in 1973 which can be grown from the equator to 50° North and South, with a range of maturity dates.

3.07 Adaptability has been achieved by three main attacks. (1) Lowland and highland types have been crossed; the offspring have been grown alternatively at lowland and highland stations and selected for suitability to both. (2) A population has been mixed from 250 varieties from the tropics and the high latitudes (e.g., Canada) representing all climates in the Americas, using 132 crosses and crosses between crosses; after several generations of mixing, the collection has been grown at a number of sites (10 in 1972) around the world, for observation, so that the surviving seed can be fed back into the mixture at CIMMYT.

3.08 These techniques have been in use for five years or more, and are producing very promising results, with some cooperators in the testing program already removing material for use in their own programs. The initial difficulties were serious, since flowering did not coincide in different varieties. As a result pollen had to be carried between highland and lowland stations, and greenhouse plants were sometimes used to get male and female parents in blossom at the same time.

3.09 Breeding for disease and insect resistance is a vital part of the maize improvement program, since tropical maize suffers from more insect predators than any other major cereal, and disease attacks are varied and severe. Every research plot in the maize program contains a part of the row treated with insecticide so that the yield potential can be demonstrated, while the remainder is unprotected, to show resistance if it exists. In addition, the row is deliberately inoculated, plant by plant, with organisms causing leaf blights and ear and stalk rots, to challenge the plants for resistance to these diseases. In 1973, facilities are available for mass rearing of insect pests, so that controlled infestation (rather than natural, which may not strike) can be used to challenge for insect resistance.

3.10 This is obviously the most comprehensive program of deliberately challenging the breeding material for a wide range of diseases and pests that has been undertaken anywhere. While the program with its full impact has been under way only since 1968, valuable materials including breeding materials resistant to the Fall Army Worm, which is very serious in all the Americas and parts of Africa, already have moved out of the research plots in 1972 into national breeding programs in cooperating countries. The importance of this kind of biological control of plants and diseases, based on multigene physiological or "horizontal" resistance rather than the much more hazardous single-gene or "vertical" resistance is hard to over-emphasize.

3.11 Improvement of protein quality in maize has been a major objective since the discovery of the Opaque 2 gene. By doubling the proportion of lysine and tryptophan in maize protein, this gene can correct the deficiencies in the amino-acid balance, and so convert maize from a low-quality protein source to a good basis for a well-balanced diet for man and animals.

3.12 The original attempts to incorporate high lysine into maize ran into serious difficulties, since the Opaque 2 gene gave floury kernels disliked by some consumers, susceptible to insect attack in storage, and producing slightly lower yields. Except in Brazil, where the floury kernel characteristic is not objected to, maize with the better nutritional balance of the high lysine maize never became important, in spite of vigorous promotion efforts as in Colombia, and it became obvious that it was necessary to transfer the high lysine characteristic to maize with the flint kernels (hard endosperm) that is generally preferred.

3.13 It was not until 1970 that the CIMMYT staff found modifier genes which made it possible to incorporate the high lysine and tryptophan of the Opaque 2 gene, and to maintain the hard endosperm of the kernel. Within two years (4 cycles of research) materials with high-quality protein and hard endosperm had been developed. By autumn 1972, these materials had been multiplied in 14 countries outside Mexico to produce 20-25 tons of seed, which is being used in demonstrations in farmers' fields and for animal-feeding trials.

3.14 At present CIMMYT research is producing maize populations with high-quality protein combined with the white or yellow color, flint, dent or floury kernel characteristics. These are being moved out in 1973 into national maize improvement programs as populations or as experimental varieties in 15 countries. Preliminary work has demonstrated that the hard endosperm does not effect the digestibility or the efficiency of use of the maize protein.

3.15 In addition to higher protein quality, higher protein percentages are being pursued, with selection for materials that have a minimum of 10-12 per cent protein in the whole kernel, associated with lysine at 4 per cent and tryptophan at 1 per cent of the total protein.

3.16 The successful transfer of the Opaque 2 gene with its high lysine and high tryptophan into hard endosperm maize is a major plant-breeding achievement, of tremendous importance to all of the maize-producing countries.

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3.17 As in the wheat program, international nurseries are an essential part of the maize program. They make it possible to identify wide adaptation in the populations under differing day length, temperatures and disease conditions, to exchange germ plasm with national breeding programs, and on the basis of feed-back to modify and adapt CIMMYT's breeding programs to meet the needs of the developing countries. The international maize nurseries began only in 1971, with 296 sites in 46 countries, expanding to more than 400 sites in 52 countries in 1972. The nurseries are specialized into 7 different types to suit the needs and interests of the breeders both at CIMMYT and in cooperating national programs. As part of the program, regional nurseries are distributed by CIAT in Latin America and by IITA in tropical Africa.

3.18 The germ plasm collection for maize at CIMMYT, at 12,000 accessions, is the largest in the world, and has been the basis for the diversified populations the program is producing. Since no more than 5,000 accessions are currently in use, CIMMYT proposes to transfer its unneeded accessions to the United States Department of Agriculture world maize collection at Fort Collins, Colorado, and to maintain only its working collection at CIMMYT, drawing on Fort Collins in the future for materials as needed when needed for the working collection.

3.19 Part of the staff time so released is to be used for initial exploratory work on wide inter-specific crosses (similar to Triticale) involving maize, sorghum and Tripsacum. Tripsacum is a wild relative of maize, found in Central America, which has a reservoir of genes that could be very valuable in importing disease-free root systems, resistance to a wide range of maize diseases and pests, tolerance to day-length differences and extremes of heat and cold, rapid seed maturity, adaptation to soils "unsuitable" for maize, and by virtue of the wide cross, exceptional hybrid vigor. CIMMYT's Tripsacum garden, which gained 127 clones of 40 Tripsacum populations last year, will be the source of valuable material for cooperative programs with other institutions pursuing this inter-specific cross.

3.20 Sorghum breeding for cold tolerance is being carried on at CIMMYT on a temporary basis until ICRISAT can make a decision about how the crop fits into that Institute's program. The objective of the program originally was to develop sorghums adapted to the cool temperatures of elevations above 2000 meters in Mexico to take advantage of sorghum's known drought tolerance for such areas where maize, because of its heat requirements, does not do well. The project involved crossing high-altitude, late maturing sorghums from East Africa with early maturing, low-altitude types, and testing the segregating materials at a number of locations at both high latitudes and altitudes. Cold-tolerant materials which perform satisfactorily at above 2000 meters in Mexico are now under test as far north as Canada. The work is financed by a special project grant.

B. Outreach

3.21 Maize outreach is only now in a position to take off in a major way, with the development of shorter, day-length insensitive materials which are resistant to a number of diseases and pests and with the combination of high protein and high lysine with hard endosperm. The maize program as with wheat, does not produce new varieties tailor-made for local use, but does produce "composites" and "experimental varieties" which may be used as such in national programs or for further selection and breeding work.

3.22 Maize outreach has had limited success to date outside Mexico, but in El Salvador it is estimated that about 60 per cent of the maize area is in improved CIMMYT materials, giving 4-5/tons per hectare under good production conditions compared to 1 ton/ha with traditional varieties and practices. Similarly in Colombia, where CIAT had been CIMMYT's outready arm, yields of maize are estimated to have been increased approximately 50 per cent in areas affected by the improved varieties and the accompanying package of inputs.

3.23 During the past year, requests for outreach assistance have increased dramatically, with CIMMYT staff being stationed in cooperating programs in Pakistan, Egypt, Nepal and Zaire, with requests pending from Tanzania and Argentina. Great potentiality for improvement obviously exists. In Zaire, where the Government finances the program, the traditional 900 kgs/ha has been raised to about 7 tons/ha in field scale demonstrations; in Egypt three new varieties based on CIMMYT materials have yielded up to 14 tons/ha with dressings of 150 kgs of nitrogen/ha in experimental plots. In the next two or three years, maize with high levels of high-quality protein, of short improved plant type, acceptable kernel type, a broad spectrum of disease resistance, day-length insensitivity and high-yielding potential will be available, and it can be assumed that much high yield levels and stability of yield will induce even small farmers to adopt the new packages.

3.24 To prove the virtues of the high-protein, high-lysine maizes, demonstrations at the field level with swine, as are being done at CIAT, are considered to be necessary. Clinical trials with undernourished children prove the matter scientifically, but the small farmer needs to see the differences on a comparative basis, and swine are the obvious test animal, since improved swine production is expected as a direct effect of the use of quality-protein maizes.

3.25 While CIMMYT has global responsibility for maize (and wheat), both IITA and CIAT operate as regional collaborators on maize, for Africa and the Andean region, respectively. The maize staffs at these latter institutions are in close contact with their CIMMYT counterparts, and the exchange of breeding material and information is mutually advantageous. IITA has been involved in the planning of CIMMYT's program in Zaire and CIMMYT is providing the maize staff in the program contracted between IITA and Tanzania. The arrangements are adequate to prevent duplication and overlap, but not so rigid as to prevent the necessary freedom of decision for regional programs.

3.26 Training as part of the "outreach" program expanded greatly in 1972, with 67 trainees last year, as compared to a total of 26 in the previous year. The maize staff considers that it is close to the limit for in-service trainees, and foresees the problems of trying to regionalize or decentralize in the near future when requests are likely to rise sharply.

3.27 It is recognized that the shortage of well-trained maize breeders and maize agronomists in cooperating countries will be the biggest obstacle to rapid development of national programs. CIMMYT is concerned over the problems of expanding this training greatly without diluting its quality, and of arranging for the best of the trainees to get further advanced training to provide the scientific (and administrative) leadership that country programs need. The answers are not yet obvious.

3.28 It is planned to develop a more intimate continuing relationship with former trainees by periodic visits from members of the maize staff, by news letters to exchange information, and by periodic workshops and refresher courses whereby graduates of the in-service courses can keep in touch with the latest developments at CIMMYT.

IV. PLAN PUEBLA

4.01 Plan Puebla is an experiment to study factors involved in increasing maize yields and farmer income in an area of 47,500 farmers cultivating an average of 2.5 hectares per family in a rainfed environment of Puebla State about 50 miles east of CIMMYT. The project has been financed as a special project and will terminate in 1973 after seven years. Plan Puebla has demonstrated that it is possible to improve the production practices of the small farmer, provided the appropriate technical inputs (seed, fertilizer, insecticides) as well as financial inputs (credit) are provided. The proportion of farmers involved with the program (as measured by numbers using credit) has continued to increase over the past six years, reaching 13 per cent in 1962. Yields per hectare increased initially and then stabilized, and the spread effect, whereby farmers not in the program use more fertilizer and obtain higher yields, is significant.

4.02 The project has provided valuable information to the Mexican and other governments interested in similar small-farmer programs, and the summary reports being prepared will, it is hoped, cast more light on the factors important in adoption of improved practices, and will be the basis for different projects with similar objectives in Mexico and other countries.

V. AGRICULTURAL ECONOMICS

5.01 The year 1972 was the first in which CIMMYT had a full-time economist. The initial year's activity has demonstrated that approximately half the economics program is associated with collaboration with the breeders and agronomists on the economic aspects of production practices, the requirements for inputs and marketing for outreach programs, etc., while the other half of program time has been devoted to studies of factors affecting the adoption or non-adoption of improved practices. Critics have maintained that the Green Revolution benefits mainly the large farmer. In India the adoption of new practices in the case of wheat has been independent of farm size, but in the case of rice, larger farm size has made it easier to adopt new practices faster because efficient water management is easier on large farms.

5.02 With respect to the role of international institutes in the socio-economic aspects of the new varieties and their technological packages, CIMMYT feels that its role should not extend beyond demonstration of how (any why) to get successful adoption. The second-generation problems of who is involved in this extra production, how the extra production is stored, transported, used and managed, its effects on income distribution, etc., are matters of national policy for the government organizations involved. Studies under way by CIMMYT are concerned with the factors controlling the rate of adoption, and are directed in part at the linkages, and how they operate, between policy makers, planners and agronomists in successful outreach programs. In addition to the Plan Puebla study, work has begun on adoption studies in El Salvador, Turkey, Colombia and India, with additional projects beginning in Tunisia, Kenya and Iran for completion in 1973.

5.03 An additional staff member for the economics unit is proposed to work closely with the headquarters agronomy staff on agronomy trials for countries with limited resources, on manuals of experimental design, plot layout and statistical analysis, and economic analysis for field trials. He also would be involved with trainee programs, dealing with economic forces affecting their work.

5.04 A part-time geographer is also being added to the staff to gather data for areas growing maize, wheat and barley with respect to climate, diseases, areas in crop, kind and number of farmers, number of consumers, etc. These data are to be used to assist in shaping the maize and wheat programs.

VI. LABORATORY SERVICES

6.01 The protein laboratory has been an absolute necessity as part of the high-quality maize program to follow the transference of high-lysine into the vitreous-kernel materials. The methods used are quick and approximate, using material from part of a kernel only, for tests in early generations, and more precise where more material is available in later generations. For checking Protein Efficiency Ratios (PER), CIMMYT has been using the meadow vole as a test animal because of the smaller amounts of material necessary compared to the standard rat test, but has found difficulty in establishing reliable correlation with standard tests. Before abandoning the vole as a test animal, CIMMYT will attempt in 1973 to standardize the vole test, since its use permits screening of earlier generations of breeding materials when quantities available are limited. Earlier screening makes the selection procedure much more efficient.

6.02 Milling, baking and industrial quality tests are an integral part of all the improvement programs for spring wheat, durum wheat and Triticale; and in 1972, the equipment and procedures necessary for handling the durum wheats were made available to give quality improvement to that program.

6.03 Training in back-up laboratory services for breeding programs has become an important and growing part of CIMMYT's work, to provide technical know-how for the operation of national laboratories, and as it continues to grow, will require more staff to meet the expanding needs.

VII. INFORMATION SERVICES

7.01 CIMMYT is aware of an inadequacy in its recent history of information to its constituency, and plans a number of news letters simed at different objectives for 1973, which will appear periodically.

7.02 One of CIMMYT's major concerns at present is language competence, and the necessity (and difficulties) of adding French to its existing capacities in Spanish and English, with the added expenditure for information material to be distributed in all three, and for training courses to be given in French, in view of the existing programs in Francophone North Africa and in Zaire.

VIII. STAFFING

8.01 The mission believes that CIMMYT can continue to carry out its present core program with a senior staff of about 50, and that there will be no pressure, unless the mandate changes, for major staff additions for some years. With respect to outreach, continued expansion is foreseen with present numbers of CIMMYT outreach rising from approximately 20 senior staff presently involved to about 35. The problem here will be to find and train competent scientists to undertake outreach responsibilities. An enlarged program of followships for pre- and post-doctoral fellows and for visiting scientists is contemplated, to give about 10 in residence at any one time.

IX. LAND, FACILITIES AND CAPITAL REQUIREMENTS

9.01 CIMMYT, by virtue of its cooperative arrangements with the Mexican Government and the privileges CIMMYT has of using land on Mexican experiment stations as well as its own, has adequate land, with two important exceptions. A small addition is needed to the high-altitude land, either at El Batan or at Toluca; if present procedures to obtain 12 additional hectares at El Batan are unsuccessful, other measures will be taken at Toluca to increase the area. In addition, 13 hectares are required at Tlaltizapan, the intermediate elevation (1,000 meters) station devoted to maize. Funds for the purchase of this land are included in the 1973 capital budget.

9.02 Headquarters facilities at El Batan are comfortable, adequate, modest, and complete except for minor experiment-station buildings and for additional accommodation for fellows and visiting scientists, a group from which future CIMMYT staff are recruited. In the near future, dormitories for trainees at Tlaltizapan, Toluca and Poza Rica will be needed to avoid the costs of hotel accommodation over lengthy periods. These are included in the 1975 capital forecast.

9.03 CIMMYT had an external panel looking at its administrative arrangements during the past year. The panel confirmed that CIMMYT is well administered, and offered a number of suggestions to increase efficiency and effectiveness still further.

9.04 CIMMYT's internal program review, carried out by the staff over a period of months (September 1972/February 1973), was a serious, searching examination of present and possible future programs. The discussion, as summarized in the staff report, is an impressive example of how program reviews should be carried out, and how the scientists themselves can appraise their challenges and possibilities than most outsiders, no matter how well they know an institute.

X. THE 1974 BUDGET

10.01 CIMMYT's 1974 budget envisions expenditures of $5,126,000 for core operations and $410,000 for capital, as compared with $4,925,000 and $1,198,000, respectively, for 1973. The core operations estimate represents a 4 per cent increase over the 1973 level. The following table compares the proposed 1974 core and capital expenditures with those budgeted for 1973 and with actual expenditures in 1972:

	(U.S. $ thousands)			% Change
	1972	1973	1974	1974/'73
Core Operations				
Unrestricted	3,320	3,935	4,108	+4
Restricted	764	1,338	1,385	+4
Total Core	4,084	5,273	5,493	+4
Capital	975	1,198	410	-66
Total Core and Capital	5,059	6,471	5,903	-10
Less Earned Income	322	348	367	
Net Core and Capital	4,737	6,123	5,536	-10

10.02 Capital requirements for 1974 total $410,000. The major item is $250,000 to bring the Center's working capital fund to the level suggested in a paper on budget and accounting practices prepared by the Consultative Group Secretariat in cooperation with Center Directors. Other items are $12,000 for development of the land to be acquired at El Batan, $115,000 for field and laboratory equipment, and $33,000 for construction of a station superintendent's house and visitors' facilities at El Batan and a lecture room at Poza Rica. Details of the capital plan in the years 1974, 1975, 1976 and 1977 are given in Annex 3.

10.03 The 1974 core operations proposal represents a leveling off in the growth of CIMMYT. For 1974 no additional senior staff are being requested. Similarly, capital expenditures are diminishing in 1974. Details of staffing, budget amounts for core operations and for capital expenditures can be found in Annexes 1 and 2.

10.04 The increase in unrestricted core operations is $173,000, or 4 per cent over the 1973 budget. The increase is small because increases for inflation, merit increases of pay and 14 additional supporting staff are offset by the reduction due to the completion of the Plan Puebla projects. Details are as follows:

Inflation (and some provision for merit increases)	$ 275,000	+8%
14 additional supporting staff	36,000	+1
Decrease due to Plan Puebla	-138,000	-4
	$ 173,000	-4

10.05 CIMMYT's budget appears reasonable in relation to the Center's obligations and to its active program research and its vigorous outreach and training programs. The budget would be much higher if the Center idd not benefit from the cooperative arrangements made with Mexican authorities for such things as land and experiment-station operation at Ciudad Obregon and for computer facilities at Chapingo. The staff is more than fully occupied, and the record of accomplishment and the volume of work testifies to the exceptional enthusiasm and dedication of the members of the staff.

10.06 Apart form core activities financed by unrestriced grants, CIMMYT has the triticale program and the high-lysine maize program which are financed by restricted grants from the Canadian International Development Agency and the United Nations Development Programme, respectively; and it also has several special programs financed by other donors. Agreements for the financing of these programs vary considerably, as would be expected. Of interest from the point of view of core operations are the amounts of overhead or indirect costs that are charged to these restricted and special programs. They vary considerably, and range from nothing to about 18 per cent of direct costs. CIMMYT has calculated that indirect expenses for the year 1972, under the formula previously approved by the Center's Board of Trustees, were about 32 per cent of direct expenses. This does not include any notional charges for depreciation.

10.07 It therefore appears that CIMMYT needs to revise the overhead to be financed by donors in future negotiations for restricted and special programs. Naturally, an overhead rate of 32 per cent should not be charged to all these programs, especially those outside Mexico which do not benefit in any way from the various facilities and services at headquarters; but an attempt should be made to calculate a fair rate of overhead for each special program and have the relevant agreements adjusted accordingly. All agreements for new restricted and special grants should include a fair charge for overhead. The CIMMYT Trustees intend to review this matter in a meeting in the summer of 1973.

ANNEX 1

CIMMYT 1974 BUDGET

Summary of Costs by Program and Activity, 1970-1977

(US $ Thousands)

MAJOR ACTIVITIES	Actual 1970 Core	Actual 1971 Core	Actual 1972 Core	1973 Budget Original a/ Core	1973 Budget Revised b/ Core	1974 Budget Core	Projected 1975 Core	Projected 1976 Core	Projected 1977 Core
1. Research									
Wheat	778	614	728	784	782	831			
Maize	455	461	482	606	573	627			
Plan Puebla & Related Activities	193	155	171	198	192	67			
Economics	-	-	78	213	189	208			
Total	1,426	1,230	1,459	1,801	1,736	1,733			
2. Conferences & Training Activities									
Wheat Training c/	-	72	122	209	211	258			
Maize Training c/	-	20	58	187	190	213			
Symposia	-	-	-	20	20	21			
Total	-	92	180	416	421	492			
3. Library & Information Services									
Library	-	12	20	22	39	42			
Information Services	171	136	187	213	220	230			
Total	171	148	207	235	259	272			
4. Support Operations									
a. Service Activities									
Buildings & Grounds	-	53	115	136	132	141			
Common Laboratory Services	-	80	70	82	94	100			
Experiment Station Operations	248	304	469	413	431	455			
Motor Pool	15	28	102	124	127	111			
General Office Services	15	26	58	63	60	66			
Total	278	491	814	818	844	873			
b. General Administration									
Board of Trustees	11	14	13	20	17	20			
Office of Director General	203	266	293	265	263	282			
Accounting	75	104	131	139	161	170			
Purchasing	5	15	40	37	31	33			
Executive Office	38	49	53	52	48	52			
Mexico City Office	-	14	21	32	30	30			
Travel Office	4	4	7	7	8	10			
Total	336	466	558	552	558	597			
5. General Operations									
Communications (Telephone & Cable)	10	19	23	35	24	31			
Office Occupancy (Rent)	26	18	5	6	6	6			
General Supplies	14	30	35	36	41	47			
Insurance	2	2	13	16	20	25			
Electricity	3	19	26	35	26	32			
Total	55	88	102	128	117	141			
6. All Other									
Provisions for future price changes d/	-	-	-	-	-	-	288	308	329
TOTAL CORE	2,266	2,515	3,320	3,950	3,935	4,108	4,396	4,704	5,033

a/ 1973 Budget based on level of funds approved by the Consultative Group, November 1972.
b/ 1973 working budget approved by CIMMYT Trustees Executive and Finance Committee, April 1973.
c/ Training funds shown here cover costs of training staff, and certain other training costs at Headquarters, but most fellowships are obtained from restricted or special grants, and are not shown here. In rounded figures, CIMMYT budgets half the total cost of training in the core budget (shown here) and half in restricted and special grants.
d/ For the years 1975, 1976 and 1977, CIMMYT has budgeted price increases at the rate of 7 % a year, but does not show any new programs unless they are already committed by donors. The Consultative Group Secretariat requested this procedure. This does not imply that CIMMYT expects its program to remain static.

ANNEX 2

CIMMYT 1974 BUDGET

Summary of Manyears and Costs by Organizational Unit, 1970 - 1977

(US $ Thousands)

By Organizational Unit	Actual 1970 Man-Years a/	1970 Cost	1971 Man-Years	1971 Cost	1972 Man-Years	1972 Cost	1973 Budget Original b/ Man-Years	Original b/ Cost	Revised c/ Man-Years	Revised c/ Cost	1974 Man-Years	1974 Cost	Projected 1975 Man-Years	1975 Cost	1976 Man-Years	1976 Cost	1977 Man-Years	1977 Cost
1. Program Units																		
Wheat	8.2	778	9.4	686	11.9	850	13.7	1,013	13.7	1,013	15	1,089						
Maize	5.0	455	7.3	481	8.0	540	14.0	793	14.0	763	16	861						
Plan Puebla & Related Activities	2.0	193	2.0	155	2.0	171	2.0	198	2.0	192	1	67						
Economics	-	-	-	-	1.0	78	2.0	213	2.0	189	3	208						
Total Operating	15.2	1,426	18.7	1,322	22.9	1,639	31.7	2,217	31.7	2,157	35	2,225	35		35		35	
2. Support Units																		
a. Service Operations:																		
Buildings & Grounds	1.0	-	1.0	53	1.0	115	1.0	136	1.0	132	1	141						
Common Lab Services	-	-	2.0	80	1.1	70	1.5	82	1.5	94	2	100						
Experiment Station Op.	1.0	248	1.0	304	1.0	469	1.0	413	1.0	431	1	455						
Motor Pool	-	15	1.0	28	1.0	102	1.0	124	1.0	127	1	111						
Information Services	2.8	171	2.3	136	3.0	187	4.5	213	4.5	220	5	230						
General Office Services	-	15	-	26	-	58	-	63	-	60	-	66						
Library	-	-	-	12	-	20	-	22	-	39	-	42						
Total	4.8	449	7.3	639	7.1	1,021	9.0	1,053	9.0	1,103	10	1,145	10		10		10	
b. General Administration																		
Board of Trustees	-	11	-	14	-	13	-	20	-	17	-	20						
Office of Dir. General	3.0	203	3.0	266	3.0	293	3.5	265	3.5	263	4	282						
Accounting	2.2	75	3.0	104	3.5	131	4.0	139	4.0	161	4	170						
Purchasing	-	5	1.0	15	1.0	40	1.0	37	1.0	31	1	33						
Executive Office	1.0	38	1.0	49	1.0	53	1.0	52	1.0	48	1	52						
Mexico City Office	-	-	0.5	14	1.0	21	1.0	32	1.0	30	1	30						
Travel Office	-	4	-	4	-	7	-	7	-	8	-	10						
Total	6.2	336	8.5	466	9.5	558	10.5	552	10.5	558	11	597	11		11		11	
3. General Operations																		
Communications (Telephone & Cable)	-	10	-	19	-	23	-	35	-	24	-	31						
Office Occupancy (Rent)	-	26	-	18	-	5	-	8	-	8	-	6						
General Supplies	-	14	-	30	-	35	-	36	-	41	-	47						
Insurance	-	2	-	2	-	13	-	16	-	20	-	25						
Electricity	-	3	-	19	-	26	-	33	-	26	-	32						
Total	-	55	-	88	-	102	-	128	-	117	-	141						
Provision for Future Price Changes d/														288		308		329
Total Core	26.2	2,266	34.5	2,515	39.5	3,320	51.2	3,950	51.2	3,935	56	4,108	56	4,396	56	4,704	56	5,033
By Object of Expenditure																		
Personal Service Costs		1,353		1,436		1,784		2,174		2,142		2,301						
Travel		137		129		173		225		202		214						
Direct Trainee Costs		129		100		122		279		283		299						
Field & Lab Expenses		348		378		584		492		526		631						
Office Related Expenses		100		178		219		301		245		270						
Vehicle Costs		127		177		324		250		199		165						
General Program Expenses		72		117		114		229		238		228						
Provision for Price Changes d/														288		308		329
TOTAL CORE	26.2	2,266	34.5	2,515	39.5	3,320	51.2	3,950	51.2	3,935	56	4,108	56	4,396	56	4,704	56	5,033

a/ Includes only actual manyears of principal and professional support staff (CIMMYT Grades I - V only). See Table 6 for complete CIMMYT staffing pattern as approved by CIMMYT Trustees.

b/ 1973 Budget based on level of funds approved by the Consultative Group, November 1972.

c/ 1973 working budgets as approved by CIMMYT Trustees' Executive and Finance Committee, April 1973.

d/ For the years 1975, 1976 and 1977, CIMMYT has budgeted price increases at the rate of 7 % per year, but does not show any new programs unless they are already committed by donors. The Consultative Group Secretariat requested this procedure. This does not imply that CIMMYT expects its program to remain static.

CIMMYT CAPITAL BUDGET

1974

Farm development at El Batan		$12,000
Field and Laboratory Equipment		
2 growth chambers	$20,000	
Field equipment for experiment stations	95,000	15,000
Construction		
Superintendent's house at El Batan	$20,000	
Lecture room for trainees at Poza Rica	8,000	
Visitors' facility - additional wheat exhibits at El Batan	5,000	33,000
Working capital		250,000
		$410,000

1975

Growth cabinet and small field and laboratory equipment		$20,000
Construction		
Superintendent's house at Toluca	$20,000	
Insect mass - rearing facility	100,000	
Visitors' facility - additional wheat and maize exhibits	5,000	
25 dormitory rooms for trainees at Tlaltizapan	75,000	
25 dormitory rooms for trainees at Poza Rica	75,000	
50 dormitory rooms for trainees at Toluca	150,000	425,000
		$444,000

1976

Field and Laboratory Equipment	$20,000
Development of computer sub-terminal facility	75,000
Construction of building for visitors	100,000
	$195,000

1977

Field and laboratory equipment	$20,000

426

December 18, 1973

Dear Bob:

This is in response to your letter of November 28. To take up your points one by one --

1. The arithmetic of pledges to CIMMYT is shown in Annex 8 to the draft summary proceedings of the November meeting of the Consultative Group, circulated after you wrote your letter.

2. Bernstein's statement applies only to the years 1975 and beyond, not to 1974. In 1974, contributions made by BID are not part of the USAID 25 per cent formula.

3. Yes, Mr. Olsen does represent Denmark.

4. "CIMMYT" was wrongly transcribed; the word actually is "summer." Our apologies.

Sincerely yours,

Harold Graves

Dr. Robert D. Osler
Deputy Director General
Resident Research
International Maize and Wheat
Improvement Center
Londres 40 (Apdo. Postal 6-641)
Mexico 6, D. F.

HGraves:apm

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

December 15, 1973

Mr. Harold Graves
Internation Bank for Reconstruction and Development
1818 H Street N. W.
Washington, D. C. 20433
U. S. A.

Dear Harold:

Following our telephone conversation today, I was not able to locate the table in the transcription of Consultative Group pledging, which would explain the source of the $ 4,505,000 in your letter of November 19 to me.

I have made the most optimistic estimates I can, based upon the CG transcript and upon information you supplied on the telephone today. I come up with $ 4,557,000 that might be available to CIMMYT in 1974.

If every assumption is true, our budget is subscribed for 1974. But I don't trust either the telephone or my arithmetic, and I ask that you check each assumption in the enclosure.

We have a Trustees Meeting at New York January 4, and I need reliable figures before then, to make our 1974 plans.

Cordially,

Hale

Haldore Hanson
Director General

Answered by telephone, January 4, 1974. HH

HH/pm
Enclosure

December 14, 1973

Assumptions about CIMMYT's funds from Consultative Group, 1974

CIMMYT asked $ 5,536,000 in net core operating and capital funds from the Consultative Group for 1974. (See CIMMYT Budget Document at 1973 International Center's Week, page 15, table 3, 1974 column, line 1d)

As of today, the most optimistic interpretation of pledges and negotiations is as follows:

1) Rockefeller Foundation	$ 750,000 1/
2) Ford Foundation	750,000 2/
3) Denmark	150,000 3/
4) Germany	212,000 4/
5) IBRD	103,000 5/
6) Inter-American Development Bank	750,000 6/
7) USAID	1,475,000 7/
8) Other income	367,000 8/
Total if all assumptions are corrected	$4,557,000

Footnotes:

1/ Rockefeller pledge is confirmed in a letter from RF to CIMMYT.

2/ Ford Foundation pledge is confirmed in a letter from FF to CIMMYT.

3/ Danish pledge to CIMMYT in kroner was estimated at $ 150,000 by the Danish representative at the CG pledging session, page 54 of transcript. This could be altered by future exchange rates..

4/ German pledge to CIMMYT of 500,000 DM at the CG pledging session was then estimated to be worth $ 212,000 . This amount could be altered by future exchange rates.

5/ IBRD and Germany made overlapping payments to CIMMYT in the last quarter of 1973. Based on the then current exchange rate for the DM, the excess payment was $ 103,000. IBRD instructed CIMMYT to carry over the excess payment, and apply to the donor's payments of 1974.

6/ Inter-American Development Bank was not able to make a firm pledge at the CG pledging session, either in amount or in allocation by centers. However, the CG Secretariat informs CIMMYT that the IADB Directors are asked to approve an allocation from the Social Progress Trust Fund (local currency) for grants to centers in the Western Hemisphere, and that the IADB staff hopes to open discussions with CIMMYT in January 1974 for a grant of $ 750,000 (equivalent in Mexican pesos), for use by CIMMYT in 1974.

7/ USAID made no specific pledge to CIMMYT in the CG pledging session. Our estimate here is based upon 25% of $ 5,903,000 , which is CIMMYT's gross core operations and capital budget for 1974 (See CIMMYT budget Document at International Center's Week, 1973, page 17, Table 3, 1974 column, line 1c)

8/ Other income consists of payments by donors to CIMMYT for administration of special projects, in order to reimburse the core budget for part of the administration; and income from sale of crops.

G 2b HG BMC

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
CIMMYT
Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

November 28, 1973

Mr. Harold Graves
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

In Hal's absence I am writing in regard to your letter of November 19.

First, could you send me a copy of your analysis of the $4,505,000 which you mention in your first paragraph?

Second, on page 81, Joel Bernstein is quoted as saying:

"For 1975 and beyond, AID is prepared in principle to provide up to 25 percent of the core and capital budget costs of the international institutes, up to a maximum total of $13 million in any one year, provided that the remaining 75 percent is forthcoming from other sources. If it becomes possible to make Social Progress Trust Fund repayments available for regular institute budgets through the Inter-American Development Bank, these would be included in this total".

My concern here is that it sounds to me as if he's saying that Social Progress Trust Funds will be included in USAID's 25%. I hope this isn't the correct interpretation since this is the source Mr. Wolf mentions on page 48 as the source of BID funds if they do become available.

Third, am I correct in assuming that Mr. Olsen (p. 34) represents Denmark?

Fourth, what is the meaning of Mr. Vos Van Steenwijk's reference to CIMMYT on page 56 where he says:

"Mr. Chairman, I'd like to confirm our indication and pledges made during the CIMMYT meeting and these are subject to usual parliamentary approval".

Best personal regards,

Sincerely yours,

Bob

Robert D. Osler
Deputy Director General
Resident Research

cc. Mr. Haldore Hanson

926

November 19, 1973

Dear Hal:

With this letter, I am sending a transcript of what members of the Consultative Group, during their meeting early this month in Washington, said about the grants they intend to make to the international agricultural research centers for 1974. The statements show (if my arithmetic is correct) intentions to make the equivalent of $4,505,000 available to CIMMYT.

In addition, the International Development Association of the World Bank Group will wish to consider a contribution to CIMMYT. As it happens, however, IDA will not be able to indicate the possible size of such a contribution until about December 15. Until that time, it will not be known whether the Inter-American Development Bank (BID) will be in a position to make grants to the international agricultural research centers in the Western Hemisphere; and until that is decided it will not be known what needs of those centers, including CIMMYT, will remain to be covered by additional funding. Needless to say, in any case, every effort will be made to complete the financing of the core and capital budget of CIMMYT. We will be in touch with you promptly as soon as BID has made its decision and it is possible to say what the IDA allocation is likely to be.

Sincerely yours,

Harold Graves

Enclosure

Mr. Haldore Hanson
Director General
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves:apm

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cc: C2

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FROM: The Secretary November 12, 1973

Address by Dr. Haldore Hanson, Director-General, International Maize and Wheat Improvement Center, to International Centers Week, July 1973.

Attached, for information, is the speech given by Dr. Haldore Hanson, Director-General, International Maize and Wheat Improvement Center (CIMMYT), at the International Centers Week held by the Consultative Group for International Agricultural Research in the Bank during the period July 30 - August 3, 1973.

The speech not only reports on the work of this major international center in 1973 and its program for the coming year, but also refers to the world-wide problem of implementing the "Green Revolution" in the context of large increases in population.

Dr. Hanson's address is also being circulated by the United Nations Development Programme through its regional offices.

Distribution:

Executive Directors and Alternates
President
Senior Vice President, Operations
Vice Presidents Bank, and Officers of IFC
Directors and Department Heads, Bank and IFC

Statement of Haldore Hanson, Director General of CIMMYT
(International Maize and Wheat Improvement Center)
to the Consultative Group on International Agricultural Research
at the World Bank, July 30, 1973

Mr. Chairman,
Members of the Consultative Group
and of the Technical Advisory Committee:

In CIMMYT's allotted time I propose to cover four things.

First, I will talk about population growth as it affects food requirements.

Second, I will give CIMMYT's point of view on what happened to world food production in the past year; what explains the drop?

Third, I will summarize the highlights of recent CIMMYT activities.

Fourth, I will speak of some of the issues of programming that we have been discussing at CIMMYT.

Population growth

My colleague, Norman Borlaug, suggests that it was probably neolithic woman, not neolithic man, who discovered agriculture. His reasoning goes like this. It must have been a woman who gathered wild grain, berries, and roots. The woman who did these things was very close to nature, and she must have hit upon the idea that cultivating plants would be easier than finding them wild. Perhaps it came to her on a day when her husband, the hunter, equipped only with a rock and a club, failed to bring home any meat.

At any rate, the domestication of cereal grains took place about 9,000 or 10,000 years ago. It happened independently for rice in eastern Asia, for wheat in western Asia, for sorghum in Africa, and for maize in Mexico. At least four different women must have gotten the same idea. They were all illiterate, in those days but very intelligent.

When agriculture began, demographers now believe the world contained about 10 million people. From that point onward, world population began to grow, aided by more reliable food supply. In fact the population slowly doubled and then more rapidly redoubled and more recently it has been rising, as you know, at a very steep rate.

For example, at the time of Christ it is now estimated there were about 250 million people in the world. This population doubled in the next 16 centuries, reaching 500 million people about the year 1650. The next doubling of population required only two centuries, and thus we find one billion people in the world by 1850. The next doubling took 80 years, and there were two billion people by 1930.

Today world population stands at 3.8 billion and continues to grow at 2% a year. At this rate we shall double the human race again in 38 years, or a little beyond 2000 A.D. Developing countries have an average growth rate of 2.5%, and they will double in 25 years or less.

So here is a measuring stick for our discussion about food. We ask ourselves: Can the world double its food production in 38 years? And can the developing countries double their food production in 25 years or less?

In the agricultural centers we speak of our work on new technology as a way to buy time, as a holding operation to give the world the opportunity to adjust downward its population growth rate. But we really should ask ourselves: are there possibilities of falling birth rates in the next two or three decades?

The answer depends upon which demographer you listen to. CIMMYT does not employ a demographer but we try to keep informed on what demographers are thinking.

Recently I read an appraisal of population growth by a demographer whose information and judgment impressed me as well-informed, well-balanced, and cautiously optimistic. This was a statement by Dr. Dudley Kirk of Stanford University. Like all careful demographers, he added many qualifying phrases. I do not have time to quote his statement at length, but at the risk of over-simplifying, I shall summarize the five reasons which Dr. Kirk gave for his hopes about falling birth rates in developing countries.

First, birth rates were already falling in the 1960s in developing countries. Of the developing countries listed by the UN as having "virtually complete" registration of births, Dr. Kirk says 42 of the 47 countries reported a reduction of birth rates between the early 1960s and the late 1960s.

Second, when a decline in birth rate begins in a developing country, Dr. Kirk says it moves down faster -- more than twice as fast -- compared to the past experience in Europe and North America. The higher the rates, the faster they seem to fall.

Third, Dr. Kirk says the climate of opinion today is more favorable towards birth control than it was at the time the population rates dropped in Europe and North America.

Fourth, there is better technology for birth control today, and much research is going on for still better technology.

Finally, growing prosperity tends to be correlated with falling birth rates, not only in advanced countries but also in the developing countries.

Having stated his reasons for hope, Dr. Kirk then re-emphasized the extreme difficulty of the population problem.

No amount of new agricultural technology, Dr. Kirk believes, can long stay ahead of a 2-1/2 percent growth rate in developing countries. In the long perspective, zero population growth is necessary. Any non-stop growth rate, no matter how small, will lead to disaster.

Moreover, Dr. Kirk believes that in the near term -- say until 1990, there will continue to be great difficulties in achieving a rapid adjustment of population growth. There can be no real success in dropping growth rates toward zero before the end of the century.

This judgment is enough to permit us in this meeting to formulate a framework for our discussions.

We can assume that world population will double once more, to more than 7 billion people, before population growth can be brought into equilibrium, or even near it.

We can assume that present foodcrop land of the world must produce twice as much food, on the same land, within the next three decades. In developing countries, the demand will come faster. Those countries must double their food production within 20 or 25 years.

There will probably be continuing food problems beyond the end of the century. If the world cannot bring its population growth to a halt within three decades, there must be other kinds of research, which I shall call "radical research", starting now to meet the further food requirement beyond 2000 A.D.

Those are the marching orders at the international centers as we see it, subject of course to the financial support of the Consultative Group members.

Food Production in 1972-73

Now let me speak about what happened to food production during the past year.

Food production in the developing countries declined in 1972 for the first time since 1966. Per capita food production in the developing countries dropped to the lowest level since 1965. This was a significant deviation from the trend. Per capita food production in developing countries had been rising for almost 20 years, in fact since the year 1954, with a gain of 1/2 percent to 1.0 percent a year above population growth. That means that for almost twenty years the improvement in agriculture was slightly better than the rise in population. In 1972 food production failed to keep pace with population growth.

The price of wheat on the world market rose 70% in the past year. Rice virtually disappeared from the world market, because there was no more rice in storage.

No doubt you have read about the shortage of railroad cars in North America, and the shortage of world ocean shipping, to move so much grain.

Some writers in the world press became very unkind in their comments on agriculture and agriculturalists. They said the green revolution was a myth, and a lie, and a slogan that had died. They said there never had been any change in the technology of food production, but only a period of favorable weather in the 1960s.

I think the Centers represented here owe to the Consultative Group their own interpretation of what happened in 1972, and I shall offer the ideas we hold at CIMMYT.

Droughts occurred last year in the wheat growing seasons of the Soviet Union, of China, and of Australia. Droughts occurred in the rice growing monsoon season of south and southeast Asia; and there was a drought disaster in Africa, just south of the Sahara, where sorghum is grown.

These separate weather developments caused a chain reaction in world food trade. The Soviet Union, as you know, bought almost 30 million tons of foodgrain in the world market, which was one step in the escalation of prices. China followed by purchasing over 4 million tons. Then India entered the market for over two million tons. India would not have found this necessary if it had not already sent two million tons of grain to Bangladesh, and later found it necessary to replace that grain for India's home consumption. Other rice growing countries of Asia also suffered, especially the Philippines from floods and Indonesia from a poor monsoon.

These areas of weather difficulty were partially offset by the very good 1972 wheat harvests in India, Pakistan, and Morocco.

Altogether, world grain production fell only 4% last year, from 1,106 million tons in 1971, to 1,064 million tons in 1972. But that small change of 4% was enough to cause the violent response in prices, in shipping, in foreign exchange expenditures, and in human suffering.

Obviously the green revolution has not solved the weather cycle. We have no present technology to save a crop when it receives less than its biological requirement in moisture.

The only palliative we know for major weather fluctuations is grain storage from year to year. In recent years grain storage has been provided mainly by three grain surplus countries: the United States, Canada, and Australia. All three of these countries have recently been reducing their storage surplus. There are about 10 other countries which have stored lesser amounts for sale. I was glad to receive from the head of the FAO, Dr. Boerma, a copy of a speech he made a few months ago to the OECD in Paris (Organization for European Co-operation and Development) in which Dr. Boerma advocated a new plan for grain storage; it would involve a larger number of countries including developing countries.

Eventually scientists should also help to level out the weather cycle by developing more widely adapted plants which show more stable yields under variations in temperature and rainfall. I shall discuss this in a moment, but it is not an immediate solution.

Before we leave the subject of 1972, we need to put in perspective the phrase "green revolution" which has been so much abused in the press. The term is not precise. It is emotional. It is overused. Some people assume the term promises more results than the revolution has so far achieved.

Still, like many popular phrases in the press, this one is probably here to stay, and therefore we ought to remove some of the imprecision by stating what we understand the term "green revolution" to mean.

At CIMMYT the green revolution is not a miracle which began with a few bagsful of seed. Seed proved to be part of a process, but only one part, and the process is still evolving. We now see the nature of this revolution more clearly than we did five years ago.

First, the green revolution involves new seeds capable of producing higher yields. These seeds give higher yields because they have genetic qualities which respond to higher fertility and higher moisture, and thus produce more grain. The new varieties generally have shorter straw in order to prevent lodging (or falling over), and the shorter plant also results in more of the dry matter of the plant being converted into grain. That is one element in the revolution.

Second, the green revolution involves a "package of agronomic practices." These include the recommended date, rate, and depth of seeding; the amount of fertilizer to be used and when to apply it; the methods of weed control; and other elements. These agronomic practices are location-specific; that is, they must be formulated on a local basis which requires training of local scientists in all grower countries. If the new seeds which are capable of higher yields are managed in the old ways, they will produce no better than the traditional varieties of seed. Thus the new seed and the new package of practices must go together.

Third, the green revolution involves new government services and new government policies. These include technical advice to farmers; the supply of needed inputs, especially fertilizer, irrigation, and pesticides at reasonable prices; credit for purchasing the new inputs; price policies on grains, and arrangements to ensure purchase and storage of bigger crops. These new government services and policies require that a government be committed to increasing its food production, or the revolution will not take place.

Fourth, the green revolution involves a continuous process of research and testing. It is not a one-time event or a single technique. It is a process continuously being modified. Change is made necessary by new pathogens of disease; by new planting and harvest dates. Every new program creates its own problems, which then require solution.

Finally, the green revolution in the tropics and sub-tropics is not an isolated event, but a continuation of the scientific process in agriculture which began in Europe and North America more than 100 years ago. Scientific methods of the temperate zone are now being adapted to the tropics and sub-tropics, and the first results in the warmer countries are remarkable, but not miraculous, certainly no more miraculous than those achieved in the past 100 years in Europe, North America, Australia and Japan.

If anyone writes in the press that the green revolution is a myth and a lie, he must be prepared to say that the process of agricultural improvement in the industrialized countries is also a myth and a lie, since we are extending the same process to the warmer regions of the world.

The green revolution is very much alive and moving forward, despite the adverse weather patterns of 1972. Having said this, we need to be very careful that we do not promise too much, too soon. There is still only a precarious balance between population growth and rising food production, and a precarious balance may be the best we can hope for during the next two or three decades.

CIMMYT had several experiences with wheat which illustrate why we must be cautious in our forecasts.

When Mexican semi-dwarf wheats first began to spread in Asia in 1966, Mexican wheats turned out to be well suited to the Gangetic plain of India and the Indus plain of Pakistan. Those areas had temperature patterns similar to northwest Mexico where the original Mexican wheats were selected. They had irrigation. They had similar races of rust. They had governments prepared to arrange adequate inputs and to ensure procurement of bigger crops. In short, they met the conditions for a revolution, and the new Mexican varieties took off. Within 7 years the Mexican wheats covered almost half the wheat lands of India and Pakistan. They helped to double the national wheat harvest. They raised national average yields per acre by 50%. The world has not seen any other crop, or region, or time period where such a rapid change has occurred in a national food supply.

But if we look at other countries, the results were not always so successful. These same Mexican wheats went into Turkey, North Africa, Brazil, and Argentina, areas which are afflicted at times by a fungus disease called septoria. Mexico does not have septoria, and the Mexican wheats were not originally bred to withstand a septoria attack. The yields of Mexican wheats were not so good in septoria areas. In fact, Brazil suffered a disastrous attack of septoria in 1972 and lost half its national crop, a disaster affecting a million tons of food grains. CIMMYT is working on the problem of septoria, by cooperating with the countries which suffer from the disease. But this is an unfinished task.

Another problem of wheat is caused by a type of stripe rust prevalent in the Andean region of South America, where wheat is an important crop. This type of stripe rust is not found in Mexico, and the original Mexican wheats contained little or no resistance to the Andean strain of the disease. Last year I visited Ecuador and was told by local scientists that Mexican wheats are not suited to the Andean region, and the wheat breeders in Mexico must still learn how to control the kind of stripe rust found in South America. Here is another unfinished job.

Obviously the first high yielding varieties were suited to some areas and not to others and the favorable publicity was largely based on the sub-continent of India and Pakistan and the difficulties were only at a later date reported in the press.

Now to conclude this discussion about the green revolution and the year 1972.

(1) CIMMYT believes that new technology of wheat and maize should enable all developing countries now growing those two crops to double their yields on present land, but so far, this doubling of yields has occurred on less than 10% of the wheat and maize lands.

(2) For the other 90% of wheat and maize lands, we believe it is possible to double the yields within the next 20 or 25 years, and thus to meet the deadline set by population growth. Our assumption is contingent upon full collaboration of the governments involved.

(3) This same doubling of yields will be needed for all the major food crops in the world, and thus, a target is set for the rice work at IRRI, for the sorghum work at ICRISAT, for the cassava work at CIAT and IITA, for the potato work at CIP.

This is an assignment common to all of us

Current developments at CIMMYT

Next let me turn to current developments at CIMMYT.

The word CIMMYT, as most of you know, is the acronym for our name is Spanish. The 6 letters of CIMMYT stand for Centro Internacional de Mejoramiento de Maiz y Trigo, or in English, the International Maize and Wheat Improvement Center.

CIMMYT was a relatively mature organization when it adopted its present name in 1966 and undertook an international mandate. CIMMYT's predecessor organization began as a national crop research organization in 1943, staffed jointly by the Government of Mexico and the Rockefeller Foundation. CIMMYT thus represents a continuation of 30 years of straight line research on maize and wheat.

During 30 years we have learned that truly remarkable changes can be introduced into a species of food crop within 10 to 15 breeding cycles; in Mexico that means in 5 to 8 years. But we cannot see the changes each year. Breeding for change is a continuous process. It stands to reason, therefore, that work of this sort requires continuous financing over a period of years to achieve results.

Developments at CIMMYT during the past year are presented to this meeting in several documents. I will describe the documents and suggest to you who do not have them that you may ask copies from the Secretariat.

