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# **WARDA**

**West Africa Rice  
Development Association**

**DRAFT BUDGET  
1972 – 1973**

**Bamako, Mali**

**MAY 9 – 11, 1972**

WEST AFRICA RICE DEVELOPMENT ASSOCIATION  
FIRST SESSION OF THE GOVERNING COUNCIL

Bamako, Mali, 9-11 May 1972

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WARDA/72/A1

DRAFT BUDGET OF WARDA

1972 - 1973

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DRAFT BUDGET 1972 - 1973

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- (1) Notes on presentation of Administrative Budget
- (2) Administrative Budget
  - a) Office of Executive Secretary
  - b) Division of Administration and Finance
  - c) General Expenses

- (3) Note on presentation of Research Budget

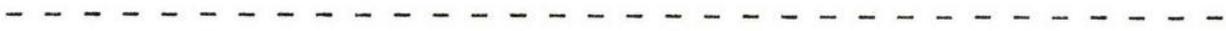
(4) Budget and Summary of project	R1
"                  "          "	R2
"                  "          "	R3
"                  "          "	R4
"                  "          "	R5
"                  "          "	R6
"                  "          "	R7
"                  "          "	R8
"                  "          "	R9
"                  "          "	R10
"                  "          "	R11
"                  "          "	R12
"                  "          "	R13
"                  "          "	R14

- (5) List of projects and costs
- (6) Budget Seed Multiplication Center
- (7) Budget of training
- (8) Budget of Research Coordination
- (9) Budget of Development Coordination
- (10) Budget of Communication System

WEST AFRICA RICE DEVELOPMENT ASSOCIATION

FIRST SESSION OF THE GOVERNING COUNCIL

Bamako, Mali 9 - 11 - 1972



WARDA / 72 / A1

ADMINISTRATIVE BUDGET (1972 - 1973)

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NOTE OF PRESENTATION OF THE DRAFT  
ADMINISTRATIVE BUDGET

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The Draft Administrative Budget of WARDA is presented for the financial years 1972 and 1973. Estimates of Expenditures are provided. Income will come from the contributions of Member-States determined according to the Scale of Contributions. The Scale in Appendix a was approved in principle by the First Session of the Governing Council.

Estimates are divided in Heads, Sub-heads and Items.

Budgetary estimates have been based taking into consideration:

a) on the one hand the statements of Member-States and Cooperative States during the Conference on Rice Development in West Africa held in Monrovia (1 -3 September 1969)

"Ways and Means

The Conference took note of what had been said already by donor countries and organizations about the technical and financial assistance they were prepared to give, and discussions on this item largely centred on the position of the West African countries themselves with regard to provision of funds for the Association. The representatives of most countries stressed the ten to fifteen year period that had been mentioned by some of the representatives of the donor countries, and hoped that this would be the full period of assistance before West African countries themselves would be asked to shoulder any of the financial burden. It was again stressed, particularly by the representative from Côte d'Ivoire, that, even if the burden were to be taken from them for this period, it would eventually fall on them, and therefore caution must be exercised in not setting up too large a structure. Some countries, notably Niger and Togo, expressed through their representatives their desire to give all assistance to the Association, but the impossibility of doing so at all in the present state of their finances. Mr. Gardiner, on behalf of ECA, said that

in order that there should be full involvement by members in the proposed Association it was necessary that there should be some contribution from each, even if it was only a token one, and this view point was supported by the representatives of the U.K. and the U. S. Mr. Gardiner pointed out that, if the Association is successful in its aims, it will in fact be saving the Member Countries large sums in foreign exchange and thus each country surely could contribute a little. There will be no need to work out details at this stage but it might be possible that there could be a graded subscription to the Association dependent on each country's rice production - something of the sort of a rice tax. Also if the Association institutes a training programme it might be possible for trainees to be sent by countries at their/<sup>own</sup>expense, and this in itself would form some sort of contribution. Both the U.K. and the U.S representatives agreed that either of these forms of contribution should be expected from each member country."

Member States having at the outset indicated the limits of their financial means, only the Administrative Budget has been charged to them.

Finally this budget had to be higher than the commitment undertaken by the Member States to provide for 1972 and 1973 a minimum counterpart of \$700,000 (in kind or in cash) plus a contribution of 80,700 dollars in cash from the Project UNDP/SF REG 220 of the 11 March 1971 of Technical Assistance to WARDA.

The operational budget will have to be financed by cooperating States and Organizations and also by other external financing sources which the Executive Secretariat will have to explore.

b) on the other hand the contribution of Member States within the framework of the Administrative Budget has been limited to expenditures necessary for the setting up and the sound management of an undertaking of about 20 million dollars covering a period of five years and involving relations with the whole world.



OFFICE OF THE EXECUTIVE SECRETARY

HEAD I STAFF COSTS 2

<u>Sub Head I Personnel Services o</u>	1972	1973
<u>ITEM I Established costs 2001</u>	-----	-----
	Warda	Warda
1) Executive secretary (13 months)	22,334	20,616
2) Secretary (8 months)	3,600	5,400
3) Registry secretary clerk(6 months)	2,700	5,400
4) Deputy executive secretary (8 months + annual increment)	12,400	19,104
5) Secretary (8 months)	3,600	5,400
6) FAO senior adviser	UN	UN
7) Legal adviser (in charge of conferences)	6,182	9,554
8) Liaison officer (with Government in charge of public relation)	4,176	6,275
9) Secretary	UN	UN
10) Clerk typist	-	1,640
11) Three drivers (660 each)	1,980	2,100
12) Messenger (13 months)	465	453
13) Subtotal 2001 . . . . .	57,437	75,942
 <u>ITEM II Consultants 2002</u>		
2 man-months	8,000	
3 man-months		12,000
 <u>ITEM III TEMPORARY ASSISTANCE 2003</u>		
 <u>ITEM IV Contractual Translation 2004</u>		
 <u>ITEM V Overtime 2005</u>		
G.S	10%	
	1,653	2,667
		./.

	- 1972 -	- 1973 -
ITEM VI Post Adjustment 2006 Professionals (changing class 6 to class 5)	9,500	10,570
ITEM VII Non residence allowance 2007 G.S. (\$565) x 3p/ (8 months) - 12	1,128	1,695
ITEM VIII Language allowance 2008 G.S. (\$312) - 3	936	936
ITEM IX Assignment allowance 2009 -	-	-
Subtotal 2002 - 2009	21,217	27,868
Subtotal Subhead I - . . . . .	78,654	103,810

SUBHEAD II Common staff costs 2

ITEM I Dependency allowance 2221 Prof (400 and 300) (mean of 4) children 8 months G.S. (\$47 per child) with a mean of 4 for 9 pers. 8 months	2,654  1,128	3,900  1,692
ITEM II Education grant 2222 Prof ) ) 1000 \$ x 2 children x4(5) G.S. (int.)	8,000	10,000
ITEM III Contribution PF 2223 Prof.) ) 14% G.S )	8,042	10,629
ITEM IV Contribution medical Insurance 2224 Prof.) ) 15% G.S )	8,616	11,388
		./.

	1972	1973
ITEM V Travel on appointment, transfer or separation 2225		
Prof. \$1200/per family x 4	4,800	1,200
G.S (int)		
ITEM VI Travel on education grant 2226		
Prof (400\$ x 2) x 6 (6)	4,800	4,800
G.S. (int)		
ITEM VII Installation expenses 2227		
Prof (27 x 30)\$ + mean 4 children one spouse		
G.S. (Int) plus 6 persons	17,010	-
ITEM VIII Removal expenses 2228		
Prof (1400\$) - 3	4,200	-
G.S. (Int) 800 x 3	2,400	-
ITEM IX Reparation grant 2229		
Prof		
G.S. (Int)	-	-
ITEM X Separation payment 2230		
Prof	-	-
G.S. (Int)		
ITEM XI Staff training 2231		
Prof	1,000	1,000
G.S		
ITEM XII Housing 2232		
Prof	11,000	11,000
ITEM XIII Compensation claim 2233		
Insurance against accidents (5%)	2,872	3,796
Subtotal Subhead II	76,522	59,405
Subtotal Head I . . . . .	155,176	163,215

DIVISION OF ADMINISTRATION AND FINANCE

HEAD I STAFF COSTS 2

SubHead I Personnel services 0

ITEM I Established costs 2001	- - - - - 1972 - - - -	1973 - - - -
	Warda	Warda
1) chief of administration and finance division	UN	UN
2) finance officer (10 months)	6,049	7,535
3) stenographer	2,670	2,785
4) personnel officer	-	7,258
5) procurement officer		7,258
6) inventory control clerk		2,440
7) typist clerks (two)		3,680
8) one clerk book-keeper (8months)	1,227	1,840
9) two messengers-cleaners	860	906
10) one driver	660	700
11) one receptionist	660	660
12) one lift operator	430	430
Subtotal . . . . .	12,556	35,492
ITEM II Consultants 2002		
One man month	4,000	4,000
ITEM III Temporary Assistance 2003	300	1,000
ITEM IV Contractual translation 2004	1,000	1,000
ITEM V Overtime 2005 (10%)	542	1,052
ITEM VI Post adjustment 2006 1,620 x 2	1,620	4,860
		./.

	- 1972 -	- 1973 -
ITEM VII Non residence allowance 2007	-	-
ITEM VIII Language allowance 2008 312 x (2) (5)	624	1,560
ITEM IX Assignment allowance 2009	-	-
Subtotal 2002 - 2009	8,586	13,472
Subtotal SubHead I . . . . .	21,142	48,964

SUBHEAD II Common staff costs 2

ITEM I Dependency allowance 2221		
Prof 400 + 300 x mean of 4 1 pers-3	1,200	3,600
G.S. \$47 per child with mean of 4 -(7)-10	1,316	1,880

ITEM II Education grant 2222		
Prof		
G.S. (Int)/1000\$ x 2 - (1) - (3)	2,000	6,000

ITEM III Contribution PF 2223		
Prof )		
G.S. ) 14%	1,758	4,969

ITEM IV Contribution medical insurance 2224		
Prof )		
G.S. ) 15%	1,884	5,324

ITEM V Travel on appointment transfer or separation 2225		
Prof		
G.S. (Int) 1,200 per family x 2	-	2,400

ITEM VI Travel on education grant 2226		
Prof )		
G.S.(Int) 400 x 2 x 2	-	1,600

	_1972_	_1973_
ITEM VII Installation expenses 2227		
Prof (27x30)xmean of 4 children+1 spouse	-	5,670
G.S. (Int) for 2 persons]		
ITEM VIII Removal expenses 2228		
Prof		
G.S. (Int) (1000 x 2)	-	2,000
ITEM IX Repatriation grant 2229		
Prof		
G.S (Int)	-	-
ITEM X Separation payment 2230		
Prof		
G.S. (Int)	-	-
ITEM XI Staff training 2231		
Prof	1,000	1,000
G.S		
ITEM XII Housing 2232		
Prof	2,000	6,000
ITEM XIII Compensation claim 2233		
5%	628	1,775
Subtotal Subhead II	11,786	42,218
Subtotal Head I . . . . .	32,928	91,182
 <u>HEAD II</u> Cost of Common services and Mis-		
cellaneous supplies 3		
 <u>Subhead I</u> Maintenance and repairs 0		
 ITEM I Maintenance of premises . . . . .		
and houses 3041	2,500	3,500

	1972	1973
ITEM II Rental and maintenance of office equipment 3042	2,000	2,000
ITEM III Rental of premises 3043	-	-
ITEM IV Maintenance and operation of cars 3044 700 x 4	1,867	2,800
ITEM V Utilities (electricity, gas, etc) 3045	6,400	9,600
ITEM VI Security 3046 (120 + 240) x 12	2,880	4,320
<u>SUBHEAD II</u> Communications and freight		
ITEM I Cables and telex 3351 (200/month :)	2,000	2,800
ITEM II Telephone 3352 200/month.	2,000	2,800
ITEM III Pouches 3353 100/month.	800	1,200
ITEM IV Freights 3354 100/month	800	1,200
<u>SUBHEAD III</u> Miscellaneous supplies and services 4		
ITEM I Miscellaneous 3461 100/month.	800	1,200
		./.

	<u>1972</u>	<u>1973</u>
ITEM II Contractual printing 3462 100/month	800	1,200
ITEM III Office supplies and materials 3463 200/month	1,600	2,400
ITEM IV Photocopy paper and supplies 3464 100/month	800	1,200
ITEM V Library books and periodicals 3465 Periodicals only (50)	400	600
ITEM VI Insurance -car and equipment 3466 \$(500 x 4) + 500	2,500	2,500
ITEM VII Insurance - houses and offices 3467 \$ 1000 + (4x500)	3,000	3,000
ITEM VIII Insurance - staff on travel 3468 \$ 100 per month	800	1,200
ITEM IX Bank charges 3469 \$ 200	200	200

HEAD III Travel and Meetings 4

SUBHEAD I Travel on official business 0

ITEM I Travel of staff 4072	8,000	9,000
Per diem 4073	8,000	9,000



	1972	1973
<u>SUBHEAD II Meetings 2</u>		
ITEM I Travel of members 4273 and per diem	6,000	12,000
ITEM II Travel of secretariat staff 4274 and per diem	4,000	4,000
ITEM III Others costs 4275	15,000	30,000
<u>HEAD IV Others charges</u>		
ITEM I Hospitality and representation 5081 Representation (200/month) Annual reception 1200	2,400 1,200	2,400 1,200
ITEM II Contingencies unforeseen 5082 10% Head II, III, IV, V	17,010	15,617
ITEM III External audit costs 5083 2nd. year		1,500
ITEM IV Contribution to UNDP project	40,350	40,350
<u>HEAD V Equipment 6</u>		
ITEM I Office equipment 6091 furniture (23 x 700) machines	15,000 5,000	2,000
ITEM II Transportation equipment 6092 cars ) motor byke)	17,000	
		./.

	<u>1972</u>	<u>1973</u>
ITEM III Equipment of premises 6093		
curtains, rugs etc...	5,000	1,000
air conditioners	11,000	-
Subtotal . . . . .	187,107	171,787
TOTAL Administrative Budget. . . . .	375,211	426,184
	=====	=====

SCALE OF CONTRIBUTIONS  
-----

General principles:

- a) A solidarity contribution of 30% of the budget for each financial year, equal in amount for all Member States;
- b) The remaining 70% are based on a contribution for each Member State, calculated by reference to the United Nations Scale

Implementation

Country -----	Percent 14 Members -----	Percent 12 Members -----
DAHOMY	6.32	7.25
GAMBIA	6.32	7.25
GHANA	9.47	10.80
GUINEA	6.32	-
IVORY COAST	6.32	7.25
LIBERIA	6.32	7.25
MALI	6.32	7.25
MAURITANIA	6.32	7.25
NIGER	6.32	7.25
NIGERIA	14.69	16.70
SENEGAL	6.32	7.25
SIERRA LEONE	6.32	7.25
TOGO	6.32	7.25
UPPER VOLTA	6.32	-

WEST AFRICA RICE DEVELOPMENT ASSOCIATION

FIRST ASSOCIATION OF THE GOVERNING COUNCIL

Bamako, Mali 9 - 11 - 1972

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WARDA/72/Alb

RESEARCH BUDGET

\* \* \* \* \*

NOTES ON BUDGETARY PRESENTATION OF THE RESEARCH  
PROJECTS

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1. The budgets are presented according to Projects. The projects are classified according to Research Centres.
2. All projects have a general regional orientation though the co-ordinating centre for each project may be located in one Regional Research Centre.
3. Except for few exceptions where the studies involve basic research work, research projects are directly extended to all the countries in the region by way of uniform cooperative trials. Countries in a network or a particular project are selected according to the type of rice cultivation practiced or the project specification. Where several countries participate in a project, e.g., Agrometeorology, the final budget is usually higher than in cases where only few countries participate or the work is conducted in only one or two centres.
4. Each proposed budget is divided into - Operating costs and Investment costs. The operating costs are calculated on annual basis but they are phased over a 5 year period.
5. Since WARDA is an international organization, salaries are based on international scales. Thus salaries of senior staff have to be uniform for all parts of the region. Since costs vary from country to country, post adjustments are to be made according to the duty station outside the headquarters, and categories of staff has to be assessed depending on education, experience and previous salary.
6. For similar reasons, all other facilities including the cost of construction of laboratories and houses are standardized.
7. Staff on the Research Assistant status and above are recommended to be paid at international rates. All staff below this class should be considered as general services and paid according to local conditions. However, regional salary scales have been adopted here for lower categories of staff for budgetary purposes.

8. The budget as such, has not accounted for facilities that could be offered to the Association by member Governments. Such facilities are added as an Appendix. The use of the facilities and perhaps of national scientists by WARDA may be a question of negotiation between WARDA and the countries concerned. However, a general policy could be laid down in this regard by the Governing Council.
9. The costs of small scale trials carried out within the countries for which the day to day care need only junior technical staff and some local labour could be financed by the countries who intend to give their cooperation to WARDA through bi-lateral assistance to the member Government (United Kingdom, Canada).
10. The present budget proposal was drawn in cooperation with:
  - i) a team of consultants from FAO, USAID, IRAT and IITA who made a study of the three aspects - training, seed multiplication and research - during a tour of the Regional Centres, lasting about 2 months;
  - ii) a technical group consisting of the consultants and West African scientists that made the necessary amendment and drafting of complementary projects.
11. In the preparation of the projects, the WARDA mid-term work programme which was submitted to the Governing Council in Monrovia, September, 1971 was taken into account. The present proposals have laid stronger emphasis on applied research as compared with fundamental research than thought hitherto.

The priorities were decided upon and individual projects drawn on the basis of their potential usefulness and their investment and operational costs. The projects presented are those considered to be extremely important, realistic and of basic value for a research and development programme in West Africa.
12. An attempt has been made to distribute the research activities in research centres or trial sites according to the most urgent rice problems in the region. It is largely on this basis and the fact that to get good results, research activities have to be properly balanced in the various disciplines, that the present budget is to be justified.

13. It is expected that by the end of the first five years, much basic information would have been collected and the first packages of agronomic practices for economic rice production would be made available to farmers for all forms of rice cultivation in the region.
  
14. Considering that West African Countries are currently spending about \$50,000,000 per year in importing rice, this rice research budget of \$17,286,421 for the whole region, for five years, designed to bridge this gap as soon as possible is highly justified.

## BUDGET

1/Operating Costs:

A. Headquarter	\$
1. Salary and supporting costs - 1 soil/water engineer	30,000
2. Salary and supporting costs - 1 Agronomist	30,000
3. Salary and supporting costs - 1 Physiologist	30,000
4. Salary and supporting costs - 6 Assistants	48,000
5. Salary and supporting costs - 3 Drivers	6,000
6. Salary and supporting costs - 2 Clerks/Typist	4,000
7. Labour and field aides	8,000
8. Supplies and expenses \$7,000 per specialist	21,000
9. Travel	12,000
10. General expenses (15% total)	28,350
11. Total - Annual	217,350
12. Total - 5 years	1,086,750
B. Multi-local Trials (Nil)	

2/Investment Costs:

A. Headquarters	
1. Furnished house for 3 specialists	90,000
2. Furnished house for 6 Assistants	120,000
3. Furnished house for 10 field aides	50,000
4. Laboratories and Offices - 3 Scientists	30,000
5. Glass/green house	6,000
6. Land development and irrigation 5 Ha \$3,000	15,000
7. Engineering equipment	32,000
8. Physiological equipment	13,000
9. Agronomy equipment	8,000
10. Cars for three specialists (allow for renewal)	18,000
11. Contingencies (10%)	38,700
12. Total	425,700
B. Multi-local Trials (Nil)	



2

PROJECT R1

S U M M A R Y

1)	Operating Costs Headquarters (5 years)	1,086,750
2)	Operating Costs Varietal Trials	-
3)	Total operating Costs .....	1,086,750
4)	Investment Costs Headquarters	425,700
5)	Investment Costs Varietal Trials	-
6)	Total Investments .....	425,700
7)	Total Project Cost.....	1,512,400
8)	Total Costs Headquarters .....	1,512,400
9)	Total Varietal Trials .....	-
10)	Total Project Costs .....	1,512,400

BUDGETI/ OPERATING COSTSA) MAIN STATION (IBADAN)

		0
1.	Entomologist	30.000
2.	Assistants	8.000
3.	Clerk typists	2.000
4.	Travel	10.000
5.	Office supplies	2.000
6.	Automobile, maintenance and operation	1.000
7.	Supplies & maintenance of Laboratory & field equip.	3.000
8.	General expenses (15%)	8.400
		- - - - -
9.	Total annual	64.400
10.	Total 5 years	322.000

B) MULTI-LOCAL TRIALS (5 locations)

1.	5 Superintendents	27.000
2.	Labour 3600 man/days @.I.5	5.400
3.	Cost of cultivation (ploughing, fertilizer etc)	1.200
4.	Office costs	500
5.	General expenses (15%)	5.115
		- - - - -
6.	Total annual	39.215
7.	Total 5 years	196.075

II/ INVESTMENTA) MAIN STATION (IBADAN)

1. House for entomologist (furnished)	30.000
2. House for assistant (furnished)	20.000
3. Office	10.000
4. Automobile (allowance for renewal)	6.000
5. Office furniture & equipment	2.000
6. Laboratory & field equipment	5.000
7. Contingency (10%)	7.300
	-----
8. Total	80.300

B) MULTI-LOCAL TRIALS (4 locations)

1. Houses for 4 superintendents (furnished)	60.000
2. Office for 4 superintendents	4.000
3. 4 motor cycles	1.200
4. Land preparation etc	8.000
5. Equipment (sprayers etc)	4.000
6. Contingency (10%)	7.720
	-----
7. Total	84.920

3

S U M M A R Y

- - - - -

1) Operating costs Headquarters (5 years)	322.000	
2) Operating costs Multi-local Trials	196.075	- - - - -
3) Total operating costs . . . . .		518.075
4) Investment costs Headquarters	80,300	
5) Investment costs Multi-local Trials	84.920	- - - - -
6) Total Investments. . . . .		165.220
7) Total Project cost. . . . .		683.295
		= = = = =
8) Total costs Headquarters . . . . .	402.300	
9) Total Multi-local Trials. . . . .	280.995	- - - - -
10) Total Project costs. . . . .		683.295
		= = = = =

PROJECT R 3a

BUDGET

(Rokupr - Field Research)

I/Operating Costs:

<u>A) Headquarters</u>		US \$
1.	Salary and supporting costs - plant Pathologist	30,000
2.	Salary and supporting costs - Consultant (1 month per year)	4,000
3.	Salary and supporting costs - 2 Assistants	16,000
4.	Salary and supporting costs - 1 Driver	2,000
5.	Salary and supporting costs - 1 Clerk/Typist	2,000
6.	Labour, 2000 days at \$1.50	3,000
7.	Supplies and expenses	4,000
8.	Travel costs	10,000
9.	General expenses (15%)	10,650
10.	Total - Annual	81,650
11.	Total - 5 years	408,250

B) Multi-local Trials (Nil)

II/Investments:

1.	Furnished house-Expert	30,000
2.	Two furnished houses - Assistants	40,000
3.	Offices and laboratories	10,000
4.	Equipment	5,000
5.	Field car (allow for renewal)	6,000
6.	Land development	500
7.	Contingencies	9,150
Total		100,650

PROJECT No R 3a

S U M M A R Y

1)	Operating costs Headquarters (5 years)	408,250
2)	Operating costs Multi-local Trials	-
3)	Total Operating Costs for 5 years	408,250
4)	Investment Costs Headquarters	100,650
5)	Investment Costs Multi-local Trials	-
6)	Total Investments	100,650
7)	Total Project Cost	508,900
8)	Total Costs Headquarters ( 1 + 4 )	508,900
9)	Total Multi-local Trials ( 2 + 5 )	-
10)	Total Project Costs	508,900

PROJECT = 3b

BUDGET

(Ibadan - Laboratory Research)

I/Operating Costs:

A) Headquarters

1.	Salary and supporting costs - plant Pathologist	30,000
2.	Salary and supporting costs - Consultant (1 month per year)	4,000
3.	Salary and supporting costs - 2 Assistants	16,000
4.	Salary and supporting costs - 2 Field Assistants	6,000
5.	Salary and supporting costs - 1 Driver	2,000
6.	Salary and supporting costs - 1 Clerk/Typist	2,000
7.	Salary and supporting costs - 4 Observers	8,000
8.	Supplies and expenses	7,000
9.	Travel costs	3,000
10.	General expenditure (15%)	11,700
11.	Total - Annual	89,700
12.	Total - 5 years	448,500

B) Multi-local Trials (Nil)

II/Investments

A) Headquarters

1.	Furnished house - Expert	30,000
2.	Two furnished houses - Assistants	40,000
3.	Offices and laboratories	20,000
4.	Laboratory equipment (see Annex)	33,000
5.	Field car (allow for renewal)	6,000
6.	Contingencies (10%)	12,900
7.	Total	141,900

B) Multi-local Trials (Nil)

S U M M A R Y

1)	Operating costs Headquarters (5 years)	448,500
2)	Operating costs Multi-local Trials	-
3)	Total operating Costs .....	448,500
4)	Investment Costs Headquarters	141,900
5)	Investment Costs Multi-local Trials	-
6)	Total Investments .....	141,900
7)	Total Project Cost .....	590,400
8)	Total Costs Headquarters (1 + 4) .....	590,400
9)	Total Multi-local Trials	-
10)	Total Project Costs (1 + 5) .....	590,400



S U M M A R Y

1)	Operating costs Headquarters (5 years)	856,750
2)	Operating costs Multi-local Trials	-
3)	Total operating Costs .....	856,750
4)	Investment Costs Headquarters	242,550
5)	Investment Costs Multi-local Trials	-
6)	Total Investments .....	242,550
7)	Total Project Cost .....	1,099,300
8)	Total Costs Headquarters (1. + 4.) .....	1,099,300
9)	Total Multi-local Trials (2 + 5)	-
10)	Total Project Costs .....	1,099,300

BUDGET IBADANLAND CLASSIFICATION AND MAPPINGI/ OPERATING COSTSA) HEADQUARTERS

1. Salary and supporting costs - soil scientist	30.000
2. Salary and supporting costs - 2 assistants	16.000
3. Salary and supporting costs - 4 technical office staff (1 surveyor, 1 draftsman, 1 typist etc)	21.600
4. Labour	900
5. Supplies and expenses	8.000
6. Travel costs	10.000
7. General expenditure (15%)	12.975
	-----
8. Total annual	99.475
9. Total 5 years	497.375

B) MULTI-LOCAL TRIALS

none

II/ INVESTMENTSA) HEADQUARTERS

1. Furnished house - expert	30.000
2. Furnished house - 2 assistants	40.000
3. Office and laboratory	10.000
4. Car (1 and replacement)	6.000
5. Equipment	8.000
6. Contingencies (10%)	9.100
	-----
7. Total	103.400

B) MULTI-LOCAL TRIALS

None

S U M M A R Y

- - - - -

1) Operating costs Headquarters (5 years)	497.375	
2) Operating costs Multilocal Trials		- - - - -
3) Total operating costs. . . . .		497.375
4) Investment costs Headquarters	103.400	
5) Investment costs Multi-local Trials		- - - - -
6) Total Investments . . . . .		103.400
7) Total Project costs. . . . .		600.775
		=====
8) Total costs Headquarters.(1 + 4) . . . .	600.775	
9) Total Multi-local Trials. (2 + 5) . . . .		- - - - -
10) Total Project costs. . . . .		600.775
		=====

PROJECT No R 4 b

SOIL FERTILITY AND FERTILIZATION

BUDGET RICHARD TOLL

I/ OPERATING COSTS

A) HEADQUARTERS

1.	Salary and supporting costs - soil fertility specialist	30.000
2.	Salary and supporting costs- soil chemist	30.000
3.	Salary and supporting costs - consultant(I month/year)	4.000
4.	Salary and supporting costs - 4 assistants	32.000
5.	Salary and supporting costs - 8 observers	16.000
6.	Supplies and expenses	20.000
7.	Travel costs	11.000
8.	General expenditure (15%)	21.450
		-----
9.	Total annual	164.450
10.	Total 5 years	822.250

B) MULTI-LOCAL TRIALS (13 locations, 20 trials)

1.	Salary and supporting costs - 13 field assistants	39.000
2.	Labour \$ 1,50 x 20 x 150 man/days	4.500
3.	Miscellaneous/supplies \$100 x 20	2.000
4.	Land preparation \$ 200 x 6 ha	1.200
5.	General expenditure (15%)	7.005
		-----
6.	Total annual	53.705
7.	Total for 5 years	268.525

II/ INVESTMENTSA) HEADQUARTERS

1. Furnished housing - 2 experts	60.000
2. Furnished housing - 4 assistants	80.000
3. Office and laboratory	20.000
4. Laboratory equipment (see itemized account-annex)	46.000
5. Field cars (2 and replacement)	12.000
6. Contingencies (10%)	21.800
	-----
7. Total	239.800

B) MULTI-LOCAL TRIALS

1. Housing for 13 field assistants \$5000 x 13	65.000
2. 13 motor bikes \$ 300 x 13	3.900
3. Contingencies (10%)	6.890
	-----
4. Total	75.790

ANNEXEQUIPMENT AND CHEMICALS FOR A SOIL AND PLANT ANALYSIS LABORATORYSUMMARY OF EXPENDITURE

<u>Items</u>	<u>US \$ Cost</u>
Water purification equipment	1,966.00
General laboratory equipment	19,332.90
Centrifuge and accessories	2,125.40
Standard joint apparatus	473.00
Atomic absorption spectrophotometer	4,500.00
General chemicals	1,870.70
Indicators	42,40
Miscellaneous chemicals and supplies	62,50