First, there is a white-covered booklet called "CIMMYT Annual Report 1972." This is a publication written by scientists for scientists. This is primarily a communication from maize and wheat scientists in Mexico to collaborating scientists in Asia, Africa, and Latin America. Copies are available here.

Next, there is a grey-covered booklet entitled "CIMMYT Program Reviews 1972-73." Laymen will find this document written in their language. The binder contains three separate appraisals of our programs. One is by the CIMMYT staff, raising questions about their own activities. One is by a Committee of the CIMMYT Trustees. It raises nine issues about CIMMYT work which is recommends should have further discussion. A third paper is by one CIMMYT Trustee, Dr. Sterling Wortman of the Rockefeller Foundation, who made his own field observations. Many of you received a copy of this booklet by mail from Mexico.

In addition, another grey-covered booklet is entitled "CIMMYT 1974 Budget Request." This paper contains our budget tables that will be discussed this week. It also gives a 10-page program summary of what has been going on in the past 12 months and what is projected for the years ahead.

Finally, you should have a white-covered paper distributed by the Secretariat, which is new to most of us at this meeting. It is called "Progress Review of CIMMYT" and was prepared by two authors representing the Consultative Group, George Dion of Canada and Andrew Urquhart of the World Bank staff who came to CIMMYT for one week, participated in program discussions there and then wrote their own report. We at CIMMYT found their ideas perceptive and independent.

I will assume that many of you have read these documents, and others plan to do so, and I will not try to summarize the full content of them. Instead, I propose to cite three or four of our activities and leave other topics for the question period.

Winter-spring wheat crosses

I will start with a comment on the program for crossing winter wheat with spring wheat. Breeders have long recognized the advantages of combining the best characteristics of winter wheat and spring wheat, but the process has been difficult because the two types of wheat grow in different climates. Winter wheats are considered superior in cold hardiness, in drought resistance, and in resistance to septoria disease. I mentioned earlier that Brazil suffered a disaster in its wheat crop this past year because of septoria and Brazil is incapable of crossing winter wheat with spring wheat because you can't grow winter wheat in Brazil. Clearly here is one example where an international center can offer a service that a government can't do for itself.

Spring wheats have better rust resistance and better milling quality. Therefore, a marriage of the two should produce progeny that are more valuable for both climates.

In 1968 CIMMYT began a 3-way collaboration, involving winter wheat breeders in the northwest United States, in Turkey and in Mexico. Crosses are now made at all three locations, and the progeny are exchanged and tested during early generations. The earliest of these crosses are now at the F-4 or F-5 stage; that is, the fourth or fifth generation.

In 1973 we received reports from progeny tests in both Turkey and Lebanon, indicating that the advanced generations of the crossing program had survived well a winter kill and a drought which had destroyed traditional varieties of spring wheat. Here was solid support for the belief of some of our scientists at CIMMYT that winter-spring wheat crosses are likely to provide the most promising approach to drought tolerance for spring wheat growers of the world. This work will continue and we must await much wider information before seed will be available to growers.

Triticale

I will now turn to another CIMMYT program -- triticale.

The major food grains eaten by the human race were domesticated about 10,000 years ago, as I mentioned earlier. Scientific man has made some improvements in those early wild plants, but from neolithic times until today, no man has succeeded in developing a new species, a man-made plant that proved commercially successful. Such an event is now taking place, with the plant called triticale.

Triticale is derived from crossing wheat and rye, after which the chromosomes of the first generation hybrid are doubled by treatment with a chemical, to produce a partially fertile new "species." The word triticale combines the Latin words for wheat and rye.

The first natural occurrence of triticale was reported in Europe in the 1880s. The chemical for treating the chromosomes was not discovered until 1936. Several European scientists such as Müntzing in Sweden and Sanchez-Monge in Spain have spent a professional lifetime trying to produce an important commercial crop from this species, but they have been frustrated by biological barriers, such as partial sterility, shrivelled grain, low yield, poor agronomic type, and narrow adaptation of the crop to various climates.

CIMMYT became active in this work nine years ago, through cooperation with the University of Manitoba in Canada. The triticale plant has now been dwarfed. Fertility has been restored by accidental mutation in Mexico. During 1973 some of the newer lines now have plump grain with test weight of 60 points per bushel, which is the accepted standard for wheat. Some lines of triticale are more cold hardy and more drought resistant than wheat, and these two characteristics undoubtedly come from the rye parent.

Protein in triticale is proving remarkable. The better lines have 2% more total protein than any wheat, and the lysine content of some triticale lines is significantly higher than in wheats when grown under the same conditions.

The best new triticales, now in the final stage of performance testing, yield essentially the same as the best Mexican bread wheats. These yields have been verified this year in reports from Ethiopia, Kenya, India, Pakistan, Lebanon, and Canada. It now seems certain that triticale can compete with wheat, barley and oats under certain climatic conditions. Triticale can be used for bread, tortillas, and chapatis. Triticale may become important for feed grain and for winter forage. It is safe to predict that triticale will add to the world's food potential before the end of the 1970s.

CIMMYT's work on triticale is financed by the Canadian Government, through restricted core grants from CIDA-IDRC.

Barley

CIMMYT's barley program, you will recall, began only in 1972. Today it is in its third breeding cycle. Over 5,000 crosses have been made in these three seasons from CIMMYT's germ plasm collection which has 4,000 items of various barleys. Segregants of these crosses are already revealing important germ plasm for better plant type, better disease resistance, and better protein.

A gene in barley called hi-proly was discovered in 1969 by the Swedish scientists Munck, Karlsson and Hagberg. This simple recessive gene raises the protein content of barley and increases one of the amino acids, lysine. The hi-proly gene provides a reliable mechanism to improve protein in barley. CIMMYT is using this gene throughout its barley program.

It is too early to talk about results, but our first international test nurseries for barley are being grown in 1973 in 20 countries of the low rainfall areas of North Africa, Asia, Eastern Europe, and the Andean region of South America. These are the areas where people grow barley rather than wheat, because barley does better under moisture stress. The Bible, you remember, speaks of barley cakes in the Jordan River valley.

Short tropical maize with better protein

Last year CIMMYT reported to this meeting on the problems of tropical maize which is too tall, and is being shortened by CIMMYT to reduce lodging (or falling over). This research has gone through two more cropping cycles since we last met. The plant is still becoming shorter at the rate of 10 centimeters per cycle. We have now taken more than one meter off the height and reduced the elevation of the ear on the stalk by about the same amount. As you would expect, lodging has substantially disappeared in these particular plants.

This improved tropical plant is undergoing maximum yield trials in Mexico in the summer of 1973 and we hope to have interesting new data on yield by the end of the year. The tall tropical plant has traditionally been grown at 25-30,000 plants per hectare. The new shorter plants are now being tested at 75,000 to more than 100,000 plants per hectare. In other words, the shorter plants will grow at double the population, or even more, and thus produce more ears per hectare.

I told you last year about the improved protein work in maize, based upon the mutant gene called opaque-2. At Centers Week one year ago, there were only four bushels in the world of seed for a new maize combining improved protein and hard endosperm. The hard endosperm is the preferred type that is eaten by most of the people who are direct consumers of maize. Now there are many tons of seed for this new maize in each of 16 countries of Asia, Africa, and Latin America. The new maize has undergone additional laboratory feeding trials with mice, rats, chicks, pigs, and human babies, and all trials have verified that this new maize has retained its high nutritional value.

This new maize is now in agronomic tests in the 16 countries, preparatory to trials in farmers' fields.

Following closely behind this first maize population with hard endosperm and improved protein, CIMMYT has five more experimental populations, each believed to have the same nutritional value, and each will be ready for international testing later in 1973.

The United Nations Development Programme is financing the work on improved protein in maize. Their support is listed under our core restricted grants.

Other Current Developments

Before concluding this review of current developments at CIMMYT, I shall make brief reference to a number of other activities.

CIMMYT's training programs in applied research provide experience in Mexico this past year to over 80 men and women from 35 countries. This was our largest training program to date. Doctoral fellows serving at CIMMYT now total 10, and they also are the largest number to date. These fellows continue to offer one of the best recruiting sources for new employees, not only for CIMMYT but also for other centers. Former doctoral fellows at CIMMYT are now serving on the staffs of IRRI, the Asian Vegetable Center, and the Arid Lands Agricultural Development Program in Lebanon, as well as in CIMMYT.

In outreach activities, CIMMYT staff spent over 1200 man days on consulting work with more than 60 governments of Asia, Africa, and Latin America during the last year. We believe CIMMYT has fulfilled the wish, expressed by the Chairman of TAC last year, that CIMMYT should continue its strong emphasis on outreach activities.

In economic studies, our chief economist is more than half finished with a review of the experiences which farmers are having with new wheat and corn technology in eight countries of Asia, Africa, and Latin America. Those of you who have been attending the economic seminar, at the end of last week, have already had a more detailed review of these studies than we will have time for here. We hope from these studies to gain a better basis for future programming decisions at CIMMYT.

I mentioned last year that CIMMYT planned to hold a review of administration with the help of an external panel. This was done, in December 1972, with a 3-man panel chaired by Mr. Jose Drilon, the Under Secretary of Agriculture in the Philippines. The Panel drafted a report which contained over 80 suggestions, some of which have already been carried out, and some are still under study. It was a productive experience. I also would say it was very time-consuming.

Copies of the administrative report are available here from the Secretariat.

So much for the highlights of CIMMYT activities.

Budget 1974

A grey-covered document which I mentioned earlier contains the CIMMYT budget request for 1974. I will not try to repeat the dollar estimates here. There are no new programs in that booklet. There is no increase in the number of professional scientists. The operating cost of our core operating budget will rise by 4%, which is less than the inflation rate in Mexico. This low increase is possible only because we are completing in 1973 the 7-year experiment with Plan Puebla, which has been supported in part by the Rockefeller Foundation.

The largest capital item in the budget for next year is a request for working capital sufficient to cover 40 days of CIMMYT core activities. The size of this item was worked out jointly by the Consultative Group Secretariat, and the Directors of all the centers. We believe our difficulties with cash flow from the core donors in the past year justifies this capital request.

Program Issues

I have reserved a few minutes at the end of this statement to say something about the program issues that have come up in our program reviews of the past year.

In our "in-house review" the professional staff of CIMMYT spent approximately two weeks looking at research plots and asking questions of each other. Out of this discussion we distilled about 30 issues which are reported to you in that document.

Subsequently our Trustees' Program Committee, headed by Dr. Guy Camus of France, reviewed the staff report, made its own field observations, and identified nine issues on which they felt further discussion should be held.

We have time now to talk about only two of these issues, and I have chosen two which I regard as quite interesting, but also quite complicated.

The first may be posed as a question: Should CIMMYT give more attention to intermediate level technology, which will help the farmer who is unable or unwilling to follow all the recommendations for high yield; in other words, the farmer who uses less fertilizer, less plant population, less weed control, and tries to reduce his risks.

This question was presented to CIMMYT during the past year by several members of the Consultative Group.

The answer must be given in several parts.

Our experience at CIMMYT indicates that widely adapted varieties of maize and wheat are superior in yield, both at optimum levels of inputs and at intermediate levels. In other words, these so-called high yielding varieties are efficient in utilizing available fertilizer and moisture, whatever the level of input. We test these experimental populations at all levels of inputs. And the farmer who uses them can choose his own level of inputs and risk.

Another part of the answer is this. CIMMYT aims to develop widely adapted varieties of maize and wheat. This means we are testing experimental materials in over 60 countries each year, to identify those which carry tolerance to both heat and cold, to excess moisture and to moisture stress, to all types of diseases and insects in the various agro-climates in which we are working. CIMMYT breeders are unable to quantify what they learn from year to year about wide adaptation, but each new breeding generation incorporates the plants which prove to be best adapted over a wide range of climatic conditions.

We believe that these widely adapted materials will be of benefit to all classes of farmers, but especially to the farmer who wants to reduce his input costs and his risks. These future varieties which are well adapted should have greater stability of yield than any varieties in use today.

One other part of this answer is worth mentioning. The farmer who wants lower input costs is generally a man in a region of variable rainfall, where droughts frequently occur. This farmer is therefore interested in drought tolerant varieties.

CIMMYT is working on drought through several approaches. These include:

drought escape, by length of maturity
drought tolerance, by root structure
drought tolerance from disease and insect resistance
drought tolerance, from plant architecture
drought escape, by substitution of crop.

It is not possible to go into details on each of these programs here, but you will find further information about them in your documents.

To sum up: Our answer to the question is that CIMMYT is doing whatever we know how to do on behalf of the farmer who wants intermediate technology.

Radical Research

The other issue I have chosen to discuss is that of "radical research" on new food sources.

This issue arose during our CIMMYT in-house review, and the term "radical research" is an arbitrary one which will become clear as I report on the discussion.

CIMMYT staff asked themselves: For how many years could present types of research on maize and wheat enable the growers of these commodities to stay ahead of population growth. Our answer is: for 15 or 20 years, definitely we can; for 30 years, probably we can. Beyond that, there is no assurance.

Like the demographer Dudley Kirk whom I quoted earlier, we doubt that today's crops and today's research methods can stay ahead of world population growth if growth continues beyond the end of the century.

What happens then?

CIMMYT scientists agreed that more radical methods of research are needed.

What are examples? Some people speak of hydroponics, or mariculture, or food from waste products, or food from inorganic materials, or mirco-organic protein, and so on. These potential food sources all have the advantage that they do not depend upon present cropland. They are supplemental. CIMMYT claims no expertise in any of these types of work, but they do deserve attention by others.

There are some fields of radical research to which CIMMYT might be able to contribute. CIMMYT has worked on branched ears of wheat, and we could resume that work. CIMMYT has worked on the wide cross, triticale, and we could work in future on other wide crosses either between two cereals, or between one cereal and one species of grass.

These are high risk research fields. By that I mean there will be many false starts and no predictable timetable.

It is the judgment of the CIMMYT scientific staff that CIMMYT should continue to devote at least 95% of its time and budget to the conventional research programs in which we are now engaged. And not more than 5% of our time or budget should be spent on these "radical" fields, that we are talking about here.

Our Trustees took up this issue, as you will see in your documents. The Trustees asked that the CIMMYT staff formulate a detailed report on alternative types of "radical research" and alternative "centers of excellence" where this type of work might be done. With this information in hand, our Trustees could make inquiries about what other institutions are prepared to do to supplement the work of the international centers.

I cannot leave this subject of radical research without telling one anecdote.

Two months ago I visited a greenhouse at CIMMYT and found on the shelves two rows of glass test tubes, each tube containing one sickly looking plant growing in a colored fluid. I asked what was going on. A scientist said one row of test tubes contained crosses between wheat and barley, the other contained crosses between wheat and oats. But, he said, don't take this seriously. We have been experimenting with different fluids as the growing medium, and the plants continue to die. All of these will probably be dead by the end of the week.

Last Saturday, which was two months later, I went into the same greenhouse. Some of those plants are still growing. They are now transferred to soil, and some are now one meter high. This time the scientist said, "It looks very promising, but don't talk about this in Washington. We ought to have a second generation of plants germinated from the F-1 seed before we say anything to the donors."

Those of you who know the characteristics of cereals will immediately recognize the payoff potential of this type of work. Barley is far more drought resistant than wheat: it has a better root structure. Obviously, if you could transfer the drought tolerance of barley into a wheat cross you are achieving something quite important. Oats have the best protein quantity and quality of any of the cereals. If these two characteristics could be combined in a new wide cross with wheat, we may have a super grain ready by 2000 A.D.

It is possibilities like this that keep CIMMYT staff working overtime.

This completes my presentation, but I would like to restate the points I have made.

First: Present world population growth requires that the world food supply be doubled in a period of about three decades, and somewhat sooner in the developing countries. CIMMYT is confident that this is possible for maize and wheat.

Second: CIMMYT interprets the downturn of food production in 1972 to be a temporary deviation from the trend. We believe that food production will continue to expand in precarious balance with population growth. Any major weather change can disrupt this balance for a period of one or two years.

Third: The highlights of CIMMYT activities during the past year included significant gains in the program for winter wheat and spring wheat crosses; also for triticale, for barley, and for tropical maize. There are many developments I didn't speak of and I hope they will arise in the question period.

Fourth: CIMMYT has reported many program issues for the information of this meeting of the Consultative Group. Two of these issues I have mentioned concern intermediate level technology, and radical research on new food sources.

Looking ahead to 1974, Mr. Chairman, if the Consultative Group finds it possible to finance the program which CIMMYT has presented in our documents, I am confident we shall report to you, one year from now, a list of accomplishments at least as successful as we found in this year's program.

926.

November 8, 1973

Dear Hal:

This is a note to keep you posted on where we stand with respect to the speech that you made at International Centers Week in August. As you will recall, there was a feeling that it should be given a wider circulation and we have taken up this matter both with UNDP and in the Bank.

UNDP has decided to circulate your speech broadly in English, French and Spanish through its regional offices. We have had the translations done in the Bank and UNDP will be circulating some 500 copies in English, 200 in French and 300 in Spanish. I am enclosing a copy of the Spanish text which I thought you might like to see, together with a copy of the French text which you might like to use in some of your African contacts. Within the Bank, we are circulating the English text to our Executive Directors and to the senior staff of the Bank itself. Here again I am enclosing a copy for your record.

With best wishes,

Sincerely yours,

Harold Graves

Mr. Haldore Hanson
Director General
CIMMYT
Londres 40
Mexico 6, D.F.

Enclosures

BMC:mcj

426

November 1, 1973

Dear Bob:

Now that the Germans have found it possible to make another contribution to CIMMYT in lieu of the contribution they were to have made in 1972, we will have to recalculate the amount of the contribution to be made by the World Bank Group in the final installment of its payment for your 1973 budget. Our understanding, you remember, was that if the German money became available, the Bank Group final payment would amount to the $250,000 originally due, minus the German contribution on 1972 account, plus a small sum (around $10,000-$15,000, I think) needed to complete the funding of CIMMYT's 1974 core and capital budget.

When the German money arrives, and you know what it actually amounts to in dollars, will you do the necessary calculations and let me know what the final Bank Group payment should be?

Sincerely,

Harold Graves

Dr. Robert Osler
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves:apm

cc: Mr. Robert Jones

Note to Mr. Jones:

We should hold our projected Nov. 15 payment to CIMMYT until we have the information asked for in this letter.

HGraves

G 3

TO: Agricultural Research Advisor Files October 29, 1973

FROM: James M. Fransen

SUBJECT: BRAZIL - Agricultural Research Project--Donor Coordination

1. For the past several years, representatives of the Ford Foundation, Rockefeller Foundation, USAID and World Bank have exchanged views in respect of the strategy to be followed by donors wishing to assist Brazil strengthen its national agricultural research program and network. In addition, representatives of the Interamerican Development Bank (IDB) and the Instituto Interamericano de Ciencias Agricolas (IICA) have also exchanged views with the "Donor Group" concerning their interest in research activities in Brazil. Memoranda summarizing earlier informal meetings by the "Group" are attached (Annexes 1 and 2).

2. Continuing with these informal meetings, on July 30, 1973, I hosted a luncheon at the Bank on the referenced subject for the following people:

(a) World Bank: L.J.C. Evans, Jim Fransen, Klaas Haasjes and Eldon Senner;

(b) Ford Foundation: Lowell Hardin, Norman Collins and Eduardo Venezian;

(c) Rockefeller Foundation: John Pino;

(d) USAID: Guy Baird, Omer Kelley and Boyd Whittle; and

(e) IDB: Clarence Pierce (representing Al Wolfe).

3. I was unable to contact Don Shurtleff of IICA in respect of the luncheon and discussion.

4. Subsequently, I had follow-up meetings with representatives of USAID (Annex 3), Ford Foundation (Annex 4), and Rockefeller Foundation (Annex 5).

5. Representatives of the Ford and Rockefeller Foundations and USAID have suggested that we meet again informally. I have therefore arranged a luncheon at the Bank on November 1, 1973, during the Consultative Group on International Agricultural Research November 1-2, 1973 meetings to be held at the Bank. This memorandum is being circulated to relevant Bank staff to provide background information.

JMFransen:il
cc: Mr. Yudelman
Messrs. Goffin and Haasjes
Messrs. Skillings and Fernandes
ARA (5)

ANNEX 1

OFFICE MEMORANDUM

TO: Files

DATE: February 6, 1972

FROM: James M. Fransen JMF

SUBJECT: ICRISAT - Possibility of an Outreach Effort or "Relay" Station for Latin America to be Located in Northeast Brazil

1. A meeting was held on January 26 to discuss the relationship of Latin America, particularly Brazil, to ICRISAT. Specifically, views were exchanged with regard to a possible outreach effort or "relay" station approach for similar ecological regions of Latin America to be located in Northeast Brazil. The development of national research capabilities needed to specifically accelerate agricultural development in Northeast Brazil was mentioned as an alternative to the closer relationship to ICRISAT. Present were Omer Kelley, Director, Technical Assistance Bureau, USAID; Guy Baird, Adviser, Technical Assistance Bureau, USAID; Lowell Hardin, Vice President, Ford Foundation; John Pino, Director, Agricultural Sciences, Rockefeller Foundation; L.J.C. Evans, Director, Agriculture Projects Department (part-time); Shig Takahashi, Economic Adviser, Agriculture Projects Department; and James Fransen, Senior Research Officer, Agriculture Projects Department.

2. Dr. Kelley opened the discussion by reviewing USAID activities to assist Brazilian agriculture. He particularly emphasized a US$12 million research loan which is intended to strengthen the national agricultural research network. Dr. Kelley continued by stating that Northeast Brazil (and parts of Colombia) were very similar ecologically to ICRISAT's proposed area of influence. He pointed out that two basic problems were delaying development of Northeast Brazil: lack of trained people and technology. He further pointed out that SUDANE, a Northeast Brazil organization, had hoped to get ICRISAT located in Brazil. Dr. Kelley reported that he had suggested to Brazilian officials that they make some financial contribution in the development of ICRISAT outreach activities in Brazil. He reported that Brazilian officials were interested, particularly if the program contained a large training aspect. He further reported that the Assistant Minister for Agriculture has confirmed Brazil's interest under these conditions. Dr. Kelley specifically proposed that a two or three man team visit Brazil to prepare a report to be submitted to the Consultative Group through TAC. Hopefully, a member of Dr. Cummings' team should be a member of the proposed team. He suggested a target date of July 1972 for submission of the report to TAC.

3. Dr. Pino queried the proposed structure of the Brazil Center, whether it would be autonomous or outreach in nature, a national program type or combinations thereof. It appeared that Dr. Pino gives preference to an independent structure for the proposed Brazilian Center. Dr. Kelley suggested that the Center could be developed with a timetable indicating

when Brazil might assume overall responsibility. However, he believes that some international sponsorship is essential to initiate activities.

4. Dr. Hardin reviewed Ford Foundation's activities in Northeast Brazil, particularly work with sorghums. He also thought that Brazil should probably have a national outreach program that would not necessarily go through TAC. He suggested that particular attention be given to the type of structure by the Review Team and that recommendations be made on the objectives of the Center, and how best to achieve them with particular reference to the orientation of the Center. He pointed out that Northeast Brazil needs technology to achieve a 5 to 10% increase in agricultural production. He raised the question of what is the best approach to take in achieving this increased productivity. He suggests that the TAC strategy paper should comment on this issue.

5. Mr. Takahashi reviewed World Bank activities in Northeast Brazil, with particular reference to the Agricultural Sector Survey carried out by the Bank. The Survey Team highlighted the need for research information in Northeast Brazil. Their report also pointed out the need to clearly define the most appropriate mechanism to channel funds into agriculture and research in Northeast Brazil. Efforts in the Northeast by the Federal Ministry of Agriculture are ineffective, particularly due to staff shortages. The State Research Organization is also weak. In discussions with the Minister of Finance, it was suggested that "Protiera" funds could be channeled into that region through Northeast Brazilian banks. They might make soft loans and contract the required research converting the loans into grants when the research is completed. He also reported that Brazilian authorities are reviewing the Spain Agricultural Research Project and are interested in strengthening their research activities. Mr. Takahashi went on to point out that the Bank settlement project in Northeast Brazil has a research component. A similar approach would be suggested if the Bank Group assists with settlement activities in the Amazon Region.

6. It was apparent from the discussion that a key decision in assisting with further development of research capabilities in Brazil would be the decision whether to focus on development of the Federal Research System or State Research Organizations or a combination of the two. The need for training was also supported by all members at the meeting. There was not, however, full agreement as to whether training should or could be done in Brazil through existing Brazilian institutions and how much outside technical assistance would be required. The consensus of the meeting was that some institute is needed in the Northeast to call attention to the high priority research requirements of the region. The scope of the proposed institute was queried. Dr. Kelley seemed to be thinking in terms of a rather substantial and diversified approach with specific objectives. It was apparent from the discussion that a Center

for Northeast Brazil would not necessarily focus on the commodities to be supported by ICRISAT. Indeed, a much greater array of commodities and production systems would appear to require research. Following further discussion, it was suggested that a more restricted approach concerned with water and soil management and a few basic crops (maize, sorghum and beans) would perhaps be the most appropriate approach and that all needs would not necessarily be covered at least in the initial stages.

7. Dr. Hardin suggested that the next steps should be to develop Terms of Reference, mobilize a team of two or three members, and initiate a study to determine the feasibility and structure of any proposed Center. Dr. Kelley stated that he would obtain an official invitation from Brazil for such a study to be undertaken. This suggestion led to further discussion concerning the structure of the Center. For example, Dr. Pino stated that if USAID were to undertake the study, we should know what kind of questions would be answered. He suggested that a follow-up meeting with agencies interested in Northeast Brazil be arranged and that the feasibility study focus on the information that these agencies would require. He also suggested that the proposal might not have to go through TAC but could be tied to ICRISAT in some other form. Dr. Hardin was in apparent agreement with Dr. Pino's suggestion and pointed out that outreach activities of international centers like CIMMYT do not go through TAC. Thus, a national effort to be administered by Brazilian authorities in the shortest possible time might not require TAC approval. He pointed out that, indeed, a network of stations might be necessary to meet Brazilian needs.

8. Dr. Kelley asked if Ford and Rockefeller were in agreement that a two or three man team should look at the area and determine if it fits into the needs of Brazil or is broader in its approach. Dr. Hardin agreed provided that it would not raise false expectations on the part of Brazilians. Dr. Kelley pointed out again his belief that Brazil is strongly interested in some tie-in with an international center or would even like ICRISAT to be located in Brazil. This led to a question by Drs. Hardin and Pino as to whether Brazil's interest was only because of their desire to have an international center in Brazil and wondered whether they would have the same interest if an institute were to be established which would focus only on Brazil's own problems. Consensus was reached that efforts should be made to determine the "size of the package" and also to investigate other possible alternative proposals, including Brazilian support.

9. Dr. Kelley informed that USAID would be prepared to field a team but would prefer that it be undertaken by the Foundations. Dr. Pino reported that it would be difficult for Rockefeller to commit itself at this time to sponsor the study. Dr. Kelley emphasized that USAID would willingly help assemble the team. Dr. Hardin was also reluctant to commit Ford at this stage. He indicated that it would be difficult for Ford to

handle for various reasons. He believes that this is of rather a long term nature, that the sponsoring agencies should not get in today and out tomorrow and that continuity should be maintained. He particularly emphasized that the Team Leader should be available for a period of up to 3 years so that he could assist with the initiation of the Center, much like Dr. Cummings is doing with ICRISAT. Following further discussion, Drs. Hardin and Pino agreed that they would review and arrange a follow-up meeting. They felt that the interest of other groups in Northeast Brazil should be determined and that the next meeting could be held in New York. Dr. Pino stated that Rockefeller was deeply interested in Latin America and Dr. Hardin pointed out the Ford Foundation's sincere interest in Northeast Brazil.

10. During the meeting, Mr. Takahashi had emphasized the Bank Group's interest in Brazil in general and the Northeast in particular. He informed that the Bank was sending a man to Brazil for one month beginning in February to review possible activities in settlement projects, including research components. Following the meeting, Mr. Evans asked Mr. Fransen to call USAID and confirm the Bank's continuing interest in Brazil. Therefore, Mr. Fransen spoke with Dr. Baird on February 1 and he informed that Dr. Kelley would see to it that the Bank continues to be invited to participate in follow-up discussions.

JMFransen:ma

cc: Messrs. Evans
Takahashi
Graves

James M. Fransen

BRAZIL-Agricultural Research

1. Representatives of the Ford Foundation, Rockefeller Foundation, USAID and the World Bank met at the Bank on February 26 to review on-going and proposed assistance by these organizations to Brazil in agricultural research and training. The discussions focused on Brazil's request to the Bank for technical assistance in the development of a new organization (EMBRAPA) to coordinate agricultural research and for the preparation of specific research projects for which Brazil might later seek financing from the Bank.

2. It was agreed that representatives of the Ford and Rockefeller Foundations would join a Bank Agricultural Research Reconnaissance Mission to Brazil during March 1973. It was also agreed that we touch base with the Inter-American Development Bank (IDB).

3. Consequently, I informed Mr. Clarence Pierce of the IDB about Brazil's request to the Bank for assistance to EMBRAPA and of the mission which we propose to send to Brazil in March. Mr. Pierce was aware of Government's proposal to the Bank since Mr. Cabral, who was mainly responsible for preparation of the Brazil proposal, was a former IDB staff member and had also discussed the proposal with them.

4. Mr. Pierce informed me of IDB agricultural research activities in Latin America which might have relevance to Brazil. They are currently considering two activities:

(a) INTA: At the November 1972 meeting of the Consultative Group on International Agricultural Research, Mr. Wolfe informed that IDB would consider research proposals which would have a regional influence and which would provide assistance to neighboring countries in the further development of their national research capabilities. INTA, Argentina's principal agricultural research organization, has therefore presented a proposal to IDB for the development of INTA as a regional center for the Southern Cone of Latin America. IDB proposes to send a team to review this proposal with INTA. The team also proposes to meet with EMBRAPA to discuss the INTA proposal with regard to the three southern states of Brazil; and

(b) Technology Adaptation for Small Producers: A project which is largely thus far only "a gleam in the eye" involves the possible joint participation of IDB and the Rockefeller Foundation in the establishment of four regional centers for the adaptation of technology for small producers. Teams of 4-5 specialists would be assigned to the four selected regions. Current thinking is that one of the teams would be located in Central America, another in the Andean zone, a third in Northeast Brazil and a fourth in the Southern Cone of Latin America.

3. Mr. Pierce did not believe that further discussions would be of much value at this time. I agree. Since Mr. Pierce undertook to inform Mr. Wolfe of our discussion, I am satisfied that IDB has been informed about our proposed activities in Brazil and in particular about the pending mission and that we know about their proposed research assistance to Brazil. We agreed to meet at a later date once the World Bank team has returned from Brazil and the IDB team from its review of the INTA proposal.

IBRD/IDA
JMFransen:go

cc: Messrs. Evans, Skillings, and Goffin.

FROM: James M Fransen

SUBJECT: BRAZIL - Agricultural Research Follow-up Discussions - USAID

1. On August 10, 1973, I visited USAID on the referenced subject. The following USAID representatives were in attendance:

(a) Dr. Omer Kelley
2245 State Department Building (21st Street entrance)
Room 2243
Tel 632-7921

(b) Dr. Guy Baird
(c) Mr. Carl van Heften
(d) Mr. Boyd Whittle.

2. I reviewed with them the current status of Bank activities in Brazil in respect of support for agricultural research and extension, and requested a briefing on USAID operations which they provided. USAID's chief contact in Brazil in respect of agricultural research is as follows:

Mr. Bill Rogers
Food and Agriculture Officer
Brasilia.

3. A US$11.2 million USAID research loan is currently providing the following support for research in Brazil:

(a) the Universities of Wisconsin, Purdue and Florida are executing agencies under a university contract arrangement with the Ministry of Agriculture. There are about 22 expatriates in Brazil under that arrangement, six of whom are in the Northeast;

(b) Dr. Ed Schuh is to be provided under the above arrangement. He would be attached to the Economic Planning Unit (SUPLAN) of the MOA in Brasilia for about three months. He would also have some responsibility for assistance with the graduate program in Economics at the University of Vicosa. He is expected to be in Brazil from August 1 through November 1 and could be of assistance with EMBRAPA;

(c) national commodity programs are supported under this project, as follows: beans, soybeans, corn/sorghum, rice and forages/livestock; and

(d) Drs. John Murdock and Wayne Kussow located in Brasilia are responsible for the university contract coordination with the Ministry of Agriculture.

projects:

(a) Education and Graduate Training:

(i) Purdue University
University of Wisconsin
University of Arizona
Ohio State University

(ii) Some support for research is provided under this project.

(b) Seed Improvement

(i) Mississippi State University; and

(ii) Some research support is associated with this project.

5. Projects to continue are as follows:

(a) Inland Fisheries Production:

(i) Auburn University
(ii) Fortaleza University
(iii) Provides two specialists, one for research and one for extension
(iv) Dr. Kelley would like comments on this project.

(b) Higher Education (Ministry of Education)

(i) US$7.6 million
(ii) Technical assistance
(iii) Just being initiated.

6. Continuing regional projects (those that affect several countries headquartered in Northeast Brazil are as follows:

(a) Oregon State

(i) Weed control
(ii) Provides three specialists.

(b) Utah State

(i) Provides two irrigation engineers both of whom may continue
(ii) Dr. Kelley advises that these two specialists could be integrated into any resulting Northeastern project.

(c) Wholesale Markets in the Northeast

(i) US$25 million
(ii) Six wholesale markets.
(iii) Provided training, construction, etc.

7. Dr. Kelley lists the problems confronting Northeastern Brazil as follows:

(a) Lack of available technology for increasing production in the dryland areas;
(b) Lack of well trained people; and
(c) Lack of institutional capability.

8. Dr. Kelley suggests the following solution for Northeastern Brazil:

(a) Establish a massive research and training institution in Northeastern Brazil.
(b) His views are not shared by Dr. Baird.

9. USAID officials believe that research responsibility in Northeast Brazil is as follows:

(a) EMBRAPA;
(b) Universities;
  (i) Pernambuco;
  (ii) Vicosa (Sete Lagoas); and
  (iii) Fortaleza (in association with University of Arizona).
(c) State Research Program.

10. USAID officials, particularly Dr. Baird, believe that the orientation/focus of research should be as follows:

(a) crops/livestock (biological);
(b) link research on such topics as socio-economics and water to specific crop-oriented research programs (the international center approach); and
(c) extension should be production oriented (ABCAR is quite active in Minas Gerais and Recife).

11. Their comments in respect of EMBRAPA are as follows:

(a) appears to be a coordinated agency rather than an executing agency; and
(b) activities of DENEPA, universities, state research networks, will not greatly change under EMBRAPA.

12. Geographical priorities:

(a) Northeast; but
(b) Campo Cerrado and Amazonas are not precluded.

13. USAID officials suggest contact be made with the following project:

(a) UNDP Livestock Project at Recife.

14. Continuing regional projects are as follows:

(a) Soils project (Cornell University) near Brasilia.

August 27, 1973.

TO: Agricultural Research Advisor Files DATE: August 27, 1973

FROM: James M. Fransen

SUBJECT: BRAZIL - Agricultural Research Follow-Up Discussions - Ford Foundation

1. On Monday August 13, 1971, I had follow-up discussions on the referenced subject at Ford Foundation headquarters in New York as follows:

(a) Dr. Norman Collins:
Ford Foundation
320 East 43rd St
New York, N.Y.
Telephone: 573-4963

2. Principal Ford Foundation support for agricultural research in Northeast is as follows:

(a) Assistance to Fortaleza University in support of sorghum/millet research. The location has now shifted to the State Experiment Station (IPA) in Pernambuco. The project was intended to be a demonstration and building block for food crops (and perhaps tree cotton) for the region, that is, an integrated program for the Northeast.

3. Ford Foundation contacts in Brazil are as follows:

(a) The Ford Foundation:
Praia do Flamengo 100, 12 Floor
Rio de Janeiro
BRAZIL
Telephone: 265-8252

(b) Dr. Stanley Nicholson:
Telephone: 227-4416 (Home)

(c) Dr. Eduardo Venezian:
Telephone: 246-5985 (Home)

(d) Dr. Mohamed A.E. Faris:
Project Sorghum/Millet Specialist, IPA Recife

4. Ford Foundation is also providing assistance to Fortaleza University in agricultural economics. According to Collins, Ford has only about US$100,000 - 200,000 per year earmarked for Brazil out of their US$2.0 million global allocation for agriculture.

5. During the luncheon in Washington, and later at other meetings during International Centers Week, it was apparent that Ford representatives had reservations (or sensitivities) concerning the follow-up proposed by the Evans Team. Collins was very candid and open in his comments at the referenced meeting in New York. It is my belief, that the meeting was extremely useful and the air has been cleared. Indeed, Collins repeatedly stated that Ford was pleased that the Bank was now taking the initiative. Collins went on to say that the leadership role was a sensitive issue. Ford had doubt that the approach proposed by the Evans Team would work. Therefore, Ford Brazil strongly considered the desirability and need for them to take the lead with Government. I sensed that Ford Brazil and Ford New York may also have been vying for the leadership role within Ford. In any case, Collins no longer considered this a sensitive issue and Ford believes that the current approach initiative by the Bank is correct.

Type of Program

6. Collins suggested that some assistance to set up EMBRAPA -- with a view to decentralizing -- should be provided. Simultaneously, a program should be developed in the Northeast which would provide the basis for decentralizing and for initiating activities. He cautioned, however, that the program should be kept small enough to handle.

Cabral - EMBRAPA

7. Collins believes that the power behind Cabral is a Purdue trained economist who came out of ABCAR (Elisau Alves) and is now a Director of EMBRAPA. Collins believes it extremely urgent that some reading be taken on whether there is likely to be a change in EMBRAPA management early next year (Government elections are in March 1974). He further suggests that we determine the time frame that key management people are likely to remain in EMBRAPA as follows:

(a) Cabral (EMBRAPA's President) is on leave from IICA. What is his commitment to them?

(b) Alves is on leave from ABCAR and there is a rumor that he may be returning to them or that he may be going to Purdue University sometime next year for about a one-year period.

(c) Edmundo Gastral, another Director, is also on leave from IICA.

(d) Meirelles, a third Director, has supposedly transferred from DENEPA.

8. Research Organizations in the Northeast

(a) IPA: Pernambuco State Research System, headquarters at Recife

(b) EPEANE: Regional Branch of the DENEPA at Recife

(c) EMBRAPA: Its Regional Group in the Northeast will be formed from the EPEANE Group.

9. Collins suggests that Cabral's current knowledge, including priorities for the Northeast and elsewhere should be determined.

10. Collins also suggests that it should be determined if any antagonism exists between ABCAR and other Government extension services.

Two Major Issues to be Sorted Out

11. Sufficient assistance to EMBRAPA to help establish a viable organization with which donors can work at the national level; and two, an integrated approach be undertaken in the Northeast that is, working with all institutes simultaneously, during Phase 1 of assistance for regional projects.

Key Commodities

12. Collins considers the key commodities in the Northeast to be as follows:

(a) cassava;
(b) beans;
(c) maize;
(d) sorghum/millets;
(e) tree cotton; and
(f) livestock.

Institutional Model

13. The principal early problem which concerned most donors was the institutional model in the Northeast. Several alternatives were considered before EMBRAPA was established. Thought was given to the international center relay station approach and the posting of about five or six expatriates in the Northeast who would not have been tied to any particular Brazilian

institution and would have been linked to the international centers. Now, however, donors can consider channeling support through EMBRAPA. Moreover, universities and state research networks should be considered. In respect of an ICRISAT relay station in the Northeast, Cummings and Bentley might be able to visit Brazil during May 1974.

Expected Size of Project and Funding (during next 5-10-year period)

14. Collins considered that funds might be needed for such things as experiment station development, laboratory and field equipment, training programs (but not a crash-type program) and that perhaps a major investment might only be required at some later date. In summing up, he felt that a cautious approach should be taken and that we set our target for a modest program at least in Phase 1. In his view, a consolidation from strength could be made, so to speak, for a larger Phase 2 Project.

David Bell - Ford Vice-President

15. Bell has just returned from Brazil. It was apparent that his observations had been instrumental in some change of attitude on the part of Collins/Hardin. Collins reported that Bell now considers that as part of a longer run effort, one of the "Group" might get someone (like Cummings did in India) to work with Cabral and EMBRAPA during at least an initial three-month period. In all likelihood, such a person would be needed on a continuing and full-time basis. Indeed, Hardin suggested to me by telephone during the week of August 13 that we begin to look for someone like Ralph Cummings to work with EMBRAPA. This is a major shift in the attitude of the Ford Foundation. Collins now belives that a high-level man working with Cabral in advising on how to set up a research organization, how to determine priority, and which experiment stations, staff and facilities to keep for EMBRAPA to be a vital component of assistance.

Summing Up

16. Collins asked what should result from our plan of action. He considered that initially two things should emerge:

(a) An inventory of facilities and staff in the Northeast; and

(b) A mechanism of coordinating foreign assistance in Brazil -- how can we all work together?

17. Collins believes that some type of joint operation would be desirable, for example:

(a) IDRC: Interested in the semi-acrid regions of the Northeast;

(b) Ford: Interested in providing linkage with international centers;

(c) Other donors: Might provide specific inputs; and

(d) The Bank: Might provide the funding.

18. In summary: Bank -- leadership and finance; other donors -- staff and linkage.

19. During my visit to Brazil, Ford Brazil staff expressed complete agreement with the sense of the above and appeared to be pleased with the approach being taken or proposed by the Bank.

August 27, 1973

TO: Agricul ral Research Advisor Files August 27, 1973

FROM: James M. Fransen

SUBJECT: BRAZIL - Agricultural Research Discussions Rockefeller Foundation

1. I also met with Dr. John Pino, Director Agricultural Sciences, Rockefeller Foundation on Monday August 13, on the referenced subject.

2. Pino was quite pleased to learn about Ford's change in attitude concerning the approach to be followed in Brazil. He was indeed quite surprised and hoped that Ford would not change its mind again. It was his understanding that they have not been in favor of an integrated development program approach to Northeast Brazil, as well as support to establish EMBRAPA.

3. Pino was consistent in his approach, and essentially repeated his comments of previous meetings. He believes that an overall development plan, including all sectors such as transport, health, agriculture and so forth, should be developed for the Northeast. He further believes that research should be geared to providing solutions to problems limiting the effectiveness of the development plan. I informed him that the basis for an inter-ministerial commission had been established during the Goffin/ Fernandes visit to Brazil, that this commission would be responsible for the overall coordination of development planning and implementation in the Northeast, and that EMBRAPA's project formulation team could obtain guidance in respect of priorities from it. This appeared to be acceptable to him. Pino had one further suggestion. He suggests that a person, similar to a country program director-type (in their jargon) be found to become the "Group's" man in Brazil. It would be his responsibility to recommend on support to be provided to EMBRAPA, for assistant with project identification and preparation, and for other related activities. In this way, he believes that "The Group" could work together in a "Steering Committee" approach, and could expect some degree of success to result from their joint efforts.

August 27, 1973.

D21

cc. GQb

October 24, 1973

Dear Ralph:

Here is a copy of a letter from Haldore Hanson concerning a possible ODA grant to CIMMYT. The project in question, on the face of it, would seem to be a special project; and in any case it was not part of CIMMYT's core program as originally conceived.

While a point no doubt could be stretched for the sake of receiving these funds, it does seem to me to be bad in principle to insert projects into core budgets in this way (especially since this particular one seems to be as much for the benefit of the Tropical Products Institute as for CIMMYT); and it does seem odd, if Hanson's letter is accurate, that for the sake of this small amount ODA should be so concerned about appearances.

What do you think should be done?

Sincerely,

Harold Graves

Enclosure

Mr. A. R. Melville
Chief Natural Resources Adviser
Foreign and Commonwealth Office
Overseas Development Administration
Eland House
Stag Place
London SW1E 5DH
England

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

September 19, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N.W.
Washington, D.C. 20433

Dear Harold:

Subject: New core restricted grant from ODA to CIMMYT for 1974.

For some months CIMMYT has been discussing with the Tropical Products Institute of London the assignment of a postdoctoral fellow to CIMMYT for two years at the expense of ODA. ODA would provide salary and round trip travel direct to the individual, and ODA would transfer to CIMMYT $9200 for the year 1974 for the local maintenance costs.

This arrangement has now been approved, starting in January 1974. But TPI says that ODA requests CIMMYT to amend its budget before the CG meeting in November, and that ODA will then pledge the $9200 to CIMMYT, as part of its contribution to CG.

I write to ask what steps CIMMYT needs to make to amend its budget for 1974. This would mean adding one line item, under core restricted, for an ODA grant of $9200 for one postdoctoral fellow from Tropical Products Institute.

Please advise.

Cordially,

Haldore Hanson
Director General

HH/mph

LI-INT'L COUNCIL FOR EDUCATIONAL DEV.
cc: OP-RESEARCH
JAN 7

Belongs

With the compliments of

JAMES A. PERKINS
Chairman

International Council for
Educational Development
680 Fifth Avenue
New York, New York 10019

ıcil for Educational Development

:, New York 10019 212/JU 2-3970 Cable INCEDEV

3ER 6, 1973

CONTACT: MARY L. RYAN
(212) 582-3970

New York, N.Y. - December 6 - James A. Perkins, Chairman of the International Council for Educational Development, announced today that Kenneth W. Thompson will join ICED on January 1, 1974, to direct a new program on Higher Education for Development. This program is the result of several years of deliberations by a group of institutions -- national and international, public and private -- which have asked ICED to conduct a study of strategies and projects on which donor agencies might concert their efforts in developing countries. ICED was requested to make the study because it is a private agency, with an international board of distinguished educators, which deals with problems of higher education in both developing and developed countries. ICED's recently completed studies for the World Bank and for UNICEF give it a special competence in this field.

The agencies supporting the study are the Agency for International Development, Canadian International Development Agency, Ford Foundation, French Ministry of Foreign Affairs, Inter-American Development Bank, International Bank for Reconstruction and Development, International Development

Research Center (Canada), Overseas Development Administration (Great Britain), Rockefeller Foundation, United Nations Development Programme, UNESCO and UNICEF.

Mr. Thompson has been the Chairman of a Task Force of representatives of the agencies involved. As Vice-President of The Rockefeller Foundation, primarily concerned with the social sciences and international affairs, he took the leadership in designing the Foundation's program on university modernization in various parts of the world.

In announcing the appointment Mr. Perkins said, "The ICED is both pleased and proud to have been selected to manage this most important enterprise. The availability of Kenneth Thompson assures a necessary continuity and the highest professional level of leadership. I am delighted that Ken Thompson will join me and Philip Coombs, ICED Vice Chairman, as a partner in this and other enterprises."

Dr. John H. Knowles, President of The Rockefeller Foundation, said, "All of us at The Rockefeller Foundation are delighted that Mr. Thompson is assuming this important position with the ICED. We look forward to working closely with ICED and Mr. Thompson in exploring new opportunities in the field of higher education for development."

Mr. Thompson joined the Social Sciences Division of The Rockefeller Foundation in 1955 and has been Vice-President since 1961. He had previously been a member of the political science faculties of Northwestern University and the University of Chicago. Mr. Thompson is the author of numerous books, among them Foreign Assistance: A View from the Private Sector; The Moral Issue in Statecraft; American Diplomacy and Emergent Patterns; Political Realism and the Crisis of World Politics. He is a Fellow of the American Academy of Arts and Sciences; a member of the Council on Foreign Relations; a member of the Boards of Editors of International Organization and Worldview; a member of the Policy Studies Committee of the United Nations Association of the U.S.A.; Chairman of the United States Study Group on Cultural Relations for the Future, an international inquiry sponsored by the Hazen Foundation; and belongs to numerous professional associations.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

October 17, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N. W.
Washington, D. C. 20433

Dear Harold:

The enclosed draft letter has been sent to 11 members of the Consultative Group who now support or have supported CIMMYT.

Please send me a copy of your mailing list for CG members, and we will send this notice about our maize seminar to other members.

Cordially,

Haldore Hanson
Director General

Enclosure:
Letter to Members of CG.

RECEIVED

1973 OCT 29 AM 11:33

COMMUNICATIONS
SECTION

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

October 17, 1973

TO: Members of the Consultative Group for International Agricultural Research.

Dear Sir:

CIMMYT is holding a one-week international seminar on "Maize in the 1970s and the Role of CIMMYT", scheduled for April 22-26, 1974. Please note the dates on your calendar. A preliminary program is enclosed.

This seminar will constitute an important planning session regarding our future work on maize, and we would welcome participation of all present CIMMYT donors, and any other Consultative Group members who share an interest in this subject.

Please notify Dr. Alfredo Carballo of the CIMMYT maize staff whether it is possible that your government or institution will plan to be represented at this seminar. When you have made your choice, we would like the name of your designated participant.

CIMMYT is inquiring whether TAC would wish to be represented either by TAC members or specialists designated by TAC.

Cordially,

Haldore Hanson
Director General

Enclosure (1)

October 17, 1973

Donors invitation list, first round

(1) Ford Foundation, NY. Lowell Hardin.

(2) Rockefeller Foundation, NY, Sterling Wortman

(3) USAID, Washington, Dr. Joel Bernstein

(4) UNDP, Mr. William Mashler.

(5) BID, Mr. Alfred Wolf.

(6) Government of Germany, Dr. Werner Treitz.

(7) Governme nt of UK., Mr. W. A. C. Mathieson.

(8) Government of Canada, IDRC, David Hopper.
CIDA, The President of organization.

(9) Government of Denmark.

(10) IBRD, Mr. Harold Graves.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

November 26, 1973.

Mr. Harold Graves
Associate Director
Development Service Dept.
Room D - 1122
1818 H Street N. W.
Washington, D. C. 20433
U. S. A.