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Richard Toll

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- 13

Soil sampling and preparation	I,428.00
Monolith preparation	207.50
Plant sample preparation	I,715.50
Chemicals and equipment for certain determinations on soil & plant samples	II,949.20
Chemicals - standard solutions	62.50
	-----
Total	45,735.60
Rounded off. . . . .	46,000.00

-16-

S U M M A R Y  
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1) Operating costs Headquarters (5 years)	822.250	
2) Operating costs Multi-local Trials	268.525	-----
3) Total operating costs . . . . .		I.090.775
4) Investment costs Headquarters	239.800	
5) Investment costs Multi-local Trials	75.790	-----
6) Total Investments . . . . .		315.590
7) Total Project cost . . . . .		I.406.365
		=====
8) Total costs Headquarters . . . . .	I.062.050	
9) Total Multi-local Trials . . . . .	344.315	-----
10) Total Project costs . . . . .		I.406.365
		=====

SOIL FERTILITY AND FERTILIZER

17 OPERATING COSTS

A) HEADQUARTERS

	\$
1. Salary and supporting costs - soil fertility specialist	30.000
2. Salary and supporting costs - soil chemist	30.000
3. Salary and supporting costs - consultant (1 month/year)	4.000
4. Salary and supporting costs - 4 assistants	32.000
5. Salary and supporting costs - 8 observers	16.000
6. Supplies and expenses	20.000
7. Travel costs	11.000
8. General expenditure (15%)	21.450
	-----
9. Total annual	164.450
10. Total for 5 years	822.250

B) MULTI-LOCAL TRIALS

1. Salary and supporting costs - 13 field assistants	39.000
2. Labour \$ 1,50 x 20 x 150 man/days	4.500
3. Miscellaneous/supplies \$ 100 x 20	2.000
4. Land preparation \$ 200 x 6 ha	1.200
5. General expenditure (15%)	7.005
	-----
6. Total annual	53.705
7. Total for 5 years	268.525

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II/ INVESTMENTS

A) HEADQUARTERS

1. Furnished housing - 2 experts	60.000
2. Furnished housing - 4 assistants	80.000
3. Office and laboratory	20.000
4. Laboratory equipment (see itemized account-annex)	46.000
5. Field cars (2 and replacement)	12.000
6. Contingencies (10%)	21.800
	- - - - -
7 Total	239.800

B) MULTI-LOCAL TRIALS

1. Housing for 13 field assistants \$ 5000 x13	65.000
2. 13 motor bikes \$ 300 x 13	3.900
3. Contingencies (10%)	6.890
	- - - - -
4. Total	75.790

ANNEX

EQUIPMENT AND CHEMICALS FOR A SOIL AND PLANT ANALYSIS LABORATORY

SUMMARY OF EXPENDITURE

<u>Items</u>	<u>US \$ Cost</u>
Water purification equipment	1,966.00
General Laboratory equipment	19,332.90
Centrifuge and accessories	2,125.40
Standard joint apparatus	473.00
Atomic absorption spectrophotometer	4,500.00
General chemicals	1,870.70
Indicators	42.40
Miscellaneous chemicals and supplies	62,50

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Soil sampling and preparation	I,428.00
Monolith preparation	207.50
Plant sample preparation	I,715.50
Chemicals and equipment for certain determinations on soil & plant samples	II,949.20
Chemicals - standard solutions	62.50
	- - - - -
Total	45,735.60
Rounded off. . . . .	46,000.00

S U M M A R Y

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1) Operating costs Headquarters (5 years)	822.250	
2) Operating costs Multilocal Trials	268.525	-----
3) Total operating costs . . . . , . . . . .		I.090.775
4) Investment costs Headquarters	239.800	
5) Investment costs Multilocal Trials	75.790	-----
6) Total Investments. . . . .		315.590
7) Total Project Cost . . . . .		I.406.365 =====
8) Total costs Headquarters. . . . .	I.062.050	
9) Total Multilocal Trials. . . . .	344.315	-----
10) Total Project Cost . . . . .		I.406.365 =====

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R4 (a + b + c)

S U M M A R Y

- - - - -

1. Operating costs - Headquarters (5 years)		2.141.875
2. Operating costs - Multi-local trials (5 years)		537.050
3. Total operating costs (5 years)		2.678.925
		=====
4. Investment - Headquarters	583.000	
5. Investment - Multi-local trials	151.580	
5. Total investment costs		734.580
		=====
7. Total cost of project		3.413.505
8. Total costs - Headquarters (1+4)	2.724.875	
9. Total costs - Multi-local trials (2 + 5)	688.630	
10. Total cost of project		3.413.505
		=====

BUDGET

I/Operating Costs

A) Headquarters

	\$
1. Salary and supporting costs - 1 Agronomist	30,000
2. Salary and supporting costs - 1 Assistant	8,000
3. Salary and supporting costs - 3 Observers	6,000
4. Labour, 1500 man-days @ \$1.5	2,250
5. Tractor operation - fuel, equipment etc.	4,000
6. Chemicals and fertilizers	2,000
7. Office supplies and expenses	500
8. General expenses (15% total)	7,913
9. Total - Annual	60,663
10. Total - 5 years	303,315

B) Multi-local Trials (Nil)

II/Investments

A) Headquarters

1. Furnished house for Agronomist	30,000
2. Furnished house for Assistant	20,000
3. Land Rover	4,000
4. 1 Tractor - 60-65 hp	5,000
5. 1 Plough	1,500
6. 1 Sprayer	2,400
7. 1 Sprayer (Tractor attachment)	1,000
8. 1 Light sprayer	500
9. 1 Motor cycle	300
10. 3 Bicycles	180

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6-

11. Office and laboratory	10,000
12. Office equipment	2,000
13. Shed for field experiments	1,000
14. Contingencies (10% total)	7,788
15. Total	85,668

B) Multi-local Trials (Nil)

PROJECT R5

S U M M A R Y

1)	Operating costs Headquarters ( 5 years)	303,315
2)	Operating costs Varietal Trials	-
3)	Total operating Costs.....	303,315
4)	Investment Costs Headquarters	85,668
5)	Investment Costs Varietal Trials	-
6)	Total Investments .....	85,668
7)	Total Project Cost .....	388,983
8)	Total Costs Headquarters (1+.4).....	388,983
9)	Total Varietal Trials (2+.5).....	-
10)	Total Project Costs .....	388,983
		=====

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I/ OPERATING COSTS

A) HEADQUARTERS - MOPTI

	\$
1. Salary and supporting costs - I agronomist	30.000
2. Salary and supporting costs - I assistant	8.000
3. Salary and supporting costs - I clerk/typist	2.000
4. Salary and supporting costs - I driver	2.000
5. Office supplies	2.000
6. Travel	10.000
7. Repairs and maintenance	2.000
8. General expenses (15%)	8.400
	-----
9. Total annual	64.400
10. Total 5 years	322.000

F) MULTI-LOCAL TRIALS (7 locations)

1. Salary and supporting costs - 7 field assistants	21.000
2. Labour 4.200 man-days C \$ I,5	6.300
3. Cost of cultivation (ploughing, fertilizer etc)	15.000
4. Office expenses	700
5. General expenses (15%)	6.400
	-----
6. Total annual	49.400
7. Total 5 years	247.000

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II/ INVESTMENT COSTSA) HEADQUARTERS

1. Furnished house for agronomist	30.000
2. Furnished house for assistant	20.000
3. Office and laboratory	10.000
4. One car (+ 1 renewal)	6.000
5. Office furniture and equipment	2.000
6. Contingencies (10%)	6.800
	-----
7. Total	74.800

B) MULTI-LOCAL TRIALS (7 locations)

1. Furnished house for field assistant	35.000
2. Office	7.000
3. Land preparation	5.600
4. 7 motor-cycles	2.100
5. Contingencies (10%)	4.970
	-----
6. Total	54.670

S U M M A R Y

1) Operating costs Headquarters (5 years)	322.000	
2) Operating costs Varietal Trials	247.000	- - - - -
3) Total operating costs. . . . .		569.000
4) Investment costs Headquarters	74.800	
5) Investment costs Varietal Trials	54.670	- - - - -
6) Total Investments. . . . .		129.470
7) Total Project cost. . . . .		698.470
		= = = = =
8) Total costs Headquarters. . . . .	396.800	
9) Total Varietal Trials. . . . .	301.670	- - - - -
10) Total Project costs. . . . .		698.470
		= = = = =

I/ OPERATING COSTSA) HEADQUARTERS - RICHARD TOLL

	C
1. Salary and supporting costs - I Agronomist	30.000
2. Salary and supporting costs - I Assistant	8.000
3. Salary and supporting costs - I clerk-typist	2.000
4. Salary and supporting costs - I driver	2.000
5. Office supplies etc	2.000
6. Travel costs	10.000
7. Repairs and maintenance	2.000
8. General expenses (15%)	8.400
	-----
9. Total annual	64.400
10. Total 5 years	322.000

B) MULTI-LOCAL TRIALS (15 locations)

1. Salary and supporting costs - 15 field assistants	45.000
2. Labour (2 seasons) 12.000 man-days C \$1.5	18.000
3. Cost of cultivation- ploughing, fertilizer etc	15.000
4. Office costs	1.500
5. General expenses (15%)	11.925
	-----
6. Total annual	91.425
7. Total 5 years	457.125

II/ INVESTMENTSA) HEADQUARTERS

1. Furnished house for Agronomist	30.000
2. Furnished house for Assistant	20.000
3. Office and laboratory	10.000
4. I car (+ I renewal)	6.000
5. Office supplies and equipment	2.000
6. Contingency (10%)	6.800
	-----
7. Total	74.800

B) MULTI-LOCAL TRIALS (15 locations)

1. Furnished houses for field assistants (15)	75.000
2. Offices	15.000
3. Land preparation	30.000
4. Motor-cycles	4.500
5. Contingencies (10%)	12.450
	-----
6. Total	136.950

S U M M A R Y

- - - - -

1) Operating costs Headquarters (5 years)	322.000	
2) Operating costs Multi-local Trials(5 years)	457.125	- - - - -
3) Total operating costs.(5 years)		779.125
4) Investment costs Headquarters	74.800	
5) Investment costs Multi-local Trials	136.950	- - - - -
6) Total Investments		221,750
7) Total Project cost		990.875
		= = = = =
8) Total costs Headquarters(I.,4)	396.800	
9) Total Multi-local Trials.(2 + 5)	594.075	- - - - -
10) Total Project costs		990.875
		= = = = =

I/Operating Costs:

A) Headquarter - Richard Toll		\$
1.	Salary and supporting costs - 2 Specialists	60,000
2.	Salary and supporting costs - 2 Assistants	16,000
3.	Salary and supporting costs - 4 Observers	8,000
4.	Salary and supporting costs - 1 Clerk/Typist	2,000
5.	Salary and supporting costs - 5 Drivers	10,000
6.	Salary and supporting costs - 1 Mechanic	2,000
7.	Labour, 40 man-days/ha	1,500
8.	Travel	10,000
9.	Repairs and maintenance	5,000
10.	Machinery operation - fuel etc.	9,000
11.	Soil analysis	2,500
12.	Field supplies @ 200/ha	5,000
13.	Office supplies and utilities	2,000
14.	General expenses (15% total)	19,950
15.	Total - Annual	152,950
16.	Total - 5 years	764,750

B) Multi-local Trials (Nil)

II/Investment

A) Headquarters- Richard Toll		
1.	- 2 houses for Specialists	60,000
2.	- 2 houses for Assistants	40,000
3.	Land levelling and renovation infrastructure 25 ha @ \$280/ha	7,000
4.	Offices and laboratories	20,000
5.	4 cars (allowance for renewal)	12,000

6.	Machinery shed 120 sq. m @ \$50/sq. m.	6,000
7.	Office furniture and equipment	3,000
8.	Set of tools	400
9.	1 Tractor, 70-75 hp	6,000
10.	1 Tractor, 60-65 hp	5,000
11.	1 Combine	18,000
12.	1 Plough	1,500
13.	1 Set of disc harrows	2,400
14.	1 Culti packer	2,000
15.	1 Seed drill	1,500
16.	1 Soil seeder	1,500
17.	2 Sets of cage wheel	800
18.	1 Set of skeleton wheel	400
19.	1 Land leveler	1,200
20.	1 Fertilizer spreader	600
21.	2 Sprayers	2,000
22.	Measuring equipment	1,200
23.	2 Trailers	1,200
24.	Miscellaneous equipment	6,000
25.	Contingencies (10% total)	26,180
26.	Total	287,980

B) Multi-local Trials (Nil)

PROJECT R8S U M M A R Y

1)	Operating costs Headquarters (5 years)	764,750
2)	Operating costs Multi-local Trials	-
3)	Total operating Costs (5 years)	764,750
4)	Investment Costs Headquarters	287,980
5)	Investment Costs Multi-local Trials	-
6)	Total Investments	287,980
7)	Total Project Cost	1,052,730
8)	Total Costs Headquarters (1 + 4)	1,052,730
9)	Total Multi-local Trials (2 + 5)	-
10)	Total Project Costs	1,052,730



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PROJECT R9

B U D G E T  
- - - - -

I/ OPERATING COSTS

A) HEADQUARTERS

1.	Salary and supporting costs - Agro-botanist	30.000
2.	Salary and supporting costs - assistant	8.000
3.	Salary and supporting costs - assistant statistician	8.000
4.	Salary and supporting costs - 3 field recorders	6.000
5.	Salary and supporting costs - 1 driver	2.000
6.	Salary and supporting costs - 1 clerk typist	2.000
7.	Labour 200 man/days @ \$ 1,5	300
8.	Travel	10.000
9.	Supplies, fertilizer etc.	500
10.	Office expenses including stationery	2.000
11.	General expenses (15%)	10.320
		- - - - -
12.	Total annual	79.120
13.	Total 5 years	395.600

B) MULTI-LOCAL TRIALS (14 locations)

1.	Salary and supporting costs-14 recorders	28.000
2.	Labour 2800 man/days @ 1,5	4.200
3.	Field expenses	5.600
4.	Office expenses	1.400
5.	General expenses (15%)	5.880
		- - - - -
6.	Total annual	45.080
7.	Total 5 years	225.400

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Project R9

II/ INVESTMENT COSTS

A) HEADQUARTERS

1. Furnished house for specialist	30.000
2. Furnished house for 2 assistants	40.000
3. 1 motor car (allowance for renewal)	6.000
4. 1 motorised bicycle	300
5. Office and laboratory	10.000
6. Open shed for pot culture	2.000
7. Development $\frac{1}{2}$ ha. land	1.000
8. Miscellaneous (pots, bags etc)	2.000
9. Contingencies (10%)	9.130
	-----
10. Total	100.430

B) MULTI-LOCAL TRIALS (14 locations)

1. Development of 7 ha. land	28.000
2. Houses for recorders	28.000
3. Offices and equipment	14.000
4. Motorised bicycles	4.200
5. Contingencies (10%)	7.420
	-----
6 Total	81.620

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S U M M A R Y

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1) Operating costs Headquarters (5 years)	395.600	
2) Operating costs Multi-local Trials(5 years)	225.400	-----
3) Total operating costs (5.years)		621.000
4) Investment costs Headquarters	100.430	
5) Investment costs Multi-local Trials	81.620	-----
6) Total Investments		182.050
7) Total Project cost		803.050
		=====
8) Total Costs Headquarters.(1 + 4)	496.030	
9) Total Multi-local Trials.(2 + 5)	307.020	-----
10) Total Project costs		803.050
		=====

I/Operating Costs:

A) Headquarters	\$
1. Salary and supporting costs - 1 Agro-meteorologist	30,000
2. Salary and supporting costs - 1 Assistant Statistician	8,000
3. Salary and supporting costs - 1 Clerk/Typist	2,000
4. Salary and supporting costs - 1 Driver	2,000
5. Travel	10,000
6. Office expenses, stationery etc.	2,000
7. General expenses (15% total)	3,100
8. Total - Annual	62,100
9. Total - 5 years	310,500

Operating Costs

B) Multi-local Trials (12 locations)	
1. Salary and supporting costs - 12 Superintendents	64,800
2. Salary and supporting costs - 12 field Assistants	36,000
3. Salary and supporting costs - 48 Observers	96,000
4. Labour, 200 x 12 x 15	33,600
5. Cost of cultivations	12,000
6. Office supplies	6,000
7. General expenses (15%)	32,760
8. Total - Annual	251,160
9. Total - 5 years	1,255,800

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II/Investment

A) Headquarters	\$
1. Furnished house for Agronomist	30,000
2. Furnished house for Assistant Statistician	20,000
3. Office and laboratory	10,000
4. Car (allow for renewal)	6,000
5. Office equipment and calculator	2,000
6. Kipp and Zonen battery with recording Potentiometer	6,000
7. Contingencies (10%)	7,400
8. Total	81,400
B) Multi-local Trials (12 locations)	
1. House for 12 Superintendents	120,000
2. House for 12 Field Assistants	60,000
3. House for 48 Observers	96,000
4. Offices and measuring rooms 12 x 2000	24,000
5. Land clearing etc.	24,000
6. Motor cycles 12 x 300	3,600
7. Bicycles 12 x 240	2,880
8. Meteorological equipment - rain guage, pluviograph, thermometers, evaporation pans, evaporimeter, anemometer, psychometer etc	120,000
9. Kipp and Zonen battery and <b>Lixtronic</b> integrator	12,000
10. Soil moisture measuring instruments - neutron probe and tubes (192) bath, Mettler balances, and minor equipment <del>1700</del> x 12	204,000
11. Fluxmeter for leaf area measurements	24,000
12. Contingencies (10%)	69,048
13. Total	759,528

PROJECT R10S U M M A R Y

1)	Operating costs Headquarters (5 years)	310,500
2)	Operating costs Multi-local Trials (5 years)	1,255,800
3)	Total operating Costs (5 years)	1,566,300
4)	Investment Costs Headquarters	81,400
5)	Investment Costs Multi-local Trials	759,528
6)	Total Investments	840,928
7)	Total Project Cost	2,407,228
8)	Total Costs Headquarters (1 + 4)	391,900
9)	Total Multi-local Trials (2 + 5)	2,015,328
10)	Total Project Costs	2,407,228

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PROJECT Rilla

BUDGET

(Variety Improvement - Bouake)

I/Operating Costs

A) Headquarters

1.	Salary and supporting costs - 2 Breeders	60,000
2.	Salary and supporting costs - 4 Assistants	32,000
3.	Salary and supporting costs - 12 Observers	24,000
4.	Clerk/Typist	2,000
5.	4 Drivers	8,000
6.	Labour	6,000
7.	Fuel, repairs and maintenance	14,000
8.	Fertilizers, miscellaneous supplies	8,000
9.	Travel costs	5,000
10.	General expenses (15%)	23,850
11.	Total - Annual	182,850
12.	Total - 5 years	914,250

B) Multi-local Trials (Nil)

II/Investment Costs

A) Headquarters

1.	Furnished houses - 2 Breeders	60,000
2.	Furnished houses - 4 Assistants	80,000
3.	Land development (8 ha)	11,200
4.	Office, laboratory, stores	40,000
5.	2 Vehicles (allowance for renewal)	16,000
6.	Irrigation equipment	6,400
7.	2 Tractors (40/45 hp.) and implements	12,000
8.	Plant protection equipment	1,600
9.	Weighing and measuring equipment	8,000
10.	Dam to supply irrigation water	80,000
11.	Minor implements and bags	2,000
12.	Contingencies (10%)	31,720
13.	Total	348,920

B) Multi-local Trials (Nil)

PROJECT R11aS U M M A R Y

1)	Operating costs Headquarters (5 years)	914,250
2)	Operating costs Multi-local Trials (5 years)	-
3)	Total operating Costs (5 years)...	914,250
4)	Investment Costs Headquarters (I + 4)	348,920
5)	Investment Costs Multi-local Trials (2 + 5)	-
6)	Total Investments .....	348,920
7)	Total Project Cost .....	1,263,170
8)	Total Costs Headquarters .....	1,263,170
9)	Total Multi-local Trials .....	-
10)	Total Project Costs .....	1,263,170



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BUDGET

(Variety Trials)

I/Operating Costs

A) Headquarters

1.	Salary and supporting costs - Agronomist	30,000
2.	Salary and supporting costs - Assistant Statistician	8,000
3.	Salary and supporting costs - Clerk/Typist	2,000
4.	Salary and supporting costs - Driver	2,000
5.	Vehicle operation	2,000
6.	Travel costs	10,000
7.	Stationery, mailing costs etc	4,000
8.	General expenses (15%)	8,700
9.	Total - Annual	66,700
10.	Total - 5 years	333,500

B) Multi-local Trials (11 locations)

1.	Salary and supporting costs - 11 Observers	22,000
2.	Labour, \$1.5 x 400 x 11	6,600
3.	Cost of cultivations, 300 x 11	3,300
4.	Office supplies	1,100
5.	General expenses (15%)	4,950
6.	Total - Annual	37,950
7.	Total - 5 years	189,750

II/Investment Costs

## A) Headquarters

1. Furnishes house - Agronomist	30,000
2. Furnished house - Assistant Statistician	20,000
3. Office and laboratory	10,000
4. 1 Vehicle (allowance for renewal)	6,000
5. Calculating machines	2,000
6. Contingencies (10%)	6,800
7. Total	74,800

## B) Multi-local Trials (11 locations)

1. Furnished house - 11 Observers	22,000
2. Land clearing, levelling, fencing etc.	16,500
3. Offices	11,000
4. Motor cycles	3,300
5. Contingencies (10%)	5,280
6. Total	58,080

PROJECT R11b

S U M M A R Y

1)	Operating costs Headquarters (5 years)	333,500
2)	Operating costs Multi-local Trials (5 Years)	189,750
3)	Total operating Costs (5 years)..	523,250
4)	Investment Costs Headquarters	74,800
5)	Investment Costs Multi-local Trials	58,080
6)	Total Investments (I + 4).....	132,880
7)	Total Project Cost (2 + 5).....	656,130
8)	Total Costs Headquarters .....	408,300
9)	Total Multi-local Trials .....	247,830
10)	Total Project Costs .....	656,130

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S U M M A R Y

1)	Operating costs Headquarters (5 years)	1,247,750
2)	Operating costs Multi-local Trials (5 years)	189,750
3)	Total operating Costs(5.years).....	1,437,500
4)	Investment Costs Headquarters	423,720
5)	Investment Costs Multi-local Trials	58,080
6)	Total Investments .....	481,800
7)	Total Project Cost .....	1,919,300
8)	Total Costs Headquarters (1.+ 4).....	1,671,470
9)	Total Multi-local Trials (2.+ 5).....	247,830
10)	Total Project Costs .....	1,919,300

PROJECT RI2

46

B U D G E TI/ OPERATING COSTSA) HEADQUARTERS

1. Salary and supporting costs - I agronomist	30.000
2. Salary and supporting costs - I assistant	8.000
3. Salary and supporting costs - I clerk	2.000
4. Salary and supporting costs - I driver	2.000
5. Office expenses, stationery etc	2.000
6. Travel	10.000
7. General expenses (15%)	8.100
	-----
8. Total annual	62.100
9. Total 5 years	310.500

B) MULTI-LOCAL TRIALS (II locations)

1. Salary and supporting costs - observers	22.000
2. Labour 3300 man/days @ 1,5	4.950
3. Cultivation costs (ploughing, fertilizer etc)	3.300
4. Office expenses	1.100
5. General expenses (15%)	4.703
6.	-----
6. Total annual	36.053
7. Total 5 years	180.265

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II/ INVESTMENTS COSTS

A7

A) HEADQUARTERS

1. Furnished house for agronomist	30.000
2. Furnished house - assistant	20.000
3. Office and laboratory	10.000
4. I car (allowance for renewal)	6.000
5. Office equipment	2.000
6. Contingencies (10%)	6.800
	- - - -
7. Total	74.800

B) MULTI-LOCAL TRIALS (II locations)

1. Housing for observers	22.000
2. Offices	11.000
3. Land clearing, development etc	11.000
4. II motor bikes	3.300
5. Contingencies (10%)	4.730
	- - - -
6. Total	52.030

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AL8

S U M M A R Y  
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1) Operating costs Headquarters (5 years)	310.500	
2) Operating costs Multi-local Trials	180.265	-----
3) Total operating costs. . . . .		490.765
4) Investment costs Headquarters	74.000	
5) Investment costs Multi-Local Trials	52.030	-----
6) Total Investments. . . . .		126.030
7) Total Project cost. . . . .		616.795 =====
8) Total Costs Headquarters. . . . .	384.500	
9) Total Multi-local Trials. . . . .	232.295	-----
10) Total Project Costs. . . . .		616.795 =====

PROJECT R 13

49

B U D G E T

I/ OPERATING COSTS

A) HEADQUARTERS

	\$
1. Salary and supporting costs - plant breeder	30.000
2. Salary and supporting costs - assistant	8.000
3. Salary and supporting costs - field assistant	3.000
4. Salary and supporting costs - 2 observers	4,000
5. Salary and supporting costs - 1 driver	2.000
6. Salary and supporting costs - 1 clerk-typist	2.000
7. Labour and mechanised field operations	4.000
8. Fuel	2.000
9. Repairs and maintenance	1.500
10. Travel costs	10.000
11. Fertilizers, insecticides, fungicide etc.	3.000
12. Office supplies	2.000
13. Miscellaneous	1.000
14. General expenses (15%)	10.875
	- - - - -
15. Total annual operating costs	83.375
16. Total operating costs for 5 years	416.875
	= = = = =

B) MULTI-LOCAL TRIALS (5)

1. Salary for 5 field assistants	15.000
2. Labour	7.500
3. Cost of cultivations	2.500
4. Office supplies	500
5. General expenses (15%)	3.325
	- - - - -
6. Annual total	29.325
7. Total for 5 years	146.625
	= = = = =
	./.