Dear Harold:

Following up on your telephone conversation with Keith Finlay of November 12, 1973, here is how we now stand on 1973 contributions from donors to CIMMYT 1973 core unrestricted budget.

	Total U. S. Dollars		
Source	Budgeted	Received or Expected	Balance
Rockefeller Foundation	750,000	750,000	----
Ford Foundation	750,000	750,000	----
U.S. A.I.D.	1,500,000	1,500,000	----
I.B.R.D. Group	1,000,000	1,500,000	500,000
West Germany	276,000	388,775 1/	112,775
Others	509,000	----	(509,000)
Totals:	4,785,000	4,888,775	103,775

1/ See attachment for details.

As I understand Keith's memo, you have asked us to plan to carry over the anticipated excess in West German donor funds noted above ($ 103,775) to fulfill part of our 1974 request from donors. Please advise us if this is your wish. If so, we now need $ 4,047,225 of total new donor funds to fulfill our 1974 core unrestricted budget instead of the $ 4,151,000 which was requested in our presentation to the Consultative Group in July - August of this year.

Sincerely yours,

Bob R. Osler

Robert D. Osler.
Deputy Director General.
Resident Research.

RDO:cc
cc: Mr. H. Hanson
Dr. K. W. Finlay

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
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Sincerely yours,

Robert D. Osler.
Deputy Director General.
Resident Research.

RECEIVED
1973 DEC -3 PM 2:04

RDO:cc
cc: Mr. H. Hanson
Dr. K. W. Finlay

ATTACHMENT: DETAILS OF W. GERMAN FUNDS RECEIVED BY CIMMYT IN 1973.

Date of Notification	Amount of Notification	Date of Deposit	U. S. Dollar Equivalent
Jan. 26, 1973	400,000 DM	Feb. 5, 1973	134,800
May 4, 1973	250,000 DM	May 31, 1973	90,375
Oct. 17, 1973	400,000 DM	Nov. 2, 1973	163,600
Totals:	1,050,000 DM		388,775

Record Removal Notice

The World Bank Group Archives & Records Management

File Title	Barcode No.
Consultative Group on International Agricultural Research [CGIAR] - G-3 - International Maize and Wheat Improvement Center [CIMMYT] - 1972 / 1974 Correspondence - Volume 2	1760372

Document Date	Document Type	
September 25, 1973	Memorandum	

Correspondents / Participants
To: Robert Jones
From: Harold Graves

Subject / Title
Disbursement of IDA grant to CIMMYT

Exception(s)
Financial Information iv

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.

Withdrawn by	Date
Sherrine M. Thompson	April 12, 2021

D1 - cc: 42a
42b
43b
43c

Mr. Robert Jones

September 25, 1973

Harold Graves HG

Supplemental Agricultural Research Grants for 1973: to CIMMYT, to CIAT, to the International Laboratory for Research on Animal Diseases (ILRAD) and to the International Livestock Center for Africa (ILCA)

The Board of Executive Directors has now approved the President's recommendations concerning additional IDA grants to various international agricultural research centers in 1973. These recommendations were contained in a President's Memorandum of September 12, 1973 (IDA/R73-99). The grants are to be made by IDA from funds transferred to the Association out of the Bank's FY 1972 net income.

The grants are as follows:

To Centro Internacional de Agricultura Tropical (CIAT), $60,000. This sum is in addition to the $120,000 already granted to CIAT for 1973.

To Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT), $500,000. This sum is in addition to the $1,000,000 already granted to CIMMYT for 1973.

To International Laboratory for Research on Animal Diseases (ILRAD), $100,000. This grant will be paid into an initial fund (on the ICRISAT model) which probably will be established around October 15, 1973.

To International Livestock Center for Africa (ILCA), $100,000. This grant will be paid into an initial fund (also on the ICRISAT model) which probably will be established sometime before the end of the calendar year 1973.

I am sending you a separate memo specifically requesting the disbursement of the CIAT grant, and am sending another memo specifically requesting the disbursement of part of the CIMMYT supplemental grant. When the time comes, I will also provide requests for disbursements to ILRAD and ILCA.

HGraves:apm

426

September 11, 1973

Dr. D. Winkelmann
Economist
International Maize and Wheat
Improvement Center
Londres 40, Mexico 6, D.F.
Apdo. Postal 6-641
Mexico

Dear Don,

Thank you for your letter of August 23. It is correct I have been invited to the Puebla Review of October 6-9, unfortunately it doesn't seem likely that I will be able to join the group, as I have another commitment in Western Africa at that time. With regard to the possibility of a seminar in October, could you give me some idea of your travel plans. I need to have plenty of notice to alert the staff. Please let me know when you expect to be in this region.

I passed your message on to Sally. I will tell you all about Haiti when we meet again.

Best regards,

Yours sincerely,

M. Yudelman
Director
Agriculture and Rural
Development Department

MYudelman:lkt

526

Mr. Cheek

August 29, 1973

Harold Graves

Distribution of Hanson Statement

Bill Mashler has agreed that UNDP will distribute Haldore Hanson's statement widely, to its resident representatives, and through its representatives and other channels. Hanson's approved text of his statement is attached.

For the UNDP distribution, French and Spanish translations of the text will be needed; and I have agreed that the Bank will do them.

Finally, UNDP will need the following quantities of the statement:

500 in English,

200 in French, and

300 in Spanish.

I'd appreciate your taking all this in hand, please.

Attachments

cc: Mr. Yudelman
Mr. William Clark

HGraves:apm

92b.

Registered

August 8, 1973

Dear Hal:

With this letter, I am sending you the verbatim transcript of that part of the Consultative Group meeting in which donors stated their intentions with regard to grants to the various international agricultural research centers for the financial requirements of the centers in 1974. This will enable you to make your own calculation of the grants intended for CIMMYT by governmental donors. In addition, no doubt, you will want to make allowance for contributions to CIMMYT by the Ford and Rockefeller Foundations, although the Foundations, as you know, will be reserving their specific decisions on these contributions until later in 1973.

The World Bank's affiliate, the International Development Association (IDA), also will be willing to consider continuing its support of CIMMYT in 1974, within the limit of IDA's available resources and taking account of the needs of other centers whose needs may not be fully met by other donors.

We would hope that donors to CIMMYT would have made up their minds sufficiently for you to have by next October 1 a good idea of what funds to expect for 1974.

Sincerely,

Harold Graves

Enclosure - pp. 38-94

Mr. Haldore Hanson
Director General
International Maize and Wheat
Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves:apm

cc: Dr. Hardin + Dr. Pino

FORM NO. 75
(7–73)

WORLD BANK GROUP

ROUTING SLIP	DATE April 3
NAME	ROOM NO.
~~M. Coulter~~	
Central Files - CIMMYT	F-244
	G-3

	APPROPRIATE DISPOSITION		NOTE AND RETURN
	APPROVAL		NOTE AND SEND ON
	COMMENT		PER OUR CONVERSATION
	FOR ACTION		PER YOUR REQUEST
	INFORMATION		PREPARE REPLY
	INITIAL		RECOMMENDATION
	NOTE AND FILE		SIGNATURE

ARKS

John.
We did not reply to this letter (CIMMYT went ahead anyway), but it may be of interest to you.

Howard Simms

Audrey/ PL files and CIMMYT.

FROM	ROOM NO.	EXTENSION

G3 ~~BC~~
✓ cc to A.V. ~~HG~~
CJ

M E M O R A N D U M

Date: August 2, 1973

To: Mr. Harold Graves, IBRD

From Haldore Hanson, CIMMYT

Subject: Indirect cost distributions to restricted and special grants

CIMMYT Trustees gave approval in principle this week to the attached paper, and I was asked to request the advice of the Secretariat whether this meets your criteria for an equitable distribution system.

I would be grateful for your comment on three points:

(1) Is an on-campus, off-campus distribution acceptable?

(2) Have you comment on our dropping the direct allocation of Headquarters staff time? (see paragraph 4).

(3) Would you accept an allocation based on total program expenditures rather than total personnel expenditures? Some Trustees prefer total program expenditures.

CIMMYT will retain its present overhead system while awaiting the comment of the Secretariat.

Agenda Item No. 2
Executive and Finance Committee
Washington, week of July 30, 1973.

Subject: Formula for Overhead charges on restricted and special grants.

At its meeting June 15, 1973, the Executive Committee asked for a calculation showing how an "on-campus" and "off-campus" rate of overhead would affect CIMMYT's restricted and special grants.

An on-campus project may be defined as an activity conducted on the campus and therefore benefiting from the complete administrative services. An off-campus project is one which is conducted away from the campus and receives only part of the administrative services.

This paper will describe how such a distinction would work at CIMMYT, what the consequences would be in the level of overhead charged, and the effect on level of income to CIMMYT.

(1) Which existing grants at CIMMYT can be classified as on-campus and which as off-campus?

Of CIMMYT's present restricted and special grants, numbering more than 50, only three are conducted jointly with the core program, benefit from the full range of administrative services, and therefore would be classified as "on-campus projects". These are:

(i) UNDP high quality protein maize project.
(ii) CIDA-IDRC triticale project.
(iii) IDRC sorghum research project.

All others receive limited administrative services and would be classified "off-campus". Most are located outside of Mexico.

(2) What administrative costs would CIMMYT allocate in 1972 to "on-campus projects" and what costs to "off-campus projects".

CIMMYT would divide the 1972 administrative expenditures totalling $953,000, into two parts:

(i) General administration:		These costs would be shared among:
Board of Trustees	$ 13,000	
Director General's office	293,000	a) Core operating program.
Accounting	151,000	
Purchasing	40,000	b) On-campus restricted projects.
Executive office	53,000	
Mexico City office	21,000	
Travel office	7,000	c) Off-campus projects.
	$ 558,000	

(ii) Support units and general operations:		These costs would be shared among:
Buildings and grounds	115,000	
Motor pool	102,000	a) Core operating
General office services	58,000	program.
Visitors service	18,000	b) On-campus res-
General operations *	102,000	tricted projects.
	395,000	

* (Includes telecommunications, rent, general supplies, insurance, utilities)

An equitable share of "general administration" could be allocated to all of CIMMYT's program grants, including core operating program, restricted and special grants, whether classified "on campus" and "off campus".

But none of the cost of "support units" and "general operations" would be allocated to "off-campus" projects.

(3) What would CIMMYT use as the basis of distribution?

As in the past, CIMMYT would use total personnel costs (i.e. total salaries, benefits, and stipends) as the basis of distribution.

This is the basis recommended by the Secretariat to the Consultative Group.

(4) Would CIMMYT continue to make a first distribution consisting of the estimated time which professional staff in Mexico devote to the restricted and special projects?

No, it would not.

For 1972 our controller estimated at the end of the year that 37 professional employees at CIMMYT headquarters spent about 2.3 man-years of time working directly on the restricted and special grants. The value of this staff time was placed at $129,360. This amount was distributed as overhead to the restricted and special grants.

This included estimates ranging from 24% of Dr. Borlaug's time, 37% of Dr. Sprague's time, down to less than 1% of the time of a scientist like R. A. Fischer, wheat physiologist.

CIMMYT does not believe the distribution of these costs should be made in the future to the "off-campus" projects, because "off-campus" projects are making a similar contribution of staff time to the CIMMYT core program, which has not been calculated in the past.

For example, wheat breeding work by Varughese in Tunisia, McCuistion in Algeria, and Klatt in Turkey has developed germ plasm which is fed directly into the CIMMYT core program in Mexico and to other national programs. The same applies to maize research by the 3 CIMMYT scientists in Zaire, by the two CIMMYT staff in Pakistan, and by CIMMYT staff in Egypt and Nepal.

We have no accurate way of measuring this exchange of services -- from headquarters to the "off-campus" projects, and back again. But we think it is equitable to assume the two services balance each other.

(5) What are the 1972 figures CIMMYT would use as the basis of (A) salaries, benefits, and stipends, and (B) total program costs?

Col. 1 Type of grant	Col. 2 Total direct program expenditures	Col. 3 Total direct personnel expenditures	Col. 4 Percent distrib. for general administration	Col. 5 Percent distrib. for general operations
(i) Core program 1972 (excluding administration and capital development)	2,365,878	1,327,715	52.8%	79.1%
(ii) On-campus projects 1972	653,469	351,554	14.0%	20.9%
(iii) Off-campus projects 1972	1,346,967	833,367	33.2%	0
TOTAL	$ 4,366,314	2,512,636	100.0%	100%

(6) Sample distribution for 1972 under "on-campus" and "off-campus" system.

Distribution No. 1
General administration $558,000

To core operating program,	52.8% of $558,000 =	$ 294,624
To restricted on-campus projects,	14.0% of $558,000 =	78,120
To off-campus projects,	33.2% of $558,000 =	185,256
Sub-total	100.0%	558,000

Distribution No. 2
General operations $395,000

To core operating programs	79.1% of $395,000=	312,445
To restricted on-campus projects	20.9% of $395,000=	82,555
To off-campus projects	0	0
Sub total	100 %	$ 395,000

Restatement of Distribution to each type of program:

1) To core operating program 1972

Total direct program expenditures 1972		$ 2,365,878
Overhead, first distribution	$ 294,624	
Overhead, second distribution	312,445	
Total overhead		607,069
% of overhead		25.7%

2) To restricted on-campus projects

Total direct program expenditures 1972		653,469
Overhead, first distribution	78,120	
Overhead, second distribution	82,555	
Total overhead		160,675
% of overhead		24.6%
		(Rounded 25%)

3) To off-campus projects

Total direct program expenditures 1972		1,346,967
Overhead, first distribution	185,256	
Overhead, second distribution	0	
Total overhead		185,256
% of overhead		13.8%
		(Rounded 14%)

(7) If CIMMYT had already adopted an "on-campus" rate of 25% and an "off-campus" rate of 14%, what would be the effect upon the collection of overhead in 1972? in 1973?

In 1972 the difference would be:

(i) Actual collection of overhead under agreements in effect in 1972 $ 266,000

(ii) Theoretical collection of overhead in 1972 if CIMMYT applied new rates of 25% and 14% to those grants which paid overhead in 1972 257,000

(iii) Difference, reduction of about 3%.

For 1973, overhead under the proposed new rates would be slightly reduced, for those grants which were operating in 1972. But CIMMYT has signed a number of new grants since 1972, and therefore the total collection of overheads would actually be increased, even under the new 25%-14% rates.

(8) Recommendations to Trustees:

It is proposed:

(i) That CIMMYT adopt an "on-campus" and "off-campus" basis for its overhead rates, as described in this paper.

(ii) That the Committee approve the rates of 25% and 14% for 1973-74, and those rates remain in effect until the Trustees annual meeting of April 1974.

(iii) That the Trustees Executive Committee review the rates once a year, at the time of the annual Trustees meeting, based upon the preceding year's experience, as reported by the Auditor.

(iv) That CIMMYT continue to specify the overhead rate for restricted or special grants. in each agreement, using the rate currently approved by the Trustees, and that this rate remain at a fixed level for the duration of each grant.

TABLE 1: Comparison of overhead on CIMMYT restricted and special grants, under rates in effect in 1972, under rates in effect in 1972, and under proposed "on-campus" and "off-campus" rates estimated at 25% and 14%

Col. 1 Type of grant	Col. 2 Description of grant	Col. 3 Termination date for grant operating in 1972	Col. 4 Overhead rate specified in agreement	Col. 5 Total direct grant expenditures	Col. 6 Overhead collected in 1972	Col. 7 Overhead 1972 if 25% and 14% rates had applied	Col. 8 Effect if NF rates used in 1973
On-campus	UNDP Global 1 Maize	3/73	-0-	387,826	-0-	-0-	1/
	CIDA/IDRC-Triticale	6/76	18%	220,327	69,306	79,629	1/
	IDRC-Sorghum	-	-	-	-	-	1/
Off-campus	RF Central America Food Crop	Terminated 72	-0-	(860)	(156)	-0-	
	" Potato Projects	12/73	10%	91,972	8,971	12,876	2/
	" Puebla Project	12/73	-0-	76,763	-0-	-0-	3/
	" Scholarship Programs	Terminated 72	-0-	26,126	-0-	-0-	
	" Winter Wheat (US)	Terminated 72	-0-	20,494	-0-	-0-	
	" Maize & Wheat Bibliographies & L. A. Journals	Terminated 72	-0-	875	-0-	-0-	
	" Germ Plasm Committee	Terminated 72	-0-	114	-0-	-0-	
	" Maize Grain Production	Terminated 72	-0-	5,476	-0-	-0-	
	" Turkey & Middle East Wheat	Terminated 72	18%	6,170	1,109	864	
	" Nutrition Lab	Terminated 72	-0-	(1,066)	-0-	-0-	
	" Klatt & Prescott Services	12/73	18%	54,605	9,968	7,645	2/
	" Other Special	Terminated 72	-0-	19,476	-0-	-0-	
	FF North Africa	4/	18%	376,976	67,819	52,777	4/
	" W. Pakistan	4/	10%	94,766	10,024	13,267	4/
	" Argentina	4/	10%	31,039	3,874	4,345	4/
	" Dhawan Services	12/74	18% Salaries	23,062	2,880	3,229	3/
	" Various	-	Varied	47,696	2,641	6,677	
	USAID North Africa	12/73	17%	65,439	11,005	9,161	2/
	" Nepal	11/76	17%	22,638	3,889	3,169	2/
	UNDP Other Programs	Terminated	-0-	38,433	-0-	-0-	
	IADB Training	10/73	Special 5/	91,196	38,693	35,460	2/
	Zaire Maize	8/76	18%	197,650	35,569	27,671	2/
	Other Various Programs & Donors	-	Varied	57,927	17	17	
	TOTALS				265,609	256,737	

Footnotes for Table 1.

1/ The 3 on-campus projects in 1973 include:

(i) UNDP high lysine maize: Present 3-year agreement specified an overhead rate of 18% until March 1976.

(ii) CIDA-IDRC triticale: present 5-year agreement specified an overhead rate of 18% until June 1976.

(iii) IDRC sorghum: present 2-year agreement specified overhead rate of 18% until 1975.

These will not be renegotiated. They will continue at 18%. But rate will change if extensions are negotiated.

2/ Special grants which now specify an overhead rate of 18%, and which will be classified as "off-campus", would benefit from the proposed reduction of rate to 14% in 1973, if the new rate is approved.

3/ Special grants which now specify no overhead, or overhead at a rate less than 14%, and are classified as "off-campus", would not be renegotiated They would continue to be treated as stated in present agreements, until end of present agreements.

4/ Three grants now in various stages of negotiation will be given the new off-campus rate, if the new rates are approved. These are:

FF Pakistan.
FF North Africa.
FF Argentina.

5/ BID training grant provides indirect costs based upon man-years of training rather than upon a percentage of direct costs. This arrangement would remain unchanged if new rates are approved.

G26.

July 30, 73

Discurso pronunciado por el señor Haldore Hanson, Director General del Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT) ante el Grupo Consultivo sobre Investigaciones Agronómicas Internacionales (GCIAI) en el Banco Mundial el 30 de julio de 1973

Señor Presidente,
Señores miembros del Grupo Consultivo y del
Comité Asesor Técnico:

Es mi propósito, en el tiempo asignado al CIMMYT, tratar de cuatro temas.

En primer lugar, deseo hablar acerca del crecimiento de la población en cuanto afecta a las necesidades de alimentos.

En segundo término, quiero exponer el punto de vista del CIMMYT con respecto a la baja registrada en la producción mundial de alimentos el año pasado; ¿cómo se explica el descenso?

Como tercer tema presentaré, en forma resumida, los aspectos más destacados de las recientes actividades del CIMMYT.

Por último, en el cuarto tema, expondré algunas de las cuestiones relacionadas con la programación que hemos estado examinado en el CIMMYT.

El crecimiento de la población

Mi colega, Norman Borlaug, sugiere que fue probablemente la mujer neolítica, no el hombre de esa Edad, quien descubrió la agricultura. Su argumento discurre de esta manera. Debe haber sido una mujer la que recogió granos silvestres, bayas y raíces. La mujer que se ocupó en estas actividades se encontraba muy cerca de la Naturaleza y de pronto se le debe haber ocurrido la idea de que cultivar las plantas sería más fácil que hallarlas silvestres. Quizá tuviera este atisbo un día en que su esposo, el cazador, sin otro equipo que un pedrusco y un garrote, regresara al hogar sin haber cobrado una pieza.

En cualquier caso, el cultivo de granos cereales para uso doméstico tuvo lugar hace unos nueve mil o diez mil años. El laboreo del arroz en el Asia oriental, del trigo en el Asia occidental, del sorgo en Africa y del maíz en México tuvo lugar de manera independiente entre sí. Por lo menos cuatro mujeres diferentes deben haber concebido la misma idea. Todas ellas analfabetas, en aquellos días, pero muy inteligentes.

Los expertos en demografía son de opinión, hoy, que cuando comenzó la agricultura el mundo tenía unos diez millones de habitantes. A partir de entonces la población mundial comenzó a crecer ayudada por una provisión de alimentos más segura. En realidad, su número se duplicó lentamente, después se reduplicó con mayor rapidez y, en épocas más recientes, ha venido aumentando, como ustedes saben, a un ritmo muy acelerado.

Por ejemplo, hoy se calcula que en la época de Jesucristo había unos 250 millones de personas en el mundo. Esta población se incrementó al doble en el curso de los 16 siglos siguientes y alrededor del año 1650 alcanzaba la cifra de 500 millones de seres. La siguiente duplicación en el número de habitantes sólo requirió dos siglos, y así nos encontramos con mil millones de personas en el mundo en 1850. El nuevo aumento al doble ocupó un lapso de 80 años y al llegar a 1930 la cifra había crecido a dos mil millones de habitantes.

La población mundial hoy en día es de 3.800 millones de personas y sigue creciendo a una tasa de 2% por año. A este ritmo de incremento la raza humana habrá aumentado otra vez al doble en 38 años, o sea poco después del año 2000 de nuestra Era. Los países en desarrollo presentan una tasa promedio de crecimiento de 2,5%, y aumentarán su población al doble en 25 años, o menos.

Aquí tenemos, pues, una vara de medir para nuestra discusión sobre los alimentos. Nos planteamos esta pregunta: ¿Puede aumentar el mundo al doble su producción de alimentos en 38 años? ¿Y pueden los países en desarrollo incrementar al doble su producción de géneros comestibles en 25 años o menos?

En los centros agrícolas hablamos de nuestros trabajos en nueva tecnología como un medio de ganar tiempo, como una operación de contenimiento a fin de brindar al mundo la oportunidad de modificar en sentido descendente su tasa de crecimiento de la población. Pero la pregunta que en realidad debemos hacernos es la siguiente: ¿Existen posibilidades de lograr índices de natalidad decrecientes en los próximos dos o tres decenios?

La respuesta depende del experto en demografía al que se escuche. El CIMMYT no tiene en su nómina a un experto en ese campo, pero tratamos de mantenernos informados de lo que piensan estos especialistas.

Hace poco leí una evaluación del crecimiento de la población por uno de esos expertos, y su información y juicio me dieron la impresión de que tenía ante mí una evaluación bien documentada, bien equilibrada y cautamente optimista. Se trataba de una exposición hecha por el Dr. Dudley Kirk, de la Universidad de Stanford. Como todos los expertos en demografía precavidos, agregaba muchas cláusulas condicionantes. No dispongo de tiempo para entresacar citas extensas de su exposición, pero a riesgo de simplificar en exceso voy a resumir las cinco razones presentadas por el Dr. Kirk como fundamento de sus esperanzas de que se logren tasas decrecientes de población en los países en desarrollo.

Primera, las tasas de nacimientos ya estaban descendiendo en el decenio de 1960 en los citados países. El Dr. Kirk afirma que 42 de esos 47 países, de los que las NN.UU. manifestaban que tenían registros de nacimientos "prácticamente completos", informaban que entre principios y fines del citado decenio de 1960 se había producido una reducción en los índices de natalidad.

Segunda, cuando comienza un descenso en la tasa de nacimientos en un país en desarrollo, sostiene el Dr. Kirk, la declinación es más rápida - el ritmo de descenso es superior al doble - comparada con la experiencia pasada en Europa y América del Norte. Cuanto más elevadas las tasas, con mayor rapidez parecen bajar.

Tercera, el Dr. Kirk estima que en la actualidad el clima de opinión es más favorable hacia el control de la natalidad que el que prevalecía en la época en que las tasas de población descendieron en Europa y América del Norte.

Cuarta, hoy se dispone de una mejor tecnología para el control de la natalidad y se están llevando a cabo muchos trabajos de investigación en la actualidad para hacerla aún más eficiente.

Ultima, se tiende a establecer una correlación de la creciente prosperidad con tasas decrecientes de natalidad, no sólo en los países avanzados sino también en los que se encuentran en desarrollo.

Tras haber expuesto las razones en que fundaba sus esperanzas, el Dr. Kirk recalcaba de nuevo la suma dificultad del problema planteado por el crecimiento de la población.

A juicio del Dr. Kirk ningún grado de nueva tecnología agrícola puede mantenerse por mucho tiempo con ventaja sobre una tasa de crecimiento de la población del 2,5% en los países en desarrollo. En una perspectiva a largo plazo, es necesario que el crecimiento de la población sea cero. Cualquier tasa de crecimiento constante, por muy pequeña que sea, conducirá al desastre.

Además, el Dr. Kirk cree que a corto plazo - digamos hasta 1990 - seguirán encontrándose grandes dificultades para lograr un rápido ajuste del crecimiento de la población. No podrá alcanzarse un éxito real en cuanto a reducir a cero las tasas de crecimiento antes de fines de siglo.

Este juicio basta para permitirnos en esta reunión elaborar un marco para nuestras deliberaciones.

Podemos dar por supuesto que la población mundial se duplicará una vez más, hasta llegar a más de siete mil millones de habitantes, antes de que se pueda equilibrar el crecimiento de la población con el de la producción de alimentos, o incluso acercarse a ese equilibrio.

Podemos dar por sentado que las tierras dedicadas al cultivo de alimentos en el mundo deberán producir el doble de esos artículos, en la misma superficie, en el curso de los tres decenios siguientes. En los países en desarrollo la demanda alimentaria aumentará con mayor rapidez, por lo que deberán elevar al doble su producción de alimentos dentro de los 20 a 25 años venideros.

Probablemente continuarán los problemas de la escasez de alimentos aun después de terminado el siglo. Si el mundo no puede detener el crecimiento de su población dentro de tres decenios, deberá recurrirse a partir de ahora a otros tipos de investigación, a la que calificaré de "investigación radical", para hacer frente a las necesidades adicionales de alimentos después del año 2000 de nuestra Era.

Esas son, en nuestro concepto, las consignas de actividad que deberán emitirse en los centros internacionales, sujetas, claro está, al apoyo financiero de los miembros del Grupo Consultivo.

La producción de alimentos en 1972-73

Permítanme ahora hablar de lo que aconteció con la producción de alimentos durante el año pasado.

Esta, por primera ocasión desde 1966, descendió en los países en desarrollo en 1972. La producción de alimentos per cápita en esos países declinó a su nivel más bajo desde 1965. Este hecho constituyó una desviación significativa de la tendencia, ya que dicha producción per cápita en los citados países había estado elevándose por espacio de casi 20 años, en realidad desde 1954, con una ventaja de 0,5% a 1% por año con respecto al crecimiento de la población. Eso quiere decir que durante 20 años el mejoramiento obtenido en la agricultura fue ligeramente superior al incremento en la población. En 1972 la producción de alimentos ya no pudo mantenerse al ritmo del crecimiento demográfico.

El año pasado el precio del trigo en el mercado mundial se elevó en 70%. El arroz desapareció prácticamente de ese mercado debido a que no había almacenamientos de ese grano.

Es indudable que habrán leído ustedes acerca de la escasez de vagones de ferrocarril en Norteamérica, y de la falta de transporte marítimo, para el acarreo del gran volumen de grano.

Algunos periodistas se mostraron muy hirientes en sus comentarios en la prensa mundial sobre la agricultura y los expertos agrónomos. Dijeron que la revolución verde era un mito y un embuste, un lema que había dejado de existir. Sostuvieron que jamás se había producido cambio alguno en la tecnología de la producción de alimentos, que no había habido sino un período de condiciones climatológicas favorables en el decenio de 1960.

Creo que los Centros representados aquí deben presentar al Grupo Consultivo su propia interpretación de lo que aconteció en 1972 y yo, a mi vez, les expondré las ideas que sustentamos en el CIMMYT.

El año pasado ocurrieron sequías durante las estaciones de crecimiento del trigo en la Unión Soviética, en China y en Australia. También se produjeron en la temporada de los monzones, cuando crece el arroz en el Asia meridional y sudoriental; y la sequía provocó un desastre en Africa, justo al sur del Sahara, donde se cultiva el sorgo.

Estos fenómenos climatológicos registrados en lugares aparte unos de otros produjeron una reacción en cadena en el comercio mundial de alimentos. La Unión Soviética, como ustedes saben, compró casi 30 millones de toneladas de cereales alimentarios en el mercado mundial, lo que significó un paso en la escalación de precios. Luego vino la China y compró más de cuatro millones de toneladas. Después entró la India en el mercado para adquirir más de dos millones de toneladas. A este país no le hubiera resultado necesario comprar esto si no hubiera enviado para entonces dos millones de toneladas de granos a Bangladesh, y más tarde lo tuvo para hacer a fin de reemplazar ese alimento para su consumo interno. También otros países del Asia cultivadores de arroz sufrieron a causa de las adversas condiciones climatológicas, sobre todo Filipinas, debido a inundaciones, e Indonesia, que atravesó una estación deficiente de monzones.

Las zonas que sufrieron rigores climatológicos encontraron compensación parcial en las espléndidas cosechas de trigo obtenidas en 1972 en la India, el Paquistán y Marruecos.

En conjunto, la producción cerealera mundial descendió en sólo un 4% el año pasado, reduciéndose de 1.106 millones de toneladas en 1971 a 1.064 millones de toneladas en 1972. Pero ese pequeño cambio del 4% bastó para provocar la violenta reacción que se registró en los precios, en el transporte marítimo, en los gastos en divisas y en sufrimientos humanos.

Es evidente que la revolución verde no ha solucionado el ciclo climatológico. No tenemos una tecnología en la actualidad que salve una cosecha cuando recibe menos de sus necesidades biológicas en humedad.

El único paliativo que conocemos para las fluctuaciones importantes en las condiciones climatológicas consiste en hacer acopio de granos de un año para otro. En los últimos años ese almacenamiento lo han proporcionado principalmente tres países con excedentes de esos productos: los Estados Unidos, el Canadá y Australia. Los tres han estado reduciendo en fecha reciente sus excedentes en depósito. Alrededor de otros 10 países han guardado existencias menores para la venta. Me complació recibir del Director de la FAO, el Dr. Boerma, una copia del discurso que pronunció hace pocos meses ante la Organización de Cooperación y Desarrollo Económicos (OCDE), en el cual abogó por el establecimiento de un nuevo plan para el almacenamiento de granos, el cual comprendería a un número mayor de países, entre ellos a los que se encuentran en proceso de desarrollo.

Con el tiempo los hombres de ciencia también contribuirán a atenuar las interperancias climatológicas desarrollando plantas de más amplia adaptación que muestren rendimientos más estables sometidas a variaciones tanto de temperatura como de índice pluviométrico. Volveré sobre este tema dentro de un momento, pero no es una solución inmediata.

Antes de que dejemos el tema de lo acaecido en 1972, necesitamos situar en su debida perspectiva la frase "revolución verde", que tanto se ha denotado en la prensa. La expresión no es precisa. Es emocional. Se ha utilizado en exceso. Algunas gentes dan por supuesto que la expresión promete más resultados de los que hasta la fecha ha alcanzado la revolución.

En fin, como muchas frases populares en la prensa, esta probablemente subsistirá en el lenguaje y, por consiguiente, debemos menguarle algo de la imprecisión exponiendo lo que nosotros entendemos que quiere decir la "revolución verde".

En el CIMMYT la revolución verde no es un milagro que comenzó con unos cuantos sacos llenos de semillas. Estas resultaron ser parte del proceso, pero sólo una parte del mismo, y el proceso sigue en marcha. Ahora vemos con más claridad que hace cinco años la índole de esa revolución.

Primero, la revolución verde conlleva el disponer de nuevas semillas capaces de producir rendimientos más elevados. Esas semillas dan rendimientos más altos porque poseen cualidades genéticas que responden a una mayor fertilidad y a un grado más elevado de humedad y por lo tanto producen más grano. Las nuevas variedades tienen en general un tallo más corto con objeto de impedir un encamado (o caída de la mies), y la planta más corta también tiene como consecuencia que una cantidad mayor de su parte seca se convierta en grano. Ese es un elemento de la revolución.

Segundo, la revolución verde entraña el ajustarse a un "conjunto de prácticas agronómicas". Entre ellas figuran la fecha recomendada, la tasa y profundidad de la siembra; la cantidad de fertilizantes a utilizar y cuándo aplicarlo; los métodos de lucha contra las malas hierbas y otros elementos. Estas prácticas agronómicas son específicas de cada lugar, es decir, deben ser formuladas con carácter local, lo cual exige el adiestramiento de científicos locales en todos los países cultivadores. Si las nuevas semillas capaces de producir rendimientos más elevados se utilizan a la antigua, no tendrán una producción mejor que las variedades tradicionales de semillas. Así, pues, la nueva semilla y el nuevo conjunto de prácticas deben ir de la mano.

Tercero, la revolución verde lleva consigo el establecimiento de nuevos servicios y nuevas políticas gubernamentales. Aquí entran el asesoramiento técnico a los agricultores, el suministro de los insumos necesarios, en especial fertilizantes, riego y plaguicidas a precios razonables, la concesión de créditos para comprar nuevos insumos, la formulación de políticas de precios de los granos y el establecimiento de mecanismos para asegurar la compra y el almacenamiento de cosechas mayores. Estos nuevos servicios y políticas gubernamentales exigen que un gobierno se comprometa a incrementar su producción de alimentos. De otro modo no se producirá la revolución.

Cuarto, la revolución verde implica un proceso continuo de investigación y ensayo. No es un acontecimiento que se produce de pronto y se extingue, ni una técnica aislada. Es un proceso modificado continuamente. El cambio lo hacen necesario los nuevos microbios patógenos transmisores de la enfermedad, las nuevas plantaciones y las fechas de recolección. Cada nuevo programa crea sus propios problemas, los que a su vez requieren solución.

Finalmente, la revolución verde no es un acontecimiento aislado en las regiones tropicales y subtropicales, sino la continuación del proceso científico en la agricultura iniciado en Europa y América del Norte hace más de 100 años. Los métodos científicos de la zona templada están adaptándose ahora al trópico y al subtrópico, y los primeros resultados obtenidos en los países más cálidos son notables, pero no milagrosos, y desde luego no más milagrosos que los logrados en los últimos 100 años en Europa, América del Norte, Australia y el Japón.

Si alguien escribe en la prensa que la revolución verde es un mito y un embuste, debe estar dispuesto a decir que el proceso de mejoramiento agrícola en los países industrializados es también un mito y un embuste, ya que estamos extendiendo el mismo proceso a las regiones más cálidas del mundo.

La revolución verde está muy llena de vida y avanza, a pesar de las rachas climatológicas adversas de 1972. Tras de haber afirmado lo anterior, debemos tener mucho cuidado de no prometer demasiado y demasiado pronto. Todavía no existe más que un equilibrio precario entre el crecimiento de la población y la producción ascendente de alimentos, y quizá lo mejor a lo que podemos aspirar durante los dos o tres decenios venideros es a un equilibrio precario.

El CIMMYT tuvo varias experiencias con el trigo que ilustran el porqué debemos ser cautos en nuestras predicciones.

Cuando los trigos semienanos mexicanos comenzaron a extenderse al Asia, en 1966, resultó que se adaptaban bien a las llanuras del Ganges en la India y a las del Indus en el Paquistán. Esas zonas tenían escalas de temperatura similares a las que prevalecen en el noroeste de México, de donde se seleccionaron los trigos mexicanos originales. Tenían regadío. Tenían géneros similares de roya. Tenían gobiernos dispuestos a conseguir los insumos adecuados y a asegurar la adquisición de cosechas mayores. En resumen, reunían las condiciones propicias para una revolución y las nuevas variedades mexicanas prendieron en aquellos suelos. Al cabo de siete años los trigos mexicanos cubrían casi la mitad de los campos trigueros de la India y el Paquistán. Contribuyeron a que se aumentara al doble la cosecha nacional de trigo. Elevaron los rendimientos promedio nacionales por acre en 50%. El mundo no ha visto ninguna otra cosecha, ni región, ni período en el que se operara un cambio tan rápido en el suministro nacional de alimentos.

Pero si dirigimos la mirada hacia otros países observamos que los resultados no siempre fueron tan satisfactorios. Esos mismos trigos mexicanos se llevaron a Turquía, al Norte de Africa, al Brasil y a la Argentina, zonas que en ocasiones padecen una enfermedad llamada septoriosis producida por hongos. México no la tiene y los trigos de ese país no se criaron originalmente para que pudieran aguantar un ataque de esa naturaleza. Los rendimientos del trigo mexicano no fueron tan buenos en aquellas zonas contaminadas por esa enfermedad. En realidad, el Brasil sufrió un ataque de septoriosis en 1972 que tuvo consecuencias desastrosas ya que perdió la mitad de su

cosecha nacional y afectó a millones de toneladas de granos. El CIMMYT está trabajando por encontrar solución a ese problema cooperando con los países que padecen esa enfermedad. Pero esta es una labor no terminada aún.

Otro problema del trigo es ocasionado por un tipo de roya estriada prevaleciente en la región andina de América del Sur, donde el trigo constituye una cosecha importante. Este tipo de roya estriada no se encuentra en México, y los trigos originales mexicanos ofrecían muy poca o ninguna resistencia a la variedad andina de la enfermedad. El año pasado visité el Ecuador y los científicos locales me informaron que los trigos mexicanos no eran aptos para el cultivo en la región andina, y los especialistas en genética del trigo en México deben aprender todavía a cómo controlar el tipo de roya estriada encontrada en América del Sur. Aquí tenemos otro trabajo sin terminar.

Es obvio que las primeras variedades de elevado rendimiento eran adecuadas para algunas zonas, pero no para otras, y la favorable publicidad de que fueron objeto se basó en gran parte en los resultados logrados en la India y el Paquistán y las dificultades encontradas no se dieron a conocer sino más tarde en la prensa.

Y ahora, para concluir este examen relativo a la revolución verde y a lo acontecido en 1972, expondré lo siguiente:

1) El CIMMYT cree que la nueva tecnología del trigo y el maíz debe permitir que todos los países en desarrollo que ahora cultivan esos granos aumenten al doble sus rendimientos en la superficie actual, pero hasta la fecha esa duplicación de los rendimientos se ha producido en menos del 10% de las tierras dedicadas al cultivo del trigo y del maíz.

2) En lo que atañe al restante 90% de la superficie destinada para esos dos cultivos, creemos que es posible incrementar al doble los rendimientos en el curso de los próximos 20 a 25 años, y así satisfacer las necesidades hasta la fecha límite fijada por el crecimiento de la población. Nuestro supuesto parte de la premisa de que se contará con la plena colaboración de los gobiernos interesados.

3) El mismo incremento al doble de los rendimientos será necesario en la que se refiere a todos los cultivos alimentarios del mundo y, por consiguiente, se establece una meta para los trabajos que se llevan a cabo en el IRRI sobre el arroz, en el ICRISAT con respecto al sorgo, en el CIAT y el IITA en relación con la mandioca, y en el CIP en lo que concierne a la patata.

Esta es una empresa común en la que todos debemos participar.

Actividades actuales en el CIMMYT

Permítanme ahora que dedique mi atención a las actividades que se vienen desplegando en el CIMMYT.

Esta última palabra, como es de conocimiento de la mayoría de ustedes, es la sigla de nuestro nombre en español. Las seis letras de CIMMYT quieren decir Centro Internacional de Mejoramiento de Maíz y Trigo.

El CIMMYT ya era una organización relativamente madura cuando adoptó su nombre actual y en 1966 asumió un mandato internacional. La entidad predecesora del CIMMYT inició sus labores como una organización nacional de investigación de cultivos en 1943, con personal aportado conjuntamente por el Gobierno de México y la Fundación Rockefeller. El CIMMYT representa así la continuación de 30 años de investigación en línea recta sobre el maíz y el trigo.

Durante 30 años hemos aprendido que pueden introducirse cambios en verdad notables en una especie de cultivo alimentario en un lapso de 10 a 15 ciclos genéticos; ese lapso en México quiere decir de cinco a ocho años. Pero no podemos ver los cambios cada año. La genética orientada a producir cambios es un proceso continuo. Es lógico, por lo tanto, que el trabajo de esta índole requiera un financiamiento continuo durante cierto número de años para obtener resultados positivos.

Los hechos salientes registrados en el CIMMYT durante el año pasado se presentan a esta reunión en varios documentos. Voy a describirles estos a ustedes y les sugiero, a quienes no los tienen, que soliciten copias de la Secretaría.

Primero, presentamos un folleto empastado en blanco titulado "CIMMYT Annual Report 1972". Es una publicación escrita por científicos para científicos. Se trata primordialmente de una comunicación de científicos de México sobre el maíz y el trigo dirigida a científicos colaboradores de Asia, Africa y América Latina. Aquí, en el lugar de esta reunión, se pueden obtener copias.

Después tenemos otro folleto de cubierta gris titulado "CIMMYT Program Reviews 1972-73". Los legos encontrarán este documento escrito en un lenguaje propio para ellos. La carpeta contiene tres evaluaciones separadas de nuestro programa. Una está hecha por el personal del CIMMYT, en la que plantea cuestiones acerca de sus propias actividades. Otra está formulada por un Comité de la Junta Directiva del CIMMYT. En ella se examinan nueve puntos acerca del trabajo que realiza el CIMMYT, el cual recomienda debe ser objeto de examen adicional. El tercer documento ha sido preparado por un miembro de dicha Junta Directiva del CIMMYT, el Dr. Sterling Wortman, de la Fundación Rockefeller, quien hizo sus propias observaciones sobre el terreno. Varios de ustedes han recibido un ejemplar de este folleto enviado por correo desde México.

Hay además otro folleto empastado en gris titulado "CIMMYT 1974 Budget Request". En este documento se presentan los cuadros de nuestro presupuesto, el que será examinado esta semana. También ofrece en 10 páginas un resumen del programa de los trabajos que se han venido realizando en los últimos 12 meses y de lo que se proyecta para los años venideros.

Finalmente, deben tener ustedes un documento de cubierta blanca distribuido por la Secretaría, el cual es nuevo para la mayoría de los que asistimos a esta reunión. Lleva el título de "Progress Review of CIMMYT" y fue preparado por dos autores que representan al Grupo Consultivo, George Dion, del Canadá, y Andrew Urquhart, del personal del Banco Mundial, quienes llegaron al CIMMYT para una semana, participaron en las deliberaciones sobre el programa que se sostuvieron allí y después redactaron su propio informe. En el CIMMYT encontramos que sus ideas han captado la realidad y se expresan con criterio independiente.

Voy a dar por sentado que muchos de ustedes han leído esos documentos, que otros se proponen hacerlo así y, por consiguiente, no voy a tratar de hacer un resumen de todo lo que se expone en ellos. Más bien me propongo citar tres o cuatro de nuestras actividades y dejar los demás temas para aclararlos en la parte dedicada a preguntas.

Cruces del trigo de invierno con el de primavera

Comenzaré haciendo un comentario sobre el programa elaborado para cruzar el trigo de invierno con el de primavera. Los especialistas en genética han reconocido desde hace tiempo las ventajas que se derivan de combinar las mejores características del trigo de invierno con el de primavera, pero el proceso ha resultado difícil debido a que los dos tipos de trigo crecen en climas diferentes. Se considera que los de invierno son superiores en cuanto a soportar el frío, en su resistencia a la sequía y a la septoriosis. Ya mencioné antes que el Brasil experimentó un desastre en su cosecha de trigo el año pasado a causa de esa enfermedad y este país no puede cruzar el trigo de invierno con el de primavera porque no se puede cultivar la primera de estas variedades en el Brasil. Vemos en este ejemplo patente que un centro internacional puede ofrecer un servicio que a un gobierno no le es factible proporcionárselo por sí mismo.

Los trigos de primavera tienen una mayor resistencia a la roya y mejor cualidad de molturación. Por lo tanto, un ayuntamiento de las dos variedades debería producir una progenie más valiosa para ambos climas.

En 1968 el CIMMYT comenzó una colaboración tripartita en la que intervinieron genetistas especialistas en trigo de invierno del noroeste de los Estados Unidos, Turquía y México. Se están haciendo cruzas ahora en los tres países y la progenie se intercambia y se somete a prueba durante las primeras generaciones. La más temprana de éstas se encuentra en la actualidad en la fase F-4 o F-5, es decir, en la generación cuarta o quinta.

En 1973 hemos recibido informes sobre análisis de progenie realizados tanto en Turquía como en el Líbano, indicando que las generaciones avanzadas del programa de cruza habían sobrevivido bien un invierno riguroso y una sequía que había destruido variedades tradicionales de trigo de primavera. En estos hechos encontraba sólido apoyo la creencia de algunos de nuestros científicos del CIMMYT de que es probable que las cruzas de trigo de invierno con el de primavera proporcionen a los agricultores de trigo de primavera del mundo el método más prometedor de crear tolerancia a la sequía. Este trabajo va a continuar y habremos de aguardar a tener información mucho más amplia antes de facilitar semilla a los cultivadores.

Tritical

Voy a ocuparme ahora de otro punto del programa del CIMMYT, el tritical.

Los principales granos alimentarios consumidos por la raza humana fueron cultivados para uso doméstico hace unos 10.000 años, como mencioné antes. El científico ha introducido algunas mejoras en aquellas plantas silvestres, pero desde la Edad Neolítica hasta hoy ningún hombre ha logrado desarrollar una nueva especie, una planta creada por él que haya resultado un éxito desde el punto de vista comercial. Ese acontecimiento se está produciendo ahora, con la planta llamada tritical.

El tritical se deriva de una cruza del trigo y el centeno, tras de la cual las cromosomas de la primera generación híbrida se aumentan al doble por medio de un tratamiento con un producto químico, para producir una nueva "especie" parcialmente fértil. La palabra tritical combina las palabras latinas que designan al trigo y al centeno.

La primera aparición natural del tritical se produjo en Europa en el decenio de 1880, según los datos. El producto químico para tratar los cromosomas no se descubrió sino hasta 1936. Varios científicos europeos, como Müntzing, en Suecia, y Sánchez Monge, en España, han dedicado toda su vida profesional a tratar de producir un cultivo comercial importante de esta especie, pero sus esfuerzos se han visto frustrados por barreras biológicas, como la esterilidad parcial, el enjutamiento del grano, su bajo rendimiento, tipo agronómico deficiente y reducida adaptación del cultivo a los diversos climas.

El CIMMYT inició sus actividades en este trabajo hace nueve años, a través de su cooperación con la Universidad de Manitoba en Canadá. La planta tritical ha sido empequeñecida ahora. Se ha restablecido la fertilidad en virtud de una mutación accidental ocurrida en México. Durante 1973 se ha observado que algunas de las líneas tienen ahora un grano henchido con un peso de prueba de 60 puntos por bushel (35 litros), que es el estándar aceptado para el trigo. Algunas de las líneas del tritical soportan mejor el frío y son más resistentes a la sequía que el trigo, características, ambas, que indudablemente proceden de la rama generadora del centeno.

El contenido proteínico del tritical está resultando notable. Las líneas mejores poseen un contenido total en proteínas superior en 2% al de cualquier trigo, y el contenido en lisina de algunas líneas del tritical es significativamente más elevado del que se encuentra en trigos cultivados en las mismas condiciones.

Los mejores de los nuevos triticales, ahora en la fase final de prueba de su comportamiento, rinden esencialmente lo mismo que los mejores trigos mexicanos para fabricar pan. Esos rendimientos se han verificado este año en informes recibidos de Etiopía, Kenia, India, Paquistán, Líbano y Canadá. Parece comprobado ahora que determinadas variedades del tritical pueden competir con el trigo, la cebada y la avena en ciertas condiciones climatológicas. El tritical se puede usar para hacer pan, tortillas y chapatis. Puede llegar

a ser importante como grano de engorda y para forraje de invierno. Cabe predecir sin temor a equivocarse que antes de terminar el actual decenio de 1970 el tritical se sumará al potencial mundial alimentario.

El trabajo del CIMMYT sobre el tritical es financiado por el Gobierno canadiense, mediante donaciones procedentes de la CIDA y el IDRC para determinadas partidas del presupuesto básico.

Cebada

El programa del CIMMYT sobre la cebada, como ustedes recordarán, comenzó apenas en 1972. En la actualidad se encuentra en su tercer ciclo de generación. En estas tres temporadas se han hecho más de 5.000 cruzas con el plasma germinal recogido por el CIMMYT que tiene 4.000 productos de diversas cebadas. Los elementos segregantes de estas cruzas ya están revelando importante plasma germinal para obtener un mejor tipo de planta, con mayor resistencia a las enfermedades y mejores proteínas.

En 1969 los científicos suecos Munck, Karlsson y Hagberg descubrieron un gene en la cebada llamado "alto proliferante". Este simple gene recesivo eleva el contenido proteínico de la cebada y aumenta uno de los aminoácidos, la lisina. El "alto proliferante" proporciona un mecanismo seguro para mejorar las proteínas que se encuentran en la cebada. El CIMMYT está utilizando este gene a través de todo su programa sobre la cebada.