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II/INVESTMENT

A) HEADQUARTERS

	\$
1. Furnished house for plant breeder	30.000
2. Furnished house for assistant	20.000
3. House for field assistant	5.000
4. Laboratory - office - storage	20.000
5. Land preparation for 10 hectares	30.000
6. 1 field car (allow for renewal)	6.000
7. 2 10 HP pumps	2.000
8. Plant protection equipment	1.500
9. Laboratory equipment & office supplies	5.000
10. Furnishing for laboratories and office	2.000
11. Minor implements and miscellaneous	1.000
12. Contingency (10%)	12.250
	- - - - -
13. Total	134.750
	= = = = =

B) MULTI-LOCAL TRIALS (5)

1. Housing for 5 field assistants	25.000
2. Office for 5 field assistants	5.000
3. Motor bikes	1.500
4. Land development (clearing, empoldering etc)	15.000
5. 5 10HP pumps \$ 1000 x 5	5.000
6. Minor equipment	2.500
7. Contingency (10%)	5.400
	- - - - -
8. Total	59.400
	= = = = =

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## S U M M A R Y

1) Operating costs Headquarters (5 years)	416.875	
2) Operating costs Varietal Trials (5 years)	146.625	- - - - -
3) Total operating costs. (5 years) . . . . .		563.500
4) Investment Costs Headquarters	134.750	
5) Investment Costs Varietal Trials	59.400	- - - - -
6) Total Investments . . . . .		194.150
7) Total Project costs . . . . .		757.650 = = = = =
8) Total Costs Headquarters (1 + 4) . . . . .	551.625	
9) Total Varietal Trials (2 + 5) . . . . .	206.025	- - - - -
10) Total Project costs . . . . .		757.650 = = = = =

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PROJECT RL4

BUDGET

I/Operating Costs:

	\$
A) Headquarters	
1. Salary and supporting costs - 1 Agronomist	30,000
2. Salary and supporting costs - 2 Assistants	16,000
3. Salary and supporting costs - 2 field Assistants	6,000
4. Salary and supporting costs - 4 Observers	8,000
5. Salary and supporting costs - 4 Drivers	8,000
6. Salary and supporting costs - 2 Clerk/Typists	4,000
7. Labour and technical support	4,000
8. Fuel	8,000
9. Repairs and Maintenance	6,000
10. Travel	10,000
11. Fertilizers, insecticides, fungicides etc.	2,000
12. Office supplies	3,000
13. Miscellaneous	4,000
14. General expenses (15%)	16,350
15. Total - Annual	125,350
16. Total - 5 years	626,750
B) Multi-local Trials (5 locations)	
1. Salary and supporting costs - 5 field Assistants	15,000
2. Labour \$1.50 x 300 x 5	2,250
3. Cost of cultivations	2,500
4. Office supplies	500
5. General expenses (15%)	3,038
6. Total - Annual	23,288
7. Total - 5 years	116,440

II/Investment

A) Headquarters

1.	Furnished house for Agronomist	30,000
2.	Furnished houses for 2 Assistants	40,000
3.	Furnished houses for 2 field Assistants	10,000
4.	Land preparation (5 ha)	15,000
5.	Office and laboratory	10,000
6.	1 field car (allowance for renewal)	6,000
7.	1 Land Rover	4,000
8.	Office and laboratory equipment	4,000
9.	1 Tractor (45 HP) and implements	6,000
10.	2 Two-wheeled tractors and implements	3,000
11.	2 Pumps (10 HP)	3,000
12.	Various agricultural machinery & equipment	15,000
13.	Contingencies (10% total)	14,600
14.	Total	160,600

B) Multi-local Trials (5 locations)

1.	House for field Assistants	25,000
2.	Offices	5,000
3.	Land preparation	4,000
4.	Motor bikes	1,500
5.	Contingencies (10%)	3,550
6.	Total	39,050

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PROJECT R14

S U M M A R Y

1)	Operating costs Headquarters (5 years)	626,750
2)	Operating costs Multi-local Trials (5 years)	116,440
3)	Total operating Costs (5 years)	743,190
4)	Investment Costs Headquarters	160,600
5)	Investment Costs Multi-local Trials	39,050
6)	Total Investments	199,650
7)	Total Project Cost	942,840
8)	Total Costs Headquarters (1 + 4)	787,350
9)	Total Multi-local Trials (2 + 5)	155,490
10)	Total Project Costs	942,840

RESEARCH PROJECTS LIST

No. & Language	Subject	Place	No. resea- rch Ing.	Cost
R1 E	Water management and irrigation	Ibadan	3	1.512.400
R2 E	Crop losses from animal pests	Ibadan	1	683.295
R3 E	Rice diseases			
	a) nurseries researches	Rokupr	1	508.900
	b) laboratory researches	Ibadan	1	590.400
R4 E	a) soil classification	Ibadan	1	600.775
	b) fertilizer use	RichardToll	2	1.406.365
	c) " "	Rokupr	2	1.406.365
R5 F	Oryza Barthii control	Mopti	1	388.983
R6 F	Varietal trials fresh water swamp	Mopti	1	698.470
R7 F	Varietal trials irrigated rice	RichardToll	1	990.875
R8 F	Mechanization research on irrigated rice	" " "	2	1.052.730
R9 F	Research on weed control in irrigated rice	" " "	1	803.050
R10 F	Agrometeorology on upland rice	Bouaké	1	2.407.228
R11 F	Variety improvement programme for rainfed rice	Bouaké	3	1.919.300
R12 F	Cooperative trials on weed control in rainfed rice	Bouaké	1	616.795
R13 E	Tidal mangrove swamp	Rokupr	1	757.650
R14 E	Agricultural practices & weed control and mechanisation	Rokupr	1	942.840
Total project costs. . . . .				17.286.421
				=====

WEST AFRICA RICE DEVELOPMENT ASSOCIATION  
FIRST SESSION OF THE GOVERNING COUNCIL

Bamako, Mali 9 - 11 - May 1972

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WARDA/72/A1c

DEVELOPMENT PROJECT BUDGET

\* \* \* \* \*

BUDGET REGIONAL SEED MULTIPLICATION CENTER

I Regional Seed Multiplication Center - Richard Tell -  
Investment Budget

<u>Land</u>	US \$
Purchase (Government owned)	
Land - renovation of irrigation infrastructure - 50 ha @ 280/ha	14,000
Red rice eradication at \$50/ha	2,500
<u>Buildings</u>	
Office renovation (30 sq m) air conditioning, etc office furniture	3,600
Storage, repair shop renovation (500 sq m)	2,000
Senior staff residence renovation (at \$5,000 per house)	5,000
Furniture (complement)	2,000
Field shed (30 sq m)	4,000
Seed control laboratory (installation in existing building) 30 sq m	2,000
	<hr/>
	18,600
<u>Equipment</u>	
Agricultural machinery:	
1 tractor, 1 disc plow, 1 disc harrow, caterpillar, grain drill, 2 small combines, trailer, fertilizer spreader, pests control equipment	25,000
Seed cleaning, revision of present equipment, parts, additional seed treatment equipment	6,000
Seed control laboratory equipment:	
samples, moisture testers, separators, seed counter, small equipment, glassware	15,000
<u>Vehicles:</u>	
1 car, 1 5-ton truck, 1 light truck	18,000
Contingency (10%)	6,400
Total	<hr/>
	105,500



II Regional Seed Multiplication Center - Richard To  
Annual Operating Costs

1	<u>Personnel</u>	
	1 seed production and control specialist	30,000
	1 assistant ("condu teur des travaux")	2,400
	1 field foreman	1,920
	6 drivers (tractor and vehicles)	5,760
	1 seed cleaning machinery operator and mechanic	1,200
	2 store clerks	2,400
	2 watchmen	1,000
	seasonal help at 150 man/days per ha at 1 4 per day	7,500
	1 administrative secretary	1,450
	2 seed control laboratory technicians	2,900
		1,000
2	Travel	2,000
3	Office expenses	2,500
4	Machinery operation	500
5	Irrigation system maintenance	2,000
6	Insurance	2,000
7	Supplies (fertilizer, pesticides, etc )	3,000
8	Utilities	500
9	Building maintenance	5,700
10	Vehicle operation	3,000
	10% Contingenc	83,730
	Total	

III Regional Seed Multiplication Center - Rokupr  
Investment Budget

Land

Purchase (Government)

Leveling, cleaning, irrigation, infrastructure at 400 ha 20,000

Buildings

Office 80 sq m at 75/sq m 6,000

Office furniture 2,000

Senior staff residence (1) 13,000

Senior staff furniture 5,000

Storage, 80 sq. m. at 30/sq. m.	2,400
Drying shed	3,000
Repair shop 50 sq. m. at 30/sq. m.	1,800
Seed cleaning building 80 sq. m. at 30/sq. m.	2,400
Seed control laboratory 30 sq. m.	3,000
Machinery shed 120 sq. m. at 30/sq. m.	3,600
<u>Equipment</u>	
Agricultural Machinery:	
1 tractor, 1 disc plow, 1 disc harrow, cultivator, grain drill, 2 small combines, trailer, fertilizer spreader, pest control equipment	25,000
Repair shop equipment	1,000
Generator	4,000
Pump	2,000
Seed cleaning equipment (100 tons per year)	20,000
Seed drying equipment (100 tons per year)	6,000
Seed control laboratory equipment:	
samplers, moisture testers, separators, seed counter, small equipment, glassware	15,000
Vehicles:	
1 car, 1 5-ton truck, 1 light truck	13,000
Contingency (10% equipment)	9,100
Total	<u>162,300</u>

IV SUMMARY OF COSTS

		<u>Bokupr</u>	<u>Richard Toll</u>
Investment		162,300	105,500
Operation costs	1st year	100,410	90,410
	2nd "	105,430	94,930
	3rd "	110,700	99,670
	4th "	116,295	104,650
	5th "	122,050	110,000
Total annual costs		554,885	499,660
Seed shipments	1st year	2,250	5,790
	2nd "	2,360	6,080
	3rd "	2,480	6,380
	4th "	2,600	6,615
	5th "	2,865	6,950
Total shipment		12,555	31,815
Total:		<u>729,740</u>	<u>636,975</u>

TRAINING BUDGET D2

A) Ibadan

a) IITA Complementary Investment Costs:

1.	2 - houses with furniture @ \$30,000	60,000
2.	2 - apartments with furniture @ 20,000	40,000
3.	Initial preparation of training aids	10,000
4.	Special training of field assistants, 2	7,000
5.	1 - classroom, 5m x 8m, 40 sq m @ \$50/sq m	2,000
6.	1 - laboratory, complete, 5m x 8m, 40 sq m @ \$100/sq m.	4,000
7.	Field equipment and additions to irrigation system	10,000
	Sub-Total	<u>\$133,000</u>
	Contingencies 10%	13,300
	Total	146,300

b) IITA Complementary Annual Budget

1.	2 - French speaking instructors @ \$30,000	60,000
2.	4 - Interpreters (6 months)	60,000
3.	- Translation	4,000
4.	2 - Agricultural field Assistants @ \$8,000	16,000
5.	- Training materials, visual aids, class- room and laboratory supplies	1,000
6.	18 - Trainees	
	(a) Food	6,480
	(b) Pocket allowance	6,480
	(c) Air fare	5,200
	(d) Visiting outside country	5,200
7.	- Travel of Staff	4,000
8.	- Health and Accident Insurance	2,000
9.	- Cleaning and Laundry	500
10.	- Books and Periodicals	450
	Sub-Total	<u>\$171,310</u>
	Contingencies	17,131
	Total one year	188,441
	Total five years	942,205
	Total project	1,088,505

B) Bouaké

A. Investment Costs:

(a) Use of AVB Center

1	2	- houses, 10m x 20m, including electricity plumbing, air conditioning, and furniture	60,000
2	2	- houses, 10m x 15m including electricity, plumbing and air conditioning	40,000
3		- Initial preparation for Training aids	10,000
4		- Special Training for Field Assistants	7,000
5		- Library and Club House 6m x 10m, including electricity, plumbing and air conditioning	4,500
6		- Dormitory Modification	4,000
7		- Install air conditioners in Classrooms	1,200
8		- Modification of one classroom into laboratory	2,500
9		- Open shed for agricultural machinery with a closed annex for tools, spare parts, fertilizers, and chemicals, 8m x 16m, 128 sq. m @ \$50/sq. m.	6,400
10		- Athletic Court	2,000

Furniture and Equipment

1		- Library and Club Room	1,360
2		- Bar equipment	100
3		- Radio	200
4		- Dormitories, 18 rooms @ \$200	3,600
5		- pH meter, entomologic material and miscellaneous	1,000
6		- Topographic	2,000
7		- Dining Room Equipment	200
8		- Kitchen, refrigerator and utensils	1,000
9		- Laundry room	500
10		- Athletic equipment	200
11		- Projector, films and slides	2,000
12		- Books, maps and manuals	500
13		- Fire extinguishers	700
14		- Meteorological Equipment	1,000

Office Furniture and Machines

15	- Calculator, typewriter, desks (4), chairs (9), files (3), shelves (3), photocopy, duplicating and miscellaneous.	4,200
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Vehicles

1	- 1 Bus, 20 passengers	10,000
2	- 1 Truck, 1-ton	4,000
3	- 1 small car	3,000
4	- 1 motor bike	300

Agricultural Machinery

1	- Tractor, 35 hp	5,150
2	- Disc plow	730
3	- Disc harrow	700
4	- Cultivator	480
5	- Seeder	1,400
6	- Trailer, 2-wheel	1,400
7	- Land leveler	1,000
8	- Ridger and tool bar	600
9	- Fertilizer Spreader	600
10	- Thresher, head	200
11	- Thresher, small (manual)	200
12	- Thresher, medium	600
13	- Winnower	500
14	- Combine	8,000
15	- Animal-drawn implements and oxen	1,600
16	- Rice mill (laboratory)	1,500
17	- Motorculteur, Kubota KMF, 10/13 hp, rotovator, cage wheels, reversible plow, leveler, ridger, and cutter bar	2,000
18	- Motorculteur, Kubota, 18/20 hp with implements	3,200
19	- Seeder, manual	75
20	- Transplanter, manual	100
21	- Transplanter, motorized	500

22	- Weeder, manual	50
23	- Weeder, mechanical	250
24	- Thresher, Borge, Adaptable to motorculteur	2,300
25	- Sprayers and dusters (3 types)	250
26	- Mechanic's tool set	500
27	- Lump sum, for miscellaneous mechanized equipment	2,500
28	- Lump sum, to develop five hectares of land for rice of different types	5,000
	- Sub-Total	<u>214,845</u>
	- Contingencies 10%	21,485
	- Total	236,330

(b) Supplemental Investment in the event of non-Utilization of the A.V.B. Training Center

-	Dormitory, landry, dining room, and kitchen, 10m x 42m, 420 sq m @ \$75	31,500
-	Office, classroom, and laboratory 8m x 24m, 192 sq m @ \$75	14,400
-	Reduce for modification of dormitory and classroom and installation of air conditioners in classroom	45,900
		<u>7,700</u>
	Difference	38,200

B. Annual Costs:

	1	<u>Personnel</u>	
1	2	- Instructors @ \$30,000	60,000
2	2	- Assistant Instructors (IITA) @ \$3,000	16,000
3	1	- Administrator	2,500
4	1	- Farm Operator	1,500
5	1	- Clerk/Typist	1,000
6	2	- Drivers @ \$2,000	4,000
7	1	- Tractor Driver	960
8	1	- Mechani.	960
9	1	- Cook	900

10	1 - Cook's helper	600
11	1 - Laundryman	600
12	6 - Laborers	1,800
13	1 - Watchman	300
14	1 - Messenger	400
	2 Food (13 x 6 x 30 x 2)	6,480
1	- Pocket money allowance	6,480
2	- Cleaning and laundry supplies	500
3	- Administrative supplies	2,000
4	- Classroom supplies	500
5	- Laborator supplies	500
6	- Books and Periodicals	450
7	- Medical supplies	180
8	- Health and accident insurance	2,000
9	- Fire insurance (buildings and equipment)	200
10	- Repair and maintenance - buildings	2,000
11	- Fertilizers and chemicals	1,000
12	- Electric, telephone, and water	2,400
13	- Vehicle operation, insurance included	7,130
14	- Tractor operation, including implements	2,630
	3 <u>Travel</u>	
1	- Trainees, air travel	5,200
2	- Trainees, visits outside country	5,200
3	- Staff	4,000
	- Sub Total	140,370
	- Contingencies 10%	14,037
	- Total one year	154,407
	- Total five years	772,035
	- Total with A.V.B. Center	1,008,365
	- Total project without A.V.B. Center	1,046,565



WEST AFRICA RICE DEVELOPMENT ASSOCIATION  
FIRST SESSION OF THE GOVERNING COUNCIL

Bamako, Mali, 9 - 11 - 5/72

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WARDA/72/A1d

COORDINATION BUDGET

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BUDGET OF THE DEPARTMENT OF RESEARCH

I. <u>Investment</u>	A.	
1. Equipment and office supplies		6,000
2. 1 Car (+ renewal)		6,000
3. Contingencies 10%		1,200
4. Sub-Total for one year		<u>13,200</u>
II. <u>Operating Costs</u>		
1. 1 Research Agronomist (c)		30,000
2. 1 Statistician (a)		30,000
3. 1 Secretary (a)		7,000
4. 1 Clerk/Typist (a)		5,000
5. 1 Clerk (a)		5,000
6. 1 Driver (a)		800
7. Office operation (a)		2,000
8. Travel (a)		5,000
9. Consultants (7 man-months) (b)		20,000
10. Annual Meeting of Researchers (b)		20,000
11. Overhead Costs 15%		19,920
12. Sub-Total for one year		<u>152,720</u>
13. Total 5 years		763,600
Total: Research Coordination for 5 years:-		776,800

BUDGET OF THE DEVELOPMENT DEPARTMENT

I/OPERATING COSTS

1) 1 Agricultural Agronomist (c)	30,000
2) 1 Specialist in Rural Engineering	30,000
3) 1 Economist	30,000
4) 1 Assistant Economist	30,000
5) 1 Specialist in Rice Storage and Processing	30,000
6) 1 Assistant Specialist in Rice Storage and Proces	30,000
7) 1 Secretary	7,000
8) 1 Stenographer	4,000
9) Clerk-Typist (2)	2,000
10) Drivers (2)	2,000
11) Consultants (24 man/months)	96,000
12) Travel	10,000
13) Housing	18,000
14) Office supplies	2,000
15) Overhead costs 15%	53,550
	-----
16) Sub-Total for one year	410,550
17) Sub-Total for five years	2,052,750

II/ INVESTMENT

1) Office equipment	8,000
2) 2 cars (+ renewal)	12,000
3) Contingencies 10%	2,000
	-----
Sub-Total. . . . .	22,000
Total Project. . . . .	2,074,750
	=====

BUDGET OF THE COMMUNICATION SYSTEM (C)

I/ OPERATING COSTS

1) 4 bilingual secretaries	28,000
2) 4 messenger-cleaners	8,000
3) rental 4 houses-offices	14,000
4) office supplies	4,800
5) overhead costs 15%	8,220
	-----
Sub-Total for one year	63,020
Sub-Total for five years	315,100

II/ INVESTMENT

1) telecommunication equipment	25,000
2) officeequipment-houses	14,000
3) motorbykes + renewal	2,800
4) contingencies 10%	4,180
	-----
Sub-Total	45,980
Total Project for five years	361,080
	=====

WEST AFRICA RICE DEVELOPMENT ASSOCIATION

FIRST SESSION OF THE GOVERNING COUNCIL

B amako, Mali 9 - 11 -1972

-----  
WARDA / 72 / A2

ORIGIN OF WARDA STAFF AT HEADQUARTERS

FOR 1972 and 1973

\* \* \* \* \*

OFFICE OF THE EXECUTIVE SECRETARY

- |     |                            |       |
|-----|----------------------------|-------|
| 1)  | Executive secretary        | WARDA |
| 2)  | Secretary                  | '' '' |
| 3)  | Registry secretary clerk   | '' '' |
| 4)  | Deputy executive secretary | '' '' |
| 5)  | Secretary                  | '' '' |
| 6)  | FAO senior adviser         | UN    |
| 7)  | Legal adviser              | WARDA |
| 8)  | Liaison officer            | '' '' |
| 9)  | Secretary                  | UN    |
| 10) | Clerk typist               | WARDA |
| 11) | Three drivers              | '' '' |
| 12) | Messenger                  | '' '' |

DIVISION OF ADMINISTRATION AND FINANCE

1)	Chief of administration and finance Division	UN
2)	Finance officer	WARDA
3)	Stenographer	?? ??
4)	Personnel officer	?? ??
5)	Procurement officer	?? ??
6)	Inventory control clerk	?? ??
7)	Typist clerks (two)	?? ??
8)	1 clerk book-keeper	?? ??
9)	Two messenger -cleaners	?? ??
10)	1 driver	?? ??
11)	1 receptionist	?? ??
12)	1 lift operator	?? ??

DEVELOPMENT DEPARTMENT

1	Production Agronomist	USAID
2	Land and water specialist	USAID
3	Economist	UN
4	Assistant economist	UN
5	Storage and Processing specialist	UN
6	Assistant storage	UN
7	One secretary	USAID
8	Stenographer	USAID
9	Typist clerk (2)	USAID

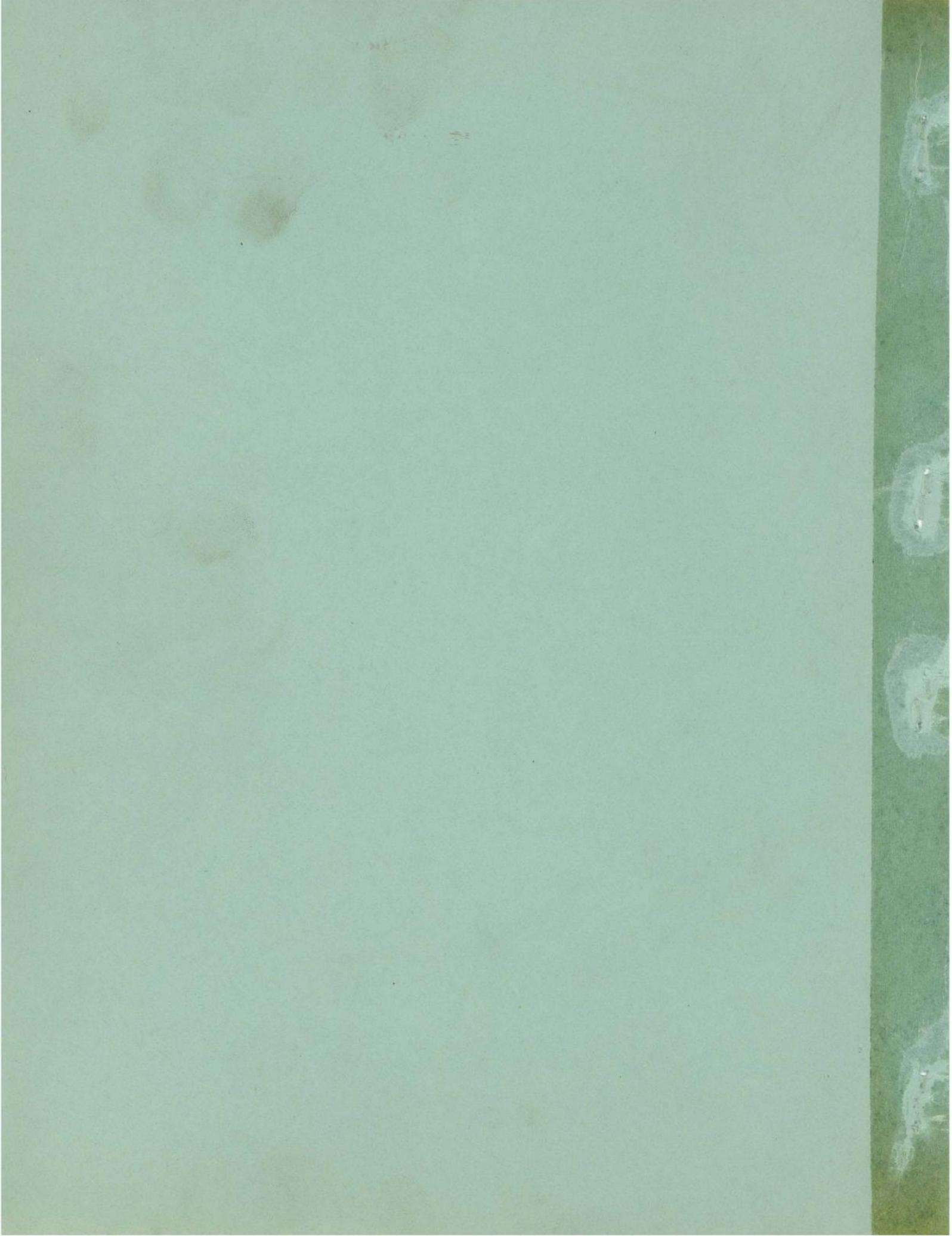


RESEARCH DEPARTMENT

1	Research coordinator (a)	NL
2	One statistician	USAID
3	One secretary	USAID
4	One typist clerk	USAID
5	One clerk	USAID

DIVISION  
OF DOCUMENTATION AND DATA PROCESSING

1	Chief of documentation Division	UN
2	Assistant documentalist	UN
3	Data processing officer	UN
4	Assistant data processing officer	UN
5	Stenographer	USAID
6	Typist-clerk	USAID
7	Photographer	UN
8	Clerk	USAID
9	Editing officer	USAID
10	Translator English	UN
11	Translator French	USAID
12	Stenographer	USAID
13	One clerk	USAID





WEST AFRICA RICE

DEVELOPMENT ASSOCIATION

G-11

WARDA: Integrated Programme  
and Budget 1977.

May 1976

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MEMBERSHIPS OF WARDA'S GOVERNING BODIES AND

SECRETARIAT STAFF

MEMBERS OF THE GOVERNING COUNCIL

CHAIRMAN H.E., Adrien Senghor  
Ministre  
Ministere du Developpement Rural et de  
l'Hydraulique  
DAKAR

Benin

Mr. Janvier Y. Capo-Chichi  
Director General of SONIAH  
B.P. 312  
PORTO NOVO

The Gambia

Alhaji Yaya Lang Ceesay  
Minister of Agriculture & Natural Resources  
Ministry of Agriculture & Natural Resources  
The Quadrangle  
BANJUL

Ghana

Dr. Joe E. Quansah  
Executive Director  
Grains Development Board  
KUMASI

Ivory Coast

Mr. Kouame Otchounou  
Director of Studies & Programmes  
Ministry of Agriculture  
ABIDJAN

Liberia

Dr. Nah-Doe P. Bropleh  
Deputy Minister  
Ministry of Agriculture  
MONROVIA

Mali

Mr. Moriba Sissoko  
Director of Cabinet  
Ministry of Rural Development  
BAMAOKO



Mauritania

Mr. Amadou Bachirou Baro  
Director  
National Centre for Agronomic  
Research & Agricultural Development  
B.P. 180  
NOUAKCHOTT

Niger

Mr. Amadou Cisse  
Secretary General  
Ministry of Rural Economy  
NIAMEY

Nigeria

Mr. B. S. Oloruntoba  
Permanent Secretary  
Ministry of Agriculture & Rural Development  
LAGOS

Senegal

M. Medoune Diene  
Director General of Agricultural Production  
Ministry of Rural Development & Water Resources  
DAKAR

Sierra Leone

Hon. S. A. Kebe  
Deputy Minister of Agriculture & Natural Resources  
Ministry of Agriculture & Natural Resources  
FREETOWN

Togo

Mr. Baguilma Ywassa  
Principal Agricultural Officer  
Ministry of Rural Equipment  
LOME

Upper Volta

Mr. Joseph Kabore  
Director of Agricultural Services  
B.P. 7028  
OUAGADOUGOU

MEMBERS OF THE SCIENTIFIC AND TECHNICAL COMMITTEE

EXECUTIVE SECRETARIAT

Dr. Nah-Doe P. Bropleh  
Deputy Minister of Agriculture  
Monrovia, Liberia

Mr. P. G. de Boer  
Mrs. B. Jagne  
Mrs. B. Phillips  
Mrs. C. Woods  
Mrs. G. Ravey  
Mr. Peter Daniels

Mr. Zakary Garba  
Director General  
National Institute of Agronomic Research  
INRAN, BP 429  
Niamey, Niger

Dr. R. A. D. Jones  
Acting Director  
Rice Research Station  
Rokupr, Sierra Leone

RESEARCH DEPARTMENT

Dr. R. A. D. Jones  
Acting Director  
Rice Research Station  
Rokupr, Sierra Leone

Dr. H. Hill  
Mr. O. Koffi

Mr. L. Sauger  
Director General  
Senegalese Institute of Agricultural Research  
B.P. 3120  
Dakar, Senegal

Dr. D. Das Gupta  
Dr. M. A. Ghosh  
Mr. N. Laroche  
Mr. J. Ballard

Dr. Bakary Toure  
Professeur a l'Universite d'Abidjan  
B.P. 4322  
Abidjan, Cote d'Ivoire

Mr. D. Bore  
Mrs. N. Bore  
Mr. S. Bore

DEVELOPMENT DEPARTMENT

Mr. B. L. Ywassa  
Deputy Director General  
Ministry of Rural Development and Cooperatives  
B. P. 1463  
Lome, (Togo)

Mr. J. A. W.  
Mr. G. M. Foye  
Mr. G. G. G.  
Mr. G. G. G.  
Mr. A. G. G.  
Mr. B. van G.

Dr. L. J. Marenah  
Director of Agriculture  
Cape St. Mary  
The Gambia

Mr. E. P. Bore  
Miss Audrey Cox

TRAINING DEPARTMENT

Head Training Centre  
Training Officer  
Training Officer

Mr. P. Foye  
Mr. J. Jody  
Mr. O. Mafassire

STAFF LIST  
as at 30/4/76

EXECUTIVE SECRETARIAT

Dr. Jacques Diouf	Executive Secretary
Dr. Lekan Are	Deputy Executive Secretary
Mr. P. G. de Boer	FAO Team Leader
Miss B. Jagne	Bilingual Secretary
Mrs. B. Phillips	Secretary
Mrs. C. Woods	Secretary
Mrs. G. Faye	Administrative Assistant
Mr. Peter Daniells	General Development Officer (USAID)

RESEARCH DEPARTMENT

Dr. H. Will	Research Coordinator (CGIAR)
Mr. O. Koffi	Soils & Fertilizer Trials Coordinator (CGIAR)
Dr. D. Das Gupta	Variety Improvement Coordinator (CGIAR)
Dr. M. A. Choudhury	Breeder (USAID/Saudi Arabia)
Mr. M. Larinde	Seed Superintendent (CGIAR)
Mr. J. Dallard	Associate Breeder at Bouake (France)
Mr. D. Moss	Research Assistant (Peace Corps)
Miss Norma Miller	Secretary
Mr. B. Sambulah	Administrative Assistant

DEVELOPMENT DEPARTMENT

Mr. D. Aw	Production Agronomist & Head (FAO/UNDP)
Mr. C. E. Tagoe	Production Agronomist (FAO/UNDP)
Mr. G. Chenet	Rural Engineer (France)
Mr. G. Brenwald	Loans Expert (Switzerland)
Mr. A. Britton	Extension Officer (USAID/FAO)
Mr. H. van Ruiten	Rice Processing Specialist (FAO/UNDP)
Mr. H. P. Rozeboom	Associate Rice Processing & Storage (FAO/Netherlands)
Miss Audrey Cox	Administrative Assistant

TRAINING DEPARTMENT

Mr. F. Faye	Head, Training Centre (USAID)
Mr. R. Judy	Training Officer (USAID)
Mr. O. Mafolasire	Training Officer (USAID)

DOCUMENTATION DIVISION

Miss K. Hoppe  
Mr. B. Guindo

Documentalist & Head (FAO/UNDP)  
Indexer (FAO/UNDP)

COMMUNICATIONS DIVISION

Mr. G. Boccara  
Mrs. T. Martin  
Mrs. M. Kosek

Translator & Head (FAO/UNDP)  
Associate Translator (France)  
French Teacher (Peace Corps)

STATISTICS DIVISION

Mr. P. Garnier

Agricultural Statistician (France)

ADMINISTRATION & FINANCE DIVISION

Mr. A. K. Djadoo  
Mr. J. Dupuy  
  
Mr. H. G. Ankoma-Sey  
Mr. C. B. Dunbar  
Mr. S. J. Merchant, Sr.  
Mr. C. Kumodzi  
Mr. P. Steratore  
  
Mr. C. Morrison  
Mr. Joseph Edzii

Chief, Administration & Finance  
Associate Expert-Administration  
& Finance (France)  
Finance Officer  
Personnel Officer  
Liaison Officer  
Procurement Officer  
Inventory/Insurance Officer  
(Peace Corps)  
Budget Assistant  
Accounting Assistant

P A R T II.

BACKGROUND INFORMATION

## I. BACKGROUND

Rice is an important staple food of West Africans. In 1975 the quantity of rice produced and available for consumption was estimated at 1.18 million metric tons (mt) and about 202,000 m.t. of rice valued at \$65m were imported to bridge the gap between production and consumption. The average annual per capita consumption for the region is 12.6 kg. This ranges from 103.9 kg per head in Sierra Leone to only 2.9 kg per head in Togo. At the present rate of consumption, the rice requirements of West Africans would be about 2.1 million m.t. in 1980. At an average price of \$320 per ton in 1975, its market value will be \$672m, but if we take into account the high fluctuations of the international rice market since 1972, this market value might as well double. These facts, coupled with the fact that West Africa is blessed with abundant land and water resources and a suitable climate to support rice growing prompted the international conference held in Monrovia, Liberia, in September, 1969 to decide to set up the West Africa Rice Development Association (WARDA).

The Constitution of WARDA was adopted at the Conference of Plenipotentiaries held in Dakar, Senegal, in 1970, while the Association started to function on 1 December, 1971. WARDA is an inter-governmental regional organization whose main aim is to make West Africa self-sufficient in rice. Its members are: Benin, The Gambia, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta. Guinea Bissau became an associate member as from 1975.

The policy making body of the Association is the Governing Council made up of a representative from each Member State. The Association now has only one committee: the Scientific and Technical Committee, which reviews its work programme. At its Fifth Session in Dakar, Senegal, in December 1975, the Governing Council abolished the Advisory Committee which used to be a second committee. The Council

and its Committee meet at least once a year, normally between October and December.

The member countries contribute to the administrative budget of WARDA, while the cooperating countries and organizations, namely France, The Netherlands, United Kingdom, United States (USAID), Canada, Abu Dhabi, Kuwait, Saudi Arabia, Switzerland, Ford Foundation, UNDP and the Consultative Group on International Agricultural Research (CGIAR) finance the research and development projects.

According to its statutes the main objectives of the Association are to promote and increase the quantity and quality of rice produced in West Africa by:

- a) encouraging, coordinating, and undertaking as necessary, basic and applied research programmes in the scientific, technical, economic and sociological fields;
- b) collecting, analyzing and disseminating information on methods applied, experience gained, and results obtained both within and outside West Africa;
- c) organizing or arranging for conferences, seminars and training facilities, securing of fellowships and establishing, or assisting in the establishment of, advisory services and training and extension facilities;
- d) elaborating requests for special financial and technical assistance and receiving and administering separately such financial and technical assistance (including movable and immovable property, services and loans), as may be made available under the appropriate programmes of the United Nations, the Specialized Agencies, other organizations or governments desirous to support the aims of the Association;

Association;

- e) providing, as appropriate, regional rice research and development facilities;
- f) carrying out or promoting any other measures or activities at the regional as well as the national level, as determined by the Governing Council, for the purpose of developing rice production and marketing in West Africa.

Paddy production of WARDA member countries stood at 1733.5m tons at the inception of the Association in December 1971. This has risen to 2208.9 million mt and 2295.8 million mt. in 1974 and 1975 respectively. Three member countries have in fact recorded surpluses from local rice production in 1975. They are Mali, Ivory Coast and Sierra Leone. It is our hope that this trend will continue with a view to promote regional trade in rice.

## II. THE SECRETARIAT

The Headquarters of WARDA is located at the E. J. Roye Memorial Building in Monrovia, Liberia. It is made up of the Executive Secretariat, a Research Department whose function covers the Coordinated Trials (Project W-1) and the Special Research Projects originally W-2, W-3 and W-4 and now regrouped and integrated into Regional research projects for irrigated rice (Richard Toll), mangrove rice (Rokupr), Deep-flooded and floating rice (Mopti) and rainfed rice (Bouake). There is also a Development Department with five divisions: Project Design, Project Quantification, Loans Management, Seed Multiplication, Production Mechanization, a Training Department with its Regional Training Centre based at the University of Liberia Farm in Fendall, near Monrovia; an Administrative and Finance Division, Documentation, Communications and Statistics Divisions. The activities of the Association are coordinated by the Executive Secretary assisted by the Deputy Executive Secretary and the other members of staff. The Secretariat has enjoyed close cooperation and support of



the UNDP/FAO which was instrumental in preparing the initial studies for formulating WARDA Research and Development projects. It has also enlisted the cooperation of IITA, IRAT, BRRI, IDRC, IRRI, AICRIP, CAU/STRC and ECA.

#### B. Training

The WARDA training programme is handled at four levels:

- a) Training of field assistants primarily designed to enable the assistants to conduct the WARDA coordinated trials under the supervision of senior national scientists: it enables uniformity and higher standards of conducting the trials.
- b) Training of rice production specialists - normally a six month course similar to that run by IRRI: this enables trainees to return to their countries to conduct local courses for extension workers.
- c) Short-term specialised training of 4-6 weeks duration, the numbers of participants varies according to subject matter which covers such fields as seed multiplication, water management, rice milling and processing; storage, etc.
- d) Training of research personnel in support of the WARDA research programmes and subsequently for national research and development personnel. The courses will vary from short-term periods of 6 months to 2-3 years for higher degrees in recognised institutions.

#### C. The Development Department

The ultimate objective of WARDA is regional self-sufficiency in rice at the earliest possible time and this can be achieved in the field through increased production and efficient storage, processing and marketing. These activities

depend on well conceived national programmes aimed at reaching as many as possible the innumerable small farmers cultivating between one and six acres (0.4 to 2 ha) of rice as well as the small huller operators and the semi-government owned larger mills.

It is the responsibility of the Development Department to add expertise to national agricultural planners (who are generally overwhelmed with work) in their efforts to devise programmes for increased rice production and improved storage and milling programmes and techniques.

The Department is also WARDA's main contact with international Financing Agencies which finance agricultural or rural development programmes in the region. It works in close relations with these agencies and often joins them in project identification, appraisal and evaluation. Two of these are the International Bank for Reconstruction and Development (IBRD) and the African Development Bank (ADB).

The Development Coordinator directs the activities of the five Divisions of the Department which are:

1. Project Design

This Division is primarily charged with the responsibility of identifying, formulating, preparing and evaluating rice projects for member states, either exclusively or in collaboration with other financing agencies, and of making general studies on rice problems in the region. To achieve these objectives, a team of experts in rice agronomy, irrigation (land and water management), economics and storage and processing has been assembled at the Headquarters for undertaking jointly specific projects based on requests by member states. WARDA has an important coordinating role to perform in order to avoid wastage of money through the duplication of studies on development trends.

2. Project Quantification

This Division is mainly a support for the Design Division in projects that involve civil engineering works. Estimating of quantities, construction costs and design drawings will be the main duties of this Division. The data and design recommendations coming from this Division can be used for inviting tenders from construction firms.

3. Loans Management

This Division is being set up at the request of member countries to assist them in finding financing for attractive development projects from Banks, etc. As an alternative, the Division might be in a position to recommend direct financing of such projects by WARDA when its resources permit. In addition, the Division will also be involved in the financial analysis of projects in order to satisfy the need of each particular financing agency.

4. Seed Multiplication

WARDA is producing foundation seeds of improved rice varieties for its member countries at its Seed Multiplication Centre in Richard Toll, Senegal. Certified seeds for distribution to farmers are to be produced from these through the seed multiplication schemes of each member country. This may prove the fastest way of improving the yield and quality of rice varieties now planted in the region.

Moreover, the seed centre will assist in accelerating the introduction of new promising varieties. WARDA, with its international contacts can acquire and import the necessary seed direct from the Breeder and multiply it for the benefit of the national multiplication stations and ultimately the West African farmers. The WARDA seed multiplication centre could also constitute a seed bank that can be placed at the disposal of countries facing urgent needs for rice seeds in an emergency.

## 5. Production Mechanisation

Research into mechanisation of rice production is of special interest in West Africa. A joint UNDP/FAO/Netherlands small scale mechanisation project is already in progress, but WARDA plans to carry out large scale mechanised rice production studies to fill the gap in the present studies. An experimental unit of 100 ha will be set up at Richard Toll, Senegal for studies on irrigated rice, while another study on 5 ha on mangrove rice cultivation will be carried out at Rokupr, Sierra Leone. The technical objectives will be to determine the most suitable type of equipment for each farm operation, the best methods of carrying out each operation and the optimum combination of mechanised field operations. From the economic standpoint, the following will be investigated: the time required by and the unit cost of each operation, the input/output ratio, the optimum economic combination of mechanised rice production systems.

The station will assist in testing machines which might be imported in large quantities by member governments. Such a service will diminish the risk of importing machines which are less adapted to the prevailing conditions in West Africa. Improvements and modifications can be suggested and these effected by manufacturers on a series of machines before they are exported to the various countries in the region.

## D. Documentation Division

The WARDA Documentation Centre and Library are located at the Headquarters in Monrovia. Its main aim is to collect, analyse and disseminate information relevant to rice in West Africa. It achieves this by providing information in the form of indexes on all aspects of rice production in West Africa to the member countries and to any organization concerned with rice. The service takes the form of collecting,

cataloguing, indexing and publicising these documents in the form of printed indexes in English and French, enabling all relevant documents to be retrieved in response to requests for literature on specific subjects. There is also a question and answer service based on the indexes, while a library to serve the needs of WARDA staff has been established at the Headquarters. The publication of a quarterly reference journal entitled "World References on Rice for West Africa" has been undertaken in collaboration with IITA, Ibadan, IRAT, Paris and TPI, London.

This Division has a Laboratory for Microfilming, Reprography and Photography.

E. The Communications Division

This Division handles the translation into French or English of all documents prepared by the Secretariat and the staff at the Headquarters. It designs the layout of documents, arrange their printing and distribution. It also assists the Executive Secretariat in Public Relations and in the preparation and release of information about WARDA to the press and public.

F. The Statistics Division

This Division deals with the collection, analyses and storage of statistical data on the different aspects of rice production in member countries and from information available in the Documentation Centre. The statistical data are obtained either by visits to member states or through replies to specific questionnaire sent out by the unit. The unit services the other departments and divisions of the Association by carrying out different types of analyses for them. It carries out its work by applying computer techniques and makes use of the computer facilities in Liberia on contract basis.

The data collected will be published as an Annual Rice Statistics Report. The data could also assist in deciding, planning and implementing rice policies in the region, as well as for updating information on rice development in West Africa.

G. Research

(i) The Research Structure

The WARDA Research programmes have resulted from programming and consultations at several levels. First in March, 1971, the West African Rice Research Workers met under the auspices of FAO, in Rome to draft what was adopted later that year by the WARDA Governing Council as the mid-term work programme. This incorporated rice development as a major activity. It determined the forms of rice cultivation to be studied and the research centres where these would be done. Later, a team of scientists including consultants from USAID, France and FAO updated an earlier FAO Inventory on Rice Research in West Africa by visiting the proposed centres early in 1972. Their reports were reviewed by West African Scientists and in May, 1972, at the Extraordinary Governing Council Meeting held at Bamako, Mali, the first steps towards adopting a Research and Development work programme for WARDA were taken. The draft work programme was reviewed and re-adjusted at a meeting among the WARDA Secretariat, Technical Advisory Committee (TAC) to the Consultative Group on International Agricultural Research (CG), FAO, International Rice Research Institute (IRRI) and International Institute for Tropical Agriculture (IITA). This paved the way for the establishment of the coordinated trials and the special research projects. In 1974, the WARDA research programme was reviewed by USAID, CG and TAC after missions to West Africa. Later, the Governing Council at its fourth seating in Ibadan adopted further improvements in the WARDA research programme with particular reference to:

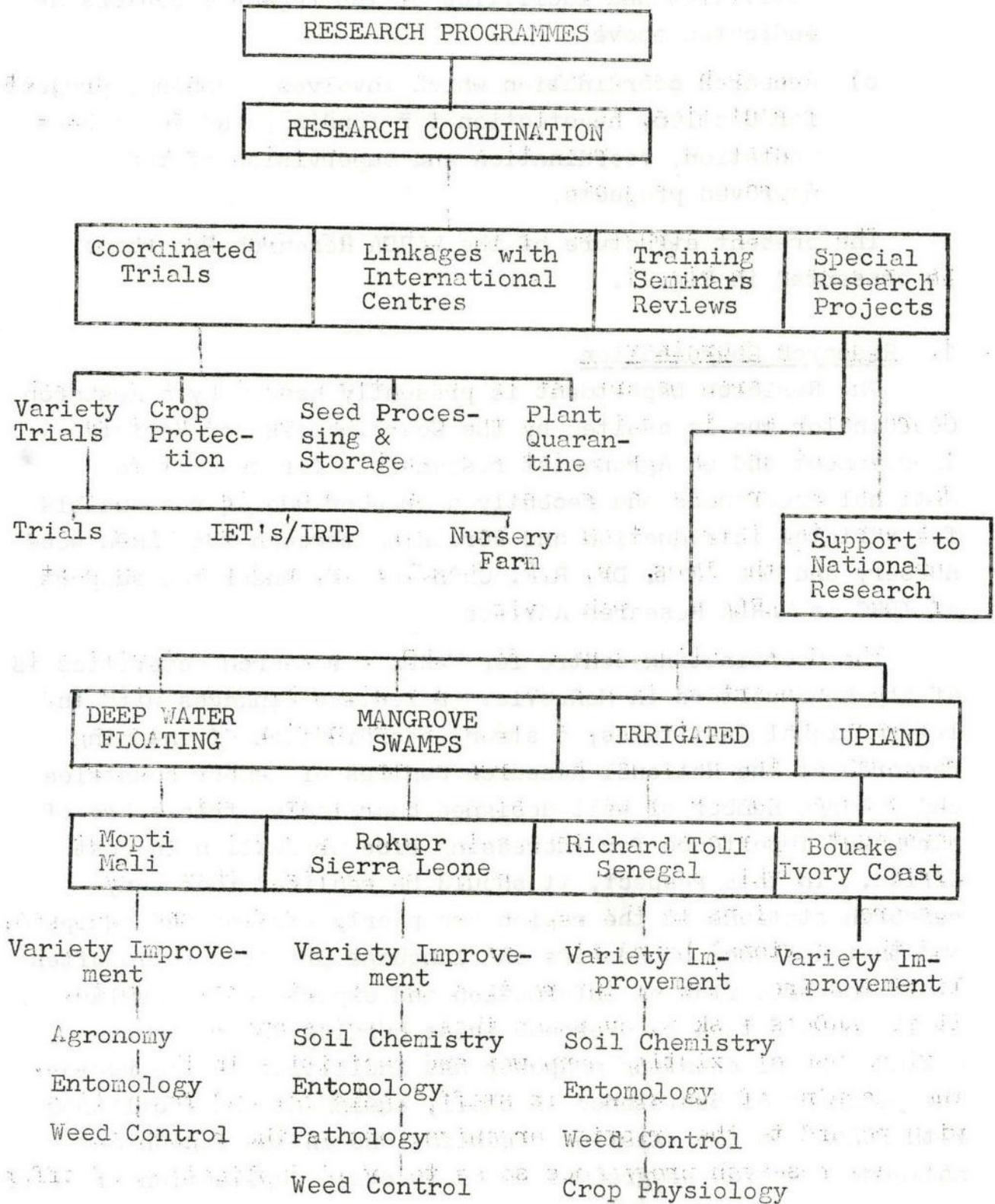
- (i) strengthening the management capacity of the research team;
- (ii) integrating the special research projects with the coordinated trials;
- (iii) establishing multi-disciplinary research teams at the centres;
- (iv) strengthening support to national research activities;
- (v) developing closer ties between WARDA research activities with the international centres;
- (vi) strengthening the initial evaluation and preliminary variety trials.

Much effort has been made over the past year to continue on-going projects and try to implement the above recommendations amongst others. However, there are still a number of hurdles to be overcome in order to have an effectively manageable WARDA Research programme.

WARDA's overall research programme can be divided into three main parts, viz:

- a) Coordinated trials of Varieties and crop Protection at a network of locations in the region with the aim of establishing a direct impact on rice development in the region. This programme is fully supported by such important components as the Seed Processing and Storage Centre, the Plant Quarantine Centre, the Initial Evaluation Tests and Training of Field and Research Assistants who conduct the trials.
- b) Special Research Projects for reinforcing existing research work and for filling gaps in rice research in the region, backstopped by available knowledge and experience at the international level. It also includes direct support to national research programmes and linkages with the international research institutes. These projects have been classified into Variety Improvement, Soil Fertility and Crop Protection.

Figure 1: The WARDA Research Structure





Various aspects of these subjects are distributed and integrated according to the ecology and the existing activities and facilities of the regional centres as indicated above.

- c) Research coordination which involves planning, project formulation, negotiation for funding, and the implementation, coordination and supervision of the approved projects.

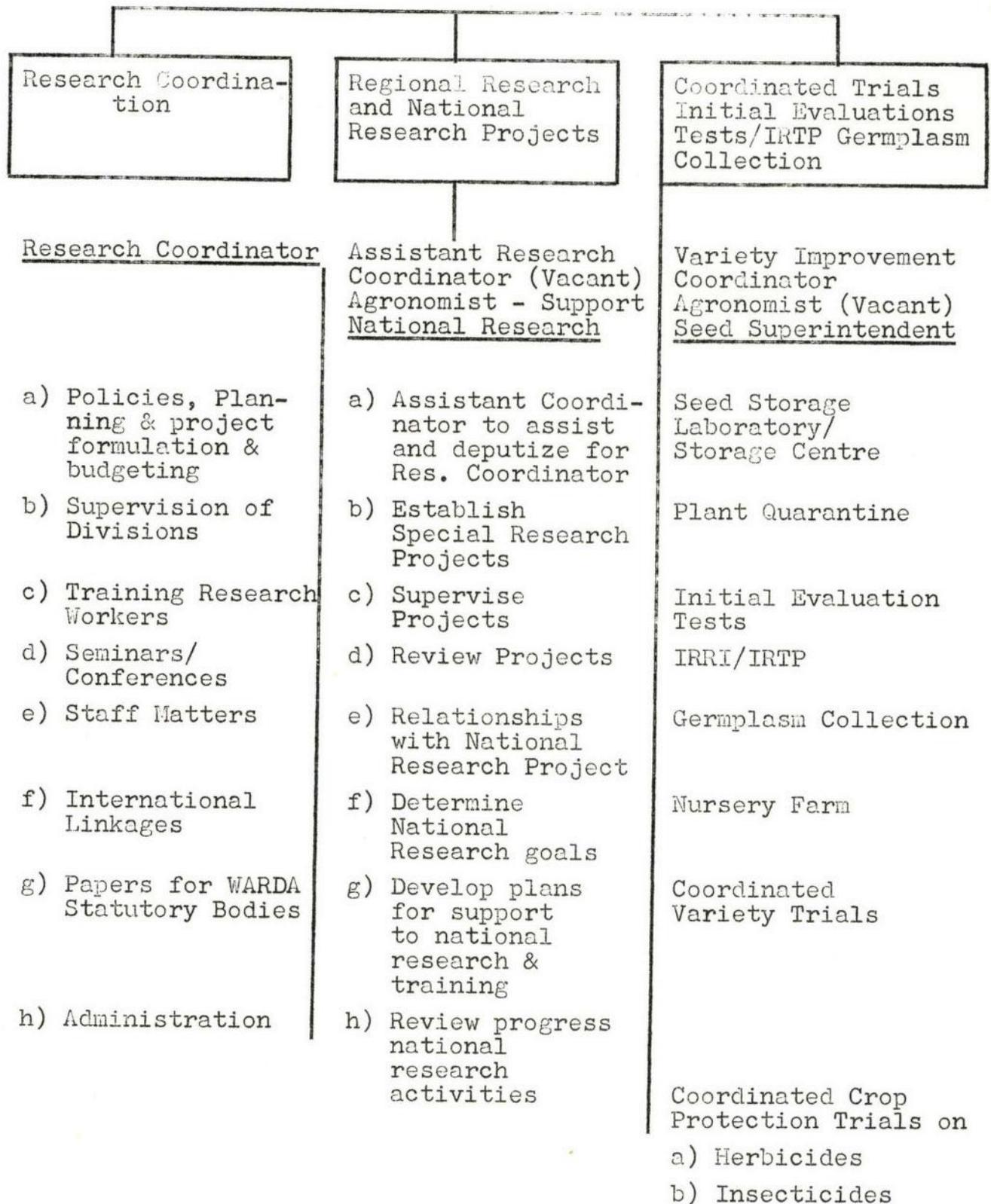
The present structure of the WARDA Research Programme is presented in Fig. 1.

#### 1. Research Coordination

The Research Department is presently headed by a Research Coordinator who is assisted by the Coordinators for Variety Improvement and an Agronomist responsible for support to National Programmes and recently a Breeder who is responsible for varietal introduction and screening through the WARDA seed nursery and the IET's. Dr. R.F. Chandler Jr. under the support of IDRC is WARDA Research Adviser.

The Coordinating centre for WARDA's research activities is at its headquarters in Monrovia. Effective linkages with the International Institutes, a strong coordination of on-going research at the National Research Centres of member countries and a large number of well designed coordinated trials are of paramount importance for increasing rice production in West Africa. In this respect, it should be realized that many research stations in the region are poorly staffed and equipped, and that national boundaries and language problems quite often limit the free flow of information and experimental results. It is WARDA's task to overcome these hurdles and to make maximum use of existing manpower and facilities in the region. The planning of assistance in staff, equipment and facilities with regard to the existing organizations in the region and national research programmes so as to avoid duplication of effort

Figure 2: Research Department



with maximum returns is one of the cardinal goals of research coordination. As such, maximum use will be made of the infrastructure available at certain major centres like IITA, Bouake (Ivory Coast), Richard Toll (Senegal), Mopti (Mali) and Rokupr (Sierra Leone) and of an organization like IRAT.

The entire WARDA research programme is being managed in such a way as to integrate the special research projects with the coordinated trials; integrate research activities at the various research centres by providing scientific team leaders who ensure that there is integrated approach to research in solving both regional and finally in strengthening national research capabilities. The structure of the coordinating teams at headquarters and staff responsibilities are shown in Fig. 2. It should be noted that two positions are vacant although the appointment of a Breeder earlier on in the year supplemented this shortage. The post of Agronomic statistician becomes more and more important with the expansion in activities.

## 2. Research Review Meeting

WARDA conducts a Research Review Meeting every year at which a Research Report incorporating all the results obtained from the coordinated trials and special projects are presented and discussed.

The Research Meeting gives scientists and delegates an opportunity to critically review the overall programme and to revise, modify or to expand the set of coordinated trials.

In order to best serve rice research workers and extension personnel in West Africa and to provide outsiders with a clear and comprehensive picture about rice research in West Africa, it has been proposed that all research activities on rice in the member countries should be annually summarized and discussed at the meeting and finally published. Pooling all valuable information on rice research annually should have

a good impact and be a good example of a joint effort and effective cooperation. This report also includes summaries of activities from the international institutions.

The annual research report may prove to be an up-to-date and a handy document, not only for research and extension workers in West Africa, but also for other rice workers, organizations and countries as it will cover all research activities on rice in West Africa.

Seminars on specialised subjects such as Breeding, Pathology, etc. are organized every year to give the opportunity of exchanging ideas and improving our knowledge on these subjects.

#### Special Research Projects

WARDA's plans for Special Research Projects in Varietal Improvement are the reinforcement of breeding work at Mopti (Mali) for deep water and floating rice, at Rokupr (Sierra Leone) for mangrove swamp rice and at Richard Toll-Fanaye in Senegal for dryland irrigated rice.

Research on insect pests, diseases and weeds are to be conducted in an integrated way with the variety improvement projects at Rokupr, Mopti and Richard Toll-Fanaye. Screening varieties and large numbers of selections for resistance against pests and diseases will form the major part of these activities.

The Research centres at Rokupr, Mopti and Richard Toll-Fanaye were selected both on ecological basis and the rice production problems found there (see below). As far as possible, multi-disciplinary team work is envisaged for each of the centres according to prevailing problems.

## Coordinated Trials

The coordinated trials are designed and managed in such a way as to obtain quick and reliable results on varietal performance, and plant protection measures under the various rice growing conditions in West Africa.

The first set of Coordinated Trials designed to provide information on the best varieties available for each area and on optimum fertilizer rates was planted in June/July, 1973 at 27 locations.

For each trial, detailed guidelines and instructions were issued along with data collection and trial information sheets to enable a proper interpretation of the results obtained.

A sound programme of coordinated trials and effective links between WARDA and the National Extension Services is expected to lead to a rapid introduction of improved varieties and better cultural practices among the rice farmers in West Africa.

### 1. Variety Trials

The variety trials fall into two main categories:

- a) The Initial Evaluation Tests which enable the screening of a wide range of germplasm which are essentially fixed, and are conducted under all the agro-climatic conditions of the region. Thirteen locations have been identified based largely on the rice culture, staffing and field facilities, production problems etc. Promising materials selected by Breeders in consultation with WARDA research staff are advanced into the second and most widely adapted trials, that is, the Coordinated Variety Trials.
- b) The Coordinated Variety Trials which are also classified according to the needs of the region - upland, irrigated,

deep water/mangrove and floating conditions. The trials are further classified into short, medium and long duration trials according to the needs of member countries. Approximately 90 such trials are being conducted during the main season.

The crop protection trials are less widely adapted in view of the technical problems involved in conducting these types of trials. The trials are conducted at 13 stations in the region where complete staff and good research facilities exist. The trials are limited to simple insecticide treatments and the testing of limited numbers of promising herbicides.

## 2. Seed Storage

With respect to the coordinated trials, by far the most important activity at present is with the Variety trials. The Seed Storage and Processing Laboratories receive, treat and distribute rice seeds for the Variety trials. It has facility for testing for purity, germination, insect and disease; seed cleaners, fumigation, drying and quality testing equipment. This ensures the supply of pure and standard rice seeds to all the trials sites in good time.

## 3. Rice Quarantine

Strict Plant Quarantine Regulations in West Africa and the limited facilities at the Regional Plant Quarantine Station at Ibadan, Nigeria for handling large quantities and varieties of rice introduction had hampered WARDA's programme on Variety improvement. To overcome this difficulty and to ease the introduction of foreign rice materials into the region, the plant quarantine facilities at Ibadan have been expanded by WARDA to enable it to cope with the additional plant materials that are introduced.

#### 4. Nursery Farm

The Research Department has been handicapped in improving the range, quality and quantities of materials to enter into the coordinated trials since there has been no facility within easy reach of headquarters where new introductions can be planted, multiplied and studied under the control of headquarters staff before nomination for the coordinated trials. The nursery farm and the seed laboratory are vital elements for the success of the coordinated variety trials. The nursery farm which has now started at the Suakoko experimental farm in Liberia is being utilized:

- a) for first stage study of introduced varieties,
- b) for the selection of new entries including early generation material in the initial evaluation test,
- c) for the preliminary variety tests and variety demonstration plots,
- d) seed multiplication plots for the coordinated trials (the present arrangement whereby seeds are collected from various sources is highly unsatisfactory and is resulting in seed admixtures, poor germination and delay in sending seeds from one site to the other, and therefore jeopardizing the success of the coordinated trials),
- e) variety maintenance plots for a Genetic Seed Bank,
- f) seed control and purification plots for the Seed Laboratory,
- g) training purposes for production specialists and field assistants.

#### 5. Training

Training now falls under a separate department although the responsibility of training senior research personnel either for the special research projects and in support of national research are still the responsibility of the department.

Recommended Stations for the Initial Evaluation Tests (WARDA/RRR/75/8)

Station	Country	Latitude (°N)	Rainfall	Cultivation	Dis- ease	In- sect	Soil	Others
1. Suakoko	Liberia	6.58	Long Monomodal	Upland Irrigated	+	+	Fetotoxicity Various def.	
2. Rokupr	Sierra Leone	9.01	Long Monomodal	Upland Mangrove Deep Water	+	+	Fetotoxicity Altotoxicity Salinity	Deep Water resistance
3. Bouake	Ivory Coast	7.40	Bimodal	Upland	+	+	Various def.	Drought tol.
4. IITA (Ibadan)	Nigeria	7.30	Bimodal	Upland Irrig.	+	+	Various def.	Drought tol.
5. Mopti	Mali	14.30	Very short monomodal	Deep water	+	+	Various def.	Deep water resistance
6. Richard	Senegal	16.27	Very short monomodal	Irrigated	+	+	Salinity Various def.	Cold tol. Photoperi.
7. Kaedi	Mauritania	16.09	Very short monomodal	Irrigated	+	+	Various def.	Cold tol. Photoperi.
8. Sapu	The Gambia	13.28	Very short monomodal	Upland Irrigated Deep Flooded	+	+	Various def.	Cold tol. Photoperi.
9. Libere	Niger	18.18	Very short monomodal	Deep Flooded Irrigated	+	+	Various def.	Cold tol. Photoperi.
10. Nyankpala	Ghana	9.25	Short monomodal	Upland	+	+	Various def.	Drought tol.
11. Moor Plant.	Nigeria	7.20	Bimodal	Upland	+	+	Various def.	Drought tol.
12. Badeggi	Nigeria	9.00	-	Irrigated	+	+	Various def.	-
13. Farakoba	Upper Volta	11.00	Short monomodal	Upland	+	+	Various def.	Drought tol.