Aún es demasiado pronto para hablar de los resultados obtenidos, pero en 1973 ya se están creando nuestros primeros almácigos internacionales de ensayo de la cebada en 20 países de las zonas de bajo índice pluviométrico del Norte de Africa, Asia, Europa oriental y la región andina de América del Sur. Estas son zonas donde los habitantes prefieren cultivar cebada en lugar de trigo debido a que la primera se da mejor en condiciones de escasa humedad. La Biblia, como ustedes recordarán, habla de panes de cebada en el Valle del río Jordán.

Maíz tropical de corto tallo con mejores proteínas

El año pasado el CIMMYT informó a esta reunión sobre los problemas que presentaba el maíz tropical, cuyo tallo es demasiado alto, y se está acortando por el CIMMYT a fin de reducir su encamado. Este trabajo de investigación ya ha pasado por dos ciclos más de recolección desde nuestra última reunión. La planta está haciéndose más corta todavía a razón de diez centímetros por ciclo. Ahora ya le hemos quitado un metro de la altura y reducido la elevación de la mazorca sobre el tallo en casi la misma longitud. Como cabía esperar, la caída por combamiento ha desaparecido considerablemente en este tipo particular de plantas.

Esta planta tropical mejorada está siendo sometida a pruebas de rendimiento máximo en México en el verano de 1973 y abrigamos la esperanza de que para fines de año podremos ofrecer nuevos datos interesantes al respecto. La densidad de cultivo de la planta tropical alta ha sido tradicionalmente de 25.000 a 30.000 plantas por ha. Ahora se están haciendo pruebas con las nuevas plantas más bajas cultivando de 75.000 hasta más de 100.000 plantas por ha. En otras palabras, las plantas más bajas harán que se aumente al

doble, o incluso más, su número de siembra y por consiguiente producirán más mazorcas por hectárea.

El año pasado hablé a ustedes acerca de los trabajos que se venían realizando para mejorar las proteínas del maíz, con base en el gene mutante llamado opaco-2. En la Semana de los Centros Internacionales celebrada hace un año, sólo había cuatro bushels de semilla en el mundo para crear un nuevo maíz combinando el contenido proteínico mejorado y el endosperma duro. Este tipo de endosperma es el preferido de la mayor parte de las personas consumidoras directas de maíz. En la actualidad se dispone de muchas toneladas de semilla para este nuevo maíz en 16 países de Asia, Africa y América Latina, el cual ha sido sometido a pruebas adicionales nutritivas de laboratorio con ratas, ratones, cerdos y niños, y todas la pruebas han confirmado que este nuevo producto ha conservado su elevado valor nutricional.

Este nuevo maíz está siendo objeto ahora de ensayos agronómicos en los 16 países mencionados, como preparación para las pruebas que se harán en los campos de los agricultores.

En orden inmediato detrás de esta primera población de maíz con endosperma duro y contenido proteínico mejorado, el CIMMYT tiene cinco poblaciones experimentales más, suponiéndose que cada una posee el mismo valor nutricional, y cada una de ellas estará lista para ser sometida a ensayo internacional más adelante este año de 1973.

El Programa de las Naciones Unidas para el Desarrollo financia los trabajos que se llevan a cabo para el mejoramiento del contenido proteínico en el maíz. El apoyo de esta entidad se canaliza en forma de donaciones para determinadas partidas del presupuesto básico.

Otros hechos salientes

Antes de concluir este examen de las labores actuales en el CIMMYT, desearía referirme brevemente a algunas otras actividades.

Los programas de capacitación del CIMMYT en materia de investigación práctica proporcionaron experiencia en México este año pasado a más de 80 hombres y mujeres procedentes de 35 países. Hasta la fecha este fue nuestro programa de capacitación más numeroso. Los becarios con el grado de doctor que prestan servicio en el CIMMYT ascienden a un total de 10 ahora, y su número también es el más elevado hasta la fecha. Estos becarios siguen constituyendo una de las mejores fuentes de contratación de nuevos empleados, no sólo para el CIMMYT, sino también para otros centros. Becarios doctores que asistieron a los programas del CIMMYT forman parte ahora del personal del IRRI, del Centro Asiático de Investigación sobre las Hortalizas, del Programa de Desarrollo Agrícola de las Tierras Aridas del Líbano, así como del CIMMYT.

El personal del CIMMYT dedicó más de 1.200 días-hombre a actividades de largo alcance en trabajos de consultoría con más de 60 gobiernos de Asia, Africa y América Latina durante el año pasado. Estimamos que el CIMMYT ha

satisfecho el deseo, expresado por el presidente del CAT el año pasado, de que el CIMMYT continúe la intensificación vigorosa de sus actividades de largo alcance.

En lo que se refiere a estudios económicos nuestro principal economista tiene terminada más de la mitad de un examen de las experiencias que están teniendo los agricultores con la nueva tecnología relativa al trigo y al maíz en ocho países de Asia, Africa y América Latina. Aquellos de ustedes que han estado asistiendo al seminario económico, a fines de la semana pasada, ya tienen una perspectiva de esos estudios más detallada de la que el tiempo nos permite ofrecer aquí. Abrigamos la esperanza de que esos estudios nos proporcionen una base más amplia de conocimientos para las decisiones que se hayan de formular en el futuro con respecto a programación en el CIMMYT.

También el año pasado mencioné que el CIMMYT proyectaba llevar a cabo un examen de la administración con la ayuda de un grupo de tres expertos ajenos al organismo. Esta labor se realizó en diciembre de 1972 y el grupo de expertos estuvo presidido por el Sr. José Drilon, Subsecretario de Agricultura de Filipinas. Estos prepararon un informe en el que se incluían 80 sugerencias, algunas de las cuales ya se han llevado a la práctica, en tanto que otras siguen siendo objeto de estudio. Fue una experiencia provechosa. También quisiera agregar que absorbió mucho tiempo.

Aquí, en la Secretaría, pueden obtenerse copias del informe administrativo.

Estos son, pues, los aspectos más destacados de las actividades del CIMMYT.

Presupuesto para 1974

En un documento de cubierta gris que mencioné con anterioridad se presenta la solicitud del presupuesto del CIMMYT para 1974. No voy a tratar de repetir aquí las estimaciones en dólares. En ese librito no figuran nuevos programas. No se aumenta el número de científicos profesionales. El costo operativo de nuestro presupuesto básico de operaciones se elevará en 4%, monto menor que la tasa de inflación de México. Este bajo incremento es posible solamente en razón de que en 1973 completaremos el experimento de siete años con el Plan Puebla, apoyado financieramente en parte por la Fundación Rockefeller.

La partida más grande de capital del presupuesto para el año venidero corresponde a una solicitud de capital de trabajo suficiente para sufragar 40 días de actividades básicas del CIMMYT. La magnitud de esa partida se elaboró conjuntamente por la Secretaría del Grupo Consultivo y los directores de todos los centros. Creemos que las dificultades que experimentamos el año pasado con la corriente de efectivo procedente de los donantes para el presupuesto básico justifican esta solicitud de capital.

Cuestiones relativas al programa

He reservado unos cuantos minutos del final de mi exposición para decir algo acerca de cuestiones relacionadas con el programa que han ido surgiendo en nuestros exámenes del programa del año pasado.

El personal profesional del CIMMYT dedicó unas dos semanas, en nuestro "examen interno", a recorrer y observar parcelas de investigación y a dirigirse preguntas recíprocas sobre esas actividades. De estas deliberaciones entresacamos unas 30 cuestiones que se las exponemos a ustedes en ese documento.

Ulteriormente, nuestra Junta Directiva del Programa, encabezada por el Dr. Guy Camus, de Francia, estudió el informe del personal, hizo sus propias observaciones sobre el terreno e indentificó nueve cuestiones con respecto a las cuales estimó que deberían sostenerse nuevas deliberaciones.

Ahora nos queda tiempo para hablar sólo de dos de ellas, y las he elegido porque las considero muy interesantes, pero también bastantes complicadas.

La primera se puede plantear en forma de pregunta: ¿Debe prestar más atención el CIMMYT a la tecnología de nivel intermedio, que ayudará al agricultor que no puede, o no está dispuesto a ello, a seguir todas las recomendaciones para obtener un elevado rendimiento? En otras palabras, al agricultor que utiliza menos fertilizante, menos número de plantas, menos control de las malas yerbas, y trata de reducir sus riesgos.

Esta cuestión se presentó al CIMMYT durante el año pasado por varios miembros del Grupo Consultivo.

La respuesta debe darse por partes.

Nuestra experiencia en el CIMMYT indica que variedades de maíz y trigo de gran adaptabilidad son superiores en rendimiento, tanto a niveles óptimos como intermedios de insumos. Dicho de otra manera, estas variedades llamadas de elevado rendimiento, son eficientes cuando se utilizan el fertilizante y la humedad de que se dispone, cualquiera que sea el nivel de insumo. Nosotros sometemos a prueba estas poblaciones experimentales a todos los niveles de insumos, y el agricultor que las emplea puede elegir su propio nivel de insumos y riesgos.

Otra parte de la respuesta es ésta. El CIMMYT pretende desarrollar variedades de gran adaptabilidad de maíz y trigo. Esto quiere decir que cada año estamos sometiendo a prueba materiales experimentales en más de 60 países, con objeto de identificar aquellos que poseen tolerancia hacia el calor y el frío, el exceso de humedad y a la escasez de ella, a todos los tipos de enfermedades e insectos en los varios climas agronómicos en los que estamos trabajando. Los especialistas en genética del CIMMYT no pueden cuantificar lo que aprenden de un año para otro acerca de la amplitud de la adaptación, pero de cada nueva generación procreadora incorpora a sí misma las plantas que demuestran ser las de mejor adaptabilidad a una amplia gama de condiciones climatológicas.

Creemos que estos materiales de amplio grado de adaptabilidad serán beneficiosos para todas las clases de agricultores, pero sobre todo para el que quiere reducir los costos de sus insumos y sus riesgos. Estas variedades futuras que se hallan bien adaptadas deben tener mayor estabilidad de rendimiento que cualesquiera otra variedad en uso en el momento presente.

Vale la pena mencionar aquí otra parte de la pregunta. El agricultor que quiere tener costos de insumos más bajos es generalmente un hombre de una región de lluvias variables, donde se producen sequías con frecuencia. A este agricultor, por lo tanto, le interesan las variedades tolerantes de la sequía.

El CIMMYT está trabajando en el problema de la sequía a través de varios métodos. Entre ellos figuran los siguientes:

escape de la sequía, mediante el control del período de madurez;
tolerancia a la sequía, por medio de la estructura de las raíces;
tolerancia a la sequía, por medio de la creación de resistencia a las enfermedades y los insectos;
tolerancia a la sequía, por medio de la arquitectura de la planta;
escape a la sequía, por medio de la substitución de cultivos.

No es posible aquí entrar en mayores detalles sobre cada uno de estos programas, pero encontrarán más información al respecto en los documentos que tienen.

Para resumir: Nuestra respuesta a la pregunta es que el CIMMYT está haciendo todo lo que sabemos hacer en beneficio del agricultor que quiere tener teconología intermedia.

Investigación radical

La otra cuestión que he seleccionado para examinar con ustedes es la de la "investigación radical" sobre nuevas fuentes de alimentos.

Este asunto surgió durante nuestro examen interno del CIMMYT y la expresión "investigación radical", acuñada arbitrariamente, adquirirá un significado claro a la luz de lo que les informe sobre el debate que sostuvimos.

El personal del CIMMYT se hizo esta pregunta: ¿Por espacio de cuántos años podrían los actuales tipos de investigación sobre el maíz y el trigo permitir a los cultivadores de estos productos mantenerse adelante del crecimiento de la población? Nuestra respuesta es: durante quince o veinte años lo podremos hacer, incustionablemente; es probable que lo podamos durante treinta años. Después de ese lapso no podemos dar seguridades.

Al igual que el experto en demografía Dudley Kirk, al que mencioné antes, dudamos de que las cosechas de hoy y los métodos actuales de investigación puedan mantenerse adelante del crecimiento de la población si éste se prolonga más allá del fin de siglo.

¿Qué ocurrirá entonces?

Los científicos del CIMMYT estuvieron de acuerdo en que se necesitan métodos de investigación radicales.

¿Qué ejemplos tenemos? Algunas personas hablan de hidroponía, o de maricultura o de extracción de alimentos de productos de desecho, o de materiales inorgánicos, o de proteínas micro-orgánicas, y de otros medios. Estas fuentes potenciales de alimentos tienen, todas, las ventajas de que no dependen de las presentes tierras de cultivo. Son complementarias. El CIMMYT no pretende tener conocimientos técnicos en ninguno de estos tipos de trabajo, pero merecen que otros les presten atención.

Existen algunos campos de investigación radical a los que el CIMMYT podría aportar su contribución. El CIMMYT ha trabajado en espigas bifurcadas de trigo y podríamos reanudar esas labores. El CIMMYT ha trabajado en la cruza amplia, el tritical, y podríamos trabajar en el futuro en otras cruzas amplias, ya sea entre dos cereales o entre un cereal y alguna especie de yerba.

Estos son campos de investigación de elevado riesgo. Lo que quiero decir con eso es que habrá muchos comienzos en falso y ninguna fecha predecible del logro de resultados.

El personal científico del CIMMYT opina que nuestro organismo debe seguir dedicando por lo menos el 95% de su tiempo y presupuesto a los programas convencionales de investigación en los que estamos empeñados en la actualidad. Y no más del 5% de nuestro tiempo y presupuesto se deben emplear en esos campos "radicales" de los que estamos hablando aquí.

Como verán en los documentos que tienen ustedes, los miembros de nuestra Junta Directiva se ocuparon de esta cuestión. Solicitaron que el personal del CIMMYT preparara un informe detallado sobre tipos alternativos de "investigación radical" y posibles "centros de excelencia" donde pudiera llevarse a cabo este tipo de trabajo. Con esta información en la mano nuestros directivos podrían interrogar y enterarse de lo que otras instituciones están dispuestas a hacer a fin de complementar la labor de los centros internacionales.

No puedo dejar este tema de la investigación radical sin referir una anécdota.

Hace un par de meses visité un invernadero en el CIMMYT y en los estantes encontré dos hileras de probetas de cristal, y cada una de estas contenía una planta de aspecto enfermizo cultivándose en un líquido de color. Pregunté qué era aquello. Un científico me explicó que una hilera de probetas contenía cruzas entre trigo y cebada y la otra cruzas entre trigo y avena. Pero, aclaró, no tome esto en serio. Hemos estado haciendo experimentos con diferentes líquidos como medio de cultivo y las plantas siguen muriendo. Todas estas estarán probablemente muertas para fin de semana.

Con la mirada puesta en 1974, Sr. Presidente, si al Grupo Consultivo le resulta posible financiar el programa que el CIMMYT ha presentado en nuestros documentos, abrigo la confianza de que dentro de un año podré enumerarles una lista de realizaciones por lo menos tan positivas como las que hemos encontrado en el programa de este año.

G2b.

Statement of Haldore Hanson, Director General of CIMMYT
(International Maize and Wheat Improvement Center)
to the Consultative Group on International Agricultural Research
at the World Bank, July 30, 1973

Mr. Chairman,
Members of the Consultative Group
and of the Technical Advisory Committee:

In CIMMYT's allotted time I propose to cover four things.

First, I will talk about population growth as it affects food requirements.

Second, I will give CIMMYT's point of view on what happened to world food production in the past year; what explains the drop?

Third, I will summarize the highlights of recent CIMMYT activities.

Fourth, I will speak of some of the issues of programming that we have been discussing at CIMMYT.

Population growth

My colleague, Norman Borlaug, suggests that it was probably neolithic woman, not neolithic man, who discovered agriculture. His reasoning goes like this. It must have been a woman who gathered wild grain, berries, and roots. The woman who did these things was very close to nature, and she must have hit upon the idea that cultivating plants would be easier than finding them wild. Perhaps it came to her on a day when her husband, the hunter, equipped only with a rock and a club, failed to bring home any meat.

At any rate, the domestication of cereal grains took place about 9,000 or 10,000 years ago. It happened independently for rice in eastern Asia, for wheat in western Asia, for sorghum in Africa, and for maize in Mexico. At least four different women must have gotten the same idea. They were all illiterate, in those days but very intelligent.

When agriculture began, demographers now believe the world contained about 10 million people. From that point onward, world population began to grow, aided by more reliable food supply. In fact the population slowly doubled and then more rapidly redoubled and more recently it has been rising, as you know, at a very steep rate.

For example, at the time of Christ it is now estimated there were about 250 million people in the world. This population doubled in the next 16 centuries, reaching 500 million people about the year 1650. The next doubling of population required only two centuries, and thus we find one billion people in the world by 1850. The next doubling took 80 years, and there were two billion people by 1930.

Today world population stands at 3.8 billion and continues to grow at 2% a year. At this rate we shall double the human race again in 38 years, or a little beyond 2000 A.D. Developing countries have an average growth rate of 2.5%, and they will double in 25 years or less.

So here is a measuring stick for our discussion about food. We ask ourselves: Can the world double its food production in 38 years? And can the developing countries double their food production in 25 years or less?

In the agricultural centers we speak of our work on new technology as a way to buy time, as a holding operation to give the world the opportunity to adjust downward its population growth rate. But we really should ask ourselves: are there possibilities of falling birth rates in the next two or three decades?

The answer depends upon which demographer you listen to. CIMMYT does not employ a demographer but we try to keep informed on what demographers are thinking.

Recently I read an appraisal of population growth by a demographer whose information and judgment impressed me as well-informed, well-balanced, and cautiously optimistic. This was a statement by Dr. Dudley Kirk of Stanford University. Like all careful demographers, he added many qualifying phrases. I do not have time to quote his statement at length, but at the risk of over-simplifying, I shall summarize the five reasons which Dr. Kirk gave for his hopes about falling birth rates in developing countries.

First, birth rates were already falling in the 1960s in developing countries. Of the developing countries listed by the UN as having "virtually complete" registration of births, Dr. Kirk says 42 of the 47 countries reported a reduction of birth rates between the early 1960s and the late 1960s.

Second, when a decline in birth rate begins in a developing country, Dr. Kirk says it moves down faster -- more than twice as fast -- compared to the past experience in Europe and North America. The higher the rates, the faster they seem to fall.

Third, Dr. Kirk says the climate of opinion today is more favorable towards birth control than it was at the time the population rates dropped in Europe and North America.

Fourth, there is better technology for birth control today, and much research is going on for still better technology.

Finally, growing prosperity tends to be correlated with falling birth rates, not only in advanced countries but also in the developing countries.

Having stated his reasons for hope, Dr. Kirk then re-emphasized the extreme difficulty of the population problem.

No amount of new agricultural technology, Dr. Kirk believes, can long stay ahead of a 2-1/2 percent growth rate in developing countries. In the long perspective, zero population growth is necessary. Any non-stop growth rate, no matter how small, will lead to disaster.

Moreover, Dr. Kirk believes that in the near term -- say until 1990, there will continue to be great difficulties in achieving a rapid adjustment of population growth. There can be no real success in dropping growth rates toward zero before the end of the century.

This judgment is enough to permit us in this meeting to formulate a framework for our discussions.

We can assume that world population will double once more, to more than 7 billion people, before population growth can be brought into equilibrium, or even near it.

We can assume that present foodcrop land of the world must produce twice as much food, on the same land, within the next three decades. In developing countries, the demand will come faster. Those countries must double their food production within 20 or 25 years.

There will probably be continuing food problems beyond the end of the century. If the world cannot bring its population growth to a halt within three decades, there must be other kinds of research, which I shall call "radical research", starting now to meet the further food requirement beyond 2000 A.D.

Those are the marching orders at the international centers as we see it, subject of course to the financial support of the Consultative Group members.

Food Production in 1972-73

Now let me speak about what happened to food production during the past year.

Food production in the developing countries declined in 1972 for the first time since 1966. Per capita food production in the developing countries dropped to the lowest level since 1965. This was a significant deviation from the trend. Per capita food production in developing countries had been rising for almost 20 years, in fact since the year 1954, with a gain of 1/2 percent to 1.0 percent a year above population growth. That means that for almost twenty years the improvement in agriculture was slightly better than the rise in population. In 1972 food production failed to keep pace with population growth.

The price of wheat on the world market rose 70% in the past year. Rice virtually disappeared from the world market, because there was no more rice in storage.

No doubt you have read about the shortage of railroad cars in North America, and the shortage of world ocean shipping, to move so much grain.

Some writers in the world press became very unkind in their comments on agriculture and agriculturalists. They said the green revolution was a myth, and a lie, and a slogan that had died. They said there never had been any change in the technology of food production, but only a period of favorable weather in the 1960s.

I think the Centers represented here owe to the Consultative Group their own interpretation of what happened in 1972, and I shall offer the ideas we hold at CIMMYT.

Droughts occurred last year in the wheat growing seasons of the Soviet Union, of China, and of Australia. Droughts occurred in the rice growing monsoon season of south and southeast Asia; and there was a drought disaster in Africa, just south of the Sahara, where sorghum is grown.

These separate weather developments caused a chain reaction in world food trade. The Soviet Union, as you know, bought almost 30 million tons of foodgrain in the world market, which was one step in the escalation of prices. China followed by purchasing over 4 million tons. Then India entered the market for over two million tons. India would not have found this necessary if it had not already sent two million tons of grain to Bangladesh, and later found it necessary to replace that grain for India's home consumption. Other rice growing countries of Asia also suffered, especially the Philippines from floods and Indonesia from a poor monsoon.

These areas of weather difficulty were partially offset by the very good 1972 wheat harvests in India, Pakistan, and Morocco.

Altogether, world grain production fell only 4% last year, from 1,106 million tons in 1971, to 1,064 million tons in 1972. But that small change of 4% was enough to cause the violent response in prices, in shipping, in foreign exchange expenditures, and in human suffering.

Obviously the green revolution has not solved the weather cycle. We have no present technology to save a crop when it receives less than its biological requirement in moisture.

The only palliative we know for major weather fluctuations is grain storage from year to year. In recent years grain storage has been provided mainly by three grain surplus countries: the United States, Canada, and Australia. All three of these countries have recently been reducing their storage surplus. There are about 10 other countries which have stored lesser amounts for sale. I was glad to receive from the head of the FAO, Dr. Boerma, a copy of a speech he made a few months ago to the OECD in Paris (Organization for European Co-operation and Development) in which Dr. Boerma advocated a new plan for grain storage; it would involve a larger number of countries including developing countries.

Eventually scientists should also help to level out the weather cycle by developing more widely adapted plants which show more stable yields under variations in temperature and rainfall. I shall discuss this in a moment, but it is not an immediate solution.

Before we leave the subject of 1972, we need to put in perspective the phrase "green revolution" which has been so much abused in the press. The term is not precise. It is emotional. It is overused. Some people assume the term promises more results than the revolution has so far achieved.

Still, like many popular phrases in the press, this one is probably here to stay, and therefore we ought to remove some of the imprecision by stating what we understand the term "green revolution" to mean.

At CIMMYT the green revolution is not a miracle which began with a few bagsful of seed. Seed proved to be part of a process, but only one part, and the process is still evolving. We now see the nature of this revolution more clearly than we did five years ago.

First, the green revolution involves new seeds capable of producing higher yields. These seeds give higher yields because they have genetic qualities which respond to higher fertility and higher moisture, and thus produce more grain. The new varieties generally have shorter straw in order to prevent lodging (or falling over), and the shorter plant also results in more of the dry matter of the plant being converted into grain. That is one element in the revolution.

Second, the green revolution involves a "package of agronomic practices." These include the recommended date, rate, and depth of seeding; the amount of fertilizer to be used and when to apply it; the methods of weed control; and other elements. These agronomic practices are location-specific; that is, they must be formulated on a local basis which requires training of local scientists in all grower countries. If the new seeds which are capable of higher yields are managed in the old ways, they will produce no better than the traditional varieties of seed. Thus the new seed and the new package of practices must go together.

Third, the green revolution involves new government services and new government policies. These include technical advice to farmers; the supply of needed inputs, especially fertilizer, irrigation, and pesticides at reasonable prices; credit for purchasing the new inputs; price policies on grains, and arrangements to ensure purchase and storage of bigger crops. These new government services and policies require that a government be committed to increasing its food production, or the revolution will not take place.

Fourth, the green revolution involves a continuous process of research and testing. It is not a one-time event or a single technique. It is a process continuously being modified. Change is made necessary by new pathogens of disease; by new planting and harvest dates. Every new program creates its own problems, which then require solution.

Finally, the green revolution in the tropics and sub-tropics is not an isolated event, but a continuation of the scientific process in agriculture which began in Europe and North America more than 100 years ago. Scientific methods of the temperate zone are now being adapted to the tropics and sub-tropics, and the first results in the warmer countries are remarkable, but not miraculous, certainly no more miraculous than those achieved in the past 100 years in Europe, North America, Australia and Japan.

If anyone writes in the press that the green revolution is a myth and a lie, he must be prepared to say that the process of agricultural improvement in the industrialized countries is also a myth and a lie, since we are extending the same process to the warmer regions of the world.

The green revolution is very much alive and moving forward, despite the adverse weather patterns of 1972. Having said this, we need to be very careful that we do not promise too much, too soon. There is still only a precarious balance between population growth and rising food production, and a precarious balance may be the best we can hope for during the next two or three decades.

CIMMYT had several experiences with wheat which illustrate why we must be cautious in our forecasts.

When Mexican semi-dwarf wheats first began to spread in Asia in 1966, Mexican wheats turned out to be well suited to the Gangetic plain of India and the Indus plain of Pakistan. Those areas had temperature patterns similar to northwest Mexico where the original Mexican wheats were selected. They had irrigation. They had similar races of rust. They had governments prepared to arrange adequate inputs and to ensure procurement of bigger crops. In short, they met the conditions for a revolution, and the new Mexican varieties took off. Within 7 years the Mexican wheats covered almost half the wheat lands of India and Pakistan. They helped to double the national wheat harvest. They raised national average yields per acre by 50%. The world has not seen any other crop, or region, or time period where such a rapid change has occurred in a national food supply.

But if we look at other countries, the results were not always so successful. These same Mexican wheats went into Turkey, North Africa, Brazil, and Argentina, areas which are afflicted at times by a fungus disease called septoria. Mexico does not have septoria, and the Mexican wheats were not originally bred to withstand a septoria attack. The yields of Mexican wheats were not so good in septoria areas. In fact, Brazil suffered a disastrous attack of septoria in 1972 and lost half its national crop, a disaster affecting a million tons of food grains. CIMMYT is working on the problem of septoria, by cooperating with the countries which suffer from the disease. But this is an unfinished task.

Another problem of wheat is caused by a type of stripe rust prevalent in the Andean region of South America, where wheat is an important crop. This type of stripe rust is not found in Mexico, and the original Mexican wheats contained little or no resistance to the Andean strain of the disease. Last year I visited Ecuador and was told by local scientists that Mexican wheats are not suited to the Andean region, and the wheat breeders in Mexico must still learn how to control the kind of stripe rust found in South America. Here is another unfinished job.

Obviously the first high yielding varieties were suited to some areas and not to others and the favorable publicity was largely based on the sub-continent of India and Pakistan and the difficulties were only at a later date reported in the press.

Now to conclude this discussion about the green revolution and the year 1972.

(1) CIMMYT believes that new technology of wheat and maize should enable all developing countries now growing those two crops to double their yields on present land, but so far, this doubling of yields has occurred on less than 10% of the wheat and maize lands.

(2) For the other 90% of wheat and maize lands, we believe it is possible to double the yields within the next 20 or 25 years, and thus to meet the deadline set by population growth. Our assumption is contingent upon full collaboration of the governments involved.

(3) This same doubling of yields will be needed for all the major food crops in the world, and thus, a target is set for the rice work at IRRI, for the sorghum work at ICRISAT, for the cassava work at CIAT and IITA, for the potato work at CIP.

This is an assignment common to all of us

Current developments at CIMMYT

Next let me turn to current developments at CIMMYT.

The word CIMMYT, as most of you know, is the acronym for our name is Spanish. The 6 letters of CIMMYT stand for Centro Internacional de Mejoramiento de Maiz y Trigo, or in English, the International Maize and Wheat Improvement Center.

CIMMYT was a relatively mature organization when it adopted its present name in 1966 and undertook an international mandate. CIMMYT's predecessor organization began as a national crop research organization in 1943, staffed jointly by the Government of Mexico and the Rockefeller Foundation. CIMMYT thus represents a continuation of 30 years of straight line research on maize and wheat.

During 30 years we have learned that truly remarkable changes can be introduced into a species of food crop within 10 to 15 breeding cycles; in Mexico that means in 5 to 8 years. But we cannot see the changes each year. Breeding for change is a continuous process. It stands to reason, therefore, that work of this sort requires continuous financing over a period of years to achieve results.

Developments at CIMMYT during the past year are presented to this meeting in several documents. I will describe the documents and suggest to you who do not have them that you may ask copies from the Secretariat.

First, there is a white-covered booklet called "CIMMYT Annual Report 1972." This is a publication written by scientists for scientists. This is primarily a communication from maize and wheat scientists in Mexico to collaborating scientists in Asia, Africa, and Latin America. Copies are available here.

Next, there is a grey-covered booklet entitled "CIMMYT Program Reviews 1972-73." Laymen will find this document written in their language. The binder contains three separate appraisals of our programs. One is by the CIMMYT staff, raising questions about their own activities. One is by a Committee of the CIMMYT Trustees. It raises nine issues about CIMMYT work which is recommends should have further discussion. A third paper is by one CIMMYT Trustee, Dr. Sterling Wortman of the Rockefeller Foundation, who made his own field observations. Many of you received a copy of this booklet by mail from Mexico.

In addition, another grey-covered booklet is entitled "CIMMYT 1974 Budget Request." This paper contains our budget tables that will be discussed this week. It also gives a 10-page program summary of what has been going on in the past 12 months and what is projected for the years ahead.

Finally, you should have a white-covered paper distributed by the Secretariat, which is new to most of us at this meeting. It is called "Progress Review of CIMMYT" and was prepared by two authors representing the Consultative Group, George Dion of Canada and Andrew Urquhart of the World Bank staff who came to CIMMYT for one week, participated in program discussions there and then wrote their own report. We at CIMMYT found their ideas perceptive and independent.

I will assume that many of you have read these documents, and others plan to do so, and I will not try to summarize the full content of them. Instead, I propose to cite three or four of our activities and leave other topics for the question period.

Winter-spring wheat crosses

I will start with a comment on the program for crossing winter wheat with spring wheat. Breeders have long recognized the advantages of combining the best characteristics of winter wheat and spring wheat, but the process has been difficult because the two types of wheat grow in different climates. Winter wheats are considered superior in cold hardiness, in drought resistance, and in resistance to septoria disease. I mentioned earlier that Brazil suffered a disaster in its wheat crop this past year because of septoria and Brazil is incapable of crossing winter wheat with spring wheat because you can't grow winter wheat in Brazil. Clearly here is one example where an international center can offer a service that a government can't do for itself.

Spring wheats have better rust resistance and better milling quality. Therefore, a marriage of the two should produce progeny that are more valuable for both climates.

In 1968 CIMMYT began a 3-way collaboration, involving winter wheat breeders in the northwest United States, in Turkey and in Mexico. Crosses are now made at all three locations, and the progeny are exchanged and tested during early generations. The earliest of these crosses are now at the F-4 or F-5 stage; that is, the fourth or fifth generation.

In 1973 we received reports from progeny tests in both Turkey and Lebanon, indicating that the advanced generations of the crossing program had survived well a winter kill and a drought which had destroyed traditional varieties of spring wheat. Here was solid support for the belief of some of our scientists at CIMMYT that winter-spring wheat crosses are likely to provide the most promising approach to drought tolerance for spring wheat growers of the world. This work will continue and we must await much wider information before seed will be available to growers.

Triticale

I will now turn to another CIMMYT program -- triticale.

The major food grains eaten by the human race were domesticated about 10,000 years ago, as I mentioned earlier. Scientific man has made some improvements in those early wild plants, but from neolithic times until today, no man has succeeded in developing a new species, a man-made plant that proved commercially successful. Such an event is now taking place, with the plant called triticale.

Triticale is derived from crossing wheat and rye, after which the chromosomes of the first generation hybrid are doubled by treatment with a chemical, to produce a partially fertile new "species." The word triticale combines the Latin words for wheat and rye.

The first natural occurrence of triticale was reported in Europe in the 1880s. The chemical for treating the chromosomes was not discovered until 1936. Several European scientists such as Müntzing in Sweden and Sanchez-Monge in Spain have spent a professional lifetime trying to produce an important commercial crop from this species, but they have been frustrated by biological barriers, such as partial sterility, shrivelled grain, low yield, poor agronomic type, and narrow adaptation of the crop to various climates.

CIMMYT became active in this work nine years ago, through cooperation with the University of Manitoba in Canada. The triticale plant has now been dwarfed. Fertility has been restored by accidental mutation in Mexico. During 1973 some of the newer lines now have plump grain with test weight of 60 points per bushel, which is the accepted standard for wheat. Some lines of triticale are more cold hardy and more drought resistant than wheat, and these two characteristics undoubtedly come from the rye parent.

Protein in triticale is proving remarkable. The better lines have 2% more total protein than any wheat, and the lysine content of some triticale lines is significantly higher than in wheats when grown under the same conditions.

The best new triticales, now in the final stage of performance testing, yield essentially the same as the best Mexican bread wheats. These yields have been verified this year in reports from Ethiopia, Kenya, India, Pakistan, Lebanon, and Canada. It now seems certain that triticale can compete with wheat, barley and oats under certain climatic conditions. Triticale can be used for bread, tortillas, and chapatis. Triticale may become important for feed grain and for winter forage. It is safe to predict that triticale will add to the world's food potential before the end of the 1970s.

CIMMYT's work on triticale is financed by the Canadian Government, through restricted core grants from CIDA-IDRC.

Barley

CIMMYT's barley program, you will recall, began only in 1972. Today it is in its third breeding cycle. Over 5,000 crosses have been made in these three seasons from CIMMYT's germ plasm collection which has 4,000 items of various barleys. Segregants of these crosses are already revealing important germ plasm for better plant type, better disease resistance, and better protein.

A gene in barley called hi-proly was discovered in 1969 by the Swedish scientists Munck, Karlsson and Hagberg. This simple recessive gene raises the protein content of barley and increases one of the amino acids, lysine. The hi-proly gene provides a reliable mechanism to improve protein in barley. CIMMYT is using this gene throughout its barley program.

It is too early to talk about results, but our first international test nurseries for barley are being grown in 1973 in 20 countries of the low rainfall areas of North Africa, Asia, Eastern Europe, and the Andean region of South America. These are the areas where people grow barley rather than wheat, because barley does better under moisture stress. The Bible, you remember, speaks of barley cakes in the Jordan River valley.

Short tropical maize with better protein

Last year CIMMYT reported to this meeting on the problems of tropical maize which is too tall, and is being shortened by CIMMYT to reduce lodging (or falling over). This research has gone through two more cropping cycles since we last met. The plant is still becoming shorter at the rate of 10 centimeters per cycle. We have now taken more than one meter off the height and reduced the elevation of the ear on the stalk by about the same amount. As you would expect, lodging has substantially disappeared in these particular plants.

This improved tropical plant is undergoing maximum yield trials in Mexico in the summer of 1973 and we hope to have interesting new data on yield by the end of the year. The tall tropical plant has traditionally been grown at 25-30,000 plants per hectare. The new shorter plants are now being tested at 75,000 to more than 100,000 plants per hectare. In other words, the shorter plants will grow at double the population, or even more, and thus produce more ears per hectare.

I told you last year about the improved protein work in maize, based upon the mutant gene called opaque-2. At Centers Week one year ago, there were only four bushels in the world of seed for a new maize combining improved protein and hard endosperm. The hard endosperm is the preferred type that is eaten by most of the people who are direct consumers of maize. Now there are many tons of seed for this new maize in each of 16 countries of Asia, Africa, and Latin America. The new maize has undergone additional laboratory feeding trials with mice, rats, chicks, pigs, and human babies, and all trials have verified that this new maize has retained its high nutritional value.

This new maize is now in agronomic tests in the 16 countries, preparatory to trials in farmers' fields.

Following closely behind this first maize population with hard endosperm and improved protein, CIMMYT has five more experimental populations, each believed to have the same nutritional value, and each will be ready for international testing later in 1973.

The United Nations Development Programme is financing the work on improved protein in maize. Their support is listed under our core restricted grants.

Other Current Developments

Before concluding this review of current developments at CIMMYT, I shall make brief reference to a number of other activities.

CIMMYT's training programs in applied research provide experience in Mexico this past year to over 80 men and women from 35 countries. This was our largest training program to date. Doctoral fellows serving at CIMMYT now total 10, and they also are the largest number to date. These fellows continue to offer one of the best recruiting sources for new employees, not only for CIMMYT but also for other centers. Former doctoral fellows at CIMMYT are now serving on the staffs of IRRI, the Asian Vegetable Center, and the Arid Lands Agricultural Development Program in Lebanon, as well as in CIMMYT.

In outreach activities, CIMMYT staff spent over 1200 man days on consulting work with more than 60 governments of Asia, Africa, and Latin America during the last year. We believe CIMMYT has fulfilled the wish, expressed by the Chairman of TAC last year, that CIMMYT should continue its strong emphasis on outreach activities.

In economic studies, our chief economist is more than half finished with a review of the experiences which farmers are having with new wheat and corn technology in eight countries of Asia, Africa, and Latin America. Those of you who have been attending the economic seminar, at the end of last week, have already had a more detailed review of these studies than we will have time for here. We hope from these studies to gain a better basis for future programming decisions at CIMMYT.

I mentioned last year that CIMMYT planned to hold a review of administration with the help of an external panel. This was done, in December 1972, with a 3-man panel chaired by Mr. Jose Drilon, the Under Secretary of Agriculture in the Philippines. The Panel drafted a report which contained over 80 suggestions, some of which have already been carried out, and some are still under study. It was a productive experience. I also would say it was very time-consuming.

Copies of the administrative report are available here from the Secretariat.

So much for the highlights of CIMMYT activities.

Budget 1974

A grey-covered document which I mentioned earlier contains the CIMMYT budget request for 1974. I will not try to repeat the dollar estimates here. There are no new programs in that booklet. There is no increase in the number of professional scientists. The operating cost of our core operating budget will rise by 4%, which is less than the inflation rate in Mexico. This low increase is possible only because we are completing in 1973 the 7-year experiment with Plan Puebla, which has been supported in part by the Rockefeller Foundation.

The largest capital item in the budget for next year is a request for working capital sufficient to cover 40 days of CIMMYT core activities. The size of this item was worked out jointly by the Consultative Group Secretariat, and the Directors of all the centers. We believe our difficulties with cash flow from the core donors in the past year justifies this capital request.

Program Issues

I have reserved a few minutes at the end of this statement to say something about the program issues that have come up in our program reviews of the past year.

In our "in-house review" the professional staff of CIMMYT spent approximately two weeks looking at research plots and asking questions of each other. Out of this discussion we distilled about 30 issues which are reported to you in that document.

Subsequently our Trustees' Program Committee, headed by Dr. Guy Camus of France, reviewed the staff report, made its own field observations, and identified nine issues on which they felt further discussion should be held.

We have time now to talk about only two of these issues, and I have chosen two which I regard as quite interesting, but also quite complicated.

The first may be posed as a question: Should CIMMYT give more attention to intermediate level technology, which will help the farmer who is unable or unwilling to follow all the recommendations for high yield; in other words, the farmer who uses less fertilizer, less plant population, less weed control, and tries to reduce his risks.

This question was presented to CIMMYT during the past year by several members of the Consultative Group.

The answer must be given in several parts.

Our experience at CIMMYT indicates that widely adapted varieties of maize and wheat are superior in yield, both at optimum levels of inputs and at intermediate levels. In other words, these so-called high yielding varieties are efficient in utilizing available fertilizer and moisture, whatever the level of input. We test these experimental populations at all levels of inputs. And the farmer who uses them can choose his own level of inputs and risk.

Another part of the answer is this. CIMMYT aims to develop widely adapted varieties of maize and wheat. This means we are testing experimental materials in over 60 countries each year, to identify those which carry tolerance to both heat and cold, to excess moisture and to moisture stress, to all types of diseases and insects in the various agro-climates in which we are working. CIMMYT breeders are unable to quantify what they learn from year to year about wide adaptation, but each new breeding generation incorporates the plants which prove to be best adapted over a wide range of climatic conditions.

We believe that these widely adapted materials will be of benefit to all classes of farmers, but especially to the farmer who wants to reduce his input costs and his risks. These future varieties which are well adapted should have greater stability of yield than any varieties in use today.

One other part of this answer is worth mentioning. The farmer who wants lower input costs is generally a man in a region of variable rainfall, where droughts frequently occur. This farmer is therefore interested in drought tolerant varieties.

CIMMYT is working on drought through several approaches. These include:

drought escape, by length of maturity
drought tolerance, by root structure
drought tolerance from disease and insect resistance
drought tolerance, from plant architecture
drought escape, by substitution of crop.

It is not possible to go into details on each of these programs here, but you will find further information about them in your documents.

To sum up: Our answer to the question is that CIMMYT is doing whatever we know how to do on behalf of the farmer who wants intermediate technology.

Radical Research

The other issue I have chosen to discuss is that of "radical research" on new food sources.

This issue arose during our CIMMYT in-house review, and the term "radical research" is an arbitrary one which will become clear as I report on the discussion.

CIMMYT staff asked themselves: For how many years could present types of research on maize and wheat enable the growers of these commodities to stay ahead of population growth. Our answer is: for 15 or 20 years, definitely we can; for 30 years, probably we can. Beyond that, there is no assurance.

Like the demographer Dudley Kirk whom I quoted earlier, we doubt that today's crops and today's research methods can stay ahead of world population growth if growth continues beyond the end of the century.

What happens then?

CIMMYT scientists agreed that more radical methods of research are needed.

What are examples? Some people speak of hydroponics, or mariculture, or food from waste products, or food from inorganic materials, or mirco-organic protein, and so on. These potential food sources all have the advantage that they do not depend upon present cropland. They are supplemental. CIMMYT claims no expertise in any of these types of work, but they do deserve attention by others.

There are some fields of radical research to which CIMMYT might be able to contribute. CIMMYT has worked on branched ears of wheat, and we could resume that work. CIMMYT has worked on the wide cross, triticale, and we could work in future on other wide crosses either between two cereals, or between one cereal and one species of grass.

These are high risk research fields. By that I mean there will be many false starts and no predictable timetable.

It is the judgment of the CIMMYT scientific staff that CIMMYT should continue to devote at least 95% of its time and budget to the conventional research programs in which we are now engaged. And not more than 5% of our time or budget should be spent on these "radical" fields, that we are talking about here.

Our Trustees took up this issue, as you will see in your documents. The Trustees asked that the CIMMYT staff formulate a detailed report on alternative types of "radical research" and alternative "centers of excellence" where this type of work might be done. With this information in hand, our Trustees could make inquiries about what other institutions are prepared to do to supplement the work of the international centers.

I cannot leave this subject of radical research without telling one anecdote.

Two months ago I visited a greenhouse at CIMMYT and found on the shelves two rows of glass test tubes, each tube containing one sickly looking plant growing in a colored fluid. I asked what was going on. A scientist said one row of test tubes contained crosses between wheat and barley, the other contained crosses between wheat and oats. But, he said, don't take this seriously. We have been experimenting with different fluids as the growing medium, and the plants continue to die. All of these will probably be dead by the end of the week.

Last Saturday, which was two months later, I went into the same greenhouse. Some of those plants are still growing. They are now transferred to soil, and some are now one meter high. This time the scientist said, "It looks very promising, but don't talk about this in Washington. We ought to have a second generation of plants germinated from the F-1 seed before we say anything to the donors."

Those of you who know the characteristics of cereals will immediately recognize the payoff potential of this type of work. Barley is far more drought resistant than wheat: it has a better root structure. Obviously, if you could transfer the drought tolerance of barley into a wheat cross you are achieving something quite important. Oats have the best protein quantity and quality of any of the cereals. If these two characteristics could be combined in a new wide cross with wheat, we may have a super grain ready by 2000 A.D.

It is possibilities like this that keep CIMMYT staff working overtime.

This completes my presentation, but I would like to restate the points I have made.

First: Present world population growth requires that the world food supply be doubled in a period of about three decades, and somewhat sooner in the developing countries. CIMMYT is confident that this is possible for maize and wheat.

Second: CIMMYT interprets the downturn of food production in 1972 to be a temporary deviation from the trend. We believe that food production will continue to expand in precarious balance with population growth. Any major weather change can disrupt this balance for a period of one or two years.

Third: The highlights of CIMMYT activities during the past year included significant gains in the program for winter wheat and spring wheat crosses; also for triticale, for barley, and for tropical maize. There are many developments I didn't speak of and I hope they will arise in the question period.

Fourth: CIMMYT has reported many program issues for the information of this meeting of the Consultative Group. Two of these issues I have mentioned concern intermediate level technology, and radical research on new food sources.

Looking ahead to 1974, Mr. Chairman, if the Consultative Group finds it possible to finance the program which CIMMYT has presented in our documents, I am confident we shall report to you, one year from now, a list of accomplishments at least as successful as we found in this year's program.

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ROUTING SLIP			Date JUL 23 1973		
INCOMING MAIL					
	Mr. Adler	D630		Mr. Rayfield	N434
	Mr. Aldewereld	A1226		Mr. de la Renaudiere	C302
	Mr. Alter	A908		Sir Denis Rickett	A1230
	Mr. Baum	D729		Mr. Rotberg	A1042
	Mr. Bell	A1136		Mr. Stevenson	D532
	Mr. Benjenk	A712		Mr. Thalwitz	A210
	Mr. Blaxall	D628		Mr. Twining	N635
	Mr. Broches	A813		Mr. van der Tak	D732
	Mr. Cargill	A513		Mr. Votaw	C702
	Mr. Cauas	N234		Mr. Wapenhans	A707
	Mr. Chadenet	A201		Mr. Weiner	A500
	Mr. V. C. Chang	H702		Mr. Wiese	A837
	Mr. Chaufournier	A313		Mr. Williams	B1210
	Mr. Chenery	A1221		Mr. Wright	A307
	Mr. Wm. Clark	D928			
	Mr. Clarke	D1029	1	BC	
	Mr. D.A. de Silva	N635			
	Mr. Diamond	A613			
	Mr. Fowler	A1219	3	CJ	
	Mr. Gabriel	H700			
	Mr. Goodman	C602			
	Mr. Goreux	N235		Cancel	
	~~Mr. Graves~~	D1122			
	Mr. Gutierrez	B906		Cancel	
	Mr. Hartwich	A413		Yes	
	Mr. Hayes	D429		Only	
	Mr. Hittmair	A1042		Only	
	Mr. Hoffman	D1123			
	Mr. Husain	C1001			
	Mr. Knapp	A1230			
	Mr. Kirmani	A1143			
	Mr. Knox	A911			
	Mr. Lejeune	A1013			
	Mr. McNamara	A1230			
	Mr. Mendels	A1219			
	Mr. Muller	N436			
	Mr. Nurick	A802			
	Mr. Paijmans	D1032			

From: Communications Section, Room C219, Extension 2023

926

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

July 16, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International Agricultural Research
1818 H Street N.W.
Washington, D. C. 20433

Dear Harold:

Subject: George Dion report on CIMMYT, and the 1974 review.

George Dion is the best "external program auditor" I have encountered. He has taken our briefing material, sorted it out in his own way, added his own interpretation, and in some instances given a clearer interpretation than I have been able to do.

He also has a way of disarming those who are audited. He left no ruffled feathers.

I have now received the copy of Dion's report which you typed from his longhand manuscript, and another copy directly from George, which is typewritten. There are a number of errors in the manuscript copied in IBRD, but I assume you found them when you reviewed the typescript from Dion. The two most serious errors in your copy were:

Page 5, line 18, "which historically have not had much utilization". (Your copy reads "which historically had much utilization".)

Page 9, line 5, "after 10 breeding cycles". (Your copy reads 100 breeding cycles.)

Bob Osler read the manuscript and offered one suggestion. He feels that Dion has not fully explained the methods for testing segregating populations in the wheat program, and by narrowing the explanation, he feels there could be criticism of Borlaug by professional breeders. I enclose the revision which Osler proposes, which is found on pages 3-4 of the manuscript you typed at IBRD.

CIMMYT

July 18, 1973

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Executive Secretary
Consultative Group on International Agricultural Research
1818 H Street N.W.
Washington, D. C. 20433

Dear Harold:

Subject: George Dion report on CIMMYT, and the 1974 review.

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Page 6, line 5, "after 10 breeding cycles." (Your copy reads "10 breeding cycles.")

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1973 JUL 23 AM 11:16

RECEIVED

I do not regard this part of the George Dion manuscript as an "error" justifying an "errata". But if you reproduce more copies of the CIMMYT report for Centers Week distribution, I think Borlaug and his staff would appreciate the change.

I have given thought to procedures which would produce an even better program review and administrative review next year.

From CIMMYT's standpoint I would change nothing in George Dion's visit. Presentation week will be repeated next year, the last week in March, and I would hope that Dion or his counterpart for 1974 could again participate in Presentation Week.

I would hope that we could see the draft report 30 days before the distribution in Washington, and there would be time to exchange comments between the author(s) and CIMMYT by telephone.

I concur in a comment by George Dion, while at CIMMYT, that two professional agriculturalists could do a better job than one, partly because they would divide the work, and partly because they would check each other's judgment.

I am less clear how the administrative man can best perform his functions.

It is my impression that Urquhart gained little by sharing the visit with Dion, although I am sure they would wish to check each other's conclusions about administration.

Osler, Finlay, Borlaug, Sprague, and myself were all totally occupied during presentation week, and had no separate conversations with Urquhart. I believe he spent most of his time talking to the Controller, Bernard Henrie, who was not qualified to speak for the Director General's office. (Henrie is no longer with CIMMYT.) Urquhart left before Presentation Week was over, and I never did hear what conclusions he had reached, until we received his draft report on July 13.

Looking back, I think it would be better if the Management Consultant for CG came after the Trustees meeting. He could then receive an auditor's report which has been accepted by the Trustees. He could be given an approved budget. He could be given any Trustee action upon the overhead rate to be used for new restricted and special grants in the following year.

I wonder if the Management Consultant doesn't need to send in advance a list of questions on which he wants CIMMYT to prepare data. For example, if the question of the inflation rate in Mexico is likely to arise in future visits, would it be well for the Consultant to request the official data of the Mexican Government on the current rate of inflation, to be gathered by CIMMYT and handed to the consultant on arrival. Other questions which might occur to the Consultant on reading our budget document might also be sent in advance, and supplemental information would be ready when he arrives.

You might get comments from Urquhart on what changes in procedure he would like to see occur in 1974.

I look forward to seeing the final CIMMYT report for 1973, and salute the Secretariat for having accomplished an awkward assignment with acceptable results all around.

Cordially,

Haldore Hanson
Director General

Enclosure.

cc. Mr. Andrew Urquhart, CG, Washington
Dr. GeorgeDion, CIDA, Canada

Enclosure:

Suggested amplification of George Dion explanation of wheat selection procedures at CIMMYT.

(Note: the following language is a copy of Dion's manuscript, as typed in IBRD, starting on page 3, line 29, and ending on page 4, line 29. The underlined portions represent changes or additions suggested by R. D. Osler.)

These give rise to a large number of segregating plants which are subjected to rigorous selection in one of CIMMYT's nurseries in Mexico, where not only are plants discarded if they become infected after deliberate inoculation (1.5 to 2 million plants individually inoculated !) but also if they lack vigor and superior agronomic characters. In addition, rigorous selection is applied for seed type and size and each plant is evaluated for gluten strength by the Pelshenke test. Those selections which survive are divided into two parts. One part is replanted in the next cycle nursery in Mexico. The other part becomes an entry in CIMMYT's F_2 or screening nurseries and is sent to numerous collaborators (in so far as seed availability permits) in some 60 countries of the world. These early generation materials are divided generally into two groups on the basis of plant and seed type and parentage of the cross-one group for rainfed areas and one group for irrigated plantings. At this stage, the national programs select out superior lines for further testing and possible release as an improved variety or as breeding material within their programs. At the same time CIMMYT not only selects those that perform well over the range of nurseries including Mexico, but also receives back for use as parents the local selections and/or varieties which performed well (resistance to local diseases, insects etc.) in a particular trial. This procedure continually broadens the gene pool of the "crossing block" - the progenitors of the next year's single, double, three-way and back crosses. From the large number of lines tested, a few later generation lines are selected each year for increase to give enough seed for testing in the International Spring Wheat Yield Nurseries (ISWYN) at more than 100 locations throughout the wheat growing world.

The vast network of national wheat breeders in the various cooperating countries enter their own best lines, and the best of the local varieties, so that the ISWYN is at the same time a trial to test new materials against old standards, but also a means of identifying materials for local varieties or new lines which have valuable resistance to local races of diseases and pests. It is by means of this constant search, hybridization, testing and incorporation of new genetic material that lines are produced as the basis of varieties designed to stay ahead in competition with new races of wheat diseases and, in general, to increase breadth of adaptation and thereby decrease risk for the farmer working under rainfed conditions.

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

1818 H St., N.W. Washington, D.C. 20433 U.S.A.
Telephone (Area Code 202) 477-3592
Cable Address – INTBAFRAD

G3

July 24, 1973

TO: Members of the Consultative Group and of TAC

FROM: Executive Secretary

SUBJECT: Progress Reviews of IRRI and of CIMMYT

1. Attached for the information of members of the Consultative Group and of the Technical Advisory Committee is a progress review of the International Rice Research Institute (IRRI). As mentioned in the Executive Secretary's Memorandum of July 10, this report is the work of Mr. L. J. C. Evans and Mr. Andrew Urquhart. Some editorial changes have been made by the Secretariat.

2. In the progress review of CIMMYT, distributed on July 17, please make the following changes --

On page 5, paragraph 2.15, line 5, after the word historically insert have not.

On page 7, paragraph 2.29, line 2, the number should be 10, not 100.

Attachment

PROGRESS REVIEW OF

INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI)

Table of Contents

SUMMARY AND CONCLUSIONS

i. A mission of Mr. L.J.C. Evans and Mr. A.V. Urquhart visited IRRI between June 3-9, 1973, to review progress and future plans and to report to the Chairman of the Consultative Group on International Agricultural Research (CGIAR). The mission was excellently impressed by the high caliber of the staff and by the volume and quality of the research achievements.

ii. IRRI has achieved signal success in its first decade through concentrating on sharply focussed objectives; results have been achieved by a relatively small senior scientific staff, brilliantly led, and supported by a very well qualified supporting staff of research assistants and research aides.

iii. After its early success in developing stiff-strawed, high-yielding varieties suitable for the tropics, IRRI has researched intensively to increase man's knowledge of diseases and insect pests of rice. Chemical control of rice diseases is less practicable in tropical than in temperate countries, but by massive screening and breeding programs it has been found possible to incorporate varietal resistance to important virus and bacterial diseases into the breeding programs. Chemical control of insect pests is more feasible and economical but here, too, research has found varietal resistance which is being used in the process of "biological engineering" to produce improved rice varieties that are resistant to insect pests and diseases as well as being high yielding and of good quality.

iv. Some of the highlights of the research program are outlined in this report. Notable results are being achieved in research on soil fertility, biochemistry, weed control, and development of machinery suitable for the small cultivator. The work of the Agricultural Economics Department on socio-economic aspects of rice farming in Asia has provided an indispensable complement to the research of the biologists. Some research is being done into irrigation water control and management in cooperation with the National Irrigation Administration of the Philippines. It is unclear whether this research is likely to prove appropriate for IRRI, and it is suggested that it be reviewed during the next twelve months with outside assistance.

vi. IRRI has developed a highly effective international outreach network, insisting on its role of partnership with national programs, aiming to provide technical assistance rather than to operate outstations of IRRI. Some programs are being phased out, since national efforts can continue effectively without further support by IRRI. A considerable training program is an important part of IRRI's work; it comprises training in research and in production and extension.

vii. In its early years, IRRI's program was oriented mainly to research relevant to irrigated rice. Recently, increased attention has been paid to rainfed rice, both lowland and upland, which accounts for about 67 per cent of rice in Asia. Important results are beginning to emerge from research on upland rice and also from research into multiple cropping systems. The 1974 budget includes proposals to expand research in upland rice and cropping systems significantly. This would require additions of senior staff, support staff, buildings and land. It would involve the most significant change of emphasis in program since IRRI's research got under way in 1962. In the mission's opinion there is a strong case for such an expansion.

viii. IRRI's budget proposals are for $3,452,000 for core operations and $1,485,000 for capital. The expansion of the multiple cropping systems program accounts for $225,000 (35 %) of the increase of $645,000 in the 1974 budget for core operations and $785,000 of the capital budget. The mission has some reservations about the amounts charged to special projects for indirect expenses and about the projected budgets for 1975 to 1977.

I. INTRODUCTION

1.01 A mission composed of Messrs L.J.C. Evans and A.V. Urquhart visited the International Rice Research Institute (IRRI) at Los Banos, Philippines, from June 3-9, 1973. Its purpose was to report to the Chairman of the Consultative Group on International Agricultural Research (CGIAR) on the program and progress of IRRI.

1.02 On arrival at IRRI, the mission discussed the terms of reference with the Acting Director, Dr. D.S. Athwal. During its five and a half days at IRRI, the mission reviewed the progress of work and plans with Dr. Athwal and the senior staff, had full discussions with the Chairman of the Board of Trustees, Dr. F.F.Hill, and the Director-Designate of IRRI, Dr. N.C. Brady, and attended by invitation part of a meeting of the Board of Trustees when the 1974 budget proposals were being reviewed.

1.03 IRRI was established in 1960 by the Ford and Rockefeller Foundations with the full cooperation of the Republic of the Philippines. Staffing and most of the building program were completed by 1962. In 1970 USAID became a major contributor to the Institute activities. In addition to these donors, the International Development Research Centre (IDRC), of Canada, the Overseas Development Administration of the United Kingdom, the Japanese Government and the International Development Association of the World Bank Group provided funds in 1973.

II. IRRI's MANDATE AND SCOPE OF WORK

2.01 IRRI's objective has been to increase the production of rice in the world, especially in Asia, and to improve its quality. Adherence to this objective has enabled the Institute to achieve a degree of focus that has probably been one of the factors responsible for IRRI's success to date. Rice is the staple food of more than half of mankind; ninety per cent of the world's supply is produced and eaten in Asia.

2.02 When the Institute's research program got under way in 1962, the average rice yield in tropical Asian countries was less than one-third of that obtained in temperate countries such as Japan. Yet the tropics provide some of the conditions that should in theory be conducive to very high yields. The single most important reason for low rice yield in the tropics the tall and leafy character of the tropical rice plant. Under a low level of management such plants compete fairly well with weeds and produce fair, but by no means high, grain yields; if an attempt is made to raise the yield by fertilizers, and by good weed, insect and water control, the plants fall (lodge) before harvest.

For high yields, plants must remain erect until harvest. IRRI plant breeders therefore sought to develop short, stiff-strawed varieties that would resist lodgning even when heavily fertilized and intensively managed. By crossing semi-dwarf varieties from Taiwan with tall, vigorous, heavy tillering tropical varieties they began to produce exceptional varieties such as IR 8 (1966), IR 5 (1967), IR 20 and IR 22 (1969) and IR 24 (1971). The impact of varieties such as these is referred to in Chapter IV.

2.03 During its first ten years IRRI has not only focussed on one crop but has concentrated mostly on one kind of rice production, i.e. rice growing under irrigation. It was believed that it was in this area that there was the greatest immediate potential for improvement ; in the light of the biological improvements actually achieved, it would be hard to argue that this decision was not a wise one. Looking forward to the next ten years, however, it appears that there is a strong case for adding another dimension to the institution's work through expansion of research into multiple cropping systems and into the problems of rainfed lowland and upland rice. This is discussed in Cahpter IX.

III. STAFF AND ORGANIZATION

3.01 The mission was considerably impressed by the very high quality of IRRI's scientific staff and its leadership. Achievements which have been acclaimed round the world have come from a handful of senior scientists of top calibre, been well motivated, brilliantly led, and supported by an unusually competent cadre of research assistants and aides. IRRI's senior staff numbers 40, of whom 27 are senior scientists (17 from countries in Asia). They are supported by 106 Filipino research assistants and research aides having M.S. or B.S. qualifications.

3.02 The research units are organized on the basis of the following disciplines ; agricultural economics, agricultural engineering, agronomy, chemistry, entomology, plant pathology, plant physiology, soil chemistry, soil microbiology, statistics, and varietal improvement. There is also a multiple-cropping unit headed by a senior agronomist. Each unit has from one to three senior scientists supported by from four to sixteen research assistants/research aides.

3.03 There has been no formalized organization of multidisciplinary, mission-oriented research teams; but clearly the research results which have been achieved must have involved a considerable degree of interdisciplinary collaboration. Research programs and objectives seem to have been planned with little formality, and this was no doubt possible because the smallness of the staff enabled the Director and Associate Director to be personally and continually involved in discussion and coordination of the research efforts of all disciplinary units. As IRRI'S activities grow, it may be that some rather more formal system of planning, budgeting and coordinating interdisciplinary research projects will become necessary.

IV. THE RESEARCH PROGRAM

4.01 It is not possible to summarize nor even to mention all of the projects in the research program. They are of course fully reviewed each year in the Institute's annual reports. The attempt is made here merely to indicate some of the highlights and trends.

4.02 It may be that IRRI is best known for its success in producing new, high-yielding rice varieties, such as IR 8 (referred to in paragraph 2.02), which have been popularly called "miracle rices." In addition to breeding for high yield, IRRI rice scientists have been conducting important research projects in disease and insect control, improvement of rice quality, weed control, soil fertility, rice mechanization, multiple cropping systems and upland rice production technology.

4.03 The early work on varietal improvement gave an encouraging indication of the potential for rice improvement through what has been called "biological engineering." The IRRI named varieties with improved plant type have indeed been planted over millions of acres in Asia, but equally impressive has been the introduction of improved IRRI genetic material into national rice-breeding programs. More than 10,000 seed samples of IRRI's breeding lines and variety collection were distributed to 69 countries in 1972 alone.

4.04 Nevertheless, the Director's introduction to the IRRI 1972 Annual Report says, "In spite of the high yield potential of new varieties, only about 15 per cent of the rice land in South and Southeast Asia is planted to high-yielding varieties developed at IRRI and by national programs. The Institute clearly recognizes that susceptibility to diseases and insects is a strong constraint to further extension of new technology."

4.05 When IRRI started its research program in 1962 the importance of diseases and pests as a major constraint on tropical rice production was insufficiently recognized. Relatively high temperature and humidity which are typical of the tropical rice environment, are of course conducive to the development of organisms harmful to the rice plant. Ten years ago, virus diseases of rice, though prevalent, were not widely recognized nor understood; bacterial diseases were often unnoticed; damage caused by stem borers was often wrongly diagnosed. It is certainly one of IRRI's major achievements to have been able within a decade to add so largely to man's understanding of the diseases and pests of rice.

4.06 Of the 20 or so diseases and pests which cause serious damage to tropical rice, IRRI scientists have focussed first on blast, bacterial leaf blight and tungro virus amongst the diseases, and on stem borers, plant hoppers and leaf hoppers amongs the insects. Some considerable work has also been done on bacterial streak, sheath blight, grassy stunt virus and whorl maggot. For diseases the main method of control has been the development of resistant varieties. Chemical control of rise diseases, which was successful in Japan, is much less effective and economical in the tropics.

4.07 Chemical control of insects, on the other hand, is much more successful and has received major attention by IRRI entomologists. Notable work has been done in the application of granular insecticides such as lindane and diasinon to the paddy water instead of to the foliage; on protection of rice seedlings by soaking in insecticide solutions before transplanting; and on control of pests by placing insecticides about 3 cm below the soil surface near the roots of transplanted seedlings. Because of the unique anaerobic environment of the rice paddy, some of the organochlorine pesticides, such as lindane, which are highly persistent under ordinary (non-puddled, non-flooded) field conditions, are rapidly degraded by micro-organisms and may cause no residue problems in tropical paddy fields.

4.08 However, a number of farm surveys by IRRI economists have confirmed that though farmers using higher yielding varieties and more fertilizer have increased their use of insecticides over the past few years, many of them use only small amounts and the tendency is not to apply chemical insecticides until too late -- after damage occurs or is clearly visible.

4.09 The ideal method of controlling diseases and pests is by developing resistant varieties. IRRI scientists have begun to develop varieties which show resistance to some of the most serious diseases and insects. This must rank, after the early success in producing high yielding varieties for the tropics, as perhaps the next most significant of IRRI's achievements. One cannot, in fact, listen without a certain exhiliration to IRRI scientists predicting, on the basis of successes already achieved, the development of still further improved varieties combining high yield, better quality, and improved resistance to diseases and insects.

4.10 Both IR 22 (named in 1969) and IR 24 (named in 1971) combine high yield potential with excellent grain quality. (IR 24 produced 11 tons a hectare in IRRI's experimental plots, the highest yield ever recorded.) Yet the acceptance of these varieties has been limited, since they are susceptible to several diseases and pests. IR 20, on the other hand, which is not so high yielding as IR 22 and IR 24 has a broad spectrum of disease and insect resistance. IRRI's annual report for 1972 notes that "it has rapidly spread to many new areas including the Philippines, South Vietnam and Bangladesh, where it is now the most popular variety. In 1972, the Bangladesh Government imported about 7,000 tons of IR 20 seed from the Philippines, which is the largest consignment of rice seeds ever imported by any country. IR 20 has also begun to make an impact on Sri Lanka and India."

4.11 The development of resistant varieties has entailed much brilliant and painstaking work. More than 200 races of the causal organism of blast were identified in the Philippines alone; international blast nurseries were set up in 1963 and from the leading rice varieties of tropical countries 258 varieties were selected and tested at over 50 locations in 26 rice-growing countries; later 8,320 varieties were screened and a second group of 320 varieties were selected for testing; about 20 varieties were found with a broad spectrum of resistance to blast. Similarly, bacterial leaf blight was intensively investigated, 8,700 va-

rieties were screened and 125 varieties selected as most resistant. Tungro and grassy stunt virus diseases were identified in 1964, their insect vectors were also identified and mass screening tests were developed. Although there are several varieties resistant to tungro, no cultivated rice variety has been found with any high resistance to grassy stunt. However, one strain of the wild species, Oryza nivara, has been found to be highly resistant, and the resistance has been successfully transferred to cultivated rice. In seeking resistance to insect pests, 10,000 rice varieties were tested against one of the most widespread and serious pests, the striped stem borer; 20 varieties were identified as resistant through intensive field and greenhouse testing.

4.12 Plant breeders and chemists have been studying the genetic improvement of grain protein and have been able to demonstrate consistent increases to as much as 10 per cent protein content in milled rices compared with the normal 7 per cent, without adverse effects on the cooking and eating quality. Research to date seems to suggest that, if protein content increases above 10 per cent, yield falls.

4.13 Research on soil fertility is beginning to produce exciting new knowledge about nitrogen fixation under flooded paddy conditions. Microbiologists have found large amounts of molecular nitrogen in submerged soils planted to rice, a nitrogen-fixing bacterium has been isolated from the rhizosphere (the zone of soil immediately surrounding the roots of the plant), and it may be that the rice plant has the ability to transport atmospheric nitrogen to the root zone where it is fixed by bacterial action. Soil chemists have continued nutrient studies including assessment of varietal resistance to iron and phosphorous deficiency, and to manganese, aluminum and iron toxicity. Zinc deficiency has been confirmed as an important limiting factor on 50,000 ha in the Philippines; application of small amounts of zinc oxide to seedlings before transplanting enabled farmers to obtain yields up to four tons per ha without fertilizers on land previously regarded as uncultivable.

4.14 Numerous farm surveys by IRRI economists have shown how greatly weed growth can reduce the benefits of improved varieties and negate the response to fertilizers. The agronomists have found that relatively small applications of 2, 4-D, costing as little as $5 per ha, can control 80 per cent of the annual weed growth in transplanted rice without injuring the rice; while the microbiologists have found that 2, 4-D is biodegradable and non-persistent in lowland and in upland soils. A potentially inexpensive herbicide, "Bentazon", has been found effective in the control of a serious perennial weed of rice, the sedge Scirpus maritimus.

4.15 With a high degree of inventiveness and ingenuity, the Agricultural Engineering Department has continued to design and test low-powered machines suitable for rice cultivation or processing and to encourage their production and distribution to farmers. The Department designs and makes

prototypes and, after thorough testing, releases designs to suitable manufacturers. During the past year a design for a 5 to 7 horsepower tiller has been released for commercialization in the Philippines. Four companies in Sri Lanka have received the design and may begin production soon; the design has also been sent to eight other Asian countries.

4.16 The extension of new machines to small and medium rice farmers (2 to 10 ha) is an important objective of the Institute. It can only be done in cooperation with the agricultural equipment manufacturers, who in tropical Asian countries are often small firms with inadequate resources for the design and development of new machinery. IRRI's assistance sometimes extends to providing technical help in planning production programs and evaluating initial models for small firms in Asian countries, and to encouraging manufacturers in industrialized countries to produce special equipment for tropical agriculture. In addition to designs for power tillers, IRRI has released designs for a three-row portable rotary power weeder, seeders for sowing pre-germinated seed in puddled paddies, a simple low-lift "bellows" pump, a lightweight table thresher, a powered, rotary grain cleaner, a drier, parboiler, and an extendable lug wheel for improving the traction of tractors in muddy fields.

4.17 Many tasks in rice cultivation which have traditionally been done by hand are laborious and time-consuming; many of them can be mechanized. Studies by IRRI economists in the Philippines showed that labor used for weeding rose from 8 per cent to 17 per cent of the total labor requirement between 1966 and 1970, the period in which high yielding varieties were being adopted. Labor use in weed control in fact increased despite the greater use of herbicides and mechanical weeders, suggesting that the increase of chemical and mechanical technology is not, under these conditions, likely to be labor-displacing.

4.18 Because of the public debate which has taken place about the benefits and the identity of the beneficiaries of the so-called "green revolution," reference may be made to an interesting study, begun in 1971, of changes in rice farming in 33 rice-growing villages in six Asian countries. Because of the diversity of the situations studied and the preliminary nature of the data so far available, only very tentative generalizations can be made at this stage, and these must be subject to later verification. It appears that the effects of the introduction of modern varieties increased labor requirements despite increasing use of tractors, threshers, etc., and that physical-environmental factors such as irrigation, flood control, pests, diseases and soil quality may be as important as farm size, type of land tenure, availability of credit or pricing policy in determining the nature, magnitude, direction and beneficiaries of the new rice technology.

4.19 A clearly noticeable trend in IRRI!s research program is the increasing attention that has been given during recent years to both lowland and upland rainfed rice. The following are the three main classifications of rice according to type of cultivation and the percentages of each by area in Asia --

Irrigated rice, bunded and puddled	33 %
Rainfed rice, usually in lowland areas, bunded to impound rainwater, and puddled; not irrigated	44 %
Upland rice, rainfed, not irrigated; not bunded or puddled; usually on lighter soils, not always on high ground.	22 %

Despite the usually higher productivity of irrigated rice, it will be seen that the percentage of unirrigated, rainfed lowland and upland rice in Asia is very important; and in Latin America and Africa there is a higher proportion of upland than of irrigated rice.

4.20 Work on upland rice in IRRI has been done by the Departments of Agronomy, Varietal Improvement, Soil Chemistry and Plant Physiology. Work by the Plant Pathology and Entomology departments on upland rice has just begun. Resistance to drought is particularly important in upland rice; ways to evaluate breeding materials for drought tolerance are being developed and new drought resistant selections are about to be tested. Studies so far have shown that varieties differ greatly in tolerance to soil conditions, which are generally more adverse in upland than in irrigated rice.

4.21 Increasing attention has also been given to research on multiple cropping systems. Very interesting findings are reported, inter alia, about crop/crop and crop/weed relationships. In one experiment mung beans interplanted with maize reduced weed growth significantly without competing much with the maize; maize planted alone yielded much less than when planted with mung. In another experiment maize planted alone had six times as many maize-borer larvae as had maize interplanted with groundnuts. (The pros and cons of expanding IRRI's research program on multiple cropping is discussed in Chapter IX.)

4.22 Reference has been made (paragraphs 4.14, 4.17, 4.18) to some of the work of the Agricultural Economics Department. It is evident that agricultural economists have had a valuable contribution to add at IRRI to the work of the other scientists. The relevance of socio-economic research is likely to become even more significant if IRRI's work program expands in the direction of multiple cropping systems and upland rice, where an understanding of the constraints, motivations and capacities of small rice farmers will be essential to the development of improved technology.

4.23 One part of the Agricultural Economics Department's work needs special mention. This is the research that is being undertaken on irrigation water control and management. Inefficient use of existing water supplies is rather widespread, and in most large irrigation schemes, it is recognized that there is room for improvement in control of water in major canals, distributories and field channels. A joint research project is under way with the National Irrigation Administration of the Philippines to manage the flow of water in canals serving 5,000 ha of the Penaranda River irrigation system in Luzon. While it may be argued that inadequacy of irrigation water is one of the common constraints of rice cultivation, it is far from clear whether management of water at the irrigation scheme level is an appropriate research project for IRRI. The scientist in charge of this work is researching with enthusiasm and imagination, but it is a question whether one man researching in this way on one irrigation scheme can succeed in producing new knowledge that will be at all widely applicable by the civil engineers, water administrators and irrigation agronomists who have responsibility for designing and running irrigation schemes. It would perhaps be worth while to make a special review of the progress of this project within the next twelve months, with the help of a few persons experienced in Asian irrigation problems, to decide whether it should be continued as it is, or discontinued, or expanded with additional staff and resources.

4.24 Even a brief account of IRRI's research program would not be complete without mention of the contribution made by the Statistics Department. This Department provides analytical services and in 1972 analyzed some 350 experiments carried out in other departments, two-thirds of them in the Departments of Entomology, Agronomy and Chemistry. The statistician is consulted by senior scientists, support staff and trainees on planning and design of experiments, sampling and collection of data, method of data analysis and on the interpretation and presentation of results. In addition, the Department itself has a significant program of research into experimental techniques. This is carried out in collaboration with other departments, and the result is improvement in experimental design, sampling techniques, field and greenhouse techniques, and so on.

V. OUTREACH

5.01 IRRI's outreach program is firmly established; it included 11 projects in seven countries at mid-1973. The maturity of the program is reflected in the fact that while two new projects have been started within the past year, one -- in India -- has been phased out after six years because IRRI's formal contribution is no longer required now that national efforts can do without it. The whole outreach program seems soundly based. Not all country requests are accepted; perhaps half the projects in the program are in it because of a country's initiative, another half because of an initiative by IRRI.

5.02 In India, IRRI's formal outreach project with the All-India Coordinated Rice Improvement Project (AICRIP), for which a USAID contract supported five IRRI scientists, was phased out in June 1973. One senior scientist assigned by the Rockefeller Foundation will continue as IRRI's representative with AICRIP. In the Philippines a new USAID contract, which began in August 1972, supports an IRRI crop production specialist who assists the National Food Production Council in the crop production program.

5.03 In Indonesia IRRI has contracted to provide six experts to train Indonesian research staff and to give support at the new research station at Sukamandi, for which funds are available from an International Development Association credit. Also in Indonesia, two IRRI scientists are working at the Maros Research Station in South Sulowesi, which is supported by a grant from the Netherlands Government. To strengthen research in rice breeding, agronomy and multiple cropping, five IRRI scientists supported by USAID funds are working at the Central Research Institute, Bogor. Lastly, a senior scientist, supported by a Ford Foundation grant, serves as joint coordinator of Indonesia's National Rice Research Program.

5.04 In Bangladesh, lack of qualified rice scientists limited the program in 1972 but a number of promising scholars were identified for training at IRRI and elsewhere. IRRI has recently had only one scientist stationed in Bangladesh, but this is to be expanded to three scientists in 1974. In Egypt, where long and slender-grain indicates varieties are likely to have great potential, one rice breeder is working with the Ford Foundation's Arid Lands Agricultural Development Program. Two scientists are working in Sri Lanka, one on extension and multiple cropping and one assisting the Paddy Marketing Board in improvement of milling, storage, and marketing. Two scientists are provided in South Vietnam under USAID contract.

5.05 Apart from the outreach projects mentioned above, in each of which IRRI provides at least one senior scientist, the outreach program also involves the identification of local scientists for training at IRRI, the engagement of consultants to work on specific problems or to give advice to local programs and the arranging of conferences. IRRI's outreach projects are not intended to operate as branch stations of IRRI; the idea is rather to work within country programs. For this reason outreach can only be really effective if the national program is well staffed, directed and designed.

5.06 In addition to formal outreach projects IRRI has a considerable network of less formal arrangements, involving exchange visits of scientists, supply of seed, training of scholars, etc. This kind of informal outreach has, for instance, been particularly successful in Korea, where the area planted with the improved IRRI variety Tongil increased from 2,700 ha to over 200,000 in one year.

5.07 IRRI's approach to its outreach activities and the scientists' outward-looking attitude have doubtless contributed significantly to the Institute's success. IRRI has aimed to build up an international network of cooperation in rice research, stimulating local initiative, strengthening rather than dominating local programs, not claiming all the credit for joint successes.

VI. TRAINING

6.01 The Institute has from the beginning regarded training as an important part of its activities. From 1962 young scientists were accepted at IRRI for training; in 1966 production training started; in 1966, training in multiple cropping was provided. At the time of the mission's visit, there were 92 trainees in residence from 23 countries.

6.02 Research scholars usually spend one or two years at IRRI working under a senior scientist, first perhaps as a research assistant and then having responsibility for a particular research project. Some scholars pursue graduate studies at the University of the Philippines College of Agriculture leading to a Master of Science degree. Research fellows are usually older and more experienced, with at least an M. S. degree or equivalent. Post-doctoral fellows are invited to the Institute to collaborate in research in their specialized fields. The fellowship is usually for one year.

6.03 Rice production training courses are of two kinds. A six-month "train the trainer" program is held for a group of about 35 each year, starting in June or July. The trainees come from extension organizations, research centers or colleges. They spend half their time in the classroom, half in the field, and the emphasis is on learning the concepts and techniques of applied research and production, and on learning the fundamentals of communication. IRRI's role is to teach trainees to organize and conduct training courses in their home countries. Secondly, two-week rice-produc-

tion courses are given, mainly for participants from the Philippines, including college graduates, farmers, mayors, cooperative officers; up to 80 participants may be trained at a time. The mission was informed that average performance was so low as to cause concern. In one group the average mark achieved in practical classes by extension worker trainees, mainly graduates from agricultural colleges in the Philippines, was 26 per cent. In another group of 36 trainees, another 11 could be given nothing more than certificates of attendance. This suggests that selection of trainees may be deficient; reliance on paper qualifications for entry may not be enough. Perhaps too many Filipino candidates are being accepted and part of the resources should be directed to training participants from other countries.

6.04 Despite the adequacy of the Institute's facilities in most respects, the buildings available for training are not adequate for training on the present scale. The training program is, indeed, due to expand further when a six-month course in cropping systems begins. The 1974 budget proposals include provision for building a training and conference center; for most of the year the space would be devoted to tutorial and seminar rooms for training; movable partitions would enable the space to be converted occasionally into one or more large conference rooms.

VII. SUPPORT SERVICES

7.01 The library performs an important and effective supporting role to IRRI's research, outreach and training programs. To keep scientists informed of the latest publications on rice, tables of contents of newly received journals are regularly copied to scientists of IRRI, CIAT and IITA. Numerous requests for publications are received from within IRRI and outside, especially for Japanese literature on rice research. Lists of new acquisitions of books, translations, reprints and microfilms are widely distributed outside IRRI. The Library prepares annually a supplement to the "International Bibliography of Rice Research." Over 2,000 books, pamphlets and reprints are added to the library yearly, and within IRRI over 30,000 books and journals are borrowed each year, exclusive of publications consulted directly in the library.

7.02 The experimental farm, though small, is well laid out and gives the impression that is efficiently managed. About 80 ha are planted to rice each year, mostly in experimental plots for the research departments. Plots not being used for experiments are used for seed production. The farm is well roaded and irrigated. Under the Farm Superintendent and Associate Farm Superintendent are between 60 and 70 employees, including supervisors, equipment operators and mechanics. Land preparation is done with tractors or carabao (water buffalo). Much of the work such as transplanting, weeding and harvesting is done on contract by workers provided by two contractors. Requests are made by research staff in writing to the Farm Superintendent and can be met on as little as 24 hours' notice. The College of Agriculture farm lands are adjacent to IRRI's and excellent relations are maintained between the two units.

7.03 The primary function of the Information Services Office is dissemination of scientific information. About 70 journal articles by IRRI scientists are edited and prepared for publication in a year. The Office is also responsible for preparing, editing and publishing the Annual Report, which extends to over 200 pages and is aimed at scientists and professional workers in the field. Public relations are time-consuming. 14,000 visitors come to IRRI annually, and one man devotes his whole time to this. Inevitably the Director and senior staff have to spend part of their time meeting visitors. An audio-visual presentation of IRRI's history and achievements is being prepared which, it is hoped, may save some senior staff time.

VIII. RELATIONS WITH OTHER INSTITUTIONS

8.01 IRRI has close and cordial relations with its neighbors, the University of the Philippines College of Agriculture. Staff have frequent contact, joint seminars are held, some IRRI staff give lectures at the College, some of IRRI's visiting scholars (trainees) undertake course work at the College. The disparity between the two institutions with respect to physical endowment of buildings and facilities, which was for a time very much in IRRI's favor, is no longer so apparent, now that the College has completed a considerable building program with the help of a World Bank loan. IRRI and the College are cooperating in carrying out joint work on multiple cropping. The College is following up work started by IRRI in six Philippine barrios (parishes). Graduates of the College play an important part in some of IRRI's international programs; for instance, a College graduate, nominated by IRRI, is in charge of the rice production training program currently being provided at IITA to trainees selected by the West African Rice Development Association (WARDA).

8.02 IRRI has strong ties with CIAT and with IITA, both of which have important rice research programs, through recognizing IRRI!s global responsibility for rice research. In Latin America only 20 per cent of the area under rice is lowland paddy, but it is calculated that half of it is planted with improved varieties derived from IRRI. In Africa, like Latin America, a much larger acreage is under upland than lowland rice. After screening IRRI varieties and selected lines likely to be most adaptable to West African upland conditions, new lines are being bred at IITA incorporating the IRRI plant type with desirable characteristics from local varieties.

IX. EXPANSION OF IRRI!s MULTIPLE CROPPING SYSTEMS AND UPLAND RICE RESEARCH

9.01 IRRI's 1974 Budget presents a proposal for significant expansion of the Institute's research on multiple cropping systems and upland rice. New staff, land and laboratories would be needed.

9.02 Reference has been made to IRRI's ongoing research on cropping systems (paragraph 4.20). The multiple cropping program has had an annual budget at the level of $100,000. A marked expansion of research is proposed, the focus of which would be on rainfed rice, where improved cropping systems would benefit a majority of the rural population in Asia. The estimated recurring budget of the expanded program would be $325,000 in 1974, rising to $774,000 by 1976; and estimated capital requirements in 1974 would be $785,000 in 1974 and $350,000 in 1975. A separate proposal giving detailed information on the proposed program of work and the facilities needed has been submitted to the Technical Advisory Committee. A separate proposal giving detailed information on the proposed program of work and the facilities needed has been submitted to the Technical Advisory Committee.

9.03 Additional resources are also requested in the 1974 Budget for expansion of upland rice research. An additional agronomist is requested; also additional support staff in varietal improvement, entomology, and agronomy; additional equipment and supplies. The estimated recurring cost would be $70,000 and the capital cost $150,000 in 1974.

9.04 The Director-Designate has recently written, "With its past successes IRRI now stands at a crossroad. Should it remain a narrowly but sharply focussed Institute, relatively small in size, thereby serving primarily as a pilot plant -- a pattern for national research institutions and stations -- or should it broaden somewhat its base of concern, to give greater emphasis to research on other than irrigated rice, and to such studies as those associated with the farming systems in which rice is grown? Further, should it continue to focus primarily on the biological problems facing rice cultivators, or should its scientific base be broadened to include a more significant socio-economic base?"

9.05 Loss of focus could be serious. One of the reasons for IRRI!s success in its first decade is doubtless the degree of focus that was insisted on at the outset and maintained. The proposal for expansion, however, might not seriously widen the focus, provided the multiple cropping systems research is confined to systems of cropping devised with rice as the main crop. Multiple cropping systems without rice would presumably not be researched. Furthermore it is clear that the proposal is not for starting new programs about which little is known, but for expanding existing programs -- existing programs which already hold promise of yielding results as impressive as those of IRRI's earlier endeavors.

9.06 Another reason for IRRI!s success may also be the relatively small number of its senior staff, which has facilitiated personal contact between the Director and staff, and between the senior staff of the different departments. It may be doubted whether after ten years of successful operation the addition of seven or eight more senior scientists over the next three to four years, on top of the existing 27 senior scientists, would adversely affect IRRI's performance. (IRRI would still be smaller than many agricultural research centers in developed countries and, incidentally, smaller than IITA is now, with 42 senior scientists.)

9.07 Even if the importance is accepted of extending IRRI's work to cover more effectively the 67 per cent of the rice in Asia that is not irrigated -- and the majority of rice elsewhere -- it may be asked whether the added costs of expansion could not be saved by switching some of the Institute's existing resources away from current activities towards multiple cropping and upland rice research. The answer might be that the senior staff of the Institute already are very thin in relation to the tasks that they are undertaking, that although much has been learned, much more remains to be found out, and that, in a sense, one problem is resolved only to bring to light another. Certainly in relation to varietal improvement, a continuous, dynamic program is essential and any diminution of the effort would be likely to have seriously adverse effects.

9.08 It might be conceded that there is a strong case for undertaking the multiple cropping work of the kind proposed, that there would still be the question whether the work might not be better done elsewhere, at another existing institution or at a new one to be established. It would almost be certainly be cheaper to do the work at an established center than to create a new one; and it is difficult to suggest an existing institution likely to be more effective than IRRI, which on a limited scale has already begun to produce results of great promise in this somewhat new and complex field.

9.09 A decision to expand on the scale proposed of course implies a commitment to expenditure beyond 1974 of the order of mignitude of perhaps $2.5 million over the next five years. It may be noted that the idea of purchasing additional land, which was put forward a year ago, has now been dropped; it is proposed instead to lease 80 ha of suitable land adjacent to the IRRI experimental farm. The proposal also makes it plain that cropping systems research, because of the location-specific nature of some of the problems, would require IRRI to have the use of at least two other pieces of land in the Philippines by arrangement with the appropriate authorities, for work in close collaboration with them; and that similarly in other Asian countries it would be necessary for IRRI to increase its biological and socio-economic work in cooperation with national agencies, involving perhaps an added dimension to its international outreach work.

9.10 The mission concludes that there is a rather strong case in favor of the expansion program proposed, in terms of costs, benefits and risks; in view of the importance of rice and the number of people involved, having regard to the proven ability of IRRI staff to produce research results of the highest quality in a relatively short time and to the fact that results of potential importance in both multiple cropping systems and upland rice research are beginning to emerge, the mission supposes that there are not likely to be many propositions as deserving as this is of donor support.

X. PHYSICAL PLANT

10.01 IRRI's physical facilities seem functional and well designed; they are now more than ten years old but do not appear so. In 1973, apartment houses for post-doctoral fellows are being built, the air-conditioning and water systems are being improved and sundry other construction work is being done.

10.02 For some time IRRI has felt the need for more laboratory space. With the proposed expansion in the multiple cropping systems program, the opportunity would be taken to build a laboratory which would serve the needs of that program as well as meeting additional needs elsewhere. The other requirements for the expanded multiple cropping systems program are described in paragraph 12.02 on the budget.

10.03 Other capital plans for 1974 are for the training/conference center referred to in paragraph 6.04 ($100,000) and farm buildings, machinery and a staff house for the expansion of the upland rice program. These total 120,000. A detailed breakdown of the capital budget request is given in Annex 2.

10.04 IRRI is finding that there is a shortage of land in its housing area for future expansion. Some more houses can still be accomodated, including those planned for 1974, but future expansion will be severely restricted.

XI. ADMINISTRATION

11.01 IRRI is fortunate in being able to find excellent locally employed staff to perform the support functions which are so essential to a smooth running institution. IRRI!s administrative services are efficient and well run.

11.02 In common with most other centers, IRRI used to have two senior staff in administration and accounting, one the executive officer and the other the treasurer. When the former resigned in 1971, the two posts were combined. Recently, however, with the increasing workload, it has been found that two senior people are needed. One additional position is included in the 1974 budget request. This seems reasonable.

XII. BUDGET

12.01 The IRRI budget proposal for 1974 is for $3,452,000 for core operations and $1,485,000 for capital, as compared with $2,807,000 and $236,000 respectively,for 1973. The increase in core operations is 23 %

more than 1973; and the planned capital expenditures would bring the total investment to $10,924,000 by the end of 1974. The total expenditures for 1974 of $4,937,000 represent a 62 % increase over the $3,043,000 for 1973. The following table briefly summarizes actual expenses for 1972, the budgets for 1973 and 1974 and projections to 1977 (more detailed figures are given in Annex I:

	Actual	Budgets		Projections		
	1972	1973	1974	1975	1976	1977
		(US $ Thousands)				
Core operations	2607	2807	3452	4101	4388	4717
Earned Income	(172)	(150)	(200)	(200)	(200)	(200)
Capital	353	236	1485	724	370	398
Total	2788	2893	4737	4625	4558	4915

12.02 One of the main reasons for the substantial increases proposed for 1974 is the expansion of the multiple cropping systems program. This accounts for $225,000 of the increase in core operations and $785,000 of capital expenses. The following table shows the planned expansion of this program.

	1973	1974	1975	1976
		(US $ Thousands)		
Core operations	100	325	739	774
Capital	-	785	380	-
Total	100	1110	1119	774

Plans call for an increase of three man-years of senior scientists and a corresponding increase in support staff. A further substantial increase is foreseen for 1975 and only a small increase in 1976. The principal items of capital expenditures in 1974 related to the cropping systems program are the major share ($300,000 out of a total $400,000) of the new laboratory building and four houses for the new senior staff ($260,000). A share of the training/conference center, the cost of leased land, equipment, machinery, vehicles and farm buildings account for the rest of the total of $785,000. Plans for 1975 include two more houses and more equipment and buildings, adding to a total of $380,000.

12.03 Other reasons for the increase in the core operations budget are:
a) A new senior scientist and support staff and equipment in the agronomy department to expand research on upland (rain fed) rice.
b) Funds ($92,000) to operate the new phytotron being donated by Australia.
c) A new senior position in administration as mentioned in paragraph 11.02.
d) The cost ($40,000) of a symposium on "The environment and the rice plant."
e) Two man-years of visiting scientists at a cost of $60,000, to replace several scientist going on study leave in 1974.
f) About half the increase of $420,000 in the budget excluding cropping systems is due to inflation of about 5%, salary increases and the need for additional supplies, etc., for new staff.

12.04 Projections of core operations and capital for 1975 to 1977 for the rice programs (i.e., everything except cropping systems) assume that there will be an increase of 7.5% p.a. in all departments and categories. This is considered enough to cover inflation of about 5% and other increases of about 2½%. The mission would have liked to see inflation separated out in presenting the projections and shown as a one line item at the bottom of the budget summary tables. This would enable the changes contemplated in the size or content of programs or departments to be clearly seen. The mission also would have liked to see, rather than across the board increases, specific proposals for increases (or shifts) in the various departments. The method of arriving at capital projections by adding 7½% p.a. to the 1974 figure does not seem to be realistic. If anything, the mission feels that capital requirements should now be a reducing item and there is no reason to believe that, because $320,000 will be required in 1974, a further $344,000 will be required in 1975 and $370,000 in 1976.

12.05 $380,000 has been requested in the 1974 budget for working capital. The mission supports this request, which represents about 40 days cash requirements of IRRI. It is worth noting that as IRRI's budget increases in 1975 and later, additional amounts should probably be requested for working capital. Nothing is shown in the projections at present.

12.06 As with other centers, many special projects are being subsidized out of core operations because insufficient amounts are being charged for indirect costs. Appendix 4 of IRRI's budget document shows that indirect costs at $1,499,042 are 98% as large as direct costs of $1,526,920. It is probable that many of these indirect costs are not attributable to or affected by special projects; but there are many that are. IRRI intends to make a study to determine what indirect costs are attributable to special projects, and to take steps to recover these indirect costs from donors in the future. In some cases where donors are unwilling to pay indirect costs, the special project will be dropped or, if it is a project in which IRRI is particularly interested, the support of the project out of core budget will be specifically proposed in the budget presentation.

12.07 IRRI has self-sustaining operations (or revolving funds) for staff housing and the cafeteria, dormitories and guest house. It is now some three years since a study was done to determine the prices charged. House rents have been increased, but the mission suggested and Management agreed that a new study should be made to ensure that these facilities are paying their way.

1974 BUDGET
THE INTERNATIONAL RICE RESEARCH INSTITUTE
Summary of Costs by Program and Activity 1970 - 1977

(in US $Thousand)

	Actual			Estimate & Budget			Projected b/		
	1970 Core	1971 Core	1972 Core	1973 Est. Exp. Core	1973 Budget a/ Core	1974 Budget Core	1975 Core	1976 Core	1977 Core
Major Activities									
1. Research									
Rice	905	993	1,145	1,187	1,182	1,317	1,416	1,522	1,637
Cropping Systems	55	33	77	90	70	240	634	654	703
Total	960	1,026	1,222	1,277	1,252	1,557	2,050	2,176	2,340
2. Conferences & Training									
Training	161	138	123	165	185	170	181	193	207
Technical Conferences	9	60	101	40	40	105	111	117	126
Total	170	198	224	205	225	275	292	310	333
3. Library, Documentation & Information Services									
Library & Documentation Center	77	79	87	82	82	94	101	110	118
Information Services	74	84	88	126	126	128	138	148	159
Total	151	163	175	208	208	222	239	258	277
4. Support Operations									
a. Service Activities:									
Buildings & Grounds including Motor Pool	210	189	225	270	270	268	291	315	339
Experimental Farm	170	180	211	219	219	246	273	296	318
Security Guards	21	24	31	34	34	38	41	44	47
Phytotron Operations	-	-	-	-	-	92	99	106	114
Total	401	393	467	523	523	644	704	761	818
b. General Administration:									
Board of Trustees	9	8	8	10	10	12	13	14	15
Administration	268	277	240	265	265	322	347	374	402
Total	277	285	248	275	275	334	360	388	417

a/ Revised 1973 budget based on final allocation approved by the Consultative Group.
b/ The projected budget is increased in annual increments of 7.5%, of which 5% (2/3) is to compensate for inflation and 2 1/2% (1/3) for operational improvements.

	Actual			Estimate & Budget			Projected b/		
	1970 Core	1971 Core	1972 Core	1973 Est. Exp. Core	1973 Budget a/ Core	1974 Budget Core	1975 Core	1976 Core	1977 Core
5. General Operations									
Rent, light & water	21	44	78	80	70	90	100	112	120
Postage, telephone & telegraph	27	32	43	35	35	35	37	40	43
Insurance	33	53	65	70	70	80	86	92	99
Freight & landing services	13	23	26	24	24	25	27	29	31
Auditors	5	8	7	9	9	10	11	12	13
Miscellaneous	62	68	31	36	36	43	47	50	54
Institute's help towards SSA	15	17	21	16	16	16	17	19	20
Total	176	245	271	270	260	299	325	354	380
6. All Other									
Medical Services	-	-	-	6	6	7	8	9	10
Tuition Fees of Research Assistants	-	-	-	2	2	2	2	3	3
Study Leave Replacements	-	-	-	-	-	60	65	69	74
Contingency Reserve	-	-	-	41	56	52	56	60	65
Total	-	-	-	49	64	121	131	141	152
Total Core - Operating	2,135	2,310	2,607	2,807	2,807	3,452	4,101	4,388	4,717
Add: Capital Expenditures	-	366	353	236	236	1,105	724	370	398
Working Capital	-	-	-	-	-	380	-	-	-
Total Core	2,135	2,676	2,960	3,043	3,043	4,937	4,825	4,758	5,115
Total Special Projects c/	778	1,013	1,482	1,962	1,962	1,909	2,000	2,100	2,200

c/ See Schedule 1

ANNEX 2

IRRI

1974 CAPITAL BUDGET REQUEST

	Rice	Cropping systems	Total
Laboratory building	$100,000	$300,000	$ 400,000
Training and conference center	100,000	25,000	125,000
Laboratory equipment		15,000	15,000
Land lease		35,000	35,000
Farm buildings and development	40,000	60,000	100,000
Farm machinery	15,000	20,000	35,000
Greenhouse		20,000	20,000
Vehicles		40,000	40,000
Seed storage		10,000	10,000
Staff houses	65,000	260,000	325,000
Total	$320,000	$785,000	$1,105,000

Mr Graves 426

UNDP

UNITED NATIONS DEVELOPMENT PROGRAMME

Distr.
GENERAL

DP/GLO/FINAL REPORT/1
10 July 1973

ORIGINAL: ENGLISH

GLOBAL RESEARCH

RESEARCH AND TRAINING IN THE DEVELOPMENT OF HIGH LYSINE MAIZE (GLO/70/001)

Final report by the International Maize and Wheat Improvement Centre (CIMMYT), Mexico, covering the period March 1970-March 1973

Note by the Administrator

1. On 11 March 1973, the initial phase of the first Global Project to be approved by the Governing Council of the United Nations Development Programme (UNDP) was concluded. This project which was carried out over a three-year period under a direct contract with UNDP by the International Maize and Wheat Improvement Centre (CIMMYT) at El Batan in Mexico, had as its objective the establishment of a programme of research and training directed towards the development of high lysine maize and of superior maize lines.

2. CIMMYT was an outgrowth of over twenty years co-operative effort between the Government of Mexico and the Rockefeller Foundation to improve the basic food crops of Mexico. The Centre was initially set up in 1963 when the Government and the Rockefeller Foundation decided to disseminate to the rest of the world some of the greatly improved varieties of maize and wheat and improved production technology which had been developed. Soon, however, it was found that the demand was greater than the two original parties could satisfy and in 1966 the Centre was reorganized with the additional participation of the Ford Foundation. In that

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year, CIMMYT was established in accordance with Mexican law as an autonomous international research and training institute under the direction of a Board of Trustees of international repute and eminence. This structure provided CIMMYT with the needed freedom of operation for its world-wide programmes and enabled it to seek financial support from all those interested in advancing its goals.

3. Subsequently, in May 1970, a Consultative Group on International Agricultural Research (CGIAR) - sponsored jointly by the International Bank for Reconstruction and Development, the Food and Agriculture Organization of the United Nations and the United Nations Development Programme - was established with the participation of the following Governments and agencies: Belgium, Canada, Denmark, the Federal Republic of Germany, France, Japan, the Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States of America, IBRD, UNDP, FAO, Ford Foundation, Rockefeller Foundation, Kellogg Foundation, Canadian International Development Research Centre, Inter-American Development Bank, Asian Development Bank and African Development Bank. Other Governments and organizations have since joined the CGIAR which also counts amongst its participants two developing countries from each of the five major regions of the world. The latter participants serve as members or alternates at their discretion.