### Planning the Regional Trials

The results obtained from the special research projects expected to provide the scientific support for the coordinated trials. In particular, the variety improvement projects at Bouake and IITA (Rainfed), Rokupr (Mangrove), Mopti (Deep flooding/floating), Richard Toll (Irrigated rice) when well established, are expected to give direct support to the coordinated variety trials. Breeding materials from the research programmes and those introduced from outside the region are entered into an initial testing programmes (IET's) for adaptability to varying rice growing conditions in West Africa. This first phase of the programme is being concentrated in a few stations within specific ecological zones and where special rice production problems exist. The following table shows the presently approved IET sites. General selection on yield parameters will be combined with these studies.

Promising lines from this test are promoted into trials with larger plots and replications to assess yield performance before the best adapted varieties are promoted into the regional variety coordinated trials.

WARDA provides the running costs of these trials including salaries of field assistants and labour, tools and equipment, chemicals and fertilizers, etc.

### Ecological Background for Rice Cultivation

In designing the coordinated trials, one should take into account the following important factors:

- i) Rainfall distribution pattern and evapotranspiration.
- ii) Solar distribution and temperature pattern.
- iii) Soil types and types of culture.
- iv) Level of management.
- v) Characteristics of varieties utilized.
- vi) Incidence of pests and diseases.

These factors are closely inter-related. The environmental potential for rice growing in West Africa is set primarily by the climate and the soils. The soils themselves reflect the influence of the climate. The classification adopted for the various ways in which rice is grown in West Africa is based largely on how water is made available to the crop.

The interacting factors between the plant, climate, the soil and management factors largely determine the yield of a particular crop of rice.

The important climatic differences within the broad West African belt are due to simple mechanisms of the general circulation of the atmosphere over the area. The belt is fed by moisture laden air from the Atlantic and dry harmattan winds from the north. While the southern winds have equitable temperature, the harmattan is cold during the northern winter and hot in summer. The WARDA region can thus be broadly divided into:

- i) area of short summer rains as found mainly in the north of the region,
- ii) area of two rainy seasons separated by a short dry spell and a longer dry season during the northern winter,
- iii) coastal areas of heavy and long periods of rainfall due to the effect of the sea and the coastal alignment.

Generally, a minimum rainfall of 600 mm per year distributed within one season (mono-modal) is essential for an upland rice crop. This is typical of the areas in the first group. The bimodal zone (second grouping) requires 1000 - 1200 mm of rain and the heavy rainfall belts receive over 2400 mm rainfall per annum. In terms of rainfall the best conditions for rain-fed rice are found in the forest zones with a rain fall distribution pattern of 150 - 180 days (mono-modal distribution).

## Responses of Rice Varieties to Ecological and Management Factors

At the outset, it is recognized that cultivated rice has a very high demand for water during its growth period. Adequate and well distributed rainfall is therefore an important factor for high yields. Moisture stress for long periods at critical growth stages like seedling or flowering stages can result in total crop failure. Prolonged and heavy rainfall resulting in high humidity encourages the incidence of diseases and pests.

Seasonal variation in day length is small for the whole area, but it is sufficient in some places notably in the north of the region, to affect varieties which are sensitive to it. For example, at Richard Toll ( $16^{\circ}27'N$ ), the mean sunshine in December is 11.3 hours but in June, it is 13 hours. Average daily sunshine hours at Rokupr ( $9^{\circ}N$ ) for December and June are 7.3 hours and 5.2 hours respectively due mainly to the cloudiness of the atmosphere during the crop season. At Rokupr it drops to 2.1 hours in August. Clear skies at Richard Toll and longer sunshine hours give it an overriding advantage over Rokupr for photosynthesis. However, the vast temperature differences (maximum) during main crop growth (June -  $38.5^{\circ}C$  for Richard Toll and  $30.6^{\circ}C$  for Rokupr) suggests a higher evapotranspiration rate at Richard Toll. The average total rainfall are 300 mm and 3000 mm per annum for Richard Toll and Rokupr respectively, practically none falling at Richard Toll from January to May.

Most West African rice varieties are sensitive to photoperiod and are therefore usually grown only during the main crop season even for irrigated rice. Apart from the effect of moisture, there appears to be a strong interaction between photoperiodism and temperature. It is essential to compare the situations at Richard Toll and Rokupr so as to have an idea of the impact of environment on pest and disease

incidence as well as crop yields in the West African region.

Under hot and dry, sunny conditions, moisture that is consumed by the plant is high but on the other hand, pest and disease incidence is often minimal. If moisture supply is adequate under such conditions and management is good, yields are much higher compared with situations with warm, moist, cloudy conditions where pest and disease incidence, short sunshine hours may be the most important yield limiting factors even where management may be good. Richard Toll typifies the first example and Rokupr the second. Modifications of the above factors occur in varying degrees all over West Africa. Since varieties react differently to these conditions, one of the major objectives of the WARDA variety and crop improvement programme is to raise or adapt rice varieties that fit within the prevailing ecological situation and to adopt production methods that maximise the conditions.

The Crop Protection trials on insects and weeds were also designed in the light of the above factors.

The most desirable feature about good soils for rice cultivation are their ability to retain moisture, as well as native and applied nutrients and also making available the nutrients to the plants for growth. Soils in the region such as halomorphic soils (Senegal, Gambia, Nigeria) and those with iron or aluminium toxicity problems (Liberia, Sierra Leone, Ivory Coast) need good management, particularly with regard to proper water control coupled with the use of resistant varieties. Soils on which rainfed rice is produced are the least productive mainly due to poor nutrient status, their vulnerability to drought conditions either as a result of the soil type or the land form or rainfall pattern. This type of cultivation is again highly vulnerable to pest and disease attack. The coordinated fertilizer trials had attempted to provide answers to some of these problems.

Under deep water or floating rice cultivation, the uncertainties about the flood waters as related to planting time, damage due to heavy floods and loss of grain during harvest result in low yields.

Management practices are more often a reflection of the historical development of rice culture in the countries. In most parts, rice cultivation is primitive and rice cultivation either on intensive basis under irrigation or through large scale land preparation by machines, is new. At the experimental level, management is often a reflection of the quality of the staff in charge of the trial and the means at his disposal.

#### Support to National Research Activities

As a follow up mechanism for the regional trials adapted to fit national needs, and to make the national research programmes more capable of participating in the Regional Research Programmes and provide reliable feedback mechanism to the WARDA Secretariat, WARDA's direct activity in this area presently takes the following forms:

- a) training of national research personnel
- b) providing relevant equipment for national research activities,
- c) conducting trials on farmers fields and
- d) assisting in developing plans for national research programme.

P A R T III.

STATE OF PROGRESS 1975 - 1976

The activities of the Association have continued to expand steadily during the period under review. Staffing of the various departments and divisions improved considerably. Efforts to initiate action at the Regional Research Stations have begun with the training of Research Assistants for Mopti and Richard Toll. The Research Assistants for the Rokupr station have also been recruited and two are being trained.

The Executive Secretary continued to maintain close contacts with Member Countries. He has also improved on the friendly and profitably relationship between ARDA and its many cooperating countries and organisations.

The rate of contribution by the member countries to the Administrative budget of the Association has been rather slow. As of the end of October 1975, only \$240,320.45 representing 48.2% of the approved budget for 1975 had been paid. The situation however improved as at the end of December 1975 when \$367,096.25 representing 73.8 per cent of the budget had been paid. The Secretariat has appealed once again to member countries to kindly take necessary steps to ensure that contributions are paid in good time.

A. Administration and Finance Division

Activities of this Division revolved mainly on the consolidation of the structures established during previous years and the introduction of modifications dictated by experience or required to achieve better efficiency.

Further to the decision taken at the Fourth Session of the Governing Council in Ibadan, Nigeria, a new Chief, Administration and Finance, Mr. Antoine Koffi Djadoo was recruited effective July 1, 1975. Mr. Djadoo has had on the job training for three months. Thereafter he underwent a 6-week intensive training at the FAO headquarters, Rome, the

World Bank and at CIAT, Colombia. He took over full responsibility for the Division on returning to Monrovia on November 17, 1975.

The Staff Appointments, Promotions and Disciplinary Committees for Professional Staff and General Service Staff met regularly. The Staff Welfare Committee also met regularly.

Regular meetings between the WARDA Executives and the staff assisted in boosting the morale of the staff.

### Finance Section

This Section has been split into two units: Accounts and Budget.

(i) Accounts: The coding system has been modified to make it compatible with the requirements of the Budget Unit. A more regular flow of financial information has been sent to the Executive Secretary and to the different departments.

(ii) Budget: Though this unit was put into operation only in August, 1975, its output in the form of regular information on budget status by departments and by donors represents a substantial assistance to all concerned for the efficient management of WARDA's resources.

A new accounting machine was received in July, 1975. As it is faster, and possesses a bigger capacity, it has contributed to the improved efficiency achieved during the year by the section.

### Personnel Section

A new Personnel Officer took over the work of the section from Mr. A.B. Naah who resigned from the Association in June, 1975. The section was visited for about two weeks in November, 1975 by a Consultant from the FAO, Mr. Chacho. Mr. Chacho's suggestions for improving the output of the section are already yielding dividends.



### Procurement Section

The activities of the Procurement Section have expanded and include, apart from procurement, maintenance of buildings and premises and supervision of the pool of vehicles.

One of the most important achievements of the year, was the agreement WARDA entered into with the Institute of International Education (IIE) in New York, an Institute which carried out procurement for most international centers. This collaboration with IIE will enable WARDA to make substantial savings as IIE is granted special discounts by all suppliers due to their bulk orders, and also in freight and other costs.

### Insurance/Inventory Section

This Section was established late in the year, in order to centralize all insurance and inventory activities which will become more and more important as the WARDA outreach programmes are implemented.

### B. Training

Training at all levels can assist WARDA in making a significant impact on rice production in the region.

### Implementation of the WARDA Training Centre

The Fourth Session of the Governing Council held at Ibadan in December 1974 approved the creation of a WARDA Training Centre, at Fendall, Liberia. The Centre will run three types of courses, namely:

1. Training of Rice Production Specialists
2. Specialized Training Programmes
3. Training of Field Assistants

Details on the different types of courses were given in an earlier paper submitted to the Scientific and Technical Committee in December 1974.

### Field Assistants Course

Twenty participants from nine member countries and two from the IITA attended the second Field Assistants course at the IITA, Ibadan, Nigeria between January 6 and February 14, 1975. The third course in the series was again held at the IITA from January 19 to February 27, 1976. It was attended by a total of 34 candidates: 23 from 12 WARDA member countries, 2 from Guinea Bissau and 9 from other countries including the Republic of Cameroon at the instance of the IITA. WARDA is grateful to the authorities of the IITA for their cooperation, and to Sierra Leone, Togo and Nigeria each of which made the services of a Training Associate available for the course.

### Specialised Training Programme

For the first time, this programme is being executed. A water management course was started on April 26, 1976 at the WARDA Training Centre, Fendall, Liberia. It is being attended by 15 trainees from WARDA member countries. The course is being conducted by experienced staff from the Netherlands led by Mr. de Wolf. Lectures were also given by Dr. Mahapatra of the IITA/FAO/UNDP rice project in Rokupr Sierra Leone and by Mr. Emlyn Jones, WARDA's soil scientist based at Rokupr. The course has stressed optimum needs and cost of providing water and the need for constant measurements both of water supplied artificially and that which comes down naturally. It was jointly financed by Netherlands and Switzerland.

### WARDA Training Centre, Fendall

The turning of the sod of the WARDA Training Centre (WTC) was performed by the Hon. James T. Phillips, Jr., then Minister of Agriculture, Republic of Liberia, on September 3, 1975. Steady progress was made on the construction of the buildings, some of which were occupied on April 25, 1976. The WARDA

Training Centre has dormitory facilities for a maximum of 40 students, three offices and two classrooms, and adequate storage space for materials and supplies. It is however using the dining and kitchen facilities of the University of Liberia Farm. The WARDA Training Centre has adequate furniture, a mini-bus and a pick-up.

Land preparation of the teaching farm of the WARDA Training Centre, Fendall started towards the end of December 1975. Both upland (rainfed) and irrigated rice fields are being prepared in readiness for the 1976 Rice Production Specialist Course which starts on June 7, 1976. Although nearly fourteen acres have been given to WARDA by the Liberian Government and the University of Liberia, more land will be made available later as a total of fifty acres (20 acres of irrigated land and 30 of upland) have been requested bearing WARDA's future needs in mind.

The report of the Training Consultant hired by WARDA recommended a minimum staff complement of five persons specialising in crop science, soil science, entomology, plant pathology and weed science. Although WARDA's Training budget makes provision for three full time members of staff, only the Training Officer (Anglophone) assumed duty by December 1975. The Head of the Training Centre assumed duty in April 1976. Efforts are being made to recruit the other Training Officer. In order that the course would be adequately covered and properly implemented, WARDA will make use of many of its professional staff based at its headquarters as resource lecturers. Already, the Association has a Research Coordinator, two Agronomists, one soil scientist, one seed technologist, one extension specialist, two crops specialists, one rural and irrigation engineer, one rice processing and storage engineer assisted by an Associate, one Associate economist, one statistician, one data processing specialist and a mechanization specialist to assist from time to time as resource lecturers. The trainees would probably benefit from

their accumulated field experience which can be utilized to provide good illustrations to lectures. In addition, WARDA intends to invite world-renown specialists from the International Institutes and elsewhere as guest lecturers.

#### Training manual

Dr. O.F. Esuruoso of the Department of Agricultural Biology, University of Ibadan, Nigeria was appointed a consultant initially for thirty days starting from August 1975 to prepare the WARDA Training Manual for the Rice Production Specialist Course. The manual is to be West African in outlook but will draw upon the recent advances made in rice technology elsewhere. The completion of the writing of the English version of the manual was not finished by November 30, 1975 as scheduled. It was however finished early in 1976 to permit sufficient time for its translation into French and its printing before the course starts on June 7, 1976.

#### Training of WARDA Staff

Pursuant to the decision of the Governing Council in December 1974 that special attention should be paid to training of WARDA staff and that a progress report should be submitted at each session of the Council, we are pleased to inform you that the training of WARDA staff has been intensified. A total of fourteen (14) professional officers and all drivers at WARDA were exposed to various training courses in 1975 as compared to only (2) members of staff in 1974.

In 1975, Mr. Jacques Diouf, Executive Secretary, underwent a two month top management course at the American Management Association in New York, USA. Dr. L.A. Are, Deputy Executive Secretary and Dr. H. Will, Research Coordinator, undertook a French Language course in France for two months and one month, respectively. Mr. O. Mafolasire was in IRRI for six months attending the Rice Production Specialist Course.

Eight newly recruited research assistants from Francophone member countries were first given a four month intensive English course from February - May 1975. Thereafter three were sent to Bangladesh (BRRI), IRRI, Thailand and IITA, and the other five went to IRRI for general training and specialized training on rice cultivation and experimentation.

Mr. Charles Dunbar, Personnel Officer, took a month course in personnel administration at the FAO Regional Office in Accra, Ghana, while Mr. Charles Kumodzi, Procurement Officer, underwent a one month course in procurement at the FAO, Rome. Mr. Djadoo, who has become the Head of Administration and Finance took a one and half months training in administration at FAO, Rome, the World Bank, Washington, D.C. and at CIAT, Colombia.

Also, about fifty (50) members of staff are undergoing daily classes in French and English at the Language Laboratory based at the WARDA headquarters since September 1975. Although the system used is non-intensive, it is considered adequate for our staff. Each class lasts for one hour daily. Although two teachers are foreseen, only one is available. It is hoped that a second one can be got fairly soon.

### C. Seminars and Meetings

#### 1975 Annual Research Review

The Annual Research Review Meeting was held also in Monrovia, Liberia from May 19-23, 1975. It was well attended by 30 delegates from member countries and from FAO, BRRI, IRAT, IRRI, OAU, Italy, SOFACO Ivory Coast and the Peace Corps. Details of decisions taken are shown under the Research Department activities.

### Scientific and Technical Committee

The fifth session of the Scientific and Technical Committee was held from November 10-12, 1975 in Monrovia, Liberia. It was attended by 6 of its 7 members, 6 observers from IITA, IRRI, IRAT etc. and by WARDA staff.

The activities and programmes of the Research, Training and Development Departments, Documentation and Communications Divisions, as well as, a paper on strengthening the national capacities for research, training and development in member countries, were reviewed and appropriate recommendations made to the Advisory Committee.

### Advisory Committee

The meeting held on December 8 and 9, 1975 was the fifth and last of the Committee. It has been abolished by the Governing Council with effect from January 1, 1976.

The Committee considered the summary progress report, the report of the Scientific and Technical Committee, programmes of the Association for 1976 and the implementation of the 1975 budget and the financing of the 1976 projects. The various reports were adopted with minor amendments.

### Governing Council

#### Second Extraordinary Session of the Governing Council

An Extraordinary meeting of the Governing Council was held in Monrovia, Liberia on March 20 and 21, 1975. It was attended mainly by Ministers from all the 13 member countries. The extraordinary meeting approved the creation of a Special Fund for research, training and development projects and an Agreement establishing the Fund. Some member countries have since ratified the Agreement.

At the same meeting, proposals on the remuneration of personnel assigned to WARDA projects in their countries

were discussed. It was the general feeling of the meeting that a single solution could not be easily found. It was however agreed that the Executive Secretary should negotiate with each Government the formula of remuneration to be adopted for each country within the framework of the principles enunciated in the Document WARDA/GC/E2/3.

The fifth session of the Governing Council was held in Dakar, Senegal from December 11 to 13, 1975. The Council considered the Activity report of the Executive Secretary, the report of the Scientific and Technical Committee and that of the Advisory Committee. The Council, among other decisions taken, unanimously approved the Administrative Budget for 1977 with the amendments made by its Budget Committee and also approved the report of the External Auditor covering the financial year 1974 and the period from January 1 to October 31, 1975.

#### D. Development Department

Despite personnel problems as the UNDP project for assistance to WARDA moved from Phase I to Phase II, the Development Department was engaged in intensive work during the period under review.

#### Direct Assistance to Member Countries

For Mali, a perspective study on intensification of rice cultivation in the area of the Office du Niger was worked out. The proposals, submitted to the Mali authorities for comment, provide for steps to raise present yields of 2 to 2.5 tons per hectare from one annual crop to 7 tons per hectare with double cropping. The principal means of attaining this objective include land levelling, development of animal traction for row sowing and weeding, and the use of research results concerning varietal improvement, fertilizer application and weed control.

For Senegal, in line with the government's guidelines, a study of the Matan project involving 10,000 to 14,000 hectares was resumed within the context of infrastructures planned by the Organisation pour la Mise en Valeur du fleuve Senegal (OMVS), (Senegal River Development Organization).

At the Gambian Government's request, WARDA sent a team of mechanization and rice milling experts to strengthen the FAO/IBRD team in connection with the appraisal mission for Phase II of the MacCarthy Island Division pilot project.

At the request of the Ghanaian Grain Development Board, WARDA assessed the milling needs of a fast expanding rice industry in northern Ghana.

For Guinea-Bissau, following the Executive Secretary's visit to the country, a multi-disciplinary team toured the country to contribute to a rice development strategy. The team made concrete recommendations designed to make Guinea-Bissau benefit rapidly from research results and development experiences gained in the sub-region to speed up the progress of rice production.

#### General, Regional and Case Studies

In keeping with the WARDA Governing Council's recommendation made at its December 1974 session, an international multi-disciplinary mission visited the seven countries of the Permanent Interstate Committee for Drought Control in the Sahelian Zone (CILSS). The mission took stock of the rice economy in the Sahel countries, surveyed rice projects under way or being prepared, diagnosed the problems of rice development and suggested guidelines for solving them.

Case studies are aimed at disseminating the experiences gained by carefully selected projects. During the period under review, three case studies were undertaken or completed:



- Kou Valley project in Upper Volta -- intensive irrigated rice cultivation, with two crops a year on more than 1,000 hectares;
- MacCarthy Island project in the Gambia -- irrigated rice cultivation on village areas with pumpings;
- rice cultivation in northern Ghana where favourable natural conditions (large very flat lowland areas), motorization and government incentives (fertilizer subsidies, credit facilities) have led to spectacular development of rice production within a few years.

In the field of general studies, WARDA prepared a paper entitled "Economic Aspects of Chemical Fertilizer Use in Rice Cultivation in the WARDA Region". The document analysed the member countries' policies of fertilizer subsidies and distribution, studied the world fertilizer market, and appraised the economic and financial aspects of fertilizer use.

From January to May 1976, WARDA's two milling experts visited all member countries for a comprehensive survey of problems affecting post-harvest operations. The data will be processed further for sectorial and country reports.

#### Cooperation with Financing Agencies

A WARDA agronomist in January 1975 took part in a World Bank mission to appraise an integrated rural development project in Upper Lofa County, Liberia. At the World Bank's request, WARDA in September/October 1975 made a comparative study of rice cultivation systems in Ivory Coast, with a view to selecting projects aimed at the country's self-sufficiency in rice.

With the African Development Bank, WARDA worked on terms of reference for updating the feasibility study of the Fosse au Lions project in Togo. At the Bank's request, WARDA in October 1975 identified the Rhombe Swamp project in Sierra Leone. In August 1975, a WARDA agronomist participated in an ADB mission which supervised the Nasia rice project in Ghana.

## Cooperation with Regional and International Organizations

The United Nations Development Advisers' Team (UNDAT II) of the UN Economic Commission for Africa in 1975 assigned a three-man team to WARDA for three months to gather basic data for a rice development strategy aimed at self-sufficiency in the sub-region. The reports of the consultants are now being put into final shape.

## Statistics and Data Processing

The provisional edition of the first rice statistics, submitted to the Governing Council in December 1974, was transmitted to the member countries for comments. The final edition incorporating amendments was completed in November 1975 and was disseminated on a large scale. The statistics, filling more than 500 pages, cover all elements of the rice economy in WARDA's member countries from 1960 to 1974. They will certainly be a valuable source of reference to planning, financing and information agencies.

The statistics are now being updated for 1975.

WARDA has also undertaken to prepare a list of rice development projects in the member countries, with basic data on each project to stimulate exchanges among them.

## Participation in Training

With USAID funds, the Development Department had a milling laboratory built for training purposes and to check the performance of the principal rice varieties grown in the region and of rice mills.

The Development Department also designed the irrigation and drainage network of the farm of WARDA's Regional Training Centre and will supervise construction.

The department helped prepare manuals to be used at the training centre.

E. Documentation Division

Index and Current Bibliography

The second issue of the Current Bibliography (289 documents) was published in August 1975 and widely distributed to WARDA member countries and cooperating countries and agencies.

The cataloguing and indexing of the first WARDA retrospective index of 500 documents started in August 1975 and it was published in March 1976.

World Rice References for West Africa

The second issue (186 References) was published also in August 1975 and distributed along with the Current Bibliography.

The third volume of 230 World References has been selected and is being translated for publication.

Microfiche Laboratory

a) Photographer

The photographer resigned at the end of March 1975.

A new photographer has not yet been recruited.

Meanwhile, a consultant photographer sent by the FAO early July, 1975, completed a three-month assignment at WARDA. He also conducted a microfilming mission to BIS Bangui, Central African Republic from July 26 to September 13, 1975. During his mission, he also microfilmed and produced microfiches totalling 50,000 pages from 480 documents selected from the BIS Archives.

Since the 30th of September, Mr. Neblett, the former photographer of the division, was recruited as a Consultant.

b) Equipment

Thirteen microfiche readers were sent to some member countries in October, 1975. Twenty-five more readers were ordered to meet additional needs. Also, 5,550 duplicate copies of microfiches of documents not yet included in the Current Bibliography were made and distributed to member countries of WARDA.

A portable camera was received from the FAO for our outdoor microfilming activities.

## Library

A Librarian recruited from the Peace Corps assumed duties in August 1975. Organization of the library and classification systems development were started. The card catalogue of the documents at the Documentation Centre according to the Agris classification was completed.

## Missions

### a) Visit to Ibadan (Nigeria)

The documentalist took part in the meeting of West African documentalists and librarians held at IITA in January 1975 in order to establish a network of Agricultural Libraries and Documentation Centres of West Africa (Aglinet).

### b) Visit to OMVS (Senegal)

The Senior Analyst Indexer and the Specialist in Information systems visited the OMVS Documentation Centre in February 1975.

### c) Visit to River Niger Commission Documentation Centre (Niger)

The documentalist visited the centre in April 1975 to establish a better cooperation in collecting and exchanging documents.

The documentalist also participated in October 1975 in a Seminar in Niamey, Niger meant to strengthen collection and exchange of information between Member Countries of River Niger Commission and WARDA.

The Documentalist also participated at the meeting on Agris Tropical in Rome, in December, 1975. The documentalist and the indexer worked on propositions for a rice thesaurus for that meeting.

F. Communications Division

1975 has been a very busy year for the Communications Division, which has seen its activities and output increase considerably. The main task carried out during the period has been the compilation and the publication of a "Rice Vocabulary" which includes, in its first edition, more than 2,500 words in English and French and, for insects and weeds, the Latin scientific names. It is hoped that this document will prove useful to research workers, translators and interpreters, and generally to all those concerned with rice cultivation in the region.

The Division carried out the translation of various documents produced by the Association. It also assisted in preparing histograms and in the final layout and editing of the 1974 Rice Statistical Yearbook.

The WARDA language laboratory became operational in September 1975. The teacher teaches 30 and 20 students English and French respectively for an hour daily from Monday to Friday. The approach is non-intensive but adequate for our staff.

Publications which were printed and released during the year were:

1. "Socio-economic Aspects of Rice Cultivation in West Africa", February 1975, English
2. "Rice varieties recommended in the WARDA Region", April 1975, English and French
3. "What WARDA can do for you", April 1975, English and French
4. "WARDA Integrated Programme and Budget", April 1975, English & French
5. "Case Study N° 2, the MacCarthy Island Division Pilot Irrigation Project in the Gambia Economy", February 1976, English
6. "Report of the Assistance to the World Bank/FAO mission in the Gambia for the Preparation of the Phase II of the IDA Agricultural Development Project", April 1975, English
7. "Future Rice Milling Requirements of Northern Ghana", April 1975, English

8. "Annual Research Report", Volumes 1 and 2, May 1975, English and French
9. "Regional Seed Multiplication Centre, Richard Toll, First Annual Report", May 1975, English & French
10. "Development of Rice Cultivation in the Sahel countries", June 1975, English & French
11. "Final Report of the Rice Research Review Meeting", June 1975, English and French
12. "Rice Vocabulary, English-French-Latin", June 1975
13. "Case Study N° 1, the Irrigated rice Area of the Kou Valley, Upper Volta," July 1975, English & French
14. "Senegal: Projet de mise en valeur du perimetre de Matam", July 1975, French
15. "World Rice References for West Africa, Volume 2", August 1975, English and French
16. "Case Study N° 3, Large Scale mechanized Rice Production in Northern Ghana", September 1975, English
17. "Conflicts between farmer's income and cost of living: a quantitative analysis of a paddy price Increase", September 1975, English
18. "Annual Report, December 1971-December 1974", October 1975, English and French
19. "Rice Statistics Yearbook, First edition, July 1975", November 1975, bilingual
20. "Economic Aspects of chemical fertilizers used in rice Production in the WARDA Region", October 1975, English
21. "Etude Comparative de differents systemes de riziculture en Cote d'Ivoire", November 1975, French
22. "Retrospective Index - Index retrospectif" (English and French) December 1975.
23. "Selection et amelioration varietale du riz (French) January 1976.
24. "Contribution a l'elaboration d'une strategie rizicole en Guinea Bissau" (French) February 1976.

G. Research Department

Research Coordination and Coordinated Trial-Progress

This is a continuous activity. Greater part has now been implemented and future improvement will be largely in the area of the regional screening programme (IEP), regionalization of activities and linkages and support to national testing programmes.

a) Research Coordination

A lot of progress has been made particularly in project planning and formulation. Efforts have been made to implement past recommendations. With the assistance of consultants, particularly Dr. Chandler, WARDA Research Advisor, further suggestions have been made to improve the efficiency and impact of the regional trials.

The Special Research Projects at Mopti, Rokupr and Richard Toll were recently reviewed by a team of consultants representing the National Governments, International research centres (IRRI, IITA, IRAT) and WARDA, so as to set project priorities for the next few years.

The Rokupr project has been implemented and it is planned that the Mopti and Richard Toll projects will also become implemented during the course of this year. Training Research Assistants which started last year so as to enable them to take positions on these projects has ended effectively for Assistants for the Mopti and Richard Toll projects while that for the Assistants for the Rokupr project has just started. The yearly field Assistants training continued by the training of 22 Assistants at IITA in January/February.

The appointment of a Breeder at Headquarters has produced a marked improvement on the variety introduction programme; the nursery farm and the nomination of materials for the IETs and the variety trials.