4. The CGIAR is unique in that it brings together not only Governments and international institutions but also the Ford, Rockefeller and Kellogg Foundations, which have played pioneering roles in the whole area of international agricultural research, and the Canadian International Development Research Center. The purpose of the CGIAR is to encourage a greater research effort aimed at assisting developing nations to increase and improve the quality of their agricultural output. It reviews existing research activities and explores major new areas of possible investigation, taking into account not only the technical but also ecological, economic and social factors. The CGIAR's objectives include helping to synchronize national and international agricultural research efforts and encouraging full exchange of information among national, regional and international research centres; discussing the financial requirements for high-priority international and regional research activities, keeping in view the need for continuity of research over a long period; undertaking a continuing review of research priorities in the light of needs of the developing countries; and suggesting feasibility studies on proposals to meet these needs.

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5. A small Technical Advisory Committee composed of distinguished international experts from developed and developing countries was established by the CGIAR. This Committee is responsible for advising the CGIAR on the principal gaps in agricultural research and on the international and regional programmes which deserve priority in filling those gaps.

6. In addition to CIMMYT several other International Research Centres have been established, and are financed by the CGIAR and/or by its members. These are the International Rice Research Institute (IRRI), Philippines; the International Tropical Agriculture Centre (CIAT), Colombia; the International Institute of Tropical Agriculture (IITA), Nigeria; and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India. UNDP has provided financial support for the establishment of ICRISAT.1/

7. These Centres have demonstrated a high level of professional and administrative competence and have a substantial potential as a vehicle for the deployment of international assistance to agricultural research. This competence has been amply demonstrated by CIMMYT in executing the High Lysine Maize project. UNDP has accordingly allocated a substantial sum for global projects under direct UNDP execution through contracts with the International Agricultural Research Centres.

8. The results on the development and initial introduction of high lysine maize documented in the attached report indicate substantial promise of not only considerably enhanced food production in maize consuming areas, but also the potential for a variety of far reaching benefits through substantially improved nutrition of both the human and livestock populations in many areas of the less developed world.

9. Much has been said and written about the critical protein deficiencies currently of widespread importance in many parts of the world, including predictions of even more serious protein deficiencies in the future.

10. Filling the protein needs of vast numbers of people with low incomes, through added amounts of meat, milk or synthetic protein supplements appears to be very difficult. Human infant and child nutrition studies conducted under this maize project have demonstrated that the new high lysine maize can substitute satisfactorily for milk as the only protein source for even infants and is quite adequate for older children and adults.

1/ See document DP/PROJECTS/R.2/Add.5.

11. Because maize is the basic food for the lower income families in many areas of the world, this offers a promising means of correcting past protein deficiencies without any diet change or other requisite other than shifting varieties of maize.

12. One of the basic research problems has been to develop maize varieties with the high lysine characteristic that are of the traditional type and quality preferred in the various regions utilizing maize. The original maize discovered with high lysine has characteristics unacceptable to people in most maize eating areas.

13. Under this project rapid progress has been made in developing maize of the various types utilized which include the high lysine factor. Initial material is being widely evaluated and its supply increased in various parts of the world.

14. Other efforts have included solving the problems of lower yield and greater susceptibility to damage from disease and insects originally associated with the high lysine type. Rapid progress has been made in solving these problems and experimental lines are now available equal to the best maize varieties in these characteristics.

15. Introduction of the new high lysine maize if properly carried out - a function performed by farmers as well as Governments - offers the opportunity for simultaneous introduction of improved production techniques which will vastly increase maize yields. The new high lysine varieties being introduced have much superior yielding ability compared with the native varieties.

16. The same improved protein quality characteristics greatly enhance the value of this maize as a feed for livestock particularly swine and poultry. This provides the potential for lower feed costs and greater production efficiency to produce meat and eggs in the future.

17. UNDP assistance has also helped to increase the linkage capacity of CIMMYT to assist national Governments to conduct adaptive research, extension programmes, field demonstrations and farmer training in improved technology of cereal production, with particular attention to the high lysine and high yielding varieties of maize, in several countries. The project initially supported work in Colombia, Ecuador, Honduras, Mexico and Peru, and this work is now being expanded in other countries both in Latin America and in other regions of the world.

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18. The excellent training and research programmes conducted under this project, and being expanded under Phase II of the project now under way, offer the opportunity to have a major impact on the well-being of large numbers of low income families. UNDP programmes should now be geared to help maximize the adoption of the new technology outlined in this report as rapidly as research progress permits.

19. Against this background of UNDP involvement in the field of international agricultural research and in terms of its impact, both real and prospective, on the economies of the developing world and the lives of its people, I wish to pay particular tribute to Mr. Paul G. Hoffman, my predecessor and first Administrator of UNDP, who had the foresight to recognize its potential and took the initiative to gain Governing Council support for a concerted effort which I believe carries with it the promise of beneficial results across the globe within the foreseeable future. I would also like to commend the management and scientific staff of CIMMYT, who, by their devotion and efforts, have done so much in the interest of agricultural development.

20. In presenting this report, I am keenly cognizant of the fact that the development of this new technology will not by itself solve the problem of production and nutrition. It is and will continue to be the responsibility of Governments themselves to adapt the new technology to the people's needs. In this effort, which represents what we consider to be the "pay-off", we stand prepared to consider providing them additional assistance as may be required and our means will permit.

Report to the Administrator

of the

UNITED NATIONS DEVELOPMENT PROGRAMME

GLOBAL RESEARCH

Research and Training in the Development of High Lysine Maize (GLO/70/001)

Carried out by:

The International Maize and Wheat Improvement Centre (CIMMYT), Mexico

Covering the period from
March 1970 - March 1973

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CONTENTS

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I. INTRODUCTION

A. GENERAL BACKGROUND

1. Civilization of man evolved around cereal foods and their domestication. Up to, and including the present time, cereals have provided the principal source of carbohydrates and energy for man. A fact that is often overlooked is that cereals, even today, also provide the largest single source of protein in the diet of most of the earth's people.

TABLE 1. Per Cent of Total Protein Supplied by Cereals in the Current Food Supplies of World Regions (Compiled from FAO food balance sheets).

Region	Per cent total protein from cereals.
Europe	37
North America	20
Latin America	40
Far East	58
Africa and Near East	60
Oceania	25

2. However, cereals in general are not a good balanced food. They often lack sufficient quantity of proteins, and the proteins have an inherently unsatisfactory nutritional balance of amino acids such as lysine and tryptophan, which are essential for the proper growth and health of man.

3. Unfortunately, a large proportion of the people living in tropical and subtropical countries in Central and South America, Africa and Asia exist on diets consisting largely of cereals and consequently suffer varying degrees of protein deficiency.

4. Although many suggestions, and some actual attempts, had been made to alleviate this protein deficiency by the use of animal protein, legume protein, leaf protein, fish meal, and even supplementation with synthetic amino acids, the impact on the problem of feeding protein deficient people has been insignificant.

B. A SCIENTIFIC BREAKTHROUGH

5. The discovery in 1963, by Dr. E.T. Mertz and his co-workers of Purdue University, that the mutant gene "opaque-2" of maize produces a modified amino acid balance of the grain endosperm protein, resulting in increased quantities of

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lysine and tryptophan, opened up exciting new vistas for plant scientists, breeders and human and animal nutritionists.

6. Feeding trials with diets of opaque-2 maize confirmed that animals, particularly the young, can gain weight at up to three and a half times faster than if fed normal maize diets. The growth rates and standards of health are roughly equivalent to growth patterns resulting from artificially balanced diets. Children suffering from severe protein deficiency in Colombia have been brought back to normal health in two to three months on a diet of opaque-2 maize.

7. The implications of this breakthrough were immediately obvious to many scientists; the biochemical, physiological and genetic mechanisms of the amino acid mutant came under detailed study. Searches were initiated in other cereal crops such as wheat, barley, sorghum, etc., for similar amino acid mutants, and breeding and feeding programmes were also started.

8. By the beginning of 1970, a great deal of valuable information had resulted from this work, but there had been virtually no impact of this research on the real problem - the nutritional welfare of the maize-eating populations of the less developed areas of the world.

9. It was doubtful whether the localized facilities of the research workers engaged in these studies was likely to have a widespread impact. However, a new concept of international research and application had been evolving that could possibly provide the competence, structure and know-how necessary to co-ordinate, supplement and, more importantly, put into practice a quality protein maize programme which may eventually influence the lives of a large number of protein deficient people in the developing world.

C. THE CONCEPT OF INTERNATIONAL RESEARCH AND APPLICATION

10. Unless the knowledge which is developed from scientific agricultural research is applied to those areas of human welfare where it is most needed, it becomes a sterile scientific exercise. This concept was recognized when the first Rockefeller Foundation agricultural assistance programme was initiated at the invitation of, and with the collaboration of, the Mexican Government nearly 30 years ago.

11. Agricultural technology was recognized as an essential, but not sole element in increasing food production. The process requires a complex, broad scale effort

which includes such other components as incentives for farmers, availability of supplies of seeds, fertilizers, pesticides, agricultural credit - and a whole series of Government policies which are not limited to agriculture. Also important is the training of research and production people to expand and supply the new materials, technology and philosophy, and adapt them to the needs of their own countries.

12. This philosophy was developed along with the creation of new high yielding, widely adapted, fertilizer responsive populations and varieties of cereals. So successful was the concept in Mexico, that it led to the evolution of the international agricultural research centres such as the International Rice Research Institute (IRRI) in the Philippines, and the International Maize and Wheat Improvement Centre (CIMMYT) in Mexico.

13. Although these developments produced the so-called "Green Revolution", it was only a beginning. Many countries were requesting assistance to raise the level of productivity of their farm lands, and whole regions remained untouched by this revolution. However, an equally serious problem was that of protein deficiency, because even in those areas where cereal grains were supplying sufficient carbohydrates, there still existed a deficit of adequate quality protein for good health and growth.

14. In 1968 the United Nations published a report entitled "International action to avert the impending protein crisis" (E/4343/Rev.1). The report had been prepared by an ad hoc Panel of Experts and submitted to the Advisory Committee on the Application of Science and Technology to Development.

15. The Advisory Committee proposed fourteen specific measures for attacking this problem. Two of these measures are of specific relevance to this report.

Specific Proposal 1: Support increased production of conventional animal and plant sources of protein by all feasible means.

Specific Proposal 4 (c): Develop and support projects for the prompt introduction of improved varieties such as corn with higher lysine and tryptophan contents and glandless cotton seed.

16. In January 1969, at the invitation of the Rockefeller Foundation, Executive officers of UNDP, FAO, IBRD and private, national, and regional assistance agencies met for the first of several informal meetings at Bellagio, Italy, to

discuss ways of utilizing and funding the expertise of the existing and projected international agricultural research centres.

17. Concurrently the Governing Council of the UNDP became increasingly concerned with the application of basic and applied research for social and economic development. This concern culminated in a decision by the Governing Council at its eighth session (16 June-2 July 1969) as follows: The Governing Council "attached great importance to UNDP activities in the various fields of basic and applied research, on programmes which are related to the solution of regional and interregional development problems involving the implementation of new technology through the support of existing or new research institutions in the developing countries, and authorized the Administrator to waive counterpart contributions from the requesting Government or Governments for this type of project to be submitted under the normal procedure of UNDP". This enabled the UNDP to initiate action to become officially associated with the ongoing international basic agricultural research, which had already achieved remarkable results with respect to rice and wheat, and for which the UNDP was now ready to provide additional financing with a view to intensifying these efforts and to facilitate worldwide dissemination of the results which would hopefully contribute to increased food production.

II. GLOBAL RESEARCH PROJECT NO. 1

A. THE ORIGINAL PROPOSAL

18. Following the adoption of the above decision by the Governing Council at its eighth session, CIMMYT submitted on 4 August 1969 to the UNDP a detailed proposal for research, development and utilization of high lysine maize which the Governing Council approved, at the recommendation of the Administrator, at its ninth session.

B. THE CONTRACT - GLOBAL RESEARCH PROJECT NO. 1

19. On 12 March 1970, CIMMYT signed a contract with UNDP containing a revised programme mutually agreed, with the following broad objective:

> "The purpose of the project is to assist the peoples of the developing countries in improving the protein content of their diet through:
> (a) intensifying research on raising the quantity and quality of protein

in maize in combination with high yield, and (b) training agronomists to carry out national programmes of nutritive maize production..."

20. The period of support was for three years.

21. The UNDP funds available in support of the CIMMYT project amounted to $1,653,200.

22. The Programme was limited to Central and South America.

23. Dr. Ernest W. Sprague, Director of the CIMMYT International Maize Programme, was named team leader with the immediate responsibility for the carrying out of the project and the implementation of the contract on behalf of CIMMYT.

24. CIMMYT agreed to convene a Policy Advisory Committee consisting of one representative of each of the Governments involved in project activities, FAO and UNDP, with a CIMMYT officer as Chairman. It was required to meet periodically as determined by CIMMYT, but at least twice a year.

25. FAO was named an advisory agency to participate in the Policy Advisory Committee.

C. RESEARCH PROBLEMS

26. In early 1970, when the Global 1 project started, there were several technical problems to be overcome before high quality maize could be produced by the farmers of Latin America. It was not certain at that time whether all the problems could be resolved.

27. The principal problems were:

(a) The original opaque-2 and floury-2 mutants were identified in varieties of maize ecologically adapted to the temperate climate of the United States "corn belt". They were thus not suitable for direct production in the tropical and subtropical areas where they could produce the greatest benefits.

(b) The descriptive names "opaque-2" and "floury-2" indicate the dull, lustreless and chalklike physical appearance of the kernels by which these mutants were originally isolated and identified. These characteristics represented an obstacle to acceptance by farmers accustomed to growing flint and dent types of maize with their clean, shiny and lustrous appearance. Apart from the high Andean regions of South America where the floury grain types are traditionally grown, the majority of the maize areas of the world grow flint and dent types for either human or animal feed.

(c) The grain of these mutant maize has a soft and less dense endosperm with a lower weight per unit volume which reduced yield by an average of 10 to 15 per cent.

(d) There were indications that the mutants were more susceptible to insect and disease attack and were therefore more difficult to store.

(e) The only certain method of identifying high quality maize was by chemical analysis of the grain for lysine and tryptophan. This highlighted the need for a simple, accurate and rapid analytical technique for measuring the quantity of these amino acids in very small quantities of grain endosperm.

D. WORK PLAN

28. The project was divided conveniently into three distinct but interrelated areas of activity:

(a) The genetic research and breeding, necessary to provide a range of maize populations and varieties which are not only high in lysine and nutritive value, but also have improved yield and agronomic characteristics, together with acceptable grain type to meet local requirements in selected Latin American countries.

(b) The chemical and nutritional research and analytical service, necessary to provide:

(i) a more efficient analytical technique for identifying single maize grains with high lysine and tryptophan content; and

(ii) an analytical service for the geneticists and breeders to enable them to identify nutritively superior genetic materials.

(c) Training and assistance in the initiation and operation of nutritive maize production programmes (NMPP's) in Latin American countries. Pending the availability of satisfactory quality maize varieties from the genetic research and breeding programme it was decided to initiate the following activities:

(i) the survey of countries in Central and South America to determine those with large subsistence maize farming areas that were willing to co-operate in this project;

(ii) the selection of a team of agronomists from the country or countries, for training in Mexico;

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(iii) assistance with the initiation and operation of an NMPP in the country; and

(iv) the organization of local, regional and international meetings to encourage the interchange of information and experience at all levels, including farmer organizations, Government agencies, Government leaders and scientists.

E. PROGRESS MARCH 1970 - MARCH 1973

(1) Genetic research and breeding

29. A small opaque-2 maize breeding programme at CIMMYT was expanded in 1970 to transfer the opaque-2 gene from its original unadapted genetic background into a wider range of maize varieties and populations from most of the maize growing areas of the world. The transfer of the o_2 gene into locally adapted maize was also underway at a number of other breeding centres. CIMMYT was able to assemble approximately 75 different o_2 maize populations which were at various stages of development. About half of these are from the Mexican programme and the rest have come from programmes in 15 different countries. These materials form the basis of the present quality maize breeding programme.

30. Principal breeding objectives include the following.

(a) Development of quality protein maize materials

31. CIMMYT is placing special emphasis on the incorporation of the quality protein characteristic into all the breeding populations within the maize programme. In this way, there is an automatic parallel development of normal and quality protein versions of all superior populations and varieties with various grain types from tropical, temperate and high altitude areas of different countries.

32. As this process of opaque-2 conversion proceeds, some information about general trends of effects on converted materials is accumulating as follows:

(i) The transfer of the opaque-2 gene into normal flint and dent maize varieties changes the physical appearance of normal grain into opaque, dull, chalky and lustreless grain. This can be overcome through further breeding and selection as discussed in (e) below.

(ii) There is considerable fading of colour, especially in yellow grain types. The degree of fading, however, varies considerably with different genetic backgrounds.

(iii) There is an increase in the levels of lysine and tryptophan. Increases of the order of 43 to 200 per cent of tryptophan in the protein have been found in different genetic materials.

(iv) The percentage of protein in the endosperm in opaque-2 converted materials generally decreases. This decline may range from 3 to 35 per cent. Some materials, however, do not follow this trend. They tend to maintain the protein content at the same level, or register a slight increase.

(v) In general, opaque-2 kernels have lower kernel density than their normal counterparts. In some genetic backgrounds the decrease in test weight has been negligible.

33. Although several of these trends are generally unfavourable for the breeders, there is sufficient genetic variability to ensure that the combination of quality protein and other desirable plant characteristics are being rapidly assembled through effective selection procedures.

(b) Wide adaptability

34. Historically, maize has been one of the most location and environment specific crops grown by man. However, if the benefits of quality protein maize is to have widespread value, it must be incorporated into varieties which are capable of producing high yield over a wide range of locations. In a short period of time it is not possible for CIMMYT to produce individual varieties for every environmentally different location in developing countries. Because of lack of manpower and expertise, most of these countries are unable to produce this type of variety for themselves.

35. By selecting offspring of all breeding materials at six sites in Mexico, which differ in latitude and altitude, plus the assistance of collaborators to select in Colombia, Egypt, Nigeria, Thailand, and the United States, rapid progress is being made towards widening the adaptive range of the CIMMYT breeding populations. Breeders select twice per year at several of the above test sites.

(c) Pest and disease resistance

36. Because of the different pests and disease that occur in these different environments, a strong selection pressure is also applied for a broad type of resistance. Entomologists and pathologists are also creating artificial infestations of insects and disease to speed up this process and make it more reliable.

(d) Plant type

37. In the lowland tropics, maize grows far too tall, resulting in loss of yield because the plants fall over, and also because too much of the carbohydrate synthesized during growth is used for tall stalks instead of seed.

38. CIMMYT breeders are making considerable progress in shortening the tropical maize plant by selecting for short plants, or by crossing specific dwarfing genes into the populations. The resulting varieties and populations can be grown at much higher plant populations, and respond to higher levels of fertilizer without falling over. The yield potential promises to be considerably increased for tropical maize.

39. This work is being assisted by physiologists and agronomists, who are also assisting to define other desirable characteristics. Populations which have a much shorter maturity period are being produced. These can be fitted into multiple cropping systems and thus increase total production of food per hectare per year.

(e) Grain type

40. A breeding objective of prime importance for successful adoption of quality protein maize is the production of a wide array of hard endosperm flint and dent grain types, equivalent to those used in various parts of the world. Considerable emphasis has been placed on this aspect of the programme during the past three years. More than 20 maize populations are being selected for varying fractions of hard, vitreous endosperm while retaining the protein quality.

41. Genetic studies have shown that the opaque-2 gene for quality protein is a single genetic factor, and therefore easily handled and maintained within a breeding programme. To combine this protein quality with a hard vitreous grain, however, requires the accumulation of many modifier genes, or genes of small individual effect that must be combined in sufficient numbers within a particular family or variety to produce the required grain type.

42. The rate of progress towards converting various populations and varieties to a hard, vitreous grain type with quality protein varies according to the frequency of modifier genes that occur within them. Much of the early enthusiasm for breeding quality protein maize in the United States was lost because the breeders were unable to convert their highly specific maize hybrids into quality

types with hard grain. The narrow genetic base of United States hybrids and lack of sufficient modifiers provides the reason for this lack of success.

43. CIMMYT breeders, using populations based on widely different genetic materials, have been able to make rapid progress towards this goal. However, populations vary considerably in the frequency of useful modifier genes that they contain. This variation will continue to impose limitations on the breeders with regard to the rapidity with which they can convert some of the populations to hard endosperm, quality protein form.

44. Apart from the need to provide a grain type acceptable to the farmer, there are other reasons for requiring hard endosperm:

(a) The soft starchy nature of the opaque-2 normal grain results in a lower specific gravity of the grain. This, in turn, results in a yield loss of 10 to 15 per cent on a weight basis. Hard endosperm types have been produced that have grain specific gravity equivalent to normal flint and dent maize.

(b) The soft grain types appear to be more vulnerable to disease and insect attack in the field and in storage. Recent research indicates that this is probably due to the soft endosperm and not the higher nutritive quality of the grain. The genetic sources of quality protein also bring with them greater susceptibility to pests and diseases, thus reducing the inherent resistance often present in local populations. Some of the quality maize families that have been converted to hard endosperm forms show that these problems can be overcome.

45. In May 1972, CIMMYT breeders harvested the first bulk seed sample (100 kilogrammes, approximately 4 bushels) of a maize population carrying the opaque-2 gene, hard endosperm grain, resistance to many common diseases, intermediate maturity (i.e. 110-115 days in the hot season in the tropical lowlands of Mexico), and good yield potential under tropical conditions in the best farmer's fields (5-6 tons per hectare in the cool season and 3-4 tons per hectare in the hot season near Poza Rica, Mexico).

46. Most of this 100 kilogramme harvest was immediately shipped by air for multiplication and testing in 15 countries (Colombia, Ecuador, Egypt, El Salvador, Guatemala, Haiti, Honduras, India, Mexico, Nepal, Nigeria, Pakistan, Panama, Philippines, and Thailand).

47. The resulting seed is being used for field trials on farmer's fields in each of these countries; test feeding of swine and small animals; and test feeding of protein deficient children in a hospital at Cali, Colombia.

48. A preliminary report from Dr. Pradilla, who is conducting the clinical tests with children in Colombia, states "...The quality of both whole grain and endosperm is very similar to that of casein when B.V. (Biological Value) and N.P.U. (Net Protein Utilization) are considered...In summary I would say that the modified endosperm has a very high nutritional value somewhat better than values obtained for the soft endosperm types".

49. Several more quality maize populations with hard endosperm grain will be available for testing and production within the next year or two.

50. The high Andean region of South America is one of the few areas where soft, starchy-grained maize is produced and eaten. The conversion of these local maize types to a quality protein form is urgently needed, but progress has been, and will continue to be, slow, for three reasons: firstly, these very large grained types of maize have a long growing season in the high, cocl environment of the Andes, and therefore it is possible to produce only one generation per year, compared with two or three in the normal breeding programme of tropical maize populations; secondly, the grain, although much larger than opaque-2, has the same soft texture which is impossible to distinguish by eye. Chemical analysis for tryptophan or lysine of all selections is essential to determine if the quality protein is present; thirdly, crossing with opaque-2 reduces the grain size. It is necessary to select for large grain size as well as quality protein.

(f) International maize breeding co-operation

51. The quality protein maize breeding programme is truly an international programme with breeding materials, populations and varieties being interchanged during the past three years between more than 31 different countries (see Table 2).

52. Another international trial that has provided interesting information about the performance of one quality protein hybrid is the International Maize Adaptation Nursery (IMAN) conducted by CIMMYT together with collaborators in 26 different countries. Amongst the 50 entries submitted from 18 countries for the first IMAN was the hybrid Agroceres 501, a commercial single-cross hybrid submitted by Agroceres in Brazil. This is an opaque-2 hybrid and it was the third

TABLE 2. International Opaque-2 Maize Trials (I.O.M.T.) sent to different countries during the years 1970-1972.

Country	First 1/ I.O.M.T. (1970)	Second 2/ I.O.M.T. (1971)	Third 3/ I.O.M.T. (1972)
Argentina	-	1	1
Brazil	1	3	2
Chile	-	1	1
Colombia	1	2	6
Costa Rica	1	1	-
Ecuador	-	-	2
Egypt	-	1	-
El Salvador	1	1	-
Ethiopia	-	-	1
FAO (Rome)	-	1	10 4/
Ghana	-	1	1
Guatemala	1	1	-
Honduras	1	1	-
India	3	2	4
Ivory Coast	-	-	2
Jamaica	-	1	1
Kenya	-	-	2
Malawi	-	-	1
Mexico (CIMMYT-INIA)	4	4	7
Nepal	-	-	1
Nicaragua	1	1	1
Nigeria	-	-	3
Pakistan	1	1	-
Panama	1	1	-
Peru	-	2	2
Philippines	1	1	1
Sri Lanka	-	-	1
Thailand	1	1	1
Uganda	-	-	1
U.S.A.	-	1	1
Venezuela	-	1	-
TOTAL	18	30	53

1/ 30 Varieties received from 7 countries.

2/ 30 Varieties received from 6 countries.

3/ 30 Varieties received from 9 countries.

4/ For distribution to countries within the Near and Middle East.

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most widely adapted entry with above average performance in Argentina, Brazil, Chile, Colombia, Ethiopia, Kenya, Mexico, Thailand, and Uganda.

53. The interchange of genetic material on this scale not only assists the breeders to develop widely adapted disease and pest resistant quality varieties, but it provides opportunities for local breeders in many different locations to test a very wide range of material for suitability to their local maize growing conditions. This approach is already stimulating the interest of several national maize programmes in quality protein maize for production by their local farmers.

(g) Maize populations and varieties versus hybrids

54. CIMMYT has concentrated solely on the production of quality protein populations and varieties rather than hybrids because:

(a) A principal role of an international centre such as CIMMYT is to produce basic genetic materials from which scientists in co-operating countries can select varieties, or inbred lines for the production of hybrids, depending on whether or not there is an adequate seed industry within the country.

(b) CIMMYT believes from experience that a developing country should concentrate on varieties for its farmers, and not hybrids, unless there is a private seed industry that is capable of producing and selling high quality seed. In a number of cases, Governments have undertaken the seed production. However, there are few, if any, cases where Government sponsored seed production programmes have been successful. Government seed programmes producing hybrids, in general, have retarded advances in production rather than accelerated it.

(c) Farmers can maintain their own seed of varieties and therefore there is no need for a highly sophisticated distribution and sales organization. This is particularly valuable in those developing countries with poorly developed transport systems and general lack of credit for buying seed.

(d) Varieties can be developed more rapidly than hybrids. By the time the breeding organization produces inbred lines, single crosses, and finally the hybrids are produced and increased and ready for sale, further improvement could have been made in the varieties so that the yield advantage normally assumed for hybrids is often lost.

(e) It is not generally recognized that it requires as many, or more, well qualified people to produce quality hybrid seed as it does to develop the hybrids.

When sufficient numbers of qualified people are not available, a nation can ill afford to dissipate its resources for producing hybrid seed.

(h) Summary

55. The genetic and breeding programme in the period 1970-1973 has demonstrated that high yielding, vitreous, quality protein grain maize, incorporating desirable agronomic characteristics can be produced for a wide range of environments. The first population has been released - this is only a beginning. More will be required over the next few years to continue to improve the over-all characteristics, but also to serve to improve the agricultural and nutritive status in developing countries throughout the world where maize is an important crop. Rapid progress is being made towards the release of further superior populations for wide scale testing by the co-operating scientists from many countries.

56. It should always be remembered that breeding is a slow process, and the difficulties in this programme are accentuated by the need to use chemical analysis to identify the individual lines and seeds with high quality protein.

(2) Chemical and nutritional research and analytical service

(a) Quality markers

57. Early in the programme studies were made to try and identify any visible morphological or physiological characteristic of maize that may be of value as a "marker" associated with high quality protein. The opaque grain, expressed by the opaque-2 gene, was the only one, and it had two major deficiencies as a selection criterion. Firstly, it precluded any opportunity to obtain better hard endosperm grain types, and secondly, in opaque-grained populations it could not differentiate quality protein from normal protein lines.

(b) Chemical analysis

58. No alternative has yet been found for the identification of high lysine and tryptophan lines of maize other than by careful chemical analysis.

59. To provide an adequate selection procedure for breeding high quality protein maize several steps were required:

(a) A simple, rapid and inexpensive procedure for measuring the percentage protein in the endosperm and the amount of lysine and/or tryptophan in the endosperm protein of large numbers of small bulk samples of maize.

Studies and evaluations of a number of techniques for analyzing lysine and tryptophan in maize endosperm were carried out collaboratively in the CIMMYT Protein Quality Laboratory and the Biochemistry Laboratory of Purdue University (the latter financed by USAID).

Simple colorimetric techniques were developed for the analysis of percentage protein, lysine and tryptophan in maize endosperm from methods already published by other workers. These developments enable the laboratory technicians to handle large numbers of endosperm samples rapidly, and with the use of simple, inexpensive equipment. The techniques are simple to learn and the results are reproducible.

These routine evaluation techniques were recommended and published under the title:

> "Chemical Screening Methods for Maize Protein Quality at CIMMYT" by Evangeline Villegas and Edwin T. Mertz. CIMMYT Research Bulletin No. 20, May 1971.

Copies of this publication together with a list of equipment which is simple to operate and maintain, and cheap to purchase, has been widely distributed to maize programmes throughout the world. A reprinting of the publication has been necessary in English and Spanish due to the large number of requests received for this Research Bulletin, A French translation is currently being made.

Using the techniques for lysine and tryptophan analysis, it was found that, invariably, when an endosperm sample had high tryptophan values, it also had high lysine values in the protein. This information greatly simplified the screening of large numbers of maize families for the breeding programme. The screening was done by the simpler and more rapid tryptophan test, and only those samples found to have high tryptophan values were then checked for lysine content.

(b) A rapid technique for sampling the lysine and/or tryptophan content of the endosperm from single grains of maize without impairing its ability to germinate.

In certain cases, e.g., when one maize family with hard endosperm is identified as possessing high levels of tryptophan in the protein, it is necessary to analyze a subsample of single grains to identify whether there is a segregation within the family, and, if so, which grains have the high level of tryptophan.

A technique was developed by the staff of CIMMYT Quality Protein Laboratory, whereby two or three small cores of endosperm are drilled out of a single grain

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without damaging the embryo. The minute quantity of endosperm is sufficient to analyze for tryptophan by a colorimetric technique. Those seeds having the high tryptophan values are then germinated in a greenhouse and eventually transplanted to the field for further genetic analysis and breeding. Without tests of this type, the rapid breeding progress so far achieved would not have been possible.

The details of this technique are also published in the CIMMYT Research Bulletin No. 20 mentioned above.

(c) A technique for establishing the amounts of all amino acids in a bulk sample with a high degree of accuracy.

Selected check samples, and the best of the material selected from the breeding programme are tested thoroughly for total amino acid pattern of their endosperm protein. A standard commercial automatic amino acid analyzer is used for this purpose.

This procedure is necessary as a research tool, but practical breeding programmes do not require this expensive equipment, which requires frequent and highly sophisticated maintenance.

Using the above techniques, approximately 17,000 samples have been evaluated for protein, tryptophan and/or lysine from the CIMMYT genetic and breeding programme, and from programmes in 19 other countries including Argentina, Bolivia, Colombia, Honduras, Nicaragua, Peru, and countries in Africa and Asia.

(c) Laboratory training

60. Because chemical analysis is the only method available to identify quality protein lines, assistance has been given to several countries in setting up their own analytical laboratories, and training personnel to man them.

61. Training has been provided as follows:

Countries	Number of Trainees
Argentina	1
Colombia	1
El Salvador	1
India	1
Mexico	5 (2 Ph.D., 1 M.S. students in Chapingo)
Nigeria	1
Pakistan	1
Peru	1
Philippines	1 (Ph.D. student)
Thailand	1
United States of America	1 (Ph.D. student Cornell University)
Venezuela	1

(d) Biological assays

62. Research at CIMMYT indicates that maize grains need to have not only increased amounts of lysine and tryptophan, but also a proper balance of these amino adids to provide optimal nutritional value. To monitor this work a small animal nutrition laboratory was equipped during 1971. The test animal is the Meadow Vole (Microtus pennsylvanicus).

63. Although a relatively new laboratory animal, the vole was chosen because it had special characteristics which enabled it to be used for relatively large scale screening of families and lines of high quality protein maize selected by the Protein Quality Laboratory tests.

64. These characteristics include short reproductive cycle; reasonable litter size; short test feeding period; small quantity of test food per animal.

65. To test the vole for its suitability for maize quality selection, a co-operative animal test was conducted during 1972 to compare it with different laboratory animals. The tests were co-ordinated by CIMMYT and Purdue University. Several cereals were used as standard test samples, and these included 7 maize samples with representatives of normal and quality protein varieties with soft endosperm and one with hard endosperm.

66. The biological assays were conducted with rats, mice, voles, and small chicks. Tests were conducted with various of the above animals at Purdue University; INCAP, Guatemala; Nebraska State University; Washington State University; Manitoba University, Canada; and CIMMYT.

67. These tests indicated that the vole was an unsatisfactory test animal because it was not possible to adequately separate the quality of several cereals and the variability between individual animals was very large.

68. Further tests are being concluded at present in which the composition of the diets is being varied to better suit the vole. If these tests are also unsatisfactory, the voles will be discarded in favour of rats. However, with their longer reproductive cycle and smaller litter size, coupled with larger test food requirement, the rats will not be able to be used as a screening animal, but will be used to test a smaller group of selected maize lines.

69. Recent work suggests that it may be possible to reduce the number of selected lines passing out of the Protein Quality Laboratory. Results indicate that a correct balance between the percentage protein in the endosperm, and the

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amount of lysine and tryptophan in that protein is more important than a large amount of either one.

70. The breeders are now adjusting their selection criteria to produce lines with no less than 10 per cent protein and 4.0 per cent lysine in the protein. This will greatly reduce the number of samples required for nutritional study.

71. Eventually, when some of the selected lines are nearing time of release and there is sufficient seed, testing with swine and children will be undertaken. So far, as already mentioned, one hard endosperm quality protein line has been given provisional testing with swine and children. This testing is carried out with the collaboration of the International Center for Tropical Agriculture (CIAT) in Cali, Colombia.

(3) Training and assistance in the initiation and operation of nutritive maize production programmes (NMPP's) in Latin America

(a) The concept

72. The original concept proposed by CIMMYT and approved by UNDP was to set up pilot projects in subsistence farming regions of Latin America to increase the production of maize by the introduction of a modern package of practices coupled with availability of fertilizers, credit, trained scientific advisory staff. When available from the research programme, new high yielding, quality protein maize varieties would be introduced to the project area to improve the diet of these farmers who eat their own produce.

(b) Programme initiation

73. At the beginning of the project period, four CIMMYT staff members visited Bolivia, Colombia, and Peru at the request of the Governments to inform them about the UNDP project. A few weeks later (April 1970) the Director General of CIMMYT and two staff members visited Colombia, Ecuador, and Peru. The second visit to Colombia and Peru was to explore in detail the organization of NMPP's in those countries.

74. A conference held in Puebla, Mexico, in August 1970 to discuss "strategies for increasing agricultural production on small holdings" was attended by political leaders, administrators, scientists and business men from 14 Central and South American countries.

75. As a result of these initial contacts with Governments in Latin America, five NMPP's have since been initiated, in Mexico (2), and in Colombia, Honduras,

and Peru, one each. Several other Governments have expressed interest in producing quality protein maize in their national maize production programmes.

(c) Nutritive maize production projects

(i) Colombia

76. In March 1970, the Agricultural Research Institute of Colombia (ICA) selected 10 scientists for training in Mexico. They were interviewed by a CIMMYT staff member and five of them were selected for two years training at the Graduate School, Chapingo, Mexico, and in the Puebla Project (Plan Puebla is a pilot project which aims to demonstrate a method for doubling maize production and yields within five years among small holders in the rainfed area of Puebla, Mexico, and to train staff members who can serve this type of production project either in Mexico or in other countries. CIMMYT is responsible for the project. Funding agencies, the Rockefeller Foundation, CIMMYT core budget, UNDP - mainly for training).

77. To enable the project in Colombia to move ahead rapidly, five more scientists were given shorter in-service training with the Puebla Project. Eighteen other scientists and agricultural leaders in the Colombian Ministry of Agriculture also visited the Puebla Project this first year.

78. A detailed study was made by a Colombian scientist of four potential project areas. The final selection of the Oriente-Antioqueño region was made with the assistance of the CIMMYT staff.

79. There are approximately 35,600 farms in the region with an average size of about 5 hectares. The project team are initially concentrating their efforts on about one-third of the area, where the cropping pattern includes potatoes, maize and beans. The team is concerned with developing optimum production practices by agronomic research trials conducted on farmers' fields; marshalling the necessary credit and inputs, such as fertilizer; and then ensuring that as many farmers as possible are assisted to adopt the new technology through an extension programme.

80. If it is assumed that at least three years of actual production are required to measure adoption rates and the impact on the region, it is too early to judge the success of this approach. The first meaningful evaluations will come at the end of 1974 and 1975.

81. The CIMMYT/UNDP assisted project in Oriente Antioqueño region was the first to be set up, but it has stimulated a great deal of interest. Colombia now has the widest range of experiments in rural development of any Government in Latin America. Six projects are now in progress covering a variety of ecologies, and experimenting with a variety of methods. Ten to 14 more projects have already been approved by the Government.

82. The six projects cover a total population of 1.9 million people, including 120,000 rural families. The project has so far touched only a small fraction of these people. However, the plan is ambitious and may eventually encompass 50 to 100 such rural development projects.

83. Three of the six projects are receiving foreign assistance, but only of a limited nature. ICA (Colombian Agricultural Institute) employs all of the six project staffs (100 project employees, including 40 college graduates) as part of its rural development programme.

84. The Caja Agraria, a Government credit agency, has made an allocation of credit funds to each project area. All loans are contracted by Caja Agraria directly with the individual or community (for community projects), and the project staff only facilitate credit applications.

85. Dr. Canuto Cardona is Co-ordinator of the six projects, making arrangements for budgets, staff selection, staff training and inter-project contracts. He is employed by ICA, with funds supplied by CIMMYT from the UNDP Global 1 grant. Dr. Cardona is also the Director of the National Opaque-2 Maize Programme.

86. During 1972, Colombia grew between 700,000 to 800,000 hectares of maize, of which 25,000 hectares are of the opaque-2 type. This programme has been involved with: nutrition research in hospitals and one community near Medellin; industrial research in manufacturers' use of opaque-2 maize; home economics research on different methods of food preparation; health education campaigns; swine feeding trials on private farms; and production field trials of opaque-2 maize on 500 private farms.

87. The grain type of the two maize hybrids used in this programme are of the soft endosperm type which is not favoured by the consumers. There is a need for a hard endosperm grain type, similar to the local commercial varieties.

88. Only limited testing has so far been carried out of potentially useful quality protein maize varieties for the high Andean production projects. Although some have had acceptable yield levels, the grain type is unacceptable.

89. Colombia has made an outstanding beginning, and top political support is being provided to ensure continued effort with this ambitious programme.

90. During the period 1970-1973 a total of seven Colombians have been, or are being trained for M.S. degree at the Chapingo Graduate School and the Puebla Project; and 12 (including four sponsored by the International Development Research Centre of Canada) trained for shorter periods - average six months - in the Puebla Project.

91. The main input of CIMMYT in the future will be to: assist with training; assist with the initiation of a local training programme; continue to provide technical advice to the Government as required; provide germplasm and collaboration in regional and international breeding efforts, with particular emphasis on high altitude, high quality protein maize; and co-operate in biological assessment of quality protein maize germplasm.

(ii) Peru

92. Similar assistance is being provided by CIMMYT to Peru. After a study of four areas in the Sierra of Andes, the Cajamarca - La Libertad area, at an elevation of 2,000-3,200 metres, in a series of mountain valleys, was selected in December 1970 as the project area.

93. About 220,000 hectares of crops and pastures are grown in the area, made up of wheat and barley, 54,000 hectares; maize, 42,000 hectares; potatoes, 20,000 hectares; all other crops, 25,000 hectares; and the balance in pasture.

94. Out of Peru's 14 million people (1971), 6.5 million live in the Sierra and 600,000 in the Cajamarca project area. Hence the project is concerned with 5 per cent of the national population, and 10 per cent of the population of the Sierra.

95. Until the project was initiated, no fertilizer was available outside the capital city of Cajamarca, and no credit office existed outside the capital city; thus very little credit or fertilizer was used. No agricultural extension service existed in the project area before 1972.

96. All five professional staff of the project were trained in Mexico in 1971 on fellowships from UNDP/CIMMYT. These scientists were selected from eight nominated. Nineteen technicians have now been added to the staff.

97. During 1971, 74 maize experiments concerning variety evaluation and productivity were carried out; 85 wheat and 34 barley experiments were also conducted to obtain data about the multiple cropping system of the region. This

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number was extended during 1972. Some quality protein maize has been included in the experiments. However, varieties with high protein quality and very large soft grains of the type used in the area are not yet available from the breeding programme in Peru or at CIMMYT. Visits by CIMMYT technical staff occur several times a year.

98. The project is co-sponsored by: the National Agrarian University, La Molina, Lima; Directorate of Research, Peru Ministry of Agriculture; a regional credit bank for north east Peru; and CIMMYT. There were no adequate economic data on agriculture in this area when the project began. The Ford Foundation is making a grant to the University to finance the needed economic studies.

99. This project hopes to serve as a pattern for a series of similar projects to cover the entire Sierra region by the end of the 1970s. However, it is too early to evaluate the project.

100. So far the Government of Peru is spending about soles 3 million ($130,000) per year on the Cajamarca Project.

101. CIMMYT plans to continue its technical support through staff visits, training some extra staff and continued co-operation with the maize breeders at the National Agrarian University to breed the large, soft grained maize varieties with quality protein. Although progress is being made with this latter objective, it is slow as only one generation a year can be grown because of the long maturity period of this type of maize.

(iii) Honduras

102. Two Government banks, the Banco Nacional de Fomento, and the Banco Central de Honduras, initiated a crop production programme patterned after the Puebla Project in early 1971 in the Francisco Morazán area of Honduras. It is an area with 15,000 hectares cultivated each year, principally to corn and beans. The area contains about 3,200 farmers.

103. CIMMYT agreed to assist the programme that was directed by an Honduran scientist trained at the Chapingo Graduate School, and in the Puebla Project, Mexico.

104. The project staff totals six scientists, but the rest are young and relatively inexperienced. Because of this, CIMMYT has provided technical advice through staff visits, and in addition, has provided a staff member for a period of two months in 1971 and again in 1972, to assist with the planning, experimental site

selections and planting of the experiments. Arrangements were made for two project agronomists to enter Tecnológico de Monterrey, Mexico, for further degree training in late 1972. They are being replaced by recent graduates from the Panamerican School of Agriculture.

105. The project began in 1971, a year devoted solely to placing trials and demonstrations of maize and beans on private farms in the valleys around the town of Cedros, 100 kilometres from Tegucigalpa.

106. From the data obtained, a modified maize technology was recommended in 1972. This technology was to be applied to the improved variety available locally - CIMMYT Tuxpeño Synthetic. The recommendations were: Fertilizer application, 60-60-0; plant population of 45,000 plants per hectare.

107. These figures were based on performance from demonstration plots, not farmer average production. The demonstrated potential yield was 5.0 tons per hectare, compared to present acreage yields of 1.35 tons per hectare.

108. Yields did not come up to this potential in 1972 because of severe drought. At least three years of actual production experience will be needed to provide adequate evaluation of the project.

109. The two banks financing the project have agreed to continue their support for another year. They requested the project staff to initiate research on crop production in a second area, the Department of El Paraíso, during 1973. During 1973, the research staff will move to the new area to develop the necessary technology to increase production. The extension staff will continue to spread the new technology in the original project area.

110. By moving research staff in this way it is hoped to reduce the cost of extending increased production to new areas.

111. Desarrural, a Government agency in the Ministry of National Resources, is responsible for both crop research and crop extension. However, there is no official connexion between Desarrural and the Project. The Director of the National Maize Programme spends four days a month at the project, and is paid by the project for this work.

112. CIMMYT has been requested to continue to provide consulting visits by maize scientists, and to supply the projects with hard, flint, quality protein maize varieties as soon as they are available.

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(iv) Mexico

113. In early 1971, two Governors from the State of Mexico and Tlaxcala each decided, after seeing the Puebla Project, to initiate a maize production programme in their State.

State of Tlaxcala

114. A small project to increase the maize production in the southern part of the State of Tlaxcala is being undertaken jointly by the State and Ministry of Agriculture (National Extension Service). The region has a total cultivated area of about 25,000 hectares. Some 70 per cent of this is planted to maize. There are approximately 10,000 farm families in the area.

115. There are four Mexican scientists employed by the State operating the programme. One Mexican member of CIMMYT staff is assigned to the project, and CIMMYT staff also are providing technical assistance in the organization and operation of the project, but no other support is provided.

116. During 1972, 972 farmers participated in the project with 2,300 hectares of maize managed according to the recommendations of the project staff. About three-fourths of these farmers were organized into groups (82 groups in 37 communities) and were assisted in obtaining credit and inputs, such as fertilizer, for growing maize.

117. An objective evaluation of yield on a sample of the farms of the participants was made just prior the harvest. The estimated average maize yield for the 2,300 hectares was 2.4 tons per hectare.

118. Fifty-one agronomic trials involving varietal comparisons, rates of fertilization, time of applying nitrogen and phosphorus and levels of plant population were harvested in October-November 1972. The results of these experiments will be used to refine the recommendations for 1973.

119. No quality protein maize has been used in this project, except in varietal trials.

State of Mexico

120. The State Government approved a plan of operations and a budget of $160,000 for 1971 to initiate a "Plan Maíz". CIMMYT staff worked closely with state officials in organizing the programme. Twenty-two Mexican technical staff employed by the State have been assigned to the project; five of these staff are receiving, or have received, training in the Puebla Project.

121. The total cultivated area of corn is about 425,000 hectares. There are approximately 150,000 farm families in the project area and their maize yield is about 1.2 tons per hectare.

122. The Plan Maíz staff was able to reach 5,239 farmers in 1971 with both improved production practices and credit, and to assist 24,000 other farmers.

123. In 1972, in general, climatic conditions were favourable for the production of maize and average yields continued to rise.

124. Two hundred and eleven agronomic trials with maize were harvested during October-December 1972. These involved varietal comparisons, population densities, rates of fertilization and times of applying nitrogen. These data have been analyzed and the results used to refine recommendations on production practices of maize. To facilitate the use of this information by extension agents, a table of recommendations for each county has been prepared.

125. An objective evaluation of maize production was made just prior to harvest and the results are:

Area devoted to maize with recommended practices	63,568 hectares
Number of farmers concerned	19,160
Number of farmers' groups	1,277
Number of "Planes Rancheros" a/	32
Average Yield	
Planes Rancheros	3.5 tons/ha.
State	1.9 tons/ha.

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a/ Under each Regional Co-ordinator, several "Planes Rancheros", or farm programmes, were organized. Each Plan Ranchero is headed by an outstanding farmer of the area.

126. High quality protein maize from the National Institute of Agricultural Research (INIA) and CIMMYT are being tested in Plan Maíz. Although no varieties or hybrids with grain acceptable to the farmers for their own consumption has yet been produced, a pig raising project with soft grained opaque-2 maize is being tested. Every effort is being made to speed up the production of a flint type quality protein maize for this high altitude area. The long maturation period of these maize types is limiting progress to one generation a year.

127. CIMMYT is continuing to provide technical guidance with the field experiments. There is no financial support to this project from UNDP funds or from CIMMYT.

(d) Regional and international meetings

(i) Seminar on Regional Rural Development Projects

128. The First International Seminar on Regional Rural Development Projects was held in Colombia on 10-15 September 1972. It was sponsored by the Instituto Colombiano Agropecuario (ICA) and the International Development Research Centre of Canana (IDRC).

129. Approximately 30 field staff from the six regional programmes in Colombia, the Cajamarca-La Libertad Project in Peru, the Francisco Morazán Project in Honduras, and the State of Mexico, Tlaxcala and Puebla Projects in Mexico attended the Seminar. In addition, some 25 representatives of the Colombian Ministry of Agriculture, CIMMYT, CIAT, Ford Foundation, Rockefeller Foundation, International Development Research Centre, and the National Agricultural Research Institute of Ecuador were present.

130. The Seminar included general presentations by the Co-ordinators of the twelve regional programmes, visits to three of the Colombian programmes, and round table discussions of six major areas of activity in the regional programmes.

131. A second seminar is to be held in Mexico in September 1973.

(ii) International Symposium on Protein Quality in Maize

132. An International Symposium on Protein Quality in Maize was held at CIMMYT headquarters on 4-8 December 1972. It was sponsored by CIMMYT and Purdue University with financial assistance provided by the United States Agency for International Development, and the United Nations Development Programme.

133. The Symposium was attended by 163 delegates from 41 countries. The programme included papers by 50 speakers from 11 countries. The topics were grouped into the following sessions:

Nutritional studies on quality maize.
Breeding for protein quality in maize.
Commercial production of quality protein maize.
Chemical and biological evaluation of maize protein quality.
Economic implications of quality protein in maize.
Progress in breeding for quality protein in other cereals.

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134. The proceedings of this Symposium are currently being edited for publication.

(d) Summary

135. Under the influence of different political and economic environments, the above production projects have taken on various forms, but most are very different from the Puebla Project which stimulated the original interest. This progression is natural and encouraging. From it is growing a whole new technology of rural development, and hope for the large number of small peasant farmers.

136. Colombia provides the best example of this trend. The Colombian Agricultural Research Institute (ICA) has made an outstanding beginning with the production projects. The project staff are well chosen and well trained; the projects are closely associated with the ICA research; and top political support is being given to the programme of rural development.

137. These Colombian projects are more accurately called rural development projects than agricultural production projects because they cover multi-crops and multi-animals, plus women's programmes and community institutions (schools, public health campaigns, fertilizer outlets, etc.). A new national extension service is being built around these rural development projects.

138. Rural development projects such as these require a knowledge of credit administration, marketing, roads, schools, health practices, population growth and economic planning. These are broader skills than maize production which led CIMMYT to help organize the Puebla Project in 1966.

139. However, these exciting developments are already attracting the interest and support of other assistance agencies such as the International Development Research Centre of Canada, the Ford Foundation, etc., that can provide some of the required knowledge.

III. THE FUTURE PROGRAMME

A. CHANGING PHILOSOPHY

140. During the past few years, CIMMYT has gained considerable experience from its world-wide involvement in national maize and wheat programmes and by assisting with the initiation of five of the above-mentioned rural development programmes in four Latin American countries.

141. This experience suggests that, to obtain the maximum increase in the production of quality protein maize on a world-wide scale, CIMMYT, with its

limited scientific manpower, should concentrate its efforts by working through the national research and production agencies and programmes in the developing nations to increase maize production on a national scale.

142. In this way the research and extension services essential for long term success and stability of a national quality protein maize programme can be developed.

143. These strengthened national maize programmes would stimulate and service both the broad-scale cultivation of quality maize, and they could provide the necessary technical support to rural development projects involving maize as one of the component crops.

B. CIMMYT'S ROLE 1973-1976

144. Following the approval by the Governing Council of UNDP at its fifteenth session of a second phase project support period to CIMMYT, a new contract between UNDP and CIMMYT was signed on 13 March 1973 for Global Research on "Research and Training in the Development of High Quality Maize, Phase II".

145. CIMMYT will continue the genetic research and breeding, and the chemical research and analysis at about the same pace as for the previous three years. The emphasis will be placed on the production of a diverse group of maize populations with wide adaptability, high yield, quality protein, pest resistance and acceptable grain types for use in various regions of the world.

146. With maize of an acceptable grain type starting to be released from the breeding programme, CIMMYT is ready to move, during the next three years, to the next stage - world-wide use of quality protein maize in national production programmes.

147. The geographic focus of the programme will be expanded from Latin America to include Africa and Asia.

C. SERVICES OFFERED TO DEVELOPING NATIONS

148. Under the terms of the new contract, CIMMYT will have the necessary flexibility to adapt its assistance and technology to the wide range of environmental, economic and technological conditions existing in different developing countries. Within the limits of its scientific manpower resources,

CIMMYT can offer the following services to developing nations genuinely interested in developing, or increasing quality protein maize production through their national agricultural research and production organizations:

(a) Consulting visits by CIMMYT maize staff to assist with planning of a national quality protein maize programme; the staff structure necessary for its initiation and operation; a training schedule for staff development; a realistic budget; and periodic visits to assist Government and programme staff with the operational aspects of the national programme.

(b) Training fellowships. Approximately 20 fellowships per year will be available for in-service training with CIMMYT scientists in Mexico, or for Masters and Ph.D. degree training. In-service training is usually for a period of six to nine months. The subject areas are maize production, maize breeding, plant protection, and training in the Protein Quality Laboratory. CIMMYT has always set very high standards for the selection of national scientists for training. The aim is always to select potential leaders. The selection is normally carried out personally by a CIMMYT scientist.

(c) Provision of quality protein maize and normal maize germplasm from Mexico and the international breeding programme.

(d) Opportunities for national staff to participate in regional and international symposia and conferences related to quality protein maize research and production.

(e) Assistance to set up a small national quality protein service laboratory and train a chemist to operate it. This laboratory would be designed to assist the national maize breeders in their selection of quality protein maize varieties for local use.

(f) Assistance with the establishment of national in-service training programmes to ensure maximum spread of the materials and technology as the national programme progresses.

149. A number of nations in Latin America, Africa and Asia are already collaborating with CIMMYT, for example all the Central American countries are linked together and to CIMMYT through the Central American Maize Co-operative. India, Indonesia, Nepal, Pakistan, the Philippines, and Thailand are included in the Inter-Asian Corn Co-operative programme. This co-operative is also linked

to CIMMYT for technical assistance and germplasm. Germplasm is interchanged with countries of the Near and Middle East through the FAO Near East Cereal Improvement and Production Project.

150. Two sister organizations, CIAT (International Centre for Tropical Agriculture) in Colombia, and IITA (International Institute of Tropical Agriculture) in Nigeria, have maize programmes operating co-operatively with CIMMYT.

151. CIMMYT has staff assigned to the following countries to assist their national maize programmes: Colombia (funds from UNDP); Egypt (Ford Foundation); Nepal (USAID); Pakistan (Ford Foundation); and, in collaboration with IITA, Tanzania (USAID and Ford Foundation); and, Zaire (Zaire Government).

152. CIMMYT believes that maximum benefit can accrue to the largest number of countries by the above approach. The potential for a large international effort is only possible because there are already many co-operative links involving CIMMYT with national programmes, and, more importantly, national programmes helping each other. CIMMYT's limited specialized resources of manpower can therefore be multiplied many times by the network of collaboration.

APPENDIX

List of scientific and report documents on UNDP supported Global Project

Chemical Screening Methods for Maize Protein Quality at CIMMYT. by Evangelina Villegas and Edwin T. Mertz. CIMMYT Research Bulletin No. 20. May 1971.

Proceedings of the International Symposium on Protein Quality in Maize, sponsored by CIMMYT and Purdue University, at CIMMYT, Mexico, 4-8 December 1972 (In Press) - See attached chapter outline.

Global Research Project No. 1. Progress Reports:

Progress Report through September 1970.
Progress Report through December 1970.
Progress Report through July 1971.
Progress Report through December 1971.
Progress Report through July 1972.
Progress Report through February 1973.

Minutes of Policy Advisory Committee Meetings:

1. 31 July 1970.
2. 24 February 1971.
3. 12 July 1971.
4. 18 January 1972.
5. 14 August 1972.
6. 5 March 1973.

International Symposium on Protein Quality in Maize

Sponsored by CIMMYT and Purdue University, at CIMMYT, Mexico, 4-8 December 1972. (In Press)

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Status of Protein Quality Improvement in Wheat.

P. Mattern.

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W. L. Clark.

Status of Protein Quality Improvement in Triticales.

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L. Munck.

926.

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

July 9, 1973

Lic. Ramiro Morales
Secretaría de Hacienda
y Crédito Público
México

Sir:

Subject: Tax status of CIMMYT

In advance of CIMMYT's appointment with you on July 10, we are putting on paper some of the background of CIMMYT's tax status.

Our conversation should enable us to identify any additional information you need.

Sincerely,

Haldore Hanson,
Director General

Enclosure:
Memo entitled "CIMMYT's Tax Status"

HH/mla

El Batán, July 9, 1973.

Subject: CIMMYT's Tax Status

A memorandum prepared by CIMMYT for the Secretaría de Hacienda.

CONTENTS:

Attachments: See page 9 for list.

cc. Secretaría de Agricultura y Ganadería

1. A Brief History of the development of CIMMYT's tax status

1.1 Joint program between the Ministry of Agriculture and the Rockefeller Foundation, 1943-66

Starting in 1943, the Rockefeller Foundation and the Ministry of Agriculture organized a joint program in agricultural research, with Headquarters in Mexico City, and with research fields at Chapingo and elsewhere in Mexico.

For most of the first 20 years, this program was called the "Office of Special Studies".

The Rockefeller Foundation contributed the services of 10-20 international agricultural scientists, plus equipment, plus part of the operating expenses, plus construction costs of some buildings.

After INIA was formed in 1961, President López Mateos, after a visit to the International Rice Research Institute in the Philippines, proposed that the Rockefeller Group in Mexico should be formed into an international research center, similar to that Institute.

Gradually, during the period 1961-66, this proposal was formulated into a legal entity, formally signed by Secretario de Agricultura y Ganadería, Prof. Juan Gil Preciado on April 12, 1966.

1.2 Tax status before 1966

The Rockefeller Foundation program was established by a written agreement dated February 19, 1943, but this did not define tax status.

By mutual agreement, the following arrangements evolved during 1943-66:

(1) Equipment and supplies financed by the Rockefeller Foundation for the joint program of agricultural research, were permitted to enter Mexico duty free. (Acuerdo Presidencial 568 dated March 3, 1948).

(2) International staff (non-Mexicans) were exempted from payment of all taxes on their income received from outside Mexico. (Oficio 311-3346 dated January 12, 1967).

(3) The parterniship owned no joint property, and therefore, there were no taxes on real estate or other physical property.

(4) Waiver of taxes on vehicles was arranged by the Ministry of Agriculture.

1.3 Tax status under the CIMMYT charter of 1966

On April 12, 1966, the legal charter establishing CIMMYT was signed jointly by the Ministry of Agriculture and the Rockefeller Foundation.

The charter established a civil partnership between the two parties.

The tax status of this partnership was defined in Article 31, as follows:

ARTICLE THIRTY FIRST.- In order that the Center may have the freedom of operation it needs to effectively carry out its work in Mexico relative to technical assistance, availability of equipment and materials in general, the Ministry of Agriculture and Livestock will solicit from the corresponding authorities:

a) Facilities for immigration papers and obtaining necessary visas for scientific personnel and specialists, as well as students who must live in Mexico during their training period, and for the importation of their personal belongings and household furnishings as well as for re-exportation of same when so indicated.

b) Exemption of applicable import taxes and duties on importation of vehicles, agricultural machinery, laboratory equipment and industrial products, justifiably used in its activities, as well as the exemption of income taxes in favor of the foreign personnel working in the Center.

c) The necessary assistance for the importation of collections of plant materials and basic seeds, registered or certified, required for the work in Mexico, as well as for the exportation of those produced in Mexico for use in other cooperating countries, and

d) In general, to intervene with all competent authorities to obtain in other aspects the assistance needed for the more efficient accomplishment of its purposes.

1.4 Tax experience 1966-68

During the period 1966-68, CIMMYT paid all normal taxes and received no refund.

Due to request from the donors at that time, as well as prospective donors some of whom have since become actual donors, during this period discussions were continuing between CIMMYT and the Government regarding the tax exemption provided in the Charter.

1.5 Tax experience 1969-73

In 1969 Licenciado López Portilla, then in the Presidencia, undertook to establish a tax status for CIMMYT by Executive Order.

Lic. López Portilla reviewed the list of taxes which CIMMYT had been paying, and proposed that the Government refund to CIMMYT, each year, certain taxes. The taxes reimbursed in 1972 by the Government of Mexico under this subsidio included:

(1) Impuestos sobre vehículos (placas, tenencias, permisos, etc.)

(2) Impuesto sobre productos del trabajo e impuesto 1% , educación del personal extranjero.

(3) Cuotas obrero patronales pagadas al Instituto Mexicano del Seguro Social por el personal extranjero.

(4) Impuestos aduanales por importación de semillas, películas, etc.

(5) Impuestos sobre terreno.

An executive order dated August 1, 1969, was drawn up on the basis of Acuerdo Presidencial No. 297 dated April 7, 1969, authorizing a refund to CIMMYT of taxes paid, up to the amount of Pesos 1,255,000 for the year 1969.

The commitment has been repeated each year, the latest order being dated April 24, 1973.

This system was adequate for CIMMYT until 1972, when taxes collected by the Government of Mexico exceeded the authorization of Pesos 1,255,000, for the first time.

Tax payments by CIMMYT for the 5-year period, (including estimate for 1973), are as follows:

1969: Pesos 420,347.66
1970: Pesos 812,381.35
1971: Pesos 1,194,361.29
1972: Pesos 1,564,143.49
1973: Pesos 1,723,200.00 (Estimated)

CIMMYT taxes have been rising for several reasons:

First, international staff at CIMMYT have risen from 16 in 1969 to 24 in 1973.

Second, tax rates of the Government of Mexico and fees paid to the Instituto Mexicano del Seguro Social have been increased.

Third, in 1972 the Government added a housing tax, not previously collected. Up to date, this tax has not been included in CIMMYT's tax statement, and therefore, has not been reimbursed to CIMMYT.

In 1972, CIMMYT paid taxes totalling Pesos 1,564,143.49, and received a refund of only Pesos 1,194,361.29.

Therefore, CIMMYT is no longer receiving the full refund of taxes, and CIMMYT can no longer tell its donors that CIMMYT is free of Mexican Government taxes.

1.6 Why a new tax arrangement is needed in 1973

CIMMYT is now receiving over US$7.0 millions a year from donors who have been told that CIMMYT is tax exempt.

The statement that CIMMYT is tax exempt was correct when the statement was first made.

That statement is no longer true in 1973.

CIMMYT would like to reach a new understanding with the Ministry of Finance before the meeting of CIMMYT's donors, at the World Bank, in August, 1973.

To explain the urgency requires an explanation of the Consultative Group, and the present donors to CIMMYT.

2. CIMMYT's present sponsorship by the Consultative Group

In 1969, the Rockefeller and Ford Foundations were spending US$6.0 millions a year to support the following four international agricultural centers:

(1) Philippines - International Rice Research Institute

(2) Mexico - CIMMYT

(3) Nigeria - International Institute of Tropical Agriculture

(4) Colombia - Centro Internacional de Agricultura Tropical

These Centers already needed more financial support than the two Foundations could supply, and there were proposals for the following additional Centers:

(5) Peru - Centro Internacional de Papa

(6) India - International Crops Research Institute for the Semi-Arid Tropics

Still others are now proposed.

Therefore, the two Foundations asked the World Bank to organize a donor group which could raise more funds for these centers.

As a result, the World Bank, the U.N. Development Program, and the FAO jointly organized the Consultative Group in 1971, a body of 27 donors who have supported these Centers since that time.

The amount of money contributed for all the Centers has risen as follows:

1971	US$11,000,000
1972	US$15,000,000
1973	US$23,000,000

The Consultative Group has required that each Center which it sponsors must first obtain tax exempt status.

Four of the Centers, including CIMMYT, already had received their tax exempt status before the Consultative Group was formed.

The two new centers formed in 1972 - in Peru and India - were required to obtain tax exempt status from the host country, before they could receive support from the Consultative Group.

3. CIMMYT's 9 donors

The Consultative Group is not itself a donor, but only the organizer of the meetings, at which the individual donors pledge their funds to each of the centers.

CIMMYT now receives support from 8 members of the Consultative Group as follows:

International bodies:

IBRD
Inter-American Development Bank
U.N. Development Program

Private foundations:

Ford Foundation
Rockefeller Foundation

Governments of:

Canada
Germany
U.S.A.

Each of these donors has asked to see CIMMYT's charter, as an indication that CIMMYT is tax exempt.

Prior to 1973, CIMMYT was able to state that it was receiving a refund from the Government of Mexico which made CIMMYT, in fact, tax free.

CIMMYT does not have documents to show the attitude of the donors toward tax exemption, but the attitudes of these donors can be indicated as follows:

World Bank group: The Bank group makes no loans or grants to any Government without a prior treaty arrangement giving tax exemption not only to the Bank employees, and the bank office, but also freedom from taxes on goods imported under World Bank funds.

The Bank has given CIMMYT $1.5 millions in 1973.

U.N. Development Program: Same as World Bank. UNDP has given CIMMYT $750,000 in 1973.

Inter-American Development Bank: Same as World Bank.

Ford and Rockefeller Foundations: These two private organizations have negotiated agreements with more than 20 countries requiring that their international employees, and their grants, shall be free of taxes. Each Foundation gave CIMMYT $750,000 in 1973.

Governments of Canada, Germany, and U.S.A. These three donors, each asked to see CIMMYT's charter, to verify its tax exempt status, before they made their first contribution.

4. Benefits to Mexico of CIMMYT's external financing

CIMMYT normally pays no taxes to Mexico.

But CIMMYT brings into Mexico over US$7.0 millions a year, which is a help to Mexico's foreign exchange balance of payments.

In addition, Mexico receives considerable prestige from the world-wide recognition of Mexican wheat and Mexican maize, which CIMMYT is promoting.

These are good reasons why the Government should find ways to solve CIMMYT's tax status, so that the sponsors, (Consultative Group), and the 8 donors will continue to provide CIMMYT's annual support.

The next meeting of the Consultative Group is in Washington, at the World Bank, in August, 1973, at which time funds will be pledged for 1974.

5. Recommendations:

(1) That the annual Acuerdo for CIMMYT's tax refund should be based upon the amount of taxes paid by CIMMYT in the preceding year, plus the amount of taxes not refunded in the previous year.

(2) That a supplementary Acuerdo be issued in 1973, to cover the amount of taxes not refunded in 1972 (i.e. Pesos 369,792.20).

(3) That payment by CIMMYT of the housing tax for non-Mexican employees should be included in the calculation of the future Acuerdos for tax refund. No foreign employee of CIMMYT has ever benefitted from Mexico's public housing program, and we believe none are likely to share in the benefits of that program in the future.

Canadian International Development Agency
Agence canadienne de développement international

BC
~~HG Hanson~~
CJ

July 6, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H St. N.W.
Washington, D.C. 20433, U.S.A.

Your file Votre référence

Our file Notre référence

Dear Mr. Graves:

Here is a typescript of the CIMMYT report -- easier for reading and editing. I have sent a copy to Hanson asking him to send you any errors in fact, or wrong interpretations that he finds, and impressing him with your urgent need to get them reproduced early for distribution.

Yours sincerely,

H.G. Dion
Agricultural Adviser

Encl.

122 Bank Street
Ottawa, Canada
K1A 0G4

122, rue Bank
Ottawa, Canada
K1A 0G4

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CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

CIMMYT

CIMMYT has its origins in a cooperative venture of the Ministry of Agriculture of Mexico and the Rockefeller Foundation which began in the mid 1940's as a national program for Mexico, became The International Maize and Wheat Improvement Centre still as a joint Mexico-Rockefeller undertaking in 1963, and in 1966, was legally designated the "Centro Internacional de Mejoramiento de Maiz y Trigo" as a civil partnership subject to Mexican law, with support from a number of sources and the following stated purposes among others:

a) to promote and carry out, nationally and internationally, programs to improve in all its aspects maize and wheat production and if advisable the production of sorghum, rice and other food crops, in order to obtain greater unit yields and better production and quality of these crops.

b) to carry out basic and applied research activities in order to achieve the purpose mentioned in the preceding point.

c) to prepare and distribute superior genetic material, which will permit the achievement of higher yield standards and better quality of crops.

d) to carry out locally and internationally, training programs for the preparation of scientists and technicians with the necessary experience in research and in the application of results, relevant to the activities of the Center.

e) to promote and participate in the conduct, locally and internationally, of all kinds of scientific and technical meetings and, of any activity directed to obtaining close cooperation among scientists engaged in programs for the improvement of cereal production, as well as of the interested sectors in any part of the world.

f) to publish and distribute the results obtained from research programs and carry out what may be necessary to promote the immediate and efficient application of these results to the improvement of quantity and quality of maize, wheat and other important food crops on a local and international level.

At present, CIMMYT carries on a vigorous and highly successful program, which is not only involved with spring wheats and durum wheats but also with Triticale, a new species made by combining wheat and rye, and barley in a modest way, and a very promising maize program, which is apparently ready for widespread application. As part of the maize program, a small sorghum breeding operation aimed at high altitude adaptation is being maintained, with the expectation that ICRISAT, the centre in India, having world responsibility for sorghum, will assume overall responsibility for its future direction.

CIMMYT has a total staff of 369, which includes 46 senior scientific staff in Mexico on core programs, about 20 professionals serving outside of Mexico on outreach programs, and more than 130 qualified scientists serving the breeding programs in various positions.

The materials produced by CIMMYT are not varieties, they are progeny lines from breeding programs which are distributed to cooperating breeders in interested countries, and may be used by them either directly where they fit well, or further selected to produce national varieties with more specific local adaptation, or used in national breeding programs with local materials to produce new varieties having locally needed characteristics.

The Wheat Program

Borlaug and his team have gone a long way beyond their initial successes which first transformed Mexico from a wheat deficit to a wheat exporting country, and then, with the same lines, brought the changes in India and Pakistan which have been named the "Green Revolution". The basis for the CIMMYT wheats

was the parent Norin wheats from Japan, which provided dwarfing genes to give strong-strained fertilizer-responsive varieties resistant to lodging (falling over) and the wheat team's discovery that by selecting those segregating lines which were resistant to the various disease and environmental challenges at a number of nursery sites, they could in fact, select for wide adaptation including a broader spectrum of disease resistance, and day-length insensitivity. It was this wide adaptation that made the wheats bred from cross 8156 made in Mexico, so suitable for the Pakistan and Indian conditions, and resistant to their diseases. The lessons learned, of using the widest possible range of parental materials as inputs into the gene pool, providing they have characteristics needed, and of selecting only after testing under the widest variety of environments has provided the key to CIMMYT success. Wheats with CIMMYT breeding have demonstrated their superiority under both irrigated and dryland conditions, which is often not realized. The CIMMYT wheats have been most spectacular under irrigation, as would be expected, since with sufficient water, they can more nearly approach their higher production potential. Nevertheless, since of the 32 countries involved in the 120 nursery trials, 24 are without irrigation, and more than 3/4 of all the nurseries are dryland nurseries, selection pressure for high production without irrigation is intense, and the same cross 8156 varieties which perform so well under irrigation in India and Pakistan also are among the highest yielding varieties under dryland conditions in all of the countries in the testing program.

The Spring Bread Wheats

The first semi-dwarf CIMMYT wheats were distributed in 1962, and immediately increased experiment station yields from 4 to 8 tons/hectare under scientific management. That represented a new yield plateau which has not been improved on since 1962. These early wheats while they had a wide range of resistance to rusts, bunt, loose smut and mildew were challenged by new pathogens, in the new environments and by continually evolving new races of rust. The program

since that time has concentrated on yield stability, that is preventing losses by building in new sources of resistance from resistant parents from areas where the diseases are endemic. By continuing to maintain and broaden the wide spectrum of "horizontal" (multi-gene) resistance as well as "vertical" (single gene) resistance, the aim is to make the breeding materials resistant (or less susceptible) to local disease epidemics, and by selecting for "horizontal" (or physiological) resistance, making the wheats less likely to succumb to new races of evolving pathogens.

Wheats with CIMMYT breeding are essentially resistant to the usual stem and leaf rusts which were previously so disastrous, and while new sources of rust resistance are continually being introduced into the spring wheat gene pool, major attention is being given to other diseases which occur in the countries of the nursery network, and in particular sources of resistance to Septoria leaf spot, mildew and scab, each of which can be devastating under appropriate environments. In 1972 CIMMYT screened 12000 lines of the World Collection for new sources of resistance to incorporate into the gene pool. Resistant lines are used as parents in the 4-5000 crosses made each year. These give rise to a large number of segregating lines, which after the fifth generation, are reduced to the best 300 lines, from of among which 75 sets are distributed to the various national programs for testing against locally adapted varieties, and selection on the basis of performance. At this stage, the national programs pick up superior lines to distribute as their varieties, or to use in further selection programs on breeding work, and at the same time CIMMYT not only selects those that perform well over the range of nurseries, but also receives back for use as parents the local varieties which had resistance against the local diseases or insects attacking the nursery. The best of the segregating lines from the nursery trials and the new breeding materials of unusual promise are therefore continually broadening the gene pool of the "crossing block" -- the progenitors of the next years single, double, three-way and back

crosses. There is, of course, rigorous selection at CIMMYT's three wheat nurseries in Mexico in the early generations, where not only are plants discarded if they become infected after deliberate inoculation (1.5 to 2 million plants individually inoculated) but also if they lack vigor and superior agronomic characters. At the end of the third generation, and again after the fourth, rigorous selection is applied in addition for gluten strength, seed type and size, and baking quality. It is the materials surviving these challenges that are selected after the fourth, fifth and sixth generations for increase to give enough material for yield tests. These are carried out in the International Spring Wheat Yield Nurseries (ISWYN) at more than 100 locations throughout the wheat-growing world.

The vast network of national wheat breeders in the various cooperating countries contribute their own best lines, and the best of the local varieties, so that the ISWYN is at the same time a trial to test new materials against old standards, but also a means of identifying materials for local varieties or new lines which have valuable resistance to local races of diseases and pests. It is by means of this constant search, hybridization, testing and incorporation of new genetic material that lines are produced as the basis of varieties designed to stay ahead in competition with new races of wheat diseases.

The breeding program, the selection of only the best at each generation, the challenges by deliberate inoculation, by different environments in Mexico in early generations, and by a wide range of environments in the international nurseries is common to the spring wheat, durum wheat and the Triticale program. The present objectives of the spring wheat program and the means of attack are as follows:

Stability of yield

The objective is to incorporate into the wheat plant characteristics which make

it resistant to epidemics of diseases and insect pests, and which would, it is hoped, make the crop more drought tolerant under dryland conditions.

With the continued input into the gene pool of additional sources of resistance for new races of rust, the breeding program apparently is staying ahead of that major scourge. Diseases of urgent concern at present are Septoria leaf spot, which is devastating in some countries, mildew and scab. Sources of resistance have been identified and incorporated into the breeding program, with resistant lines now appearing in the pipeline.

Drought resistance, to give greater yield stability under conditions of dryland moisture stress, is being tackled through crossing spring with winter types, since winter wheats have a deeper root crown, and could transfer a more vigorous root system. In addition, the winter wheats, which historically have not had much utilization in the improvement of spring wheats, could contribute cold tolerance, new genes for disease and insect resistance and a new range of maturity dates to the spring wheat types arising from crosses. Similarly, the winter wheat types could gain genes for dwarfing, nitrogen response and disease resistance from the spring wheat parents.

The winter-spring wheat crossing program has been carried on not only at CIMMYT but with two U.S. universities, and with the Turkish national wheat program. Preliminary observations in Turkey and Lebanon indicate that some segregates from these crosses have ~~much~~ greatly increased drought resistance, remaining green when other varieties were killed. It is expected that these materials could be of the greatest immediate value to Turkey, Iran, Afghanistan, Algeria, Argentina and Chile, as appropriate ~~materials~~ lines appear from the breeding program.

Improved Nutritional Quality

While the initial CIMMYT wheats were produced with a primary concern for high yield with acceptable quality, a major selection criterion at present is for

improved bread making ability (gluten quality). In addition, a serious search is being made by collaborating scientists at Nebraska for genetically controlled variations in lysine in wheat, and variations do exist, but not as dramatic variations as with the opaque-2 gene in maize. A long term breeding program has been undertaken to incorporate genes for both higher protein levels, and higher lysine levels but it will be a lengthy process, since poor plant types are associated with the higher lysine levels -- whether these can in fact be incorporated into desirable wheat varieties remains to be seen.

Physiological Studies

This work is designed to find out what aspects of the wheat plant control its yielding potential and how these should be modified. While only in its second year, the study has already established that the shorter plants not only give a higher yield because they can hold up a more heavily fertilized crop without lodging, but also that they give a higher yield when lodging is prevented, since there is in the short varieties, a higher ratio of grain to total dry matter. Work has just begun on effects of shading, thinning, crowding and carbon dioxide fertilization as part of a program to identify yield limiting processes, and to suggest desirable points of attack. Since still shorter plants are not a desirable modification, and straw strength in CIMMYT wheats is at least adequate, additional increments to yielding ability can only be identified by such studies.

Durum wheats

The CIMMYT durum wheat program began in 1968, in an attempt to do for those countries raising durum wheat for pasta and cous-cous what had been done for the bread wheats. This is of prime importance to India, the countries of North Africa and the Middle East as well as to other producers including Argentina USA, Canada and the USSR.

The program has gone through 10 cropping cycles, and has produced lines incorporating the dwarf character istic with good yield potential, better response to nitrogen fertilizers, and high resistance to lodging, Sources of disease resistance for the rusts, Septoria, mildew and scab are being incorporated, but no single line as yet has resistance to all of these diseases. The new materials are being used because of their demonstrated superiority in yield trials, -- Tunisia released a new CIMMYT based variety in 1972, and Algeria imported 15000 tons of seed of a Mexican variety, Jori 69, which again was based on CIMMYT materials.

The best "experimental variety" CIMMYT has produced thus far, Cocorit C 71 has yielded almost as well as the highest yielding bread wheats in the widespread research trials, but it needs further improvement with regard to grain type and industrial quality before it is fully acceptable in the durum market. The new capacity of the CIMMYT milling and baking laboratory made it possible in 1972 to evaluate grain, milling, macaroni and cooking qualities of the durum wheats, and these criteria are now being applied for selection in the segregating progeny lines after the third and subsequent generations.

Progress in the five years of the durum program has been very rapid, equivalent to that in the best five years of the much older spring wheat program, and CIMMYT expects the release of fully acceptable high yielding strong-strawed dwarf durums with a wide spectrum of disease resistance, and good industrial quality, in the next few years.

Triticale

Triticale is the first man-made new food plant - it is the result of a crossing program between two different species Triticum (wheat) and Secale (rye). CIMMYT's involvement began with a cooperative project with the program already underway with the University of Manitoba in Canada in 1965. The early material, while it appeared to be promising, had a number of serious problems

including low fertility, tall weak straw, shrivelled grain, low grain yield, and a narrow adaptation. Rapid progress has been achieved. High fertility (number of seeds in the head) was solved by a fortunate accidental outcross to a Mexican bread wheat in 1968, providing a fertility factor used in all the highly fertile Triticale breeding lines, called for convenience Armadillo; dwarfing was introduced first from the dwarfing gene of bread wheat, later from dwarf-type durums that had been found, and most recently from a dwarf rye found at the University of Georgia, -- as a result some lines now will permit the use of 120 kg/ha of nitrogen without lodging, and yield in the range of 6-7 tons/ha, approaching that of the highest yielding wheats; good plant type, considerable disease resistance and desirable agronomic characters which were identified in the Armadillo lines have been transferred to the various lines of the new species; the shrivelled grain character has been less rapid in its response but constant and heavy selection for plumper seeds has produced materials which suggest a few more cycles of selection will give acceptable grain quality.

Triticale is already being grown commercially in Canada for a distillery, in the United States as a fall and winter forage crop and in Eastern Europe for human food. There is significant interest in the crop in Ethiopia, Algeria, India, Spain and Pakistan. The most recent trials indicate that Triticale outyields the best bread wheats in Ethiopia. It appears that Triticale has cold and drought tolerance which may indicate a major place for it beyond the present borders of wheat cultivation.

As far as quality is concerned, preliminary indications are that some lines may have higher protein and higher lysine than wheat. As to industrial use, acceptable bread and chappattis can be made from Triticale.

It would appear that success with Triticale is imminent, and that a new crop will be available to find its niche in agricultural ecology and in the

industrial world, as a feed grain and as human food.

Barley

The Consultative Group's TAC agreed in 1972 on an interim basis that CIMMYT should carry on a small maintenance program with barley on a budget of $40,000, in view of the importance of barley as a cereal for human food in areas where wheat doesn't do well because of low rainfall, high elevations, cooler temperatures and short growing seasons.

CIMMYT has a germ plasm collection of 4000 lines which is being screened for desirable characteristics, and has identified sources of material for stiff straw, disease resistance, higher protein, higher lysine and naked kernels (for human food). Swedish material (Hyproly) is a source of high protein and high lysine for combination into desirable agronomic types. Four lines tested in 1972 had more than 20% protein (as compared to approximately 15% for wheat).

The wheat staff, who carry the barley program as part of their program, estimate that after 10 breeding cycles (5 years) CIMMYT should be able to demonstrate approximately the same level of improvement in Barley as is being obtained with Durum wheat, for instance, with important implications for many difficult areas of Asia, Africa and South America.

Wheat Outreach

While the CIMMYT wheat program has been very successful in arranging a supporting network of wheat scientists throughout the world, this success poses logistical problems -- CIMMYT sends out over 500 nursery trials for spring wheats, durum wheats and triticales to more than 60 countries, with observations by the collaborating scientists coming back to CIMMYT to be summarized in 5 annual publications. The returning flow of data does not always give enough information on weather and rainfall, and ~~to~~ fertilizer usage, and inadequate experiment station management contributes to large experimental errors. CIMMYT is working

out ways of arranging regional reviews, as in the mid-east, and for specifications of the climatological data needed, which may require additional instrumentation. In addition, CIMMYT is making the head of its research stations available for a series of visits to cooperating research stations in Asia and Africa to advise on solutions to station management problems.

The original outreach programs for the wheat program were the very successful campaigns in India and Pakistan, which have evolved to the point where these national wheat improvement programs are independent entities, cooperating with CIMMYT in nursery trials. They continue to extract new CIMMYT lines for national breeding programs when locally valuable materials appear, but otherwise they are not dependent in any technical way on CIMMYT. Such outreach programs represent the successful evolution from introduction through partnership and training to a self reliant competent national organization.

At present, major outreach country programs involving CIMMYT staff, are underway in Algeria, Morocco, Tunisia and Turkey, financed on a special project basis by interested donors. Further expansion is foreseen to include programs in the Mediterranean region, Eastern Europe, East Africa, South East Asia, the Andean countries, and five countries of other regions.

As part of the outreach program in Tunisia, the wheat staff there have involved themselves in exploratory work to assist Tunisia in finding a winter legume to rotate with spring wheat as a substitute for the present weedy fallow. The discovery of adapted (or adaptable) legumes, and the development of improved wheat farming systems for North Africa is most important. This represents however a new aspect of CIMMYT's outreach which has not been a part of the traditional program. As an additional phase of CIMMYT's work, at a time when there is a shortage of staff for the growing number of wheat improvement programs, this new "systems" phase is being treated as a pilot project requiring serious consideration before it is accepted as a normal CIMMYT activity.

for the production of hybrids. CIMMYT abandoned the hybrid approach after it became obvious that subsistence farmers would not willingly adopt a maize program that involved them in the expense of buying new seed each year.

In the execution of the breeding program, the maize staff has developed exceedingly efficient highly coordinated systems of breeding, testing and screening, associated with production management, stage by stage, reducing the time for production of experimental varieties to 3-4 years, rather than the 10 or more years under traditional breeding systems. The essence of the hurry-up program is that all materials judged as being potentially useful are planted at the beginning of each season so that they may be used as potential parents if the data from the previous growing season confirms their value -- if not, when this data is available, they are discarded. As a result, breeding testing and screening are carried out simultaneously rather than sequentially in different growing seasons, and the efficiency in terms of time, is approximately tripled -- a very important consideration in a hungry world.

The maize program has four main objectives, as follows:

Shorter maize is necessary since tropical maize is tall (e.g. 3.5 metres) very leafy, and very susceptible to lodging (falling over) as it matures because the heavy ear is high on the stalk (2.5 metres). By shortening the plant, not only does it resist lodging, and therefore can be pushed to higher yields by increasing nitrogen applications, but less of the dry matter production is required for stalk and leaves and a higher proportion goes into grain; the planting density can be increased ~~4x~~ from 50000 to 100000 plants per hectare, which means in turn better competition by the maize with weeds, all of which means more harvested grain (+40%) per unit area. Three different breeding and selection methods are used, including the use of brachytic (dwarf branched) material for crossing, and all three have succeeded in reducing the plant height by a metre, and ear-height by the same amount -- in effect, cutting off

a metre from the bottom of the plant. Short maize populations with the kernel types, white and yellow, flint, dent and floury that are preferred in different parts of the world have been developed, and distributed in 1972, incorporating differences in maturity dates (95 days, 105 days and 115 days), so that national programs will be able to use these materials for varieties suited to their requirements.

Maize with wide adaptation is highly desirable for countries with wide ranges in climate. Maize, in the many centuries it has been domesticated, has been selected by farmers so as best to meet their particular environment, and therefore with very narrow adaptation and little or no transferability across latitudes, which determine day length, or between low and high altitudes, or wet and dry climates. The maize team's approach is to deliberately build in the widest kind of adaptability, particularly day length insensitivity, and after beginning in 1970, in 1973 materials are being moved into national programs which can be grown from the equator to 50° N and S, with a range of maturity dates. The adaptability has been achieved by three main attacks -- (1) by crossing lowland-highland types and growing these alternately at lowland and highland stations for selection for suitability to both; (2) by mixing a population of 250 varieties from the tropics and the high latitudes (e.g. Canada) representing all climates in the Americas, using 132 crosses, and crosses between crosses, and after several generations of mixing, the collection is grown at a number of latitudes and climates, the progeny recrossed with the original mixture in Mexico, and the population recombined; and (3) by bulking 5000 varieties from CIMMYT's germ plasm collection, allowing these to cross fertilize for several generations, and growing the result at a number of sites (10 in 1972) around the world, for observation, and so that the surviving seed can be fed back into the mixture at CIMMYT. These techniques have been in use for five years or more, and are producing very promising results, with some cooperators in the testing program already removing material for use in

their own programs. The initial difficulties were serious since flowering did not coincide in different varieties, as a result pollen had to be carried between lowland and highland stations, and greenhouse plants sometimes used to get male and female parents in blossom at the same time.

Breeding for disease and insect resistance is a vital part of the maize improvement program, since tropical maize suffers from more insect predators than any other major cereal, and disease attacks are varied and severe. Every research plot in the maize program contains a part of the raw treated with insecticide, so that the yield potential can be demonstrated, while the remainder is unprotected, to show resistance if it exists. In addition, the raw is deliberately inoculated plant by plant with organisms causing leaf-blights, and ear and stalk rots, to challenge the plants for resistance to these diseases. In 1973, facilities are available for mass rearing of insect pests, so that controlled infestation (rather than natural, which may not strike) can be used to challenge for insect resistance. This is obviously the most comprehensive program of deliberately challenging the breeding material for a wide range of diseases and pests that has been undertaken anywhere. While the program with its full impact has been underway only since 1968, already valuable materials, including breeding materials resistant to the Fall Army Worm, which is very serious in all the Americas and parts of Africa, has moved out of the research plots in 1972 into national breeding programs in cooperating countries. The importance of this kind of biological control of pests and diseases, based on multi-gene physiological or "horizontal" resistance rather than the much more hazardous single-gene or "vertical" resistance is hard to over-emphasize.

Improvement of protein quality in maize has been a major objective since the discovery of the opaque-2 gene which, by doubling the proportion of lysine and tryptophan in maize protein, can correct the deficiencies in the amino acid

balance, and so convert maize from a low quality protein source to a good basis for a well-balanced diet for man and animals. The original attempts to incorporate high lysine into maize ran into serious difficulties since the opaque-2 gene gave floury kernels disliked by some consumers, susceptible to insect attack in storage, and producing slightly ~~less in~~ lower yields. Except in Brazil, where the floury kernel characteristic is not objected to, maize with the better nutritional balance of the high lysine maize never became important, in spite of vigorous promotion efforts as in Colombia, and it became obvious that it was necessary to transfer the high lysine characteristic to maize with the flint kernels (hard endosperm) that ~~was~~ is generally preferred. It was not until 1970 that the CIMMYT staff found modifier genes which made it possible to incorporate the high lysine and tryptophan of the opaque-2 gene, and to maintain the hard endosperm of the kernel. Within 2 years (4 cycles of research) materials with high quality protein and hard endosperm had been developed, and by autumn 1972, had been multiplied in 14 countries outside of Mexico to produce 20-25 tons of seed, which is being used in demonstrations in farmers fields and for animal feeding trials.

At present CIMMYT research is producing maize population with high quality protein combined with the white or yellow colour, flint, dent or floury kernel characteristics which are being moved out in 1973 into national maize improvement programs as populations or as experimental varieties in 15 countries.

Preliminary work has demonstrated that the hard endosperm does not affect the digestibility or the efficiency of use of the maize protein.

In addition to higher protein quality, higher protein percentages are being pursued, with selection for materials that have a minimum of 10-12% protein in the whole kernel, associated with lysine at 4% and tryptophan at 1% of the

total protein.

The successful transfer of the opaque-2 gene with its high lysine-tryptophan into hard endosperm maize is a major plant-breeding achievement, of tremendous importance to all of the maize-producing countries.

As in the wheat program, international nurseries are an essential part of the maize program, in order to identify wide adaptation in the populations under differing day-length, temperature and disease conditions, to exchange germ plasm with national breeding programs, and on the basis of feed-back to modify and adapt CIMMYT's breeding programs to meet the needs of the developing countries. The international maize nurseries began only in 1971, with 296 sites in 46 countries, expanding to more than 400 sites in 52 countries in 1972. The nurseries are specialized into 7 different types to suit the needs and interests of the breeder both at CIMMYT and in cooperating national programs. As part of the program, regional nurseries are distributed by CIAT in Latin America and by IITA in tropical Africa.

The Germ Plasm Collection for maize at CIMMYT, at 12000 accessions is the largest in the world, and has been the basis for the diversified populations the program is producing. Since no more than 5000 accessions are currently in use, CIMMYT proposes to transfer its unneeded accessions to the USDA world maize collection at Fort Collins, Colorado, and maintain only its working collection at CIMMYT, drawing on Fort Collins in the future for materials as needed when needed for the working collection. Part of the staff time so released is to be used for initial exploratory work on wide inter-specific crosses (similar to Triticale) involving maize x sorghum and maize x Tripsacum. Tripsacum is a wild relative of maize, found in Central America, which has a reservoir of genes that could be very valuable in imparting disease-free root systems, resistance to a wide range of maize diseases and pests, tolerance to

day-length differences and extremes of wet and cold, rapid seed maturity, adaptation to a soils "unsuitable" for maize, and by virtue of the wide cross, exceptional hybrid vigor. CIMMYT's Tripsacum Garden, which gained 127 clones of 40 Tripsacum populations last year, will be the source of valuable material for cooperative programs with other institutions pursuing this inter-specific cross.

Sorghum breeding for cold tolerance is being carried on at CIMMYT on a temporary basis until ICRISAT can made a decision as to how it fits into its program. The objective of the program originally was to develop sorghums adapted to the cool temperatures of elevations above 2000 metres ~~for~~ in Mexico to take advantage of sorghum's known drought tolerance for such areas where maize, because of its heat requirements, does not do well. The project involved crossing high-altitude late-maturity sorghums from East Africa, with early-maturity low-altitude types, and testing the segregating materials at a number of locations both at high latitudes and altitudes -- cold-tolerant materials which perform satisfactorily at above 2000 metres in Mexico are now under test as far north as Canada. The work is financed by a special project grant.

Maize Outreach is only now in a position to take-off in a major way, with the development of shorter, day-length insensitive materials with resistance to a number of diseases and pests, and with the combination of high protein and high lysine with hard endosperm. The maize program as with wheat, does not produce new varieties tailor-made for local use, but does produce "composites" and "experimental varieties" which may be used as such in national programs, or for further selection and breeding work.

Maize outreach has had limited success to date outside of Mexico, but in El Salvador it is estimated that about 60% of the maize area is in improved CIMMYT materials, ~~with improved production practices~~ giving 4-5 tons/ha under good production conditions compared to 1 ton/ha under traditional varieties and practices. Similarly in Colombia, where CIAT has been CIMMYT's outreach

arm, yields of maize are estimated to have been increased approximately 50% in areas affected by the improved varieties and the accompanying package of inputs.

During the past year requests for outreach assistance have increased dramatically, with CIMMYT staff being stationed in cooperative programs in Pakistan, Egypt Nepal and Zaire, with requests pending from Tanzania and Argentina. Great potentiality for improvement obviously exists -- in Zaire, where the Government of Zaire finances the program, the traditional 900 kgs/ha has been raised to about 7 tons/ha in field scale demonstrations, in Egypt, 3 new varieties based on CIMMYT materials have yielded up to 14 tons/ha with dressings of 150 kgs of nitrogen/ha in experimental plots. In the next two to three years, maize with high levels of high quality protein, of short improved plant type, acceptable kernel type, a broad spectrum of disease resistance, day-length insensitivity and high yielding potential will be available, and it can be assumed that much higher yield levels, and stability of yield (reduced risk of loss from disease, etc.) will induce even small farmers to adopt the new packages.

To prove the virtues of the high protein high lysine maizes, demonstrations at the field level with swine, as is being done at CIAT, is considered to be necessary -- clinical trials with undernourished children prove the matter scientifically, but the small farmer needs to see the differences on a comparative basis, and swine are the obvious test animal, since improved swine production is expected as a direct effect of the use of the quality protein maizes.

While CIMMYT has global responsibility for maize (and wheat), both IITA and CIAT operate as regional collaborators on maize for Africa and the Andean region respectively. The maize staffs at these latter institutions are in close contact with their CIMMYT counterparts, and the exchange of breeding material and information is mutually advantageous. IITA has been involved in the

planning of CIMMYT's program in Zaire, and CIMMYT is providing the maize staff in the program contracted between IITA and Tanzania. The arrangements are adequate to prevent duplication and overlap, but not so rigid as to prevent the necessary freedom of decision for regional programs.

Training as part of the outreach program expanded greatly in 1972, with 67 trainees last year, as compared to a total of 26 in the previous years. The maize staff considers that it is close to the limit for in-service trainees, and foresees the problems of trying to regionalize or decentralize in the near future when requests are likely to rise sharply.

It is recognized that the shortage of well trained maize breeders and maize agronomists in cooperating countries will be the biggest obstacle to rapid development of national programs, and CIMMYT is concerned over the problems of expanding this training greatly without diluting its quality, and of the problems of arranging for the best of the trainees to get further advanced training to provide the scientific (and administrative) leadership that their country programs need. The answers are not yet obvious.

It is planned to develop a more intimate continuing relationship with former trainees by periodic visits from members of the maize staff, by newsletters to exchange information and by periodic workshops and refresher courses whereby graduates of the in-service courses can keep in touch with the latest developments at CIMMYT.

Plan Puebla ——————>

"Plan Puebla is an experiment to study factors involved in increasing maize yields and farmer income in an area of 47,500 farmers cultivating an average of 2.5 hectares per family in a rainfed environment of Puebla State about 50 miles east of CIMMYT." The project has been financed as a special project and will terminate in 1973 after 7 years. It has demonstrated that it is possible to

improve the production practices of the small farmer, providing the appropriate technical inputs (seed, fertilizer, insecticides) as well as financial inputs (credit) are provided. The proportion of farmers involved with the program (as measured by number using credit) has continued to increase over the past six years reaching 13% in 1962, yields per hectare increased initially and then stabilized, and the spread effect whereby farmers not in the program use more fertilizer and obtain higher yields is significant.

The project has provided valuable information to the Mexican and other governments interested in similar small farmer programs, and the summary reports being prepared will, it is hoped, cast more light on the factors important in adoption of improved practices, and will be the basis for different projects with similar objectives in Mexico and other countries.

Agricultural Economics ——→

1972 was the first year CIMMYT had a full-time economist, and the initial years' activity has demonstrated that approximately half of the program is associated with collaboration with the breeders and agronomists on the economic aspects of production practices, the requirements for inputs and marketing for outreach programs, etc. while half of the program time has been devoted to studies on factors affecting the adoption or non-adoption of improved practices. Considerable critical attention has been directed at those responsible for the Green Revolution, suggesting this benefits mainly the large farmer. In India the adoption of new practices in the case of wheat has been independent of farm size, but in the case of rice, larger farm size has made it easier to adopt new practices faster because efficient water management is easier on larger farms.

With respect to the Institutes' role in the socio-economic aspects of the new varieties and their technological packages, CIMMYT feels that its role

should not extend beyond demonstration of how (and why) to get successful adoption. The "second generation" problems of who is involved in this extra production, how the extra production is stored, transported, used and managed, its effects on income distribution, etc. are matters of national policy for the government organizations involved. Studies under way by CIMMYT are concerned with the factors controlling the rate of adoption, and are directed in part at the linkages, and how they operate, between policy makers, planners and agronomists, in successful outreach programs. In addition to the Plan Puebla study, work has begun on adoption studies in El Salvador, Turkey, Colombia and India, with additional projects beginning in Tunisia, Kenya and Iran for completion in 1973.

An additional staff member for the Economics Unit is proposed to work closely with the Headquarters agronomy staff on agronomy trials for countries with limited resources, on manuals of experimental design, plot layout and statistical analysis, and economic analysis for field trials, and to be involved with trainee programs on economic forces affecting their work.

A part time geographer is also being added to the staff to gather data for areas growing maize, wheat and barley with respect to climate, diseases, area in crop, kind and number of farmers, number of consumers, etc. to be used to assist in shaping the maize and wheat programs.

Laboratory Services

The protein laboratory has been an absolute necessity as part of the high quality maize program, to follow the transferrance of high lysine into the vitreous-kernel materials. The methods used are quick and approximate, using material from part of a kernel only, for tests in early generations, and more precise where more material is available in later generations. For

checking Protein Efficiency Ratios (PER), CIMMYT has been using the meadow vole as a test animal because of the smaller amounts of material necessary compared to the standard rat test, but has found difficulty in establishing reliable correlation with standard tests. Before abandoning the vole as a test animal, CIMMYT will attempt in 1973 to standardize the vole test, since its use permits screening of earlier generations of breeding materials when quantities available are limited -- earlier screening makes the selection procedures much more efficient.

Milling, baking and industrial quality tests are an integral part of all of the improvement programs for spring wheat durum, wheat and Triticale, and in 1972, the equipment and procedures necessary for handling the durum wheats were made available to give quality improvement to that program.

Training in back-up laboratory services for breeding programs has become an important and growing part of CIMMYT's work, to provide technical know-how for the operation of national laboratories, and as it continues to grow, will require more staff to meet the expanding needs.

Information Services

CIMMYT is aware of an inadequacy, in its recent history, of information to its constituency, and plans a number of newsletters aimed at different objectives for 1973, which will appear periodically.