### Research Review Meeting

Thirty one delegates from member countries and Guinea Bissau attended the Third Annual Research Review Meeting. Five delegates represented the cooperating states and organizations - IRAT, FAO, IRRI, IITA, FAO-Quelea-Quelea project and Dr. R. F. Chandler who represented IDRC apart from being Advisor to WARDA. There were also three observers from CIBA Geigy, I.C.I. and Sofaco. The Conference which examined the results and progress made with the WARDA Coordinated trials, National research programmes, International linkages and the special Research project as well as planning for the next year, arrived at the following main conclusions:

- a) The proposal that WARDA's coordinating activities be sub-regionalized into four zones based on:
  - i) efficient ecological network of trials;
  - ii) closer supervision of field trials by WARDA and National staff
  - iii) bridging the communication gap between WARDA and member countries and among the member countries;
  - iv) better idea of national research problems and the support that WARDA can give;
  - v) WARDA participation on farm trials;
  - vi) provide more rapid feed-back with the International Centres.
- b) That as part of the special research programmes, technology transfer to farmers should be emphasized.
- c) The process of nominating varieties for the various trials was revised so that seeds reach member states by early March; some countries had been receiving their seed supplies late.
- d) there were requests to increase both the trials sites and number of trials; the procedure for approving these was agreed on; this is largely based on the collection of adequate information from the field, real needs and the availability of qualified personnel to conduct such trials successfully; member states were urged however to undertake relevant trials through their national programmes.



e) It was realized that member countries can provide adequate information regarding the national research policies and areas of need. It will take a very long time for WARDA to work out plans for support to national research; delegates were however warned that support though based on the needs of individual countries will be confined to items or areas that cannot be provided locally.

f) IRAT offered assistance in training if requested by WARDA.

g) To cut down the accounting problems now experienced and to establish uniform standards of costing the trials from country to country, delegates approved the idea of a Block vote for each trial on agreed conditions.

h) Delegates felt that WARDA should initiate on-farm or applied research trials on farmers' field.

i) The need to incorporate the desirable characteristics of O. glaberrima in high yielding varieties in breeding programmes was agreed upon.

j) Delegates agreed that in furtherance of the Inter-Africa phytosanitary convention, all introduced rice materials should be channelled through the Regional plant quarantine centre at Ibadan and that these should go through WARDA and IITA who will then distribute them to member states as required. WARDA was made to provide the assurance that it will take steps to avoid delays in introducing materials into the region.

k) The report of the joint meeting among IRRI, IITA, IRAT and WARDA on collaborative action on Germplasm collection and Preservation as well as the IRTP programme was approved by delegates with the addition of Moor Plantation, Nigeria to the IET/IRTP test sites and Kpong, Ghana to the IET test sites: the report recommended that in view of its past experience and planned activities of IRAT/ORSTROM in rice germplasm collection, these institutions should take leadership in rice germplasm collection; both WARDA and IITA should assist IRAT and have storage facilities at varying levels. Samples of all materials collected will be sent to IRRI and this institution in exercise of its global mandate should assist in implementing this programme.

l) It was decided that the Preliminary Variety Trials should be conducted only at National levels but that promising materials from the IET sites which would have already been homogenous before entry into the IETs should centre directly into the coordinated variety trials.

m) It was proposed that WARDA should look into the possibility of including fungicidal test as part of the crop protection trials.

n) In furtherance of an earlier decision, WARDA was urged to monitor a mission to assess the incidence of diseases and pest problems in rice cultivation in West Africa; it was agreed that a combined team of scientists from IRRI, IITA, IRAT and WARDA can start such a survey this year.

o) For the Sahelian countries such as Mauritania, urgent rice production problems which needed study were agreed upon as varietal behaviour during the cold dry and hot dry seasons; the control of rat .

#### Coordinated Trials Programme

A quick short-term impact on rice development in West Africa can be made through an efficient regional test programme. To be able to do this, as was reported last year, certain basic supporting institutions are necessary. Both the Seed Nursery Farm at Suakoko and the Plant Quarantine Centre at Ibadan are now functioning through the effective liaison between the Seed Laboratory and the Plant Quarantine Centre at Ibadan, WARDA has in stock 1735 varieties/lines of which 1489 are from outside West Africa. Most of these are now under observation and multiplication at the Suakoko Nursery Farm. After the initial multiplication, they will be entered into the IET and subsequently the coordinated variety trials. The quality and quantity of seeds now distributed to the trial sites from the seed laboratory has improved greatly.

Last year's targets for setting up 15 IET test sites have not been met mainly as a result of staffing and logistical problems as well as the availability of ready test materials.

AVERAGE YIELDS-VARIETY TRIALS

IN KG/HA  
1974 & 1975

	Dry Season	Rainfed	Irrigated	Mangrove	Deep flooded	floating
1974	3116	2151	4414	2284	4146	3955
1975	5450	2798	4643	2203	4460	ALL WITH HIGH CV

TOTAL TRIALS & RETURNS FROM 1975 TRIALS

Variety	IET & PVT	FERTI-LIZER	HERBI-CIDES	INSECTI-CIDE	TOTAL/MEAN	
Planned	89	18	33	9	10	159
Conducted	87	14	31	6	7	145
% Return	97.8	77.8	93.9	66.7	70	81.3

TOTAL TRIALS & RETURNS FROM 1974 TRIALS

Planned	77	13	24	19	13	146
Conducted	77	5	20	12	7	121
% Return	100	38.5	83.3	63.2	53.8	71.8

The tables show an averagely general increase in yield in 1975 as compared with the 1974 season. There was an increase of 10% (71% to 81%) of trials conducted of total trials planned for the 1974 over those of 1975.

Last year there was a marked improvement on the standards of management and reporting from most stations and very outstanding results from same. These improvements may be largely due to the decision taken last year to limit trials to areas where the results would provide useful information and where capable scientists exist. There was however, still great concern over the poor standard of financial accounting for the trials.

#### Special Research Projects: Progress

Regional Research Projects on deep water/floating, Mangrove rice and dryland irrigated rice designed to fill gaps in rice research information in West Africa and adapt information that is utilizable in the regional testing programmes and national extension services are presently financed from bilateral sources.

#### Mangrove/Rokupr

Of the three projects, only the Rokupr project has become operational with the appointment of Mr. E. Jones, Soil Scientist, provided under the U.K. assistance as team leader. An Entomologist has been identified. This post is financed by USAID. The Breeder (U.K.) is being actively recruited. Meanwhile, the infrastructure mentioned last year i.e. laboratories, cold room, electricity generator, green house and screen house are being developed. In spite of the availability of funds, difficulties arising from administering the projects tended to delay its full implementation.

The technical review team which studied the original project document set out the following main research priorities for the next 2-3 years.

a) Variety Improvement - high yields, high photosynthetic efficiency under low light intensity, salt tolerance, soil toxicity tolerance, plant height of 1-1.4m and medium duration. The emphasis was placed on screening and to be followed later by hybridization.

b) Agronomy - land preparation and other cultural practices; an investigation into water control systems, soil management and mechanization.

c) Weed control - cultural practices and screening of herbicides.

d) Technology transfer - farmer's field trials with improved and modern farm practices.

e) Crop protection - varietal resistance and screening of insecticides;

i) yield losses to diseases and insects

ii) crab control

iii) monitoring salt concentration and routine laboratory determination.

Local management of the programme is through a Coordinating Committee consisting of a Government Agricultural Ministry Representative; Director of the Rokupr station; UNDP project Leader and WARDA team Leader. Apart from anything else, this ensures integration of activities and prevents duplication.

#### Deep Water/Floating Rice-Mopti

This project is to be funded mainly by USAID with minor funding from Saudi Arabia. The project allows for greater investment in infrastructure - houses, laboratories, land development etc.

The team leader for the project has already been recruited. On the return of the four Malian research assistants from training, the project will start at least at the experimental level.

Agreements between WARDA and the Government of Mali have been signed for the implementation of the project. The project which will initially have a team leader and his deputy in addition to Malian research assistants, will have the following main priorities according to the March 1976 review team:

a) In Varietal Improvement work: the development of high yielding varieties with fertilizer responsiveness, rapid elongation abilities, submergence tolerance, basal tillering and harvesting, tolerance to drought during the early grown stages, insect resistance and appropriate maturity periods: to make rapid progress in the selection of materials with the desired characteristics, immediate attention should be given to genetic material in segregating generations as well as fixed lines available from various sources. Limited amount of hybridization should be resorted to only if considered necessary.

b) Insect control: identification of genetic material with resistance to stem borers and other insects should be given major emphasis. Evaluation of insecticides, method and time of application should also be given some attention.

c) In weed control: emphasis should be on identification of most economic method and effective development of chemical, mechanical and cultural practices.

d) Agronomic research should concentrate on land preparation, method of sowing, time and rate of fertilizer application. Mechanization using animal power should be strongly emphasized in Agronomic Research.

e) Intensification of technology transfer to the farmer is essential in order to increase rice production. This can be accomplished through farm trials, and increased surveys to determine real farm problems.

f) The team felt that mechanization of rice operations will be extremely important for increased production. Operations such as sowing, weeding and threshing will require the development and testing of machines which are practical, efficient and simple to operate - at the small farmers' level.

Richard-Toll/Fanaye Project

Like the Mopti project, this project is expected to become implemental with the return of the four Senegalese research assistants. Funds are expected from IDRC and CIDA for infrastructural and operational costs. The activities are being fully integrated with the Rice Research activities of the Senegalese Government in the Sahelian zone. This project is becoming increasingly more important in view of the massive agricultural development project due to start in the Senegal river valley.

The review team made the following main recommendations for the implementation of the project:

a) in rice breeding work, the development of high yielding varieties with fertilizer responsiveness, photoperiod insensitivity, tolerance to cold, insect and blast resistance and appropriate maturity periods requires emphasis. In order to take 2 to 3 crops, varieties should be suited to different planting times. In fact, the best planting time to make maximum use of solar radiation and to avoid cold damage needs to be investigated. There is need for surveillance to monitor diseases that may become important with intensive rice production.

To make rapid progress in the next 2-3 years, immediate attention should be given to established genetic material, in segregating generations as well as fixed lines available from various sources, and limited amount of crossing work should be resorted to only if considered necessary.

b) In weed control: developing chemical, mechanical and cultural practices should receive primary attention while work concerned with inventory of weeds and residual effect of herbicides should be given a low priority.

c) in insect control work, identification of lines possessing genetic resistance and identification of insecticides giving effective control and standardization of application methods to reduce cost and improve efficiency should be given major emphasis. Work should include developing packages of priorities which integrate varietal resistance with chemical control of insect pests. Research on biological control of insect pests is time consuming, complex, has limited chances of success and should be given low priority.

d) Work in the area of soil science and water management should focus on:

- i) time and method of fertilizer application
- ii) different kinds of fertilizers
- iii) efficient use of water, and
- iv) irrigation and drainage practices in relation to soil salinity and nitrogen conservation. Also lines possessing tolerance to soil salinity should be identified.

e) Trials on farmers' fields to develop packages of practices for farmers' adoption should be given attention. Such tests should form part of the network of the WARDA regional trial, so as to extend relevant results to other member countries either through the regional or national farm trials.

#### General

It is important to note certain common factors emphasized by the review team for all the projects.

- a) Strong experienced scientific leadership at the site was recommended as essential element for even the initiation of the project.
- b) integration of activities with national research efforts while not losing sight of the regional roles of the projects.



- c) the transfer of technology was considered a major constraint as in several instances results were available but had not been tested at the production level.
- d) a minimum of infrastructure and social facilities that can attract capable scientists.
- e) a detailed annual work plan can only be drawn by scientists on the site in consultation with non-resident scientists.
- f) Variety screening was regarded as a priority over breeding.

#### Support to National Research Activities

While supply of equipment to national stations as part of the coordinated research activity has been initiated, definite plans for the establishment of training plans for national research workers and starting field trials on farmers' fields need to be established. Each member state has been approached both by means of questionnaires and visit by WARDA research team to countries to determine national rice research policies, achievements and the level at which WARDA can intervene. At the outset, one should take into consideration that member countries are at varying stages of development and research capabilities and the sizes of countries vary and consequently, the nature of the support to countries would vary accordingly.

#### Linkages with International Centres

The IITA, IRRI and WARDA have now signed a "tripartite letter of understanding" so as to re-delineate the specific roles of each institution in rice research, development and training in West Africa and how to cooperate in mutually enhancing the activities of each institution.

Cooperation with these institutions is not new. Already both IITA and IRRI have been involved in training the WARDA Research Assistants and IITA has conducted the last two WARDA field assistants training. (In future the latter course will

be conducted at the Johnsonville training centre). IRRI, IITA and IRAT staff were recently involved in the evaluation of the WARDA special research projects as reported earlier.

Before the last WARDA Annual Research Meeting, scientists representing IITA, IRRI, IRAT and WARDA discussed.

- a) WARDA participation in the international Rice Testing Programme of IRRI
- b) The collection and preservation of Rice Germplasm in West Africa

WARDA had previously decided to participate in the IRON (international Rice observation Nursery of IRRI). However, due to phytosanitary limitations, available staff and facilities, WARDA did not undertake this direct responsibility last season.

The following main recommendations which were approved by the recent WARDA Research Review Meeting were arrived at:

- a) The desirability of centralization of introduction of materials into West Africa using both IITA and WARDA as contact points
- b) Participation of WARDA in seven international rice testing nurseries viz:
  - i) International Rice Observation Nursery (IRON)
  - ii) International Upland Rice Observation Nursery (IURON)
  - iii) International Blast Nursery (IBN)
  - iv) International Rice Sheath Blight Nursery (IRSEB)
  - v) International Rice Salt Tolerant Observation Nursery (IRSTON)
  - vi) International Rice Cold Tolerant Observation Nursery (IRCTON)
  - vii) International Rice Deep Water Observation Nursery (IRDWON)
  - viii) Stem borer Nursery.

3. Six trial points (approved last year) were agreed for West Africa, namely:
  - a) Suakoko (Liberia)
  - b) Rokupr (Sierra Leone)
  - c) Mopti (Mali)
  - d) IITA, Ibadan (Nigeria)
  - e) Richard Toll (Senegal)
  - f) Sapu (The Gambia)
  - g) Bouake was agreed upon as a new addition.
4. WARDA's participation in IRTP should be carried out all year behind the IRRI schedule - this is to allow enough time for clearance of materials through the plant quarantine and seed increase if required.
5. In view of the fact that agreement has been reached on the desirability of centralization of materials introduction, the feed-back to IRRI should also be centralized.
6. There should be exchange of IRTP trials results between WARDA and IITA.
7. The title "West Africa Initial Evaluation Tests/International Rice Observational Nursery (WA IET/IRON)" as the case may be should be given to the fusion of WARDA's IET and IRTP of IRRI and duplication of materials in these trials should be avoided.
8. IRRI would prepare instruction books etc to be able to accommodate the IET entries as addition to the IRTP entries. On the germplasm question, the meeting agreed on the following:
  1. IRAT be given financial and technical support to complete its work on germplasm collection and that it should undertake the leading role for West African germplasm collection.
  2. Ivory Coast Government be assisted to improve the storage facility at Bouake for short and medium term germplasm storage.

3. IITA should be responsible for the long-term storage of African germplasm which it receives from any source - provided that financial support for these activities is obtained.
4. IITA may collect rice samples, whenever possible, during its general germplasm collection undertaking in Africa under IBPGR auspices.
5. The group appreciated the global leadership that IRRI has taken for rice germplasm collection and evaluation and its role of helping other institutes and countries for these activities. The meeting felt that the IRRI should support the plan of collection in West Africa at all levels possible.
6. WARDA establish a storage facility for germplasm at Fendall, its present rice laboratory where all samples of materials collected by IRAT and IITA would be sent for short term storage.
7. WARDA should provide administrative and logistic support and help coordinate the collection activities of IRAT and IITA.
8. There should be free flow of materials amongst all these institutes.
9. The various bodies concerned should prepare budget requests to cover their individual activities. These requests should be exchanged and then forwarded to IRRI for support so that feed-back is obtained before or by the September meeting of WARDA's Variety Improvement Seminar at Bouake.

## Highlights of the Results of the 1974/75 Coordinated Trials

During the dry season of 1974-75 and wet season of 1975, twenty coordinated trials were conducted in 26 locations. The trials comprised of eleven variety trials, five fertilizer trials, two herbicide trials and two trials with insecticides.

### 1. Dry Season of 1974-75 - short duration trial

IR20 had the widest adaptability in the region. It yielded 10.02 t/ha at Sapu and 2.78 t/ha at Mänge, which shows that under good natural environment and management practices, it can produce very high yields while under poor management and diseased conditions it can still give reasonable yields. It showed great insect resistance in these trials.

### 2. Dry Season of 1974-75 - medium duration trial

IR1529-680-3 appeared to be the most promising variety. Its highest yield of 11.31 t/ha at Sapu and lowest yield of 6.50 t/ha at Mission Tove support its high yielding ability under varied conditions. IR5 also showed good adaptability compared with IR1529-680-3 but the latter was superior in yield, disease resistance and grain quality. Under poor environmental and diseased conditions, SML Alupi was found to have good adaptability. Its highest yield of 7.43 t/ha at Suakoko and second best of 6.58 t/ha at Mission Tove indicate that it can be a good variety under diffused sunlight and diseased conditions that prevail in Sierra Leone, Liberia and Togo. This can be probably profitably grown in addition to IR1529-680-3.

### 3. Rain-fed short duration trial

I Kong Pao was identified as a highly promising early maturing variety for rainfed condition. It maintained relatively high yield at all the locations and did not show any adverse performance in terms of resistance at any place.

High yield potential varieties gave higher yields irrespective of their height or plant architecture. Their yields increased at higher fertility level. Tall varieties, although have some advantages under poor light, failed to compete with semi-dwarf or semi-tall varieties, both under low and high fertility levels. All tall varieties lodged at high nitrogen level.

Including semi-dwarf to conventional tall varieties in this trial created management problems. Low nitrogen was good for the tall varieties but was not enough for semi-dwarf or semi-tall varieties. Higher nitrogen application caused the tall plants to lodge. Under low nitrogen, semi-dwarf varieties did not express their optimum yield. However, at intermediate level of nitrogen when tall plants did not lodge, varieties like I Kong Pao and SE302G produced better yields.

#### 4. Rainfed-medium duration trial

Considering plant type, grain, yield and life cycle, IR442-2-58 was found to be the best performer. It gave the highest average yield of 3.55 t/ha and matured in 135 days. It is known to have some drought tolerance, is semi-tall and has long, medium, slender grain. It has the potentiality of giving high yield under good management. IR442-2-58 has already been adopted for upland production in some countries although in some areas, it shows high susceptibility to blast.

#### 5. Irrigated short duration trial of main season

IR1529-677 had the highest average yield and rank and showed marked superiority over the other varieties. Its highest yield was obtained at Sapu, 8.72 t/ha, and its lowest of 3.48 t/ha at Mange. Sapu had the best management conditions supported by good environmental factors, while Mange had poor natural conditions along with management problems

Under good natural and management conditions, yield was increased, life cycle was decreased and plant height slightly increased. The reverse was true for poor conditions.

Wider spacing of 25 x 25 cm gave high yield at certain locations but closer spacing could be still better for all varieties. In addition to higher yield, closer spacing helped uniform maturity and weed control.

6. Irrigated medium duration trial of main season

IR1529-680-3, which is a sister line of IR1529-677 gave the best average yield. This has wider resistances to diseases and the grains are good. This variety has proven its merits also in many Asian and Latin American countries (international rice yield nursery, 1974 and 1975).

Correlation between high yield and increased plant height and decreased life cycle was demonstrated in this trial also, so also was wider spacing.

7. Deep flooded/mangrove swamp - medium duration trial

Spacing of 25 cm x 15 cm was found to be too wide for the tall low tillering varieties. BH2 and ROK5 showed promise.

8. Deep flooded/mangrove swamp - long duration trial

Inclusion of salt tolerant, elongating and just tall varieties in this trial posed a management problem for determining the merits of the varieties for each condition, like deep flooding, or mangrove swamp.

9. Floating - long duration trial

Nineteen entries were found to be too many for one experiment. IR442-2-58 and T442 varieties were not found to be suitable for floating conditions. Further testing may be required.

10. Initial Evaluation Test

Six early maturing and 19 medium maturing lines were identified for yield trials in 1976.

11. Preliminary varietal trial

Four early maturing and five medium maturing varieties were identified as potential varieties. These would be included in the yield trials of 1976.

12. Fertilizer trials - Off season 1974-75

In five countries where the fertilizer trials were conducted, NPK extension rate or NPK optimum rate failed to give the estimated best economic returns from fertilizer use. In most countries, the effect of N alone was strong and there was either NP or NK synergism. Except in Benin where lowest economic returns from fertilizer use were obtained, all other countries exhibited very promising results. The economic rates of N, P and K varied between 40 and 90 kg N/ha, 20 and 40 kg  $P_2O_5$ /ha, and 30 and 40 kg  $K_2O$ /ha respectively.

In general there was high coefficient of variation.

13. Fertilizer trials - rainfed Main season 1975

Rainfed fertilizer trials were carried out in seven countries. Only three countries exhibited promising economic returns from fertilizer use. It showed again that nitrogen alone played an important role in increasing grain yield and that either NPK extension or NPK optimum rates failed to give the best economic returns from fertilizer use. The economic rate of nitrogen varied between 40 and 60 kg N/ha.

The coefficient of variation, in general was very high (CV varied between 19.6 and 28.2%).

14. Fertilizer trial - irrigated rice Main Season 1975

Out of seven trials, only two trials showed economic benefits from fertilizer use.

With the limited available information, it might be noted that the N-P synergism in increasing grain yield was very strong. On the other hand there seemed to be no yield response to potassium application. The economic dose of NP combination varied between 26 kg N + 56 kg  $P_2O_5$ /ha and 40 kg N + 30 kg  $P_2O_5$ /ha.



The coefficient of variation varied between 16.1 and 21%.

15. Fertilizer trial - Deep flood/mangrove Main Season 1975

Deep flooded - Only one trial was conducted in Mali.

Although various combinations of NP and NPK produced significantly greater grain yield than the control, none of the treatment combinations gave any economic advantage.

Mangrove - Only one trial was conducted in Sierra Leone. In all three years (1973, 1974, 1975) nitrogen alone gave economic benefit from fertilizer use. In 1973 and 1974 the best treatment was 40 kg N/ha and in 1975 it was 60 kg N/ha.

16. Fertilizer trials - Floating rice condition

Only one trial was conducted in Mali. The trial showed that phosphorous at the rate of 30 kg  $P_2O_5$ /ha was the best economic dose.

17. Herbicide trial

Rainfed conditions - some herbicides were as good as hand-weeding with regard to grain yield and control of weeds (for example, AC-92553 in The Gambia, Upper Volta, A-820 and Propanil + 2,4, 5-TP in Senegal, and USB3584 and STAM F34-T in Upper Volta).

18. Insecticide trial

In Ghana (Dawhenya) Furadan 30 at the rate of 1.2 kg a.i./ha gave the highest yield increase (46%) over control.

In Senegal (Djibelor), Furadan (0.8 and 0.4 kg a.i./ha) and Sau 155 exhibited good control of insect pest and produced significantly greater grain yield than the control.

Variety Stability studies

Among the common entries tested at various locations and growing conditions, the following varieties have tended to exhibit high yield potentialities and wide adaptability.

- a) Rainfed:
  - i) Short duration - SE302G and I Kong Pao
  - ii) Medium duration - TX5210 (RCK1) and A2xF4.6 (RCK2)
- b) Irrigated
  - i) Short duration - IR20, CICA4 and I Kong Pao
  - ii) Medium duration: IR5, IR442, IR269-26-3-3-3, IR1529-680-3, Vijaya and Jaya.
- c) Common for Rainfed and Irrigated
  - i) Rainfed short duration: I Kong Pao and IR442
  - ii) Irrigated short - I Kong Pao
  - iii) Irrigated medium - IR442.

P A R T IV.

FUTURE PROGRAMMES

Coordination of the Associations activities and programmes are done at the headquarters in Monrovia, Liberia. Useful contacts will be maintained with member countries and cooperating countries and organisations.

The Scientific and Technical Committee and the Governing Council meetings of the Association are expected to take place in October and November 1976, respectively.

Details of the programmes of the different departments and divisions of WARDA are shown below:

A. Administration and Finance Division

The implementation of the WARDA out-reach programme will put heavy pressure on all the sectors of the Administration and Finance Division, but it is felt that the level of efficiency achieved so far will permit the Administration to respond satisfactorily to this pressure.

The new Chief, Administration and Finance will have to travel to countries where projects are being carried out, at the very early stages of the projects, to train on the spot those who will be administratively responsible for the project. He will also try to establish a regular flow of administrative information between the stations and the headquarters.

Evidently some further assistance will be required in the Administration, particularly in the Procurement Section where the officer-in-charge of the section will have to devote most of his time to procurement activities, and will prepare as well monthly reports on status of orders placed. It will therefore be necessary to recruit somebody to take care of other activities that he will not have time to carry out. We feel that the most adequate solution will be to recruit a maintenance officer who will be in charge of maintaining and repairing office equipment and vehicles.

High pressure will also be put on the Finance Section, particularly in the Budget area. For this reason, we are requesting a new post of Budget Assistant for 1977. Finally the increased staff and the increased procurement activities will be reflected at the level of the Inventory/Insurance Officer for whom we request the establishment of a post of Senior Clerk Typist to properly carry out this programme of work.

B. Training Department

Rice Production Specialist Course

The second course to be undertaken at the WARDA Training Centre (WTC) in 1976 will be the Rice Production Specialist Course. It is scheduled to take place from June 7 to December 4, 1976. We expect to have two participants per member country, i.e. a total of 30 participants after due allowance has been made for Guinea Bissau.

Field Assistants Course

This will be held at the WARDA Training Centre in January/February, 1977. A total of 30 participants are expected to attend the course. The assistance of Training associates will be required for a successful course.

Specialised Training Programme

It is WARDA's intention to organise a 6-week rice milling workshop in April 1977 for about 20 trainees from member countries. Details of this programme are being worked out.

Until our centre is fully staffed, the Secretariat will from time to time solicit the assistance of member countries for the release of Training Associates and Resource lecturers to WARDA's Training programme to ensure adequate coverage of all types of rice cultivation in the region. Reputable rice specialists will also be invited

from outside the region as occasional lecturers.

### Training of WARDA Staff

While it is WARDA's wish to pursue vigorously the appropriate training programmes befitting of its staff, it has to be borne in mind that training is a continuous process. In view of the above, it is hoped that WARDA staff will continue to benefit from useful courses that may be organized from time to time.

Training programmes foreseen for WARDA staff are as follows:

The Francophone Associate Training Officer later to be recruited for the WARDA Training Centre is to undertake a four months intensive English course in the USA. Thereafter, he is to attend the six month RPS course at IRRI. Both courses are to be financed by the USAID.

Three Research Assistants at Rokupr, Sierra Leone are to undergo a one-year training in rice technology and research methods possibly at IRRI and/or IITA. The training is again expected to be financed by the USAID.

### High Level Training Programme

WARDA plans to assist scientists and development officers in member states to undergo high level training in various fields through bilateral arrangements with donor countries and agencies. It is WARDA's hope that this can be executed along the following lines:

### Training of Research Personnel

Agricultural research needs to be intensified in member countries with a view to compliment WARDA's regional research effort. To make meaningful contribution, member countries would need assistance in the training of high level scientists. The needs of each country will certainly be different, but all

member countries will profit from post-graduate training for their scientists. WARDA intends to assist scientists in member countries by soliciting for training fellowships from donor countries and organisations. WARDA will also attempt to locate suitable institutions where the scientists could undergo their training. Trained scientists are expected to return to their countries to strengthen their capacity for agricultural research.

#### Training of Development Personnel

WARDA envisages post-graduate training for agricultural planners, agronomists, economists, milling engineers, marketing specialists and irrigation and drainage specialists etc.

Again, needs will vary from one member country to another. Training of personnel in this category is to be financed from funds to be negotiated with bilateral donors.

#### Language Training for Rice Scientists in West Africa

Any effort made to make rice scientists in the WARDA region learn another language e.g. English or French will definitely be mutually beneficial to the scientists and WARDA staff. It will definitely be a step in the right direction as it will enhance communication between WARDA staff and the scientists scattered over many stations in the region with whom they have regular contact. WARDA intends to develop a separate programme for scientists in the region by locating bilateral financial assistance for intensive language training of 4 to 6 months.

#### C. Development Department

In the coming budgetary year, the Development Department will continue to identify more accurately the requirements of member countries and to serve them. It is going to concentrate its efforts on the following aspects:

- Meeting requests from member countries and financing agencies. The curricula vitae of all experts available for field missions have been sent to all member countries and international financing agencies to enable them to determine the services they can obtain from WARDA.

- Strengthening exchanges among the rice projects of the region. To this end, new case studies will be undertaken. The list of rice development projects in WARDA countries will be compiled.

Another means of developing such exchanges will be used this budgetary year — organized visits to projects. Officers in charge of rice development are to be invited to visit carefully selected projects. Each group will consist of seven persons from WARDA member countries, two or three experts of the Development Department and guests from the World Bank and the African Development Bank. Each group will visit two projects on which documentation will be sent beforehand. Three tours for group visits are expected to be organized during the budgetary year.

- Investigating the strengthening of the WARDA member countries' national capacity for the transfer of technology: adaptative research, seed multiplication, and training. It would appear that appropriate action in these fields could make for rapid progress in rice production at relatively low cost. Besides, if the regional programmes at WARDA level in these fields are to be fully effective, they should be relayed by counterpart programmes at national level.

This investigation will be made with French financial support, in cooperation with a French consultancy firm.

- Undertaking a study of the problems and prospects of intra-regional rice trade among the WARDA member countries.



The WARDA countries are at different levels of self-sufficiency in rice. Some countries, as a result of several factors, managed to meet their needs from their own rice production in 1975/76. Others are still fairly far from the goal of self-sufficiency. It would therefore seem that intra-regional trade might be promoted in order to achieve regional self-sufficiency earlier. But there are various considerable constraints which have to be accurately identified and solved -- production costs, currency and customs barriers, transportation difficulties, etc.

This study, expected to take about two years, will be made with Stanford University and with financial assistance from USAID.

- Systematic classification of the types of rice cultivation in West Africa. It has become necessary for research and development needs to go beyond the first approximate inventory undertaken when WARDA was set up.

- A monographic country study of the WARDA region's rice economy. It would update and complete the USAID study entitled "Rice in West Africa" and the UNDP 1970 inventory on the same subject.

- Processing the data gathered in the survey on post-harvest operations.

- Contributing to WARDA's training courses.

#### D. Documentation Division

Two issues of the Index (the Current Bibliography No.3 and a Retrospective Index) have to be published in June and December 1976.

#### Missions in the region of the Documentalist and the Senior Indexer

Experience shows that it is difficult to get important documents from member countries when we write for them. This is the reason why it is so important to meet the people who have the documents and also participate in relevant seminars

for exchange of information. Travels for collecting such information could take place when it is least likely to hamper the work of the division. Up till now, FAO provided the necessary funds for such travels.

#### Participation in Agris Level 1 and Agris Tropical

We would benefit from participating in the Agris network by becoming an input centre (and therefore receiving the indexes, tapes and programmes of Agris which we can use to enlarge our publications) and by contributing to Agris Tropical through the working group on food crops. Our proposals for a normalized rice vocabulary for the Agris Tropical Thesaurus would also be found useful.

#### Turning of the "World References" into an Abstract Journal

This document should prove more informative for the users.

Elaborating on specialised surveys and bibliographies for the other departments.

#### E. Communications Division

##### Translation

To continue with the translation of all documents published by the Association. To prepare a revised edition of the "Rice Vocabulary". Missions should be undertaken in the Region to collect, for weeds and insects, as many local names as possible. If scientific staff is available, another long term objective would be to include definitions of all terms listed in the vocabulary.

##### Editing

To continue the preparation of proceedings of seminars. To finalise the publication of the booklets on plant protection.

##### Publications

To set in operation the offset printing equipment. To continue with publication and printing of all WARDA documents.

Public relations

To prepare audio-visual material (feature stories, histograms, slide shows, etc.), according to staff availability. To organize field days. To participate in fairs.

Communications

To continue with exploitation of newspapers and magazines. To keep mailing list in order, to dispatch all publications. To keep archives.

Language laboratory

To continue with teaching of English and French to WARDA staff. To devise ways and means of assisting scientists in the member countries in acquiring knowledge of a second language (scholarships, etc.)

F. Research Department

1. Research Co-ordination: This is an on-going activity as shown in the departmental chart. With the implementation of the three regional projects as well as the regionalisation programme, staffing will become a very serious constraint and much effort would have to be made to get suitable staff. Of immediate importance is the need for a Bilingual Secretary and an Agronomic Statistician. The latter will assist in the design, field implementation of trials, the compilation and statistical analysis of the results. To effectively implement the variety introduction and screening programme, a full time Breeder will be needed at headquarters. He should improve the variety introduction system and establish and supervise the screening and multiplication programmes at the Nursery farm, Suakoko as well as Richard Toll. Since the programme is very much related to the IRTP programme of IRRI it had been suggested that IRRI can help WARDA in filling this post. For this reason, this post has not been budgeted for. If added to the Budget an allowance of \$40,000.00 should be made. A senior scientist also needs to be appointed at headquarters to implement and supervise the special research projects.

Co-ordinated Trials: This will largely involve closer supervision of the trials so as to raise the standard of management and reporting as well as establishing and supervising the network of the initial evaluation test sites. This has led to the idea of sub-regionalization. The implementation of this idea will require negotiations with Governments to locate scientists in the countries and the establishment of certain facilities. Great emphasis will be placed on the variety introduction programme and the improvement of the nursery farm at Suakoko. Total trials for the 1976/77 crop season is 154 made up of 99 variety trials, 14 IET, 22 Herbicides and 21 Insecticides conducted at 34 trial sites. Allowing for an increase of 10% for the 1977/78 season, there will be about 170 trials.

Special Research Projects: The major problems for all these projects involve the provision of infrastructure for scientists to be attracted to stay on the projects and do effective work. Major infrastructural development for Mopti and Richard Toll/Fanaye are on the way and difficulties of placing senior research personnel on these projects continue to pose serious problems. The priorities established by the review team will be followed. It should be recognised however that strong secretariat support will be necessary for the various negotiations with Governments, in the establishments of laboratory and field facilities and supply and installation of equipment, financial control along with the development of the various research activities. It is therefore important that at least a full time senior scientist (Assistant Research Co-ordinator) be provided at headquarter for this purpose.

Support to National Research:

The overall present objective of the WARDA research programme is to raise the capabilities of all the national research programmes to make them capable and self-supporting. In this regards they will be encouraged:

- (i) to continue to participate in the co-ordinated trials programmes; meetings and seminars and provided with all relevant information.

- (ii) Local candidates will be trained to fill research positions in their countries;
- (iii) over-all research plans should be drawn with the assistance of WARDA.
- (iv) to assist in providing relevant equipment for research activities.
- (v) establish applied research test plots in farmers fields.

Since countries are at varying stages of development and research capabilities and their sizes and needs vary, each country will be treated on its own merit.

### Linkages with International Centres

According to the agreement signed with IITA and IRRI, the following main activities are envisaged:

- (a) backstopping activities by the centres such as the survey of the pest and disease incidence in West Africa; providing a number of specific elements necessary for the implementation of the special research projects - ie, more specialised studies;
- (b) International rice testing programme (IRTP)
- (c) germplasm collection and preservation
- (d) joint participation in seminars and meetings
- (e) training of research personnel
- (f) interchange of materials and relevant information.

## 2. Regionalisation

Based on the idea of regionalisation, the WARDA Research structure will have to be re-organised to reflect the following main activities:

### Headquarters

- a) Research Co-ordination - the job responsibilities of the Research Co-ordinator will remain as detailed in Fig 2. The Agronomic Statistician will be added to this department and he will be mainly in charge of trial design and implementation, the compilation and statistical analysis of the results, backstopping national research

activities in experimental designs, research data collection, analysis and reporting of results.

b) Special Research Projects

By the start of 1977 the three special research projects would have become operational. While the Rokupr project would have made some advances in research, the major activities at Mopti and Richard Toll/Fanaye will be concerned with infrastructural development, procurement of equipment and their installation; negotiations with host Governments for implementation and the initiation of limited research activities. This will require a full time senior scientist to give headquarters backstopping and will necessitate much travelling to the sites. The Assistant Research Coordinator will be largely responsible for these activities.

c) Variety Trials Introduction, Multiplication and Screening through the IET/IRTP

The past three years coordinated variety trials clearly indicated that the success of these trials depend very much on the quality of entries in the trials. Highly adaptable or desirable varieties can be identified if they are available in the trials. This year some highly adaptable varieties were recognized on the basis of results of 1975 and previous years. Few varieties are expected to be identified every year for commercial production in WARDA region. However, after three years of experience, national scientists of the region have felt the necessity of trying more promising varieties of stable performance with wider spectrum of disease and insect resistances for their respective areas. Thus the demand for better varieties are steadily increasing from the scientists. In order to meet the demands and to ensure a continuous flow of good materials of diversified origin into the coordinated trials,

WARDA will have to take full responsibilities to guarantee satisfaction of the scientists in different member countries. To achieve this, the following steps are required:

- (a) Introduction of hundreds of elite breeding materials every year from IRRI, IITA, CIAT, IRAT and some countries and screening them at Suakoko and Richard Toll/Fanaye. Only selected materials shall be entered in IET. Through observation on the selected materials for yield contributing characters, drought tolerance, cold tolerance, reaction to problems soils, disease and insect resistances, grain quality and life cycle. Direct introduction of new materials into IET does not help, as more than 90% of them will not fit in West Africa and IET limits the scope for testing more materials. It is well recognized today that testing more materials and rigid selections from them bring faster and more dependable results.
- (b) Conducting IET along with national cooperation
- (c) Seed increase (and more closer observation) of the most promising varieties coming from IET (and WARDA's own programme) for different rice crops (eg. upland, irrigated, swamp, etc.) for nomination in the coordinated variety trials.
- (d) Maintenance of Nucleus and Breeders seed of the outstanding varieties for continuous supply to national or WARDA seed increase agencies to maintain genetic purity.

To fulfil these steps, a full time senior Breeder is needed at headquarters. He should undertake all the breeding procedures at Suakoko and Richard Toll/Fanaye outlined above to guarantee a continuous flow of superior materials in the pipeline of WARDA. Until superior materials start flowing from the WARDA's regional projects, this arrangement is essential to fill the gap already being faced.

3. Regional Coordination

The recommendation of Dr. Chandler which is acceptable to the WARDA secretariat, in the main, is as follows:

"As a result of my recent trips to West Africa (in February and in October-November, 1975), I make the following recommendations:

1. That WARDA move most of its technical staff concerned with research into the field, rather than continue to have them operate from the WARDA offices in Monrovia.

I am referring specifically to the agronomist, Mr. Francois Faye, the varietal improvement coordinator, Dr. D. Das Gupta, and the soils and fertilizer coordinator, Mr. O. Koffi. I would change their titles to regional coordinator and have them supervise all coordinated trials, whether they involved varieties, fertilizer, insecticides or herbicides. Instead of adding an assistant research coordinator to the Monrovia office, as has been proposed, I would add another regional coordinator. This would provide 4 men, each to supervise the research projects in several specified countries. For example, the four groups of countries among the 13 member countries (exclusive of Liberia) could be as follows:

- I. Mauritania, Senegal and Mali
- II. The Gambia, Sierra Leone and Ghana
- III. Ivory Coast, Niger and Upper Volta
- IV. Togo, Dahomey and Nigeria.

Such a plan would cut down travel costs and make possible more frequent visits to the various cooperative projects. In assigning the coordinators to the several groups of countries, attention should be paid to language proficiency. Except for Group IV, I combined the countries according to whether French



or English was the dominant language. Since 2 Francophone countries lie between Ghana and Nigeria, there seemed no practical way to combine them according to language. Therefore, a bilingual staff member should be assigned to the Togo-Dahomey-Nigeria grouping.

I have not included Liberia simply because WARDA headquarters would remain there in any event, and the research coordinator could supervise any research activities in that country.

I predict that if competent people are stationed throughout the West African area, relationships with national programs will improve, the quality of the coordinated trials will be raised, and the general prestige and effectiveness of the WARDA program will be enhanced."

Guinea Bissau could be added to the first group especially as there are regional projects in Senegal and Mali.

It is the view of the Secretariat that in locating the regional coordinators, first priority should be given to countries with low research **infrastructure**. It is therefore proposed that they be located in Mauritania, Niger and Togo for groups I, III and IV. Ghana is selected among the group II countries in view of its massive rice development projects and the fact that both Sierra Leone and the Gambia have reasonable research infrastructures for rice.

In the long run, it may be desirable to locate a scientist per country particularly for support to national research.

In making these tentative proposals, it is recognised that WARDA has to negotiate with countries to provide certain concessions and/or facilities that scientists would require minimum research and social facilities to be able to operate effectively. Final decisions on posting will largely depend on the results of negotiations with Governments.

#### 4. Budget

General remarks relating to the 1977 budget followed. In Dr. Chandler's report, he recommended reduction in headquarters posts. This is acceptable in so far as the field activities of the research department are concerned. However, it will be impossible to run the Secretariat and all the coordinating activities as outlined above by one man. To maintain effective coordination the headquarters' research coordinating team suggested above is the minimum that can be envisaged.

#### Budget Proposal - W1 - 1977

##### Remarks

1. The 1977 budget is mainly characterised by the idea of sub-regionalisation as proposed by Dr. R.F. Chandler, Adviser to WARDA. Sub-regionalisation has the following main advantages:
  - (i) The establishment of a more efficient network of trials;
  - (ii) closer supervision of the field trials by the WARDA staff in view of the communication problems presently encountered in administering the trials from WARDA headquarters;
  - (iii) closer control with national research programmes and personnel with the object of supporting the national research capabilities more objectively;
  - (iv) expanding on the coordinated trials in particular, WARDA participation in the design and management of on-farm trials and how they fit into the rice development projects of member countries;
  - (v) obtain more promptly, feedback from the coordinated trials and national research, at the WARDA Secretariat.

In sub-grouping WARDA coordinated activities, one should distinguish headquarter activities from the purely, field or sub-regional activities which mainly constitute the field trials.

The headquarters activities include: Overall administration of the WARDA research activities; research training and seminars; analysis and preparation of results for research review meetings; Seed Storage and Processing Laboratory; Nursery Farm Management; Plant Quarantine; feedback with the sub-regional coordinators; management of the Special Research Projects etc.

3. The Regional Coordinators will be responsible for the implementation of the multi-local coordinated trials; initial evaluation tests; on-farm trials and developing programmes in support of national research activities.

4. It is proposed that plans be initiated in 1976 so as to make it possible to sub-regionalise the WARDA area by 1977. Staffwise, this will require four regional officers at the start and at least three senior scientific staff in addition to the Breeder with full Secretariat supporting staff at headquarters.

5. It is proposed that the regional officers be located at experimental stations in one of a group of three countries - preferably in countries without the WARDA Special Research Projects or in Liberia. External aid will be necessary to develop housing and office facilities for the coordinators at the experiment stations especially in countries where such facilities are limited and the Government cannot make new provisions for them.

6. A statistician will be required among the staff at headquarters to primarily assist in the design and implementation of field trials both as part of the regional as well as the national programme and to compile and assist in analysing the results for publication for the Research Review Meetings.

7. As part of WARDA's activities in bringing West African Scientists together informally in member countries or project sites as well as exposing qualified Personnel to International Conferences involving rice so as to improve the research output of the scientists, the WARDA Scientific and Technical Committee recommended exchange visits of scientists and to WARDA support to them in order to attend rice research meetings. A total budget of \$7,400 is requested for this.

8. Guinea Bissau is now an associate member of WARDA and in view of the low economic state of that country it benefits from such WARDA support as the coordinated trials. This applies to the training of Field Assistants.

9. Special Guests - Research Review Meeting

Provision is being made for 2 non-West African scientists to attend the Research Review Meeting every year so as to enable the exchange of ideas and experience of such outstanding scientists from other parts of the world with the West African scientists especially where such scientists cannot obtain non-WARDA sponsorship to attend the meeting. This will further enhance WARDA's international relationships.

10. Research Assistant Training for the IET.

The proper implementation of the initial evaluation tests dictates that a special training programme like that organised at IRRI for the International Rice Nurseries should be started. It is hoped to train 4 assistants every year at IRRI.

11. Germplasm Collection:

WARDA intends to initiate germplasm collection by 1977. It is hoped that this will form part of the programme of the Genes Board and IRRI. However, the storage facilities at the WARDA regional centres would need improvement to cope with this new and important activity. An average of \$20,000, is essential for each centre. Already some provision for storage has been made at the regional centres and at Johnsonville. However these need to be improved in terms of storage space and particularly for insulation and temperature and humidity control.

12. Nursery Farm

This farm is already becoming rather active. By the middle of 1976, two crops will be taken from about 8 acres. The handling of materials at the site of the Nursery Farm - Suakoko - 120 miles from Monrovia as well as transportation to the Seed Storage Laboratory at Johnsonville, Monrovia will require a Pick-up.

13. UN Volunteers

For reasons given last year and the difficulty in getting volunteers at the moment dictate that qualified Africans from member states be appointed in positions which were previously meant for these volunteers.

14. Equipment support to Trial Sites.

In order to improve the capacity of the trial sites and national research centres to properly conduct the coordinated trials and also undertake relevant local research, provision is made to supply relevant equipment and improve facilities at the various trial sites. A yearly allowance of approximately \$4,000 is made per station per year for three years.

15. In order to encourage efficient management of the trials, effort has been made to limit the numbers of trials to the needs of the countries where the trials are being conducted, the available manpower and facilities for good trial management. The crop protection trials in particular were limited by the Scientific and Technical Committee to stations where senior scientists capable of managing such complicated trials exist. Attempts have been made to conduct variety trials only in places where the results would be of relevance firstly, to the country where the trial is being conducted and to the WARDA region as a whole. The fertilizer trials, in view of their lack of relevance to the needs of the member countries were cancelled as part of the regional trials programme. Plans are being developed to make them part of the on-farm trials in the sub-regional trials programme in 1977.

As a consequence of these modifications, management is to become more effective and the total trial costs likely to be lower than before. However, these are expected to increase with sub-regionalisation. The greatest emphasis in 1976 and 1977 is being placed on establishing the IET trials.

16. Block Votes to Member States to Conduct the Regional Coordinator Trials

Following the recommendations of the Scientific and Technical Committee at its fourth seating and the subsequent approval by the Governing Council of the recommendation - "that the Secretariat should examine the communication and accounting/budgetary difficulties with the coordinated trials;" four-man consultancy mission visited member countries to study this problem and consulted with member

states. Most countries expressed concern that the accounting procedure adapted was cumbersome, time consuming and somehow unrealistic to achieve. As a consequence countries found it difficult to submit detailed accounts of expenditure and in almost all cases returns were always several months behind the trial results. In some cases, the WARDA Secretariat could only close its account a year after the trials were completed because of late return. There was also the problem of crop season overlapping and varying from one country to the other; when this is viewed in terms of the financial year, innumerable difficulties arise in the accounting system.

Considering the limited human resources at most of the trial sites; the problems involved in getting the coordinating team to obtain up-to-date accounts from member countries; the Consultancy Mission recommended:

"provided mutual agreement can be reached on the series of trials to be undertaken and cost per trial, block grants could be made to governments for carrying out the programme. The block grant will then be reviewed on the basis of careful and successful conduct of the programmes and their continued national and regional relevance - this approach is suggested as an alternative to the consultative groups' insistence for detailed accounting for each trial site"

The report further recommended the ratio of field assistants to trials as 1:4 to avoid the extreme variability that now exists by arbitrarily adapting the appointment of two field assistants per each trial site.

Procedure: The following procedure is suggested in calculating the block vote per trial:

- a) Operating Cost: In view of the difficulties involved in obtaining accurate operating costs per country and aware of the fact that the present allowance of \$330. per trial is very generous, it is proposed that this figure be used in calculating the total cost per trial in each country.
- b) Field Assistants: The costing of field assistant salaries has been highly controversial. The average cost for the 1973/74 season ranged from \$97 to \$330. However, in view of the fact that it is now agreed that field assistants on these regional trials are first and foremost part of the national service; that they are utilized mutually for the coordinated trials as well as national activities; that the countries stand to benefit more from each trial; that WARDA can only reimburse governments for the management cost of the field assistants; that these field assistants are supervised by senior scientific staff who because of the additional responsibility now demand compensation; that the field assistant charges have been unreasonably high in certain instances without necessary justification in output and that requests to Ministries have so far failed to give the exact cost of field assistant in each country; the cost of field assistant is spread over a whole year although they may not be fully engaged for the whole year, it is proposed that:
- i) a flat rate be adopted for the management of each trial in all countries;
  - ii) that the mean rate of the 1973/74 charges per field assistant as appeared in claims of member countries be adopted for each country;

iii) that a fixed ratio of field assistants for trial should be adopted - consequently the consultancy recommendation of a 1:4 ratio is suggested:  
Based on the above assumption, the average cost per trial can be arrived at as follows:

i) total monthly salary for field assistant in 1973/74

(average of 13 countries) = \$ 190,00

ii) therefore annual salary = 2,280.00

iii) if one field assistant can manage 8 in two seasons

(1 year) therefore charges per trial = 2,280.00 ÷ 8

= 285.00

thus the cost per trial is made up of:

i) management cost(field assistant) 285.00

ii) operational cost (previously approved) = 330.00

Total = 615.00

Note: In line with the recommendation for appointing national Coordinators, it should be agreed between WARDA and member countries - that a proportion of the management cost could be paid to scientists as inducement for supervising the trials. Senior national scientists appointed as national coordinators can be paid 10% of the total cost of each successful trial (mutually agreed with WARDA) should be paid to the national coordinator. This is found to be essential in order to keep their interest in the trials. In agreement with the member states, such national coordinator should be prepared to undertake additional coordinating role for WARDA at national level.



Summary - Cost/trial

i) Management cost	\$ 285.00
ii) Operational cost	330.00
iii) Coordinating cost (10% total)	60.00
	<hr/>
	\$ 675.00
Inflation cost (10%)	68.00
	<hr/>
	\$ 743.00
	<hr/>

Method of Payment - Fifty percent of the total charge should be paid at the start of the trials and 50 percent after WARDA and the member country concerned agree on the standard of the trials. It should be possible to pay proportions of the second 50 percent or not at all depending upon the trial results.

These proposals were unanimously adopted by participants during the third WARDA Research Review Meeting (May 24-29, 1976). 17. In 1977, it is hoped that the initial evaluation programme would be fully developed in terms of laboratory and field facilities in addition to equipment and appointment of supporting staff. It is now felt that WARDA would be better off in training West Africans to conduct these trials in place of UN or other volunteers. Such scientists will be in their Government service and their costs will be reimbursed by WARDA. As a result, the present budget cancels out motorbikes and their running cost as well as subsidiary furniture as presented in the 1976 budget.

WARDA 1977 BUDGET

SUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITURE

IN U. S. DOLLARS

	<u>BUDGET</u> <u>1976</u>	<u>BUDGET &amp; PROJECTED</u> <u>1977</u>	<u>PROJECTED</u> <u>1978</u>
I <u>OFFICE OF THE</u>			
<u>EXECUTIVE SECRETARY</u>			
<u>Executive Offices :</u>			
Professionals	120,000	120,000	120,000
Non-Professionals	<u>42,749</u>	<u>43,037</u>	<u>43,341</u>
SUB - TOTAL	162,749	163,037	163,341
<u>Administration &amp; Finance :</u>			
Professionals	168,000	168,000	168,000
Non-Professionals	<u>62,211</u>	<u>84,689</u>	<u>93,157</u>
SUB - TOTAL	230,211	252,689	261,157
Personnel Staff Cost Adjustment	20,118	115,663	120,229
Governing Council	47,000	45,000	45,500
Other Direct Costs	<u>53,020</u>	<u>59,816</u>	<u>65,798</u>
SUB - TOTAL	120,138	220,479	242,527
TOTAL DIRECT COSTS	513,098	636,205	671,025
CAPITAL ITEMS -	<u>9,900</u>	<u>23,600</u>	<u>25,960</u>
TOTAL OFFICE OF THE EXECUTIVE SECRETARY	522,998	659,805	696,985
	=====	=====	=====

WARDA 1977 BUDGETSUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITUREIN U. S. DOLLARS

	<u>BUDGET</u>	<u>BUDGET &amp; PROJECTED</u>	<u>PROJECTED</u>
	<u>1976</u>	<u>1977</u>	<u>1978</u>
<u>II COMMUNICATIONS &amp; DOCUMENTATION</u>			
<u>Communications :</u>			
Professionals	66,000	76,000	76,000
Non-Professionals	<u>14,128</u>	<u>15,540</u>	<u>17,094</u>
SUB - TOTAL	80,128	91,540	93,094
<u>Documentation :</u>			
Professionals	56,000	56,000	56,000
Non-Professionals	<u>31,421</u>	<u>42,813</u>	<u>47,094</u>
SUB - TOTAL	87,421	98,813	103,094
<u>Personnel Staff Costs Adjustment</u>	5,784	7,171	7,888
<u>Other Direct Costs</u>	<u>13,000</u>	<u>3,000</u>	-
SUB - TOTAL	18,784	10,171	7,888
TOTAL DIRECT COSTS	186,333	200,524	204,076
Capital Items	<u>21,300</u>	<u>13,500</u>	<u>10,000</u>
TOTAL COMMUNICATIONS & DOCUMENTATION	207,633	214,024	214,076
	=====	=====	=====

## WARDA 1977 BUDGET

SUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITUREIN U. S. DOLLARS

	<u>BUDGET</u> 1976	<u>BUDGET &amp; PROJECTED</u> 1977	<u>PROJECTED</u> 1978
<u>III DEVELOPMENT DEPARTMENT</u>			
<u>Headquarters Staff :</u>			
Professionals	550,000	556,000	556,000
Non-Professionals	<u>63,179</u>	<u>69,497</u>	<u>76,447</u>
SUB - TOTAL	613,179	625,497	632,447
Personnel Staff Costs Adjustment	31,789	34,268	37,695
Sub-Contracts	<u>224,112</u>	<u>125,000</u>	<u>130,000</u>
	255,901	159,268	167,695
<u>Field Staff :</u>			
Professionals	67,556	11,111	12,222
Non-Professionals	<u>104,444</u>	<u>112,222</u>	<u>123,444</u>
SUB - TOTAL	172,000	123,333	135,666
Other Direct Costs	<u>157,667</u>	<u>142,556</u>	<u>135,312</u>
TOTAL DIRECT COSTS	1,198,747	1,050,654	1,071,120
Capital Items	<u>128,389</u>	<u>38,556</u>	<u>-</u>
TOTAL DEVELOPMENT DEPARTMENT	1,327,136	1,089,210	1,071,120

## WARDA 1977 BUDGET

SUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITUREIN U. S. DOLLARS

	<u>BUDGET</u> <u>1976</u>	<u>BUDGET &amp; PROJECTED</u> <u>1977</u>	<u>PROJECTED</u> <u>1978</u>
<u>IV RESEARCH DEPARTMENT</u>			
<u>Staff Costs :</u>			
i) <u>W-1 Coordinated Trails</u>			
(a) <u>Headquarters Staff :</u>			
Professionals	194,971	206,050	226,655
Non-Professionals	19,936	49,664	54,630
Personnel Staff Costs Adjustment	<u>1,712</u>	<u>(46,925)</u>	<u>(51,617)</u>
SUB - TOTAL (a)	216,619	208,789	229,668
(b) <u>Field Staff :</u>			
Professionals	26,973	194,000	213,400
Non-Professionals	<u>205,983</u>	<u>38,000</u>	<u>41,800</u>
SUB - TOTAL (b)	232,956	232,000	255,200
SUB-TOTALS i) W-1 Coordinated Trails	449,575	440,789	484,868
ii) <u>Special Research Projects</u>			
* (a) Rokupr	127,000	133,000	146,300
* (b) Richard Toll	55,162	94,121	103,533
* (c) Bouake	10,000	10,000	11,000
* (d) Mopti	<u>85,000</u>	<u>160,000</u>	<u>176,000</u>
SUB-TOTAL ii) Special Research Projects	287,162	397,121	436,833

WARDA 1977 BUDGETSUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITUREIN U. S. DOLLARS

	<u>BUDGET</u> <u>1976</u>	<u>BUDGET &amp; PROJECTED</u> <u>1977</u>	<u>PROJECTED</u> <u>1978</u>
Other Direct Costs	<u>390,874</u>	<u>751,365</u>	<u>826,502</u>
TOTAL DIRECT COSTS	1,127,611	1,589,275	1,748,203
Capital Items	<u>869,750</u>	<u>931,100</u>	<u>1,024,210</u>
TOTAL RESEARCH DEPARTMENT	1,997,361	2,520,375	2,772,413
	=====	=====	=====
* SEE TABLE 4 FOR DETAILS OF SPECIAL PROJECTS			
V <u>TRAINING</u>			
Professionals	171,000	171,000	188,100
Non-Professionals	<u>20,000</u>	<u>20,000</u>	<u>22,000</u>
SUB - TOTAL	191,000	191,000	210,100
Direct Costs	<u>282,500</u>	<u>282,500</u>	<u>310,750</u>
SUB - TOTAL	473,500	473,500	520,850
Capital Items	<u>67,000</u>	<u>67,000</u>	<u>73,700</u>
TOTAL TRAINING	540,500	540,500	594,550
	=====	=====	=====
VI Reinforcement of National Structures in The Field of Training, Research and Seed Multiplication	300,000	500,000	500,000
	=====	=====	=====

WARDA 1977 BUDGET  
SUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITURE  
IN U. S. DOLLARS

	<u>BUDGET</u> <u>1976</u>	<u>BUDGET &amp; PROJECTED</u> <u>1977</u>	<u>PROJECTED</u> <u>1978</u>
<u>VII GENERAL OPERATING COSTS</u>			
Building and Grounds	10,752	10,752	11,827
Motor Pool	20,300	13,100	14,410
Communications	25,170	25,170	27,687
Office & Miscellaneous Supplies	22,746	20,900	22,990
Common Operating Equipment	6,030	3,500	3,850
Others	<u>10,000</u>	<u>10,000</u>	<u>111,000</u>
TOTAL DIRECT COSTS	94,998	83,422	91,764
Capital Items	<u>10,000</u>	-	-
TOTAL GENERAL OPERATING COSTS	<u>104,998</u>	<u>83,422</u>	<u>91,764</u>
TOTAL DIRECT COSTS	3,594,287	4,033,580	4,307,038
TOTAL CAPITAL ITEMS	<u>1,406,339</u>	<u>1,573,756</u>	<u>1,633,870</u>
TOTAL BUDGET	5,000,626	5,607,336	5,940,908
	=====	=====	=====

WARDA 1977 BUDGET

SUMMARY OF COSTS BY ORGANIZATIONAL UNIT AND OBJECT OF EXPENDITURE

TABLE 1

<u>BY OBJECT OF EXPENDITURE</u>	<u>BUDGET</u>	<u>BUDGET</u>	<u>BUDGET</u>
	<u>1976</u>	<u>1977</u>	<u>1978</u>
Personnel Service Costs	2,671,196	2,665,346	2,931,881
Consultants	27,000	38,000	38,000
Operational Travel	113,600	134,000	148,500
Building	648,800	233,000	256,300
Equipment	488,739	1,064,372	1,170,809
Vehicles	56,600	41,600	10,600
Maintenance & Repairs	736,502	596,989	521,097
Communication and Freight	51,220	60,170	67,687
Others	206,969	773,859	796,034
<b>TOTAL</b>	<b>5,000,626</b>	<b>5,607,336</b>	<b>5,940,908</b>