One of CIMMYT's major concerns at present is language competence, and the necessity (and difficulties) of adding French to its existing capacities in Spanish and English. This implies ~~with the~~ added expenditures for information material to be distributed in all three, and for training courses to be given in French, in view of the existing programs in Francophone NOrth Africa and in Zaire.

Staffing - it is apparent that CIMMYT can continue to discharge its present

mandate and its core program with a staff of about 50, and that there will be no pressure, unless the mandate changes, for major staff additions for some years. With respect to outreach, continued expansion is foreseen, with present numbers of CIMMYT outreach staff rising from approximately 20 presently involved to about 35 -- the problem here will be to find and train competant scientists to undertake outreach responsibilities, ~~and~~ An enlarged program of fellowships for pre- and post-doctoral fellows and for visiting scientists is contemplated to give about 10 in residence at any one time.

Land and Facilities - CIMMYT by virtue of its cooperative arrangements with the Mexican Government, and the privileges CIMMYT has of using land on government experiment ~~INIA~~ stations as well as its own, has adequate land, with two very important exceptions -- a small addition is needed to the high altitude land, either at El Batan or at Toluca, and if present procedures to obtain 12 additional hectares at El Batan are unsuccessful, other measures will be taken at Toluca to increase the area. In addition 13 hectares are required at Tlaltizapan, the intermediate elevation (1000 metres) station devoted to maize.

Headquarters facilities at El Batan are comfortable, adequate and modest. They ~~and~~ are complete, except for minor experiment station buildings, and for additional accommodation for fellows and visiting scientists, the group from which future CIMMYT staff are recruited. A major requirement is for capital funds to complete the land levelling and irrigation equipment at the four CIMMYT experiment stations. In the near future, dormitories for trainees at Tlaltizapan, Toluca and Poza Rica will be needed to avoid the costs of hotel accommodation over lengthy periods. Other capital requirements foreseen are relatively small.

Financing - CIMMYT's budget appears modest in relation to its obligations and to its active program of research and its vigorous outreach and training

programs. Its budget would be much higher if it did not benefit from the cooperative arrangements made with Mexican authorities for such things as land and experiment station operation at Ciudad Obregon and for computer facilities at Chapingo. The staff are more than fully occupied, and the record of their accomplishments and the volume of work per year testifies to the exceptional enthusiasm and dedication of the staff members.

CIMMYT had an external panel looking at its administrative arrangements during the past year -- it confirmed that the administration serves CIMMYT well, and offered a number of suggestions to increase efficiency and effectiveness still further.

CIMMYT's internal program review carried out by the staff was a serious searching examination of present and possible future programs. The discussion, as summarized in the report, is an impressive example of how program reviews should be carried out, and how the scientists themselves can appraise their challenges and possibilities more capably than most outsiders, no matter how well they know an institute.

Form No. 27
(3-70)

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

92b

OUTGOING WIRE

TO: HANSON
CENCIMMYT

DATE: June 22, 1973

CLASS OF SERVICE: LT

COUNTRY: MEXICO

TEXT:
Cable No.:

WOULD LIKE TO RECEIVE FINAL BUDGET AND TABLES AS SOON AS POSSIBLE FOR PURPOSES OF PREPARING CONSOLIDATED PICTURE STOP
PLEASE ADVISE DATE IF WE WILL NOT HAVE THESE BY JULY 1 STOP
REGARDS

URQUHART

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME Michael E. Ruddy

DEPT. Programming and Budgeting

SIGNATURE M. E. Ruddy
(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

REFERENCE:

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C2b

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

Form No. 27
(5-70)

OUTGOING WIRE

TO: HANSON

CENCIANNY

DATE: June 22, 1973

CLASS OF SERVICE: LT

COUNTRY: MEXICO

TEXT:

Cable No.:

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PLEASE ADVISE DATE IF WE WILL NOT HAVE THESE BY JULY 1 STOP
REGARDS

URQUHART

NOT TO BE TRANSMITTED

AUTHORIZED BY:

NAME: Michael E. Ruddy

DEPT: Programming and Budgeting

SIGNATURE: [signature]

REFERENCE:

(SIGNATURE OF INDIVIDUAL AUTHORIZED TO APPROVE)

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7 JUN 73

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926

June 14, 1973

Dear Dr. Osler:

Many thanks for your letter of June 4, 1973, in which you requested the following information:

The regional responsibilities for the following persons are:

Mr. Cranswick	Australia
Mr. Hattori	Japan
Mr. Pfeiffer	France
Mr. Stedtfeld	Germany
Mr. van Campenhout	Belgium.

Mr. Erik Tornqvist is the Executive Director for both Norway and Sweden, and both these countries wish to receive nine (9) sets of all Consultative Group documentation. Mr. Tornqvist finds it easier to handle if we send him two envelopes, one envelope addressed as Executive Director for Norway, and the other addressed as Executive Director for Sweden.

Attached is a list of the present members of TAC. Please note that as of June 30, 1973, Dr. George Harrar is going to be replaced by Dr. Vernon W. Ruttan.

With best wishes,

Sincerely yours,

Bruce M. Cheek
Deputy Executive Secretary

Enclosure

Dr. Robert D. Osler
Deputy Director General
Resident Research
CIMMYT
Londres 40
Mexico 6, D.F.

BMC:mcj

1 ~~HG~~
2. ~~BC~~ 6/6
3. CIMMYT file
CJ

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

May 31, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N.W.
Washington, D. C. 20433

Dear Harold:

Subject: German payments.

Your letter of May 24 is correct in that we expect a total of 800,000 DM, not 500,000, and we show the value of these pledges at US$276,000.

On February 5, 400,000 DM (US$134,800) was deposited to our account. On May 4, Dr. Treitz wrote notifying us of an additional deposit of 250,000 DM. This latter amount was actually deposited in our account as $90,375 US dollars on May 31. To date we have not received any information relative to the timing of deposit of the balance - 150,000 DM.

Good luck on your visit to Germany.

Cordially,

Hal

Haldore Hanson
Director General

HH/mph

CIMMYT

G26

May 24, 1973

Dear Hal:

Thanks for the two notes that arrived here today.

We'll look forward to seeing you and Don at the socio-economic seminar. Virgilio asks to have his name put on the list of attendees provisionally, but is not certain that he will be in Washington at the time of the seminar. (I rather think he will not be.)

I hope to be in Germany during the week of June 11, and to straighten out at that time what the total German contribution to CIMMYT in 1973 is intended to be. In the meantime, on the basis of earlier information, I have been carrying a figure on my books of $280,000, based on an expectation of DM 800,000 at a conversion rate of around 1DM equaling $0.35. These are somewhat different from the figures you mention in your letter, although the dollar amounts correspond closely.

Anyway, in June, I hope to be able to find out whether there will be a further German contribution, in lieu of the amount that had been expected in 1972.

In addition, there is still the question of whether the Inter-American Development Bank will make some peso funds available toward the costs of your capital program at CIMMYT. The answer seems to depend on a policy determination now being made in the U. S. Government concerning the use of repayments to the Social Progress Trust Fund of IDB, from which the peso grants would be made. I may be able to write you about this in the near future; but, being a former Federal employe, you will appreciate that the time interval may stretch.

Like you, I want the Bank to be able to take its own further action on CIMMYT not later than July.

Judy and I send fond regards to you and Bernie. Our visit to you in the spring of 1972 is still a green and pleasant memory among all the not-so-golden nematodes that since have crawled out of the Consultative Group woodwork.

Sincerely,

Harold Graves

Mr. Haldore Hansen
Director General
International Maize and Wheat Improvement Center
Apdo. Postal 6-641
Londres 40
Mexico 6, D. F.

HGraves/
apm

926

May 23, 1973

Dear Hal:

Last year, if I remember correctly, CIMMYT mailed its Program and Budget directly to members of the Consultative Group, in time for members to receive them by July 15, about two weeks in advance of International Centers Week. I would appreciate it if you would follow the same procedure, notifying members that they should bring the document with them to Centers Week, this year.

With this letter, I am sending you address labels for this distribution. In the case of addressees who wish to receive more than one copy, the desired number of copies is shown in red on the label.

In addition, please send 50 copies to me here by air freight. Since the dates of Centers Week are almost the same as last year, July 15 would again be a suitable deadline for the receipt of your material by the addressees.

Sincerely yours,

Harold Graves

Mr. Haldore Hanson
Director General
CIMMYT
Londres 40
Mexico 6, D. F.

HG:mcj

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

May 15, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street N.W.
Washington, D. C. 20433

Dear Harold:

A letter from Bonn dated May 4, 1973 states that the German Government has transferred another 250,000 DM to CIMMYT, making a total of 500,000 DM for 1973. We carry this amount at $276,000 in our budget, although we do not have the precise exchange value of the latest payment.

I hope it will be possible for the German Government to make a decision before July 1, regarding any further payments, this year, and thus the IBRD will also be able to make its disbursement plans for this year.

Until now, we show $509,000 of our approved program not yet covered by grants.

See you in July.

Cordially,

Hal

Haldore Hanson
Director General

HH/mph

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

Londres 40, México 6, D. F.
Apdo. Postal 6-641
Cable: CENCIMMYT

April 26, 1973

Mr. Harold Graves
Executive Secretary
Consultative Group on International Agricultural Research
International Bank for Reconstruction and Development
1818 H Street N.W.
Washington, D. C. 20433

Dear Harold:

CIMMYT is simmering down after the jumble of events during Presentation Week (April 3-7) and Trustees meetings (April 8-10).

Presentation Week drew 12 very good participants, and I think we gave them a good briefing, squeezed into 5 days. Those attending were:

From TAC (3): Peter Oram, Louis Sauger, Manuel Elgueta.
From CG (2): George Dion, Andrew Urquhart.
From CIMMYT donors (4): Representatives of FF, USAID, UNDP, CIDA.
From CIMMYT Trustees Program Committee (3): Guy Camus (France), Jose D. Drilon (Philippines), Leonel Robles (Mexico).

To give you some of the flavor of the briefing, I enclose 3 documents:

CIMMYT's Program Review 1973, by Senior Staff.
Trustees program review, 2 documents.

It is our present intention to repeat presentation week on March 25-29, 1974.

I look forward to the draft reports of Dion and Urquhart. They worked hard at their assignments, and I hope our staff responded to all their needs.

Cordially,

Hal

Haldore Hanson
Director General

Enclosures (3)

INCOMING CABLE

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Mr. Graves

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HAROLD GRAVES March 23, 1973

INTERNATIONAL BANK OF RECONSTRUCTION AND DEVELOPMENT

1818 H STREET N W

WASHINGTONDC20433

APPRECIATE ARRIVAL FLIGHTS OF DION AND URQUHART

WHEN AVAILABLE STOP WE BOOKED BOTH MEN HOTEL

GENEVE APRIL TWO CENCIMMYT

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G26

UNITED NATIONS
DEVELOPMENT PROGRAMME

PROGRAMME DES NATIONS UNIES
POUR LE DEVELOPPEMENT

866 UNITED NATIONS PLAZA
NEW YORK, N.Y. 10017

TELEPHONE: 754-1234

CABLE ADDRESS: UNDEVPRO • NEW YORK

REFERENCE: GLO 72/009

7 March 1973

Dear Mr. Graves,

..... I am pleased to enclose herewith one conformed copy of the Contract between the United Nations Development Programme and the International Maize and Wheat Improvement Centre covering Phase II of UNDP support to the Centre, which will come into effect on 13 March 1973.

With best personal regards.

Yours sincerely,

William T. Mashler
Director
Division for Global and Interregional Projects

Mr. Harold Graves
Executive Secretary
Consultative Group on International
Agricultural Research
1818 H Street, N.W.
Washington, D.C.

CONTRACT
BETWEEN

CONFORMED COPY

THE UNITED NATIONS DEVELOPMENT PROGRAMME

AND THE

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
(CIMMYT)

This Contract entered into by and between the United Nations Development Programme (hereinafter called the UNDP) and the International Maize and Wheat Improvement Center (hereinafter called CIMMYT), a general copartnership with legal capacity organized under the laws of Mexico and with its principal offices at El Batan, Texcoco, Mexico

WITNESSETH

Whereas the UNDP seeks to promote research directed towards raising the quality of protein in maize, while at the same time increasing its yield, and the training of scientists to carry out national programmes of nutritive maize production, in order to assist peoples of developing countries in improving the protein content of their diet; and whereas CIMMYT is staffed and equipped to carry out such research and training, having been established for the purpose of carrying out research into such matters, and having been actually engaged for three years specifically in the role under contract to the UNDP; now therefore the Parties hereto hereby agree as follows:

ARTICLE I

1. CIMMYT hereby agrees to undertake phase II of a programme of research, training and technical assistance to developing countries directed towards the development of nutritive maize with both high yield and high quality protein, as well as conventionally acceptable taste and kernel appearance and suitability for use in a wide range of ecological and farming conditions throughout the world. It shall continue to utilize a multi-disciplinary,

coordinated approach to the Project involving the participation, interaction and collaboration of geneticists, breeders, physiologists, agronomists, chemists, entomologists, pathologists and other specialists who are available to CIMMYT.

2. For the purpose of carrying out the Project, CIMMYT will provide the following:

(a) technical personnel,including personnel in the disciplines mentioned above;

(b) other necessary personnel, including administrative personnel and supporting personnel for those mentioned in sub-paragraph (a) above;

(c) necessary facilities, including buildings, laboratories, equipment and services at its headquarters in Mexico;

(d) facilities necessary for carrying out work at outlying stations in Mexico or elsewhere;

(e) training facilities for approximately 20 persons per year from Asia, Africa, Near and Middle East, Central and South America and other regions of the world;

(f) such other facilities as may be necessary or appropriate to the carrying out of the Project.

ARTICLE II

CIMMYT shall carry out the Project and all activities under this Contract in pursuance of the Work Plan in Annex I of this Contract and such changes in such Work Plan as the partners may make from time to time.

ARTICLE III

CIMMYT shall, in carrying out the Project consult the Food and Agriculture Organization of the United Nations on its technical and organizational aspects through the mechanism of the Policy Advisory Committee established in Part 2.2(d) of the Work Plan, in Annex I of this Contract. Without prejudice to the provisions of Section 10.01 and 10.17

of the General Conditions in Annex IV hereof, CIMMYT may also request the assistance of the Food and Agriculture Organization of the United Nations on its relationship with Governments which might be involved in Project operations. CIMMYT may as required consult other organizations possessing technical competence on the Project or any part thereof.

ARTICLE IV

(a) The staff to be provided by CIMMYT for work on the Project shall include the services of Dr. E.W. Sprague, Director of its International Maize Programme, as Team Leader. The Team Leader shall have immediate responsibility for the carrying out of the Project and the implementation of this Contract on behalf of CIMMYT. The full-time services of the following individuals will be provided:

1. Dr. Mario Gutiérrez G. - Geneticist
2. Dr. S.K. Vasal - Maize Breeder
3. Dr. Alfredo Carballo - International Nurseries, Meetings Symposia
4. Dr. Peter Goldsworthy - Production Agronomist
5. Dr. Antonio Turrent - Training Agronomist

(b) CIMMYT shall also provide such executive, administrative and other supporting or back-stopping services from its permanent establishment as the efficient execution of the project may require. These will include the following individuals:

1. Dr. K.W. Finlay - Deputy Director General, Special Programs
2. Dr. Evangelina Villegas M. - Head, Protein Quality Laboratory
3. Dr. E.C. Johnson - Maize Breeder
4. Dr. Alejandro Ortega C. - Plant Protection

ARTICLE V

The selection of CIMMYT's personnel to work on the Project shall be the responsibility of CIMMYT, provided that UNDP shall be furnished by CIMMYT with the curriculum vitae of, and shall have the right to approve, any individual proposed by CIMMYT for work on the Project at its onset or at any later stage (whether for initial assignment thereto or as a replacement for any individual removed therefrom). UNDP shall have the right to require

that CIMMYT withdraw or replace any individual assigned by it to the Project. UNDP may exercise its rights under this paragraph for any reason it may deem sufficient.

ARTICLE VI

UNDP shall have the right to observe at all reasonable times the progress of work carried out under this Contract and to consult directly with personnel of CIMMYT on work performed by them.

ARTICLE VII

Title to all equipment purchased under this Contract shall vest in UNDP, as provided in Section 10.18 of the General Conditions in Annex IV to this Contract, but all such equipment shall be under the custody and control of CIMMYT until completion of work under this Contract, at which time the equipment shall be disposed of in accordance with instructions from UNDP. CIMMYT shall maintain records of all equipment purchased under this Contract and shall purchase insurance to cover casualty and other loss of such equipment. The cost of such insurance shall be an allowable cost under this Contract. Equipment shall be defined to include those items costing more than one hundred dollars and having a service life of more than five years.

ARTICLE VIII

1. As complete consideration for the performance by CIMMYT of its obligations under this Contract, UNDP shall pay the direct costs of carrying out the Project, in the amounts approved by UNDP. For purposes of this Contract, "direct costs" shall include expenditures envisaged in the budget in the Work Plan annexed hereto in respect of the salaries of all technical and other personnel of CIMMYT assigned to work on the Project, fellowship support, publications, libraries, seminars, conferences, benefits, maintenance, travel, equipment, insurance, materials, administrative costs and services.

2. CIMMYT will normally purchase the equipment required for the Project directly. However, the UNDP will on request from CIMMYT purchase and arrange shipment to the Project site of any of the items required for the execution of the Project in accordance with the detailed specifications for the classes of equipment as per the lists submitted by CIMMYT.

3. Notwithstanding anything to the contrary in this Contract, UNDP shall not be obligated to make payments hereunder in excess of the amount of $2,305,600, and CIMMYT shall not be obligated to continue performance hereunder where continuation would otherwise entail payments for UNDP in excess of such amount.

ARTICLE IX

1. On or before the last working day of March, and of each succeeding quarter during which this Contract is in force, the UNDP shall advance to CIMMYT an amount equal to CIMMYT's estimate of expenditure which CIMMYT will incur in the following quarter on the Objects of Expenditure detailed in the budget in Annex II of this Contract. CIMMYT will indicate the amount to be deposited to specified bank accounts in Mexico or the United States of America. Payments will be made in Mexican pesos or U.S. Dollars.

2. It is understood that the compensation payable to CIMMYT under paragraph one of this Article is intended to cover the amount to be expended by it on the major categories of expenditure detailed in the budget appended in Annex II to this Contract. CIMMYT shall inform UNDP of any significant departures from the budget. Such compensation or any advance against such compensation under paragraph one of this Article shall be reduced in the next quarter to the extent that the sums actually expended by CIMMYT in the previous quarter falls short of the total amount estimated. Quarterly financial reports to be submitted by CIMMYT in accordance with the provisions of the Work Plan shall indicate the sums expended on such major categories of expenditure in the quarter to which reports relate.

3. The provisions of paragraphs one and two of this Article shall not apply to the last three months of this Contract.

4. Any compensation due to CIMMYT in respect of the last three-month period of this Contract shall be paid to it as part of the final payment due to it under paragraph five of this Article.

5. Upon conclusion of the Project, or upon its termination under Article XI, paragraph 3, below, or Section 10.12 of the General Conditions in Annex IV hereof, CIMMYT shall submit to the UNDP Annual and final reports which shall state the total amounts expended on the major categories, accompanied by a certificate from CIMMYT's external auditor certifying to the correctness of such statement. Any difference between the disbursements made by UNDP under paragraphs one and two of this Article and the total direct costs incurred by CIMMYT on the Project as certified by its external auditor shall be applied in reduction of, or shall be added to, any balance due to CIMMYT under paragraph two of this Article as the case may be. The net balance due to CIMMYT shall be paid by UNDP to CIMMYT within the next calendar month following that in which the statement is received.

ARTICLE X

This Contract shall come into force on 13 March 1973. It shall remain in force until approval by UNDP of the final report referred to in paragraph 2.5(c) of the Work Plan and payment by the UNDP of any outstanding amount due to CIMMYT under this Contract.

ARTICLE XI

1. The Parties hereto agree to be bound by all of the provisions of the Work Plan and General Conditions attached hereto as Annexes I through IV, respectively, and made a part hereof. For purposes of the General Conditions in Annex IV:

(a) The term "Contractor" shall be understood to mean CIMMYT;

(b) The term "Contract" shall be understood to include the foregoing provisions and Annexes I and II hereof;

(c) The term "Government" shall be understood to mean the Government of Mexico;

(d) The reference to "payment in respect of work already accomplished" in Section 10.12 of the General Conditions shall be understood to mean any payments due from UNDP under Article VIII paragraph 1 of this Contract up to the effective date of its termination by UNDP; and

(e) Section 10.16 shall apply only to such of Contractor's employees as are assigned to the Project on a full-time basis.

2. In the event that CIMMYT should be of the opinion that a patent or copyright should be taken out in respect of any discovery resulting from work under this Contract or material produced under it, in order to promote the utilization of such discoveries or materials and thus to disseminate the benefits of the Project, it shall so inform the UNDP. The Parties shall then consult with a view to determining the conditions under which such patent or copyright shall be taken out and rights to the patent or copyright granted to the third parties.

3. CIMMYT may terminate this Contract with thirty days notice of termination to the UNDP. If CIMMYT should terminate this Contract, the UNDP shall be obligated to pay CIMMYT only such payments as may be due from UNDP under Article VIII, paragraph 1, of this Contract, up to the effective date of its termination by CIMMYT.

ARTICLE XII

Any notice required to be given by any of the parties hereunder shall be sent in writing addressed as follows:

To UNITED NATIONS DEVELOPMENT PROGRAMME:

Mr. William T. Mashler
Director
Division for Global and Interregional Projects
United Nations Development Programme
866 United Nations Plaza
New York, N.Y. 10017
U.S.A.

With copy to:

Resident Representative of the
United Nations Development Programme
in Mexico
Apartado Postal 6719
México, D.F., México

To CIMMYT:

Mr. Haldore Hanson, Director General
CIMMYT
Londres 40, ler. piso
Apartado Postal 6-641
México 6, D.F., México

or such other address of any such addressees as shall be designated by notice given as herein required. Notices hereunder shall be effective when received.

IN WITNESS WHEREOF, the Parties hereto have signed this Contract on the dates indicated beneath their respective signatures:

International Maize and Wheat Improvement Center

Keith W. Finlay, Deputy Director General

5th March 1973.

date

United Nations Development Programme

I.G. Patel, Deputy Administrator

22nd Feb. 73

date

ANNEX I: WORK PLAN

UNITED NATIONS DEVELOPMENT PROGRAMME

Global Research

Research and Training in the Development of
High Quality Maize, Phase II

This Project will be carried out by UNDP through: The International Maize and Wheat Improvement Center, Mexico, with advisory assistance of the Food and Agriculture Organization of the United Nations (FAO).

(1.) Preamble

As contracting agent for the UNDP, the International Maize and Wheat Improvement Center (CIMMYT) with FAO as advisory agent, will conduct the second phase of a Global Research Project entitled "Research and Training in the Development of High Quality Maize". The objectives of this project are set out in the Governing Council document DP/PROJECTS/R.2/Add.6 dated 17 November 1972.

(2.1) Description of Project

The continuing programme proposed under the new contract can be divided conveniently into three distinct, but interrelated areas of activity.

A. Genetic research, breeding and agronomy.

This is the basis for developing higher yielding maize populations and varieties of improved nutritive value, which are more resistant to, or tolerant of such negative yield factors as insect and disease attacks. From this programme will emerge a range of populations and varieties of maize which are not only higher yielding and possessing improved agronomic characteristics, but which are also high in digestible protein of good amino acid balance. In addition they will possess acceptable grain types suited to the many maize growing areas of the world.

B. Determination of the nutritive value of maize.

This phase of the work will continue to evaluate new chemical analytical techniques of potential value to speed up the selection programme. The analytical service will continue as an essential part of the breeding programme. The chemical and biochemical analyses will be supported by feeding trials (biological assays) using small animals to ensure that differences found by chemical methods are ones of real significance in terms of actual nutritional value.

C. Training and assistance in national nutritive maize programmes.

An important part of CIMMYT's responsibility will be to assist national nutritive maize programmes in Africa, Asia, the Near and Middle East as well as in Central and South America. This assistance will consist of training of national staff, consultant visits by

CIMMYT staff, provision of quality maize germplasm from Mexico and the international breeding programme, opportunity for national staff to participate in symposia and conferences related to quality maize production and assistance with the establishment of national in-service training programmes to ensure maximum spread of materials and technology.

(2.2) Organization

Overall responsibility for the organization and execution of the project rests with the Contracting Agent, (CIMMYT). Advice from FAO will be sought as required.

CIMMYT shall:

(a) Be responsible for the detailed planning, administration and execution of the project including timing and budgeting of the various elements, and the preparation of technical reports;

(b) Be responsible directly to the UNDP for all material, equipment and transport furnished to the project by the UNDP;

(c) Coordinate, as judgment indicates desirable, the efforts of project personnel with that of other agencies and programmes whose activities have a bearing on this project;

(d) Convene a Policy Advisory Committee which will include up to two representatives from each of the geographic regions, Asia; Africa; Europe and the Near and Middle East; and, Central and South America; together with a representative of the Food and Agriculture Organization and the United Nations Development Programme, to advise CIMMYT on policies and programme of work, particularly as to emphasis to be given to research, training and demonstration activities during the life of this Contract. It is emphasized that this Committee shall advise on policy and planning activities as requested by the CIMMYT officer who will serve as chairman. It shall not involve itself in operational or supervisory aspects of the project. It shall meet periodically as determined by CIMMYT, but at least once a year during the life of the project, at such time and place as CIMMYT shall determine.

(2.3) Sequence of Operations

CIMMYT shall commence execution of the project upon receipt of written authorization to do so from the UNDP.

Initiation of the project is planned to commence in March 1973 and to continue for three years thereafter. The project may be renewed for a further period on agreement of both parties.

The planned sequence of operations for the project is set out in Annex III.

(2.4) Budget

The estimated cost of the services and facilities to be provided by CIMMYT is summarized in Annex II, Tables 1 through 5. Funds will be provided by the UNDP to the extent of the equivalent of US$2,305,600 to meet these costs.

(2.5) Reports

CIMMYT will submit to UNDP the following reports:

(a) Quarterly financial reports of the sums expended by it, in the quarter to which such report relates, on the Objects of Expenditure detailed in the budgets in Annex II.

(b) Annual reports indicating:

i) progress of the Project;

ii) total amounts expended on budgeted Objects of Expenditure; and

iii) an inventory of Project equipment purchased from UNDP funds, and for which title remains with UNDP.

(c) A Final Report indicating:

i) satisfactory completion of the Project;

ii) total amounts expended on budgeted Objects of Expenditure; and

iii) an inventory of Project equipment purchased from UNDP funds, and for which title remains with UNDP.

Items 2.5(b) ii), iii) and 2.5 (c) ii), iii) shall be accompanied by a certificate from CIMMYT's External Auditor certifying to the correctness of such statement.

Reports shall be written in English.

(2.6) Changes in Work Plan

On the basis of periodic reviews of project activities, the two parties to the Project shall, as appropriate, confer to determine if any modification to the Work Plan is required. All agreed modifications shall be reflected in adjustments or amendments to the Work Plan.

(2.7) Steps to be taken at the completion of UNDP Assistance to the Project

At the conclusion of the project, UNDP shall consult the Parties involved regarding the disposition of the equipment provided by the UNDP. Such consultation shall not prejudice the right of the UNDP to retain title to that part of the equipment which is not needed for the continued operation of the project, or for activities following directly therefrom, or which is more urgently needed by other United Nations Development Programme-assisted projects.

ANNEX II: BUDGET

TABLE 1. Estimated 3-Year Budget March 1973-March 1976[1/]

ITEM	1973[2/]	1974	1975	1976[3/]	TOTAL
1) Genetic Research breeding and Agronomy	233 700	339 800	354 600	74 000	1 002 100
2) Chemical Research and Analysis	46 400	68 800	77 300	16 500	209 000
3) Training and Production Assistance	285 400	363 000	376 400	69 700	1 094 500
TOTAL	565 500	771 600	808 300	160 200	2 305 600

1/ For detailed budget breakdown for each year see Tables 2, 3, 4 and 5.

2/ 9 1/2 month period March 13, 1973-December 31, 1973.

3/ 2 1/2 month period January 1, 1976-March 12, 1976.

ANNEX II: BUDGET

TABLE 2. Budget for Period March 13, 1973-December 31, 1973

ITEM	Genetics, Breeding, Agronomy	Chemical Biological Analysis	Promotion Production in National Programmes and Training	TOTAL
1) Salaries and Allowances 1/	115 700	18 500	51 800	186 000
2) Travel (local and international)	12 000	3 400	9 900	25 300
3) Training	31 700 2/	6 000 2/	79 100 3/	116 800
4) Field and Laboratory equipment and operating	29 300	10 300	45 500 4/	85 100
5) Vehicles (purchase and operating)	7 700	1 100	12 300	21 100
6) International Nurseries	1 600 5/	-	6 300 6/	7 900
7) Workshops and Symposia	-	-	25 000	25 000
8) Policy Advisory Committee	-	-	12 000	12 000
9) Administrative costs	35 700	7 100	43 500	86 300
TOTAL	233 700	46 400	285 400	565 500

Comments of Budget

1/ Staff lists attached.

2/ Training costs at CIMMYT.

3/ Stipends etc. for in-service and degree trainees.

4/ For national programme support or regional cooperation.

5/ Seed shipment.

6/ Data Processing and national support when necessary.

ANNEX II: BUDGET

TABLE 3. Estimated Budget for Period January 1, 1974-December 31, 1974

ITEM	Genetics, Breeding, Agronomy	Chemical Biological Analysis	Promotion Production in National Programmes and Training	TOTAL
1) Salaries and Allowances	157 500	26 600	68 200	252 300
2) Travel (local and international)	16 600	4 800	14 100	35 500
3) Training	45 100	11 700	111 900	168 700
4) Field and Laboratory equipment and operating	39 700	13 800	58 300	111 800
5) Vehicles (purchase and operating)	26 300	1 400	9 300	37 000
6) International Nurseries	2 800	-	8 800	11 600
7) Workshops and Symposia	-	-	25 000	25 000
8) Policy Advisory Committee	-	-	12 000	12 000
9) Administrative costs	51 800	10 500	55 400	117 700
TOTAL	339 800	68 800	363 000	771 600

ANNEX II: BUDGET

TABLE 4. Estimated Budget for Period January 1, 1975-December 31, 1975

ITEM	Genetics, Breeding, Agronomy	Chemical Biological Analysis	Promotion Production in National Programmes and Training	TOTAL
1) Salaries and Allowances	172 800	29 900	74 400	277 100
2) Travel (local and international)	17 400	5 400	14 700	37 500
3) Training	49 300	14 900	119 000	183 200
4) Field and Laboratory equipment and operating	36 100	10 800	59 400	106 300
5) Vehicles (purchase and operating)	21 900	4 500	5 500	31 900
6) International Nurseries	3 000	-	9 000	12 000
7) Workshops and Symposia	-	-	25 000	25 000
8) Policy Advisory Committee	-	-	12 000	12 000
9) Administrative costs	54 100	11 800	57 400	123 300
TOTAL	354 600	77 300	376 400	808 300

ANNEX II: BUDGET

TABLE 5. Estimated Budget for Period January 1, 1976- March 12, 1976

ITEM	Genetics, Breeding, Agronomy	Chemical Biological Analysis	Promotion Production in National Programmes and Training	TOTAL
1) Salaries and Allowances	36 700	6 400	15 700	58 800
2) Travel (local and international)	3 600	1 200	3 100	7 900
3) Training	10 400	3 200	25 000	38 600
4) Field and Laboratory equipment and operating	7 300	2 100	12 400	21 800
5) Vehicles (purchase and operating)	4 100	1 100	1 000	6 200
6) International Nurseries	600	-	1 900	2 500
7) Workshops and Symposia	-	-	-	-
8) Policy Advisory Committee	-	-	-	-
9) Administrative costs	11 300	2 500	10 600	24 400
TOTAL	74 000	16 500	69 700	160 200

ANNEX III: SEQUENCE OF OPERATIONS

During the first year of the operations of phase 2, the following activities will be undertaken:

1. Genetic Research

Among the genetic sources of quality protein in maize, the Opaque-2 gene has been the most effective. For this reason most of the genetic research will be devoted to studying the interrelationship of the Opaque-2 major gene and the large number of modifier genes which can be manipulated to vary the texture of the grain. This research is necessary to assist the breeders to produce quality versions of the various grain types required in different areas of the world, thus facilitating acceptance of the quality maize.

The main areas of research will be:

a) to study the extent to which modifier genes, in combination with Opaque-2, can be used to produce the various grain types with quality protein that are required in different regions of the world;

b) to study the possibility of recurrent selection for improved protein quality without the use of the Opaque-2 gene;

c) to superimpose the Opaque-2 gene on superior quality material derived from b) above.

The main part of the genetic research will be carried out in Mexico by CIMMYT which has the laboratory facilities and Experiment Stations representing the major maize growing environments of the world.

Continuation: Since the research concerns unresolved areas, and several generations of progeny testing will be necessary after test crossing, work will continue throughout the grant period. Emphasis will be given in future to those problems which may delay varietal improvement and adoption by the consumer.

2. Breeding

CIMMYT and its collaborators now have several maize populations with quality protein that are adapted to particular maize growing environments of the world. The breeders will continue to select widely adapted, agronomically superior disease and insect resistant varieties with high quality protein.

A quality protein version of all maize populations in the CIMMYT programme will be produced as they are selected for yield superiority.

The main quality protein maize breeding aims:

a) Improve the yield and agronomic characteristics of at least one population adapted to each of the major environmental areas of the world.

b) A concentrated effort will be made to produce superior materials for those areas of the world where floury grain types of maize are preferred.

c) Simultaneously add quality protein to all populations in CIMMYT's total maize breeding programme.

d) Supply to all collaborating nations, populations and progeny from which quality protein varieties can be formed.

e) Through CIMMYT's International Nursery Programme test quality maize varieties and progeny throughout the maize growing areas of the world.

f) Continue to direct the selection and testing of quality maize to ensure the development of more widely adapted material to be used directly as varieties or as parent material by national programmes.

This work will be conducted from CIMMYT in Mexico. Much of the selection work will be also done in Mexico; however, there will also be a large part of the testing and selection carried out in national programmes by CIMMYT collaborators.

Continuation: Plant breeding is a continuous process of improvement. As the present programme will be expanding into wider areas of the world, the breeding and selection programmes will also continue to change to accommodate new grain and plant types. The work will continue throughout the grant period.

3. Production Agronomy

Populations of quality maize now available and those to be developed will be studied to determine the most efficient production practices. The studies will include:

a) response to fertility;

b) the effect of plant population density;

c) the interaction of fertility, population density, and the incidence of disease and insect attack; and

d) plant protection practices and the role of chemicals for pest control.

This work will be carried out initially in Mexico in the various environments available at CIMMYT experiment stations. This will establish the guidelines for the most economic practices. Those guidelines will then be of value for the specific tests to be carried out in national programmes.

Continuation: This work will continue throughout the grant period as there will be a continuous flow of improved materials from the breeding programme.

4. Chemical and Nutritional Research and Analysis

Rapid chemical analysis is essential to the genetic and breeding research activities. Populations of maize now available and those that will continue to become available must also undergo biological testing. These tests involve the use of small animals such as rats and later, as more seed of superior materials becomes available, feeding tests with swine and children will be included.

The various aspects of this section of the programme will include:

a) Routine chemical analyses of protein, lysine and tryptophan as a service to the geneticists and breeders. This service will be provided primarily to the CIMMYT programme, but limited numbers of samples will be handled for countries initiating a national quality maize programme.

b) Test samples will continue to be analyzed to cross check with other laboratories. This is particularly important to assist the small national service laboratories, set up through this collaborative programme, to monitor the efficiency of their techniques.

c) Studies to test new methods of analysis will continue, in the search for faster, simpler or more efficient techniques.

d) Biological tests of the nutritive value of large numbers of new quality maize lines will be screened by feeding trials with small animals such as voles or rats.

e) The most promising quality maize populations and varieties will be tested for nutritional value by feeding to swine when sufficient seed is available.

f) The final nutritional test of the best material will be conducted by feeding protein deficient children.

The chemical research and analytical service will be carried out at the CIMMYT Protein Quality Laboratory. Cooperation with Purdue University and small national service laboratories will be continued and expanded during the Contract period.

The biological tests with small animals will be carried out by CIMMYT in Mexico. CIAT and the University of Cali are expected to collaborate with the swine feeding trials and clinical testing with children.

Continuation: Continued efforts will be made to develop faster and simpler ways of obtaining a total quality evaluation of the quality maize material being produced. This effort will assure the high nutritional quality of the maize material being produced.

5. Training and Cooperation with National Programmes in the Developing World

It is essential to continue to train people at all levels in the techniques of the development, evaluation and production of superior quality protein maize. It will be only through strong, well oriented and motivated national scientists and their programmes that quality maize will be able to have a real effect on the nutritive well-being of the people of those nations.

It is also necessary to establish service laboratories in various countries to accelerate the development of the more nutritive maize.

The main features of this part of the programme are:

a) Train young scientists in the CIMMYT In-service Training Programme. This training will involve the individuals in all aspects of the programme, i.e., breeding, production, plant protection, chemical analysis.

b) Train a few key young scientists to the Masters or Ph.D. level.

c) Provide opportunities for visiting scientists and graduates to work in the CIMMYT programme. This will allow them to keep up-to-date with modern developments.

d) Provide opportunities for short visits by policy makers to inform them of the potential and possibilities that exist for their nation if they support and promote a national production programme focused on increasing production of superior quality maize.

e) CIMMYT senior staff to consult with staff of national agriculture programmes, national leaders and Governments to inform and stimulate them to promote national production programmes based on superior quality maize.

f) In a few particular instances there may be merit in providing a CIMMYT staff member for 2 to 3 years to provide the necessary leadership to start an active national research and production programme.

Much of this work will be done by CIMMYT staff. Also most of the in-service training and post-graduate degree thesis research will be done at CIMMYT in Mexico. Appropriate training and degree effort will also be carried out at other International Institutes, CIAT, IITA, and Universities. The actual programmes of research and production will logically be undertaken in the cooperating national programmes.

Continuation: This effort will need to continue as long as there is a need to accelerate production and improve diets in the developing world.

6. Meetings and Symposia

The appropriate international and cooperating national maize research and production workers will meet once each year. This will keep the scientists abreast of the latest developments and encourage mutual assistance between national programmes. The annual meeting will assist the coordination of effort, and facilitate the interchange of relevant materials.

The meeting will be held in Mexico at CIMMYT headquarters in the first and third years and at a regional headquarters in conjunction with a regional workshop in the second year.

One international symposium in 1975 or 1976 is under consideration.

Staff employed by CIMMYT for this project

1. Senior CIMMYT Staff participating in the UNDP Global Project but not financed by the project:

   Dr. Ernest W. Sprague - Director of CIMMYT International Maize Programme. Team Leader.

   Dr. Keith W. Finlay - Deputy Director General - Chairman Policy Advisory Committee - Administrative responsibility for the Project.

   Dr. Evangelina Villegas M. - Head Protein Quality Laboratory.

   Dr. Elmer C. Johnson - Maize Breeder.

   Dr. Alejandro Ortega C. - Entomologist.

2. Scientific Staff financed by the Project:

   Dr. Mario Gutiérrez G. - Geneticist.

   Dr. S. K. Vasal - Maize Breeder.

   Dr. Alfredo Carballo - International Nurseries, Meetings and Symposia.

   Dr. Peter R. Goldsworthy - Production Agronomist.

   Dr. Antonio Turrent F. - Training.

3. Supporting Staff financed by the Project:

   a) Genetics and Breeding:

Caballero, Rodolfo	Field Assistant
Guevara G., José G.	" "
Pliego, Esequías	" "
Ramírez, Mauro	" "
Soqui G., Heriberto	" "
Martínez R., Martha	Secretary

   b) Agronomy:

Bacopulos T., Elyn	Experimentalist
Angulo B., Sergio	Field Assistant
Aragón C., José	" "
Cons V., José	" "
López V., Raymundo	" "
Munguía R., Juan	" "
Gómez P., Rosa M.	Secretary

c) Protein Quality Laboratory

González C., Leopoldo A.	Laboratory Assistant
Arias L., Francisco	" "
Monsalvo L., Amparo	" "
Sánchez L., M. Esther	" "

ANNEX IV: GENERAL CONDITIONS

10.01 Privileges and Immunities of Contractor and Contractor's Personnel

The UNDP will obtain for CIMMYT (hereinafter referred to as the Contractor) exemption from or reimbursement for the cost of any taxes, duties, fees or levies which may be imposed in the country on salaries or wages earned by the Contractor's full-time foreign personnel in the execution of the Project (assigned to it under Article I.2(a) or Article IV) and on any equipment, materials and supplies which the Contractor may bring into the country in connexion with this Project or which after having been brought into the country may be subsequently withdrawn therefrom.

The UNDP agrees to use its best efforts to obtain for the Contractor and his personnel (except Government nationals employed locally), to the extent granted by the Government of Mexico (hereinafter referred to as the Government) to UN staff members, such facilities and immunities as the Government has agreed to grant to contractors performing services for the UNDP or its Executing Agencies within the country and to their personnel.

10.02 Waiver of Privileges and Immunities

Any provision, whether in an Agreement, Plan of Operation, or any other instruments to which the Government is a party, by which a Government confers benefits upon the Contractor and his personnel upon request of UNDP in the form of facilities, privileges, immunities, or exemptions by reason of his performance of services for the UNDP on this Project may be waived by the UNDP where, in its opinion, the immunity would impede the course of justice and can be waived without prejudice to the successful completion of the Project or to the interests of the UNDP or the UN.

10.03 Nature of Documents

All maps, drawings, photographs, mosaics, plans, reports, recommendations, estimates, documents and all other data compiled by, or received by the Contractor under this Contract shall be the property of the UNDP. Without prejudice to the proprietary rights of UNDP as stated herein, the Contractor shall be free to publish any data or reports

developed under this Contract, after furnishing to UNDP draft copies of such proposed publications for its comments thirty days or more in advance of submission of the document for publication. The Contractor shall be free to use data and reports developed under the Contract in other parts of its programme or extension thereof.

10.04 Independent Contractor

The Contractor shall have the legal status of an independent contractor vis-a-vis UNDP. Any person assigned by the Contractor to perform services under this Contract shall remain in the employment of the Contractor. Unless otherwise provided for in this Contract, the UNDP shall not be liable for claims of any kind in connexion with the performance of such services. The Contractor and his employees shall conform to all applicable laws, regulations and ordinances promulgated by legally constituted authorities of the Government concerned.

10.05 Contractor's Responsibility for Employees

The Contractor shall be responsible for the professional and technical competence of his employees and will select for work under this Contract, reliable individuals who will perform effectively in the implementation of the Contract, comply with laws of the Government, respect the local customs and conform to a high standard of moral and ethical conduct.

10.06 Assignment

The Contractor shall not assign, transfer, pledge or make other disposition of this Contract or any part thereof or of any of the Contractor's rights, claims or obligations under this Contract except with the prior written consent of the UNDP.

10.07 Sub-contracting

In the event the Contractor requires the services of sub-contractors, the Contractor shall obtain the prior written approval and clearance of the UNDP for all sub-contractors. The approval of the UNDP of a sub-contractor shall not relieve the Contractor of any of his obligations under this Contract, and the terms of any sub-contract shall be subject to and be in conformity with the provisions of this Contract.

10.08 UN Privileges and Immunities

Nothing in or relating to this Contract shall be deemed a waiver of any of the privileges and immunities of the UN or the UNDP.

10.09 Non-employment of UN or UNDP Staff Members

The Contractor shall not while this Contract is in effect employ or consider the employment of United Nations or UNDP employees without prior written approval of the UNDP.

10.10 Language, Weights and Measures

Except as may be otherwise specified in the Contract, the English language shall be used by the Contractor in all written communications to the UNDP with respect to the services to be rendered and with respect to all documents procured or prepared by the Contractor pertaining to the work. The Project surveys shall be based on the metric system of weights and measures, and estimates of quantities involved shall be made and recorded in metric units except as otherwise specified in the Contract.

10.11 Force Majeure

Force Majeure as used herein shall mean acts of God, laws or regulations, industrial disturbances, acts of the public enemy, civil disturbances, explosions and any other similar cause of equivalent force not caused by nor within the control of either party and which neither party is able to overcome. As soon as possible after the occurrence of any event constituting force majeure, the Contractor shall give notice and full particulars in writing to the UNDP of such force majeure if the Contractor is thereby rendered unable, wholly or in part, to perform his obligations and meet his responsibilities under this Contract. In this event, the following provisions shall apply:

(a) The obligations and responsibilities of the Contractor under this Contract shall be suspended to the extent of his inability to perform them and for as long as such inability continues. During such suspension and in respect of work suspended, the Contractor shall be entitled only to reimbursement by the UNDP against appropriate vouchers

of the essential costs of maintenance or preservation of any of the Contractor's work then in progress under this Contract and of equipment, the purchase of which was financed by UNDP hereunder.

(b) The Contractor shall within fifteen (15) days of the occurrence of the force majeure submit a statement to the UNDP of estimated expenditures for the duration of the period of suspension.

(c) The terms of this Contract shall be extended for a period equal to the period of suspension taking, however, into account any special conditions which cause the time for completion of the work to be different from the period of suspension.

(d) If the Contractor is rendered permanently unable, in whole or in part, by reason of force majeure to perform his obligations and meet his responsibilities under this Contract, the UNDP shall have the right to terminate this Contract on the same terms and conditions as are provided for in Section 10.12, "Termination", except that the period of notice may be seven (7) days instead of thirty (30) days.

(e) For the purpose of the preceding sub-section, the UNDP may consider the Contractor permanently unable to perform in case of any period of suspension in excess of ninety (90) days. Any such period of ninety (90) days or less shall be deemed temporary inability to perform.

10.12 Termination

The UNDP may terminate this Contract in whole or in part at any time upon thirty (30) days notice of termination to the Contractor. In the event such termination is not caused by the Contractor's negligence or fault, the UNDP shall be liable to the Contractor for payment in respect of work already accomplished, for necessary terminal expenses of the Contractor, and for the cost of such urgent work as is essential and as the Contractor is asked by the UNDP to complete. The Contractor shall keep expenses at a minimum and shall not undertake any forward commitment from the date of receipt of any notice of termination.

10.13 Workmen's Compensation and other Insurance

(a) The Contractor shall provide and thereafter maintain appropriate workmen's compensation and liability insurance, with respect to all of its employees who are assigned to work on the Project.

(b) The Contractor shall provide and thereafter maintain insurance in an appropriate amount against public liability for death, bodily injury or damage to property arising from the operation in any country in which the Contract is to be performed of motor vehicles, boats or airplanes owned or leased by the Contractor. The Contractor warrants that similar insurance shall be provided and maintained in respect of all vehicles or boats owned or leased by his personnel and used by them in any country in which the Contract is to be performed.

(c) The Contractor shall comply with the labour laws of any country in which the Contract is to be performed providing for benefits covering injury or death in the course of employment.

(d) The Contractor undertakes that provisions to the same effect as the provisions of this Article will be inserted in all sub-contracts or subordinate contracts made in performance of this Contract, except sub-contracts or subordinate contracts exclusively for furnishing materials or supplies.

10.14 Indemnification

The Contractor shall indemnify, hold and save harmless and defend at its own expense the UNDP, its officers, agents, servants and employees from and against all suits, claims, demands, and liability or any nature or kind, including costs and expenses arising out of acts or omissions of the Contractor or his employees or sub-contractors in the performance of this Contract. This clause shall extend to claims or liability in the nature of workmen's compensation claims or liability or those arising out of the use of patented inventions or devices.

10.15 Disputes - Arbitration

Any dispute arising out of the interpretation of application of the terms of this Contract shall, unless it is settled by direct negotiations, be referred to arbitration in accordance with the rules then obtaining of the International Chamber of Commerce. The UNDP and the Contractor agree to be bound by any arbitration award rendered in accordance with this section as the final adjudication of any such dispute.

10.16 Conflict of Interest

Other than work to be performed under this Contract for which an employee is assigned by the Contractor, no employee of the Contractor shall engage, directly or indirectly, either in his own name or through the agency of another person, in any business, profession, or occupation in the country in which he is assigned; nor shall he make loans or investments to or in any business, profession, or occupation in said country.

10.17 Source of Instructions

The Contractor shall neither seek nor accept instructions from any authority external to the UNDP in connexion with the performance of its services under this Contract. The Contractor shall refrain from any action which may embarrass or adversely affect the UNDP and shall fulfill his commitments with fullest regard for the interests of the UNDP.

10.18 Title to Equipment

Title to all equipment purchases under this Contract shall vest in UNDP, but all such equipment shall be under the custody and control of the Contractor until completion of work under this Contract, at which time the equipment shall be disposed of in accordance with instructions from UNDP. The Contractor shall maintain records of all equipment purchased under this Contract and shall purchase insurance to cover casualty and other loss of such equipment. The cost of such insurance shall be an allowable cost under this Contract. Equipment shall be defined to include those items costing more than one hundred dollars and having a service life of more than five years.

10.19 Rights to Material Produced under Contract

Title, copyrights and patent rights to any and all discoveries resulting from work under this Contract or to material produced under it shall be vested in the UNDP.

10.20 Publicity

Unless authorized in writing by the UNDP, the Contractor shall not advertise or otherwise make public the fact that he is performing or has performed services for the UNDP, or use the name, emblem or official seal of the UNDP or any abbreviation of the name of the UNDP for advertising purposes or for any other purposes.

10.21 Amendments

No changes in or modifications of this Agreement shall be made except by mutual agreement, in writing, between the UNDP and the Contractor.