## WARDA 1977 BUDGET

SUMMARY OF SOURCE AND APPLICATION OF FUNDS

	<u>1976</u>	<u>1977</u>	<u>1978</u>
1. <u>SUMMARY OF SOURCES AND APPLICATION OF FUNDS</u>			
<u>TOTAL FUNDS AVAILABLE</u>			
<u>Cash Grants :</u>			
Member Countries	577,296	710,829	-
CGIAR	827,000	1,476,364 (proposed)	-
France	283,623	-	-
USAID	445,000	-	-
Kuwait	33,590	-	-
ACDI	346,400	-	-
Abu-Dhabi	50,000	-	-
IDRC	262,663	152,701	-
Saudi Arabia	100,000	100,000	100,000
Switzerland	50,000	50,000	-
Unfunded	712,228	1,989,997	5,740,908
TOTAL	<u>3,687,800</u>	<u>4,479,891</u>	<u>5,840,908</u>
Cash Received on Grants			
Grants Receivable at Year End			
Earned Income			
TOTAL FUNDS AVAILABLE			
In-Kind Grants	1,317,856	1,127,445	100,000
TOTAL RESOURCES AVAILABLE	<u>5,005,656</u>	<u>5,607,336</u>	<u>5,940,908</u>

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TABLE 2 - WARD 1977 BUDGET

SUMMARY OF SOURCE AND APPLICATION OF FUNDS (CONTINUED)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
<u>APPLICATION OF FUNDS TO OPERATIONS</u>			
Executive Secretary	513,098	636,205	671,025
Communications & Documentation	186,333	200,524	204,076
Development Department	1,198,747	1,050,654	1,071,120
Research Department	1,127,611	1,589,275	1,748,203
Training Program	473,500	473,500	520,850
Support to National Programs	150,000	250,000	250,000
General Operating Costs	94,998	83,422	91,764
Total Operating Cost	3,744,287	4,283,580	4,557,038
<u>CAPITAL ACQUISITIONS</u>			
Executive Secretariat	9,900	23,600	25,960
Communication & Documentation	21,300	13,500	10,000
Development Department	128,389	38,556	-
Research Department	869,750	931,100	1,024,210
Training Program	67,000	67,000	73,700
Support to National Programs	150,000	250,000	250,000
General Operating Costs	10,000	-	-
TOTAL CAPITAL	1,256,339	1,323,756	1,383,870

## TABLE 2.- WARDA 1976 BUDGET

SUMMARY OF SOURCE AND APPLICATION OF FUNDS (CONTINUED)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
<u>BROUGHT FORWARD</u>	5,000,626	5,607,336	5,940,908
Funds Applied to Unexpected Balances :			
Member Countries			
UNDP/FAO			
France			
USAID			
CGIAR			
<u>TOTAL APPLICATION OF FUNDS</u>	<u>5,00626</u>	<u>5,607,336</u>	<u>5,940,908</u>

TABLE 2. - WARDA 1977 BUDGET

SUMMARY OF SOURCE AND APPLICATION OF FUNDS (CONTINUED)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
2. <u>FUNDS PROVIDED AND EXPENSES</u>			
<u>BY ACTIVITY</u>			
<u>Executive Secretary &amp; General Office</u>			
Member Countries	259,098	710,829	773,899
UNDP/FAO	56,000	-	-
France T. C.	10,000	10,000	-
Kuwait	898	-	-
Peace Corps	10,000	-	-
Unfunded	-	8,898	-
TOTAL FUNDS PROVIDED	605,996	729,727	773,899
TOTAL EXPENSES	605,996	729,727	773,899
UNEXPENDED BALANCE	-	-	-
<u>Communication and Documentation</u>			
Member Countries	23,639	-	-
UNDP/FAO	150,500	100,000	-
France T. C.	10,000	10,000	-
FAO/Belgium	10,000	10,000	-
Kuwait	1,796	-	-
Peace Corps	30,000	40,000	-
Unfunded	3,698	67,524	228,926
TOTAL FUNDS PROVIDED	229,633	227,524	228,926
TOTAL EXPENSES	229,633	227,254	228,926
UNEXPENDED BALANCES	-	-	-

TABLE 2 - WARDA 1977 BUDGET

SUMMARY OF SOURCE AND APPLICATION OF FUNDS (CONTINUED)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
<u>Development Department</u>			
Member Countries	24,559	-	-
UNDP/FAO	301,500	290,000	-
FAO/Netherlands	20,000	20,000	-
Switzerland	62,000	58,000	-
France S.M.C.	365,556	234,445	-
France	283,623	-	-
France T. C.	180,000	180,000	-
USAID/FAO	36,000	-	-
Peace Corps	10,000	10,000	-
Kuwait	12,898	-	-
Germany	10,000	10,000	-
Abu Dhabi	10,000	-	-
Unfunded	11,000	286,765	1,071,120
TOTAL FUNDS PROVIDED	1,327,136	1,089,210	1,071,120
TOTAL EXPENSES	1,327,136	1,089,210	1,071,120
UNEXPENDED BALANCES	-	-	-
<u>Research Department</u>			
CGIAR	827,000	-	-
USAID	113,000	-	-
United Kingdom	100,000	100,000	100,000
France T. C.	10,000	10,000	-
France	-	-	-
CRDI	262,663	152,701	-
ACDI	346,400	-	-

TABLE 2. - WARDA 1977 BUDGETSUMMARY OF SOURCE AND APPLICATION OF FUNDS (CONTINUED)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
UNDP/FAO	11,000	11,000	-
Peace Corps	10,000	10,000	-
Abu Dhabi	30,000	-	-
Kuwait	17,998	-	-
Saudi Arabia	100,000	100,000	100,000
Unfunded	169,300	2,136,674	2,572,413
TOTAL FUNDS PROVIDED	1,997,361	2,520,375	2,772,413
TOTAL EXPENSES	1,997,361	2,530,375	2,772,413
UNEXPENDED BALANCES	-	-	-

TRAINING

USAID	304,000	-	-
FAO Kind	48,500	6,000	-
Netherlands Kind	65,000	-	-
Switzerland Kind	50,000	-	-
Abu Dhabi	10,000	-	-
Unfunded	35,000	333,000	594,550
TOTAL FUNDS PROVIDED	540,500	540,500	594,550
TOTAL EXPENSES	540,500	540,500	363,000
UNEXPENDED BALANCES	-	-	-

SUPPORT TO NATIONAL PROGRAMS

Unfunded/Requested from Special Fund	300,000	500,000	500,000
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SUMMARY

Funds Provided/Requested	5,000,626	5,607,336	5,740,908
Total Estimated Expenses	5,000,626	5,607,336	5,740,908
Unexpended Balance	-	-	-

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WARDA 1977 BUDGETFUNDED AND REQUIRED PROVISIONS (US\$)

TABLE 3

	<u>BUDGET 1977</u>	<u>REQUESTED FROM MEMBER STATES</u>	<u>FULLY FUNDED BY OTHER DONORS</u>	<u>NEW GRANTS REQUIRED</u>
<u>EXECUTIVE SECRETARY</u>				
Staff Costs	531,389	512,491	18,898	-
Other Direct Costs	104,816	104,816	-	-
Capital Items	23,600	23,600	-	-
TOTAL	659,805	640,907	18,898	-
<u>COMMUNICATION AND DOCUMENTATION</u>				
Staff Costs	197,524	-	132,000	65,524
Other Costs	3,000	-	3,000	-
Capital Items	13,500	-	13,500	-
TOTAL	214,024	-	148,500	65,524
<u>DEVELOPMENT DEPARTMENT</u>				
Staff Costs	908,098	-	123,333	784,765
Other Direct Costs	142,556	-	87,556	55,000
Capital Items	38,556	-	23,556	15,000
TOTAL	1,089,210	-	234,445	854,765
<u>RESEARCH DEPARTMENT</u>				
W-1 Staff Costs	440,789	-	-	440,789
Other Direct Costs	559,975	-	-	559,975
Capital Items	475,600	-	-	475,600
TOTAL	1,476,364	-	-	1,476,364

TABLE 3 - WARDA 1977 BUDGET  
FUNDED AND REQUIRED PROVISIONS (US\$) (CONTINUED)

	<u>BUDGET</u> <u>1977</u>	<u>REQUESTED</u> <u>FROM MEMBER</u> <u>STATES</u>	<u>FULLY FUNDED</u> <u>BY OTHER</u> <u>DONORS</u>	<u>NEW GRANTS</u> <u>REQUIRED</u>
<u>ROKUPR STATION:</u>				
Staff Costs	133,000	-	-	133,000
Other Direct Costs	64,000	0	-	64,000
Capital Items	8,000	-	-	8,000
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	205,000	-	-	205,000
<u>RICHARD TOLL STATION :</u>				
Staff Costs	94,121	-	-	94,121
Other Direct Costs	58,580	-	-	58,580
Capital Items	-	-	-	-
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	152,701	-	-	152,701
<u>MOPTI STATION :</u>				
Staff Costs	160,000	-	-	160,000
Other Direct Costs	61,000	-	-	61,000
Capital Items	447,500	-	-	447,500
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	668,500	-	-	668,500

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## TABLE 3 - WARDA 1977 BUDGET

FUNDED AND REQUIRED PROVISIONS (US\$) (CONTINUED)

	<u>BUDGET</u> <u>1977</u>	<u>REQUESTED</u> <u>FROM MEMBER</u> <u>STATES</u>	<u>FULLY FUNDED</u> <u>BY OTHER</u> <u>DONORS</u>	<u>NEW GRANTS</u> <u>REQUIRED</u>
<u>BOUAKE STATION :</u>				
Staff Costs	10,000	-	-	10,000
Other Direct Costs	7,810	-	-	7,810
TOTAL	17,810	-	-	17,810
<u>TOTAL RESEARCH</u>				
Operations	1,589,275	-	-	1,589,275
Capital	931,100	-	-	931,100
TOTAL	2,520,375	-	-	2,520,375
<u>GENERAL OPERATING</u>				
Building and Grounds	10,752	10,752	-	-
Motor Pool	13,100	13,100	-	-
Communications	25,170	25,170	-	-
Office & Miscellaneous Supplies	20,900	20,900	-	-
Common Operating Equipment	3,500	-	3,500	-
Others	10,000	-	10,000	-
Capital Items	-	-	-	-
TOTAL	83,422	69,922	13,500	-

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## TABLE 3 - WARDA 1977 BUDGET

FUNDED AND REQUIRED PROVISIONS (US\$) (CONTINUED)

	<u>BUDGET</u> <u>1977</u>	<u>REQUESTED</u> <u>FROM MEMBER</u> <u>STATES</u>	<u>FULLY FUNDED</u> <u>BY OTHER</u> <u>DONORS</u>	<u>NEW GRANTS</u> <u>REQUIRED</u>
<u>TRAINING</u>				
Staff Costs	191,000	-	-	191,000
Other Direct Costs	282,500	-	40,000	242,500
Capital Items	67,000	-	-	67,000
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	540,500	-	40,000	500,500
	<hr/>	<hr/>	<hr/>	<hr/>
<u>SUPPORT TO NATIONAL PROGRAMS</u>				
Staff Costs	-	-	-	-
Direct Costs	500,000	-	-	500,000
Capital Items	-	-	-	-
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	500,000	-	-	500,000
	<hr/>	<hr/>	<hr/>	<hr/>

COSTS OF SPECIAL PROJECTS

	<u>BUDGET</u>	<u>BUDGET &amp; PROJECTED</u>	<u>PROJECTED</u>
	<u>1976</u>	<u>1977</u>	<u>1978</u>
<u>ROKUPR</u>			
<u>Staff Costs :</u>			
Professionals	127,000	133,000	146,300
Non-Professionals	-	-	-
Other Direct Costs	56,000	64,000	70,400
TOTAL DIRECT COSTS	183,000	197,000	216,700
Capital Items	30,000	8,000	8,800
TOTAL PROJECT COSTS	213,000	205,000	225,500

RICHARD TOLL

<u>Staff Costs :</u>			
Professionals	48,288	56,576	62,233
Non-Professionals	16,874	37,545	41,300
Other Direct Costs	54,501	58,580	64,438
TOTAL DIRECT COSTS	119,663	153,701	167,971
Capital Items	489,400	-	-
TOTAL PROJECT COSTS	609,063	152,701	167,971

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SEARCHED  
SERIALIZED  
INDEXED  
FILED

COSTS OF SPECIAL PROJECTS (CONTINUED)

	<u>BUDGET</u>	<u>BUDGET &amp; PROJECTED</u>	<u>PROJECTED</u>
	<u>1976</u>	<u>1977</u>	<u>1978</u>
<u>BOUAKE</u>			
<u>Staff Costs :</u>			
Professionals	10,000	10,000	10,000
Non-Professionals	-	-	-
Other Direct Costs	7,100	7,810	8,591
	<hr/>	<hr/>	<hr/>
TOTAL DIRECT COSTS	17,100	17,810	18,591
Capital Items	-	-	-
	<hr/>	<hr/>	<hr/>
TOTAL PROJECT COSTS	17,100	17,810	18,591
<u>MOPTI</u>			
<u>Staff Costs :</u>			
Professionals	60,000	110,000	121,000
Non-Professionals	25,000	50,000	55,000
Other Direct Costs	10,500	61,000	67,100
	<hr/>	<hr/>	<hr/>
TOTAL DIRECT COSTS	95,500	221,000	243,100
Capital Items	302,500	447,500	492,250
	<hr/>	<hr/>	<hr/>
TOTAL PROJECT COSTS	398,000	668,500	735,350

COST OF SPECIAL PROJECTS (CONTINUED)

	<u>BUDGET</u> 1976	<u>BUDGET &amp; PROJECTED</u> 1977	<u>PROJECTED</u> 1978
<u>SEED MULTIPLICATION CENTRE</u>			
<u>Staff Costs :</u>			
Professionals	67,556	11,111	12,222
Non-Professionals	104,444	112,222	123,444
Other Direct Costs	<u>88,667</u>	<u>87,556</u>	<u>96,312</u>
TOTAL DIRECT COSTS	260,667	210,889	231,978
Capital Items	<u>104,889</u>	<u>23,556</u>	-
TOTAL PROJECT COSTS	365,556	234,445	231,978

S U M M A R Y

O F

MOVEMENTS ON GENERAL & UNEXPENDED GRANT FUNDS

	----- A U D I T E D -----		
	<u>1972/1973</u>	<u>1974</u>	<u>1975</u>
OPENING FUND BALANCE	-	\$185,350.08	\$569,856.69
INCOME OF THE YEAR	\$1,108,538.28	1,474,243.85	1,113,236.42
TRANSFER TO FUNDS	1,108,538.28	1,659,593.93	1,683,093.11
TRANSFER FROM FUNDS TO OPERATIONS (=ACTUAL EXPENDITURE)	(923,188.20)	(1,089,737.24)	(1,259,819.14)
CLOSING BALANCE	185,350.08	569,856.69	423,273.97



**WEST AFRICA  
RICE  
DEVELOPMENT  
ASSOCIATION**

G-11

**WARDA**

**Integrated Programme**

**and**

**Budget 1975-1978**

**April 1975**

C O R R I G E N D U M

Page III - 12: For Daikena (Niger), the total rainfall figure is 438 mm, and not 4381.

Page III - 17: The last sentence of the Section 3, Season 1974/75, should read:  
"Approximately 90 per cent of the total trials planned were conducted by member States".

Page III - 25: The second sentence of Section F, Statistics Division, should read as follows: "Although some data, especially those on areas, yields and production inevitably contain errors, the tables should be very useful for planning and project preparation".



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## D. Communications Division

## E. Statistics Division

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- b. Case for IITA
- c. Site Selection and Training Programme

## C. Seminars and Meetings

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2. General observations - Coordinated Trials
  - 2.1 Variety trials
  - 2.2 Fertilizer trials
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## E. Development Department

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2. Case Studies
3. Cooperation with Financing Institutions
4. General and Sectoral Studies
5. Seed Multiplication

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## G. Documentation Division

## H. Communications Division

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MEMBERSHIPS OF WARDA'S GOVERNING BODIES AND

SECRETARIAT STAFF

Ministère de la Production  
Directeur de Cabinet  
M. A. Timité

Ingénieur Agronome  
Dr. E. Timité

GOVERNING COUNCIL  
M. A. Timité

December 1974 Session

IVORY COAST

Mr. Jean Oulai  
Directeur Général de la SODERIZ  
Mr. A.A. Timité  
Sous Directeur de la Production  
SODERIZ

DAHOMY

Mr. Y.J. Capo-Chichi  
Directeur Général de la SADEVO

THE GAMBIA

Dr. L.J. Marenah  
Director of Agriculture

GHANA

Mr. A.R. Williams-Baffoe  
Deputy Director of Agriculture

Dr. J. Quansah  
Senior Research Officer

LIBERIA

Dr. Nah-Doe Bropleh  
Assistant Minister of Agriculture

Dr. J.D. Sauer  
Director of Research

Mr. P. Worzi  
Director, Rice Division

MALI

Mr. S. Moriba  
Directeur de cabinet  
Ministère de la Production

Dr. F. Traoré  
Ingénieur Agronome

MAURITANIA

Mr. A. Baro  
Chef de la Division de la Recherche  
Agronomique

NIGER

Dr. Z. Garba  
Chargé de la Recherche Agronomique

NIGERIA

Dr. B. Shaib  
Permanent Secretary  
Federal Ministry of Agriculture  
and Natural Resources

Mr. B.S. Oloruntoba  
Director  
Federal Department of Agriculture

Dr. B.O.E. Amon  
Secretary  
Agricultural Research Council  
of Nigeria

Dr. C.H. Obihara  
Director  
Federal Department of Agricultural  
Research

SENEGAL

Mr. B.D. Coly  
Directeur des Actions et Programmes  
Direction Générale de la Production  
Agricole

SIERRA LEONE

Mr. A.B. Momoh  
Deputy Permanent Secretary  
Ministry of Agriculture  
and Natural Resources

Dr. R.A.D. Jones  
Acting Director  
Rice Research Station, Rokupr

TOGO

Mr. B. Ywassa  
Directeur Général Adjoint de  
l'Economie Rurale

Mr. E. Kambia  
Ingénieur Agronome

Mr. A. Adotévi  
Ingénieur Agronome

UPPER VOLTA

Mr. L. Sow  
Direction des Services Agricoles

Mr. J. A. ...  
Development Coordinator  
UNRWA  
Geneva, Switzerland

Mr. J. J. ...  
Director of Agriculture  
Cote d'Ivoire, The Gambia

Mr. G. ...  
Director-General Adjoint  
FAO  
Geneva, Switzerland

Mr. B. Ywassa  
Directeur Général Adjoint  
Direction Générale de l'Economie Rurale  
Lomé, Togo

At the November 1975 Session, Mr. J. J. ... and  
Mr. L. Sow were re-elected as members of the  
Scientific and Technical Committee. The new elected  
members are:

Mr. J. J. ...  
Assistant Director of Agriculture  
Ministry of Agriculture  
Geneva, Switzerland

Mr. J. J. ...  
Chief of the Research Administration  
Ministry of Development  
Geneva, Switzerland

SCIENTIFIC AND TECHNICAL COMMITTEE

November 1974 Session

Dr. B.O.E. Amon  
Secretary  
Agricultural Research Council of Nigeria  
Ibadan Nigéria

Mr. D. Aw  
Development Coordinator  
WARDA  
Monrovia, Liberia

Dr. L.J. Marenah  
Director of Agriculture  
Cape St. Mary, The Gambia

Mr. G. Vallaeys  
Directeur-Général Adjoint  
IRAT  
Paris, France

Mr. B.L. Ywassa  
Directeur Général Adjoint  
Direction Générale de l'Economie Rurale  
Lomé, Togo

At the November 1974 Session, Dr. L.J. Marenah and Mr. B.L. Ywassa were reelected as members of the Scientific and Technical Committee. The new elected members are :

Dr. N.D. Bropleh  
Assistant Minister of Agriculture  
Ministry of Agriculture  
Monrovia, Liberia

Dr. Z. Garba  
Chargé de la Recherche Agronomique  
Ministère du Développement Rural  
Niamey, Niger



Dr. R.A.D. Jones  
Acting Director  
Rice Research Station  
Rokupr, Sierra Leone

MINISTRY OF AGRICULTURE

Ministry of Agriculture

Mr. L. Sauger  
Directeur  
Institut Sénégalais de Recherches Agricoles  
Bambey, Sénégal

IVORY COAST

Dr. B. Touré  
Professeur de l'Université  
Abidjan, Côte d'Ivoire

COAST

Mr. A. Williams  
Deputy Director of Agriculture  
Ministry of Agriculture

Dr. Maurice Brogdon  
Assistant Director of Agriculture  
Ministry of Agriculture

ALGERIA

Mr. L. Sauger  
Director of Research  
Ministry of Agriculture

Mr. L. Sauger  
Director, Rice Division  
Ministry of Agriculture

Dr. A. Sauger  
Chargé de la Recherche Agronomique

LIBERIA

Mr. A. Sauger  
Director des Services et Programmes  
Direction Nationale de la Production  
Agricole

LIBERIA

Mr. A. Sauger  
Deputy Permanent Secretary  
Ministry of Agriculture & Forestry Research

LIBERIA

Dr. R.A.D. Jones  
Acting Director, Rice Research Station  
Rokupr

ADVISORY COMMITTEE

November 1974 Session

IVORY COAST

Mr. A.A. Timité  
Sous-Directeur à la Production  
SODERIZ

GHANA

Dr. J. Quansah  
Senior Research Officer  
Ministry of Agriculture

Mr. A.B. Williams-Baffoe  
Deputy Director of Agriculture  
Ministry of Agriculture

LIBERIA

Dr. Nah-Doe Bropleh  
Assistant Minister of Agriculture  
Ministry of Agriculture

Dr. J. Sauser  
Director of Research  
Ministry of Agriculture

Mr. P. Worzi  
Director, Rice Division  
Ministry of Agriculture

NIGER

Dr. Z. Garba  
Chargé de la Recherche Agronomique

SENEGAL

Mr. B.D. Coly  
Directeur des Actions et Programmes  
Direction Générale de la Production  
Agricole

SIERRA LEONE

Mr. A.B. Momoh  
Deputy Permanent Secretary  
Ministry of Agriculture & Natural Resources

Dr. R.A.D. Jones  
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Rokupr

FRANCE Mr. H. Lefébure  
Ingénieur Agronome, Chargé de Mission  
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British Embassy  
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UNITED STATES Mr. J. Osguthorpe  
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FORD FOUNDATION Mr. E. Gilbert  
Programme Adviser in Agriculture  
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Director of Outreach  
Ibadan

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N.J. U.S.A.

Mr. J. ...  
Special Adviser

Mr. ...  
Special Adviser

Mr. ...  
Special Adviser

Mr. ...  
Special Adviser

Mr. ...  
Special Adviser

Mr. ...  
Special Adviser

Mr. ...  
Special Adviser

## WARDA STAFF LIST

AS AT 31/12/74

Executive Secretariat

Mr. Jacques Diouf	Executive Secretary
Dr. Lekan Are	Deputy Executive Secretary
Mr. P.G. de Boer	Senior Adviser (FAO/UNDP)
Miss B. Jagne	Bilingual Secretary
Mrs. B. Phillips	Secretary

Research Department

Dr. Harry Will	Research Coordinator (CGIAR)
Mr. Omer Koffi	Soils & Fertilizer Coordinator (CGIAR)
Mr. François Faye	Variety Improvement Coordinator (CGIAR)
Mr. M. Larinde	Seed Superintendent (CGIAR)
Mr. O. Mafolasire	Associate Weed Specialist (CGIAR)
Mr. J.N. Bassil	Associate Soil Fertility Specialist at Richard Toll (France)
Mr. J. Dallard	Associate Breeder at Bouaké (France)

Development Department

Mr. Djibril Aw	Production Agronomist and Head (FAO/UNDP)
Mr. C.E. Tagoe	Production Agronomist
Mr. O.S. Wild	Economist (FAO/UNDP)
Mr. J. Vianen	Associate Economist (FAO/Netherlands)
Mr. W.K. Bach	Land & Water Management Engineer (USAID)
Dr. R.E. Parker	Rice Processing & Storage Engineer (USAID)

Development Department (contd.)

Mr. H.P. Rozeboom Associate Rice Processing & Storage  
Engineer (FAO/Netherlands)

Mr. T.P. Sessou Assistant Rural Engineer (FRANCE)

Mrs. J. Sharobim-Fascione Bilingual Secretary

Documentation Division

Miss Kyra Hoppé Documentalist & Head (FAO/UNDP)

Mr. B. Guindo Indexer

Mr. E. Neblett Technical Photographer (FAO/UNDP)

Communications Division

Mr. G. Boccara Translator & Head (FAO/UNDP)

Miss T. Dechambenoit Associate Translator (FRANCE)

Statistics Division

Mr. P. Gérard Data Processing Specialist & Head (FAO/UNDP)

Mr. W. Sachers Data Processing Associate (FAO/W. Germany)

Administration & Finance Division

Mr. G.J. Miquel Chief, Administration & Finance (FAO/UNDP)

Mr. A.G. Ankoma-Sey Finance Officer

Mr. A.B. Naah Personnel Officer

Mr. C. Dunbar Liaison Officer

Mr. C. Kumodzi Procurement Officer

Miss A. Borghi Bilingual Secretary (FAO/UNDP)

Mrs. C. Woods Secretary

P A R T II.

THE SECRETARIAT

Technical Committee which reviews the work programme, and the Advisory Committee which studies the financial and programme aspects of the project. At its 4th Session the Governing Council decided to phase out the Advisory Committee. The Council and its Committees meet at least once a year normally between October and December.

The member countries contribute the administrative staffs of WARDA while the participating countries and

I. BACKGROUND.

Rice is an important staple food of West Africans. Production is now estimated at 1.48m tons and about 590,000 tons of rice valued at over \$250m are being imported annually into West Africa to bridge the gap between production and consumption. At the present rate of consumption, the rice requirements of West Africans would be about 2.5m tons in 1980. At an average price of \$500 per ton, its market value will be \$1,250m. These facts, coupled with the fact that West Africa is blessed with abundant land and water resources and a suitable climate to support rice growing prompted the international conference held in Monrovia, Liberia, in September, 1969 to decide to set up the West Africa Rice Development Association (WARDA).

The Constitution of WARDA was adopted at the Conference of Plenipotentiaries held in Dakar, Senegal in 1970, while the Association started to function on 1 December, 1971. WARDA is an inter-governmental regional organization whose main aim is to make West Africa self-sufficient in rice. Its members are: Dahomey, Gambia, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta.

The policy making body of the Association is the Governing Council made up of a representative from each Member State. The Association has two committees, the Scientific and



Technical Committee which reviews its work programme, and the Advisory Committee which studies the financial and programming aspects of the projects. At its 4th Session, the Governing Council decided to phase out the Advisory Committee. The Council and its Committees meet at least once a year, normally between October and December.

The member countries contribute the administrative budget of WARDA, while the cooperating countries and organizations, namely France, The Netherlands, United Kingdom, United States (USAID), Canada, Belgium, Ford Foundation, UNDP and the Consultative Group on International Agricultural Research (CGIAR) finance the research and development projects.

According to its statutes, the main objectives of the Association are to promote and increase the quantity and quality of rice produced in West Africa by:

- a) encouraging, coordinating, and undertaking as necessary, basic and applied research programmes in the scientific, technical, economic and sociological fields;
- b) collecting, analyzing and disseminating information on methods applied, experience gained, and results obtained both within and outside West Africa;
- c) organizing or arranging for conferences, seminars and training facilities, securing of fellowships and establishing, or assisting in the establishment of, advisory services and training and extension facilities;
- d) elaborating requests for special financial and technical assistance and receiving and administering separately such financial and technical assistance (including movable and immovable property, services and loans), as may be made available under the appropriate programmes of the United Nations, the

Specialized Agencies, other organizations or governments desirous to support the aims of the Association;

e) providing, as appropriate, regional rice research and development facilities;

f) carrying out or promoting any other measures or activities at the regional as well as the national level, as determined by the Governing Council, for the purpose of developing rice production and marketing in West Africa.

## II. THE SECRETARIAT.

The Headquarters of WARDA is located at the E.J. Roye Memorial Building in Monrovia, Liberia. It is made up of the Executive Secretariat, a Research Department whose function covers the Coordinated Trials (Project W-1) and the Special Research Projects originally W-2, W-3 and W-4 and now regrouped and integrated into Regional research projects for irrigated rice (Richard Toll) mangrove rice (Rokupr) Deep-flooded and floating rice (Mopti) rainfed rice (Bouake). There is also a Development Department with five divisions: Project Design, Project Quantification, Loans Management, Seed Multiplication, Production Mechanization; an Administrative and Finance Division; Documentation, Communications and Statistics Divisions. All the activities of the Association are coordinated by the Executive Secretary assisted by the Deputy Executive Secretary and the other members of staff. The Secretariat has enjoyed close cooperation and support of the UNDP/FAO which was instrumental in preparing the initial studies for formulating WARDA Research and Development projects. It has also enlisted the cooperation of IITA, IRAT, IRRI, AICRIP, OAU/STRC and ECA, and several donor countries including USAID, France, U.K., the Netherlands, arab countries etc.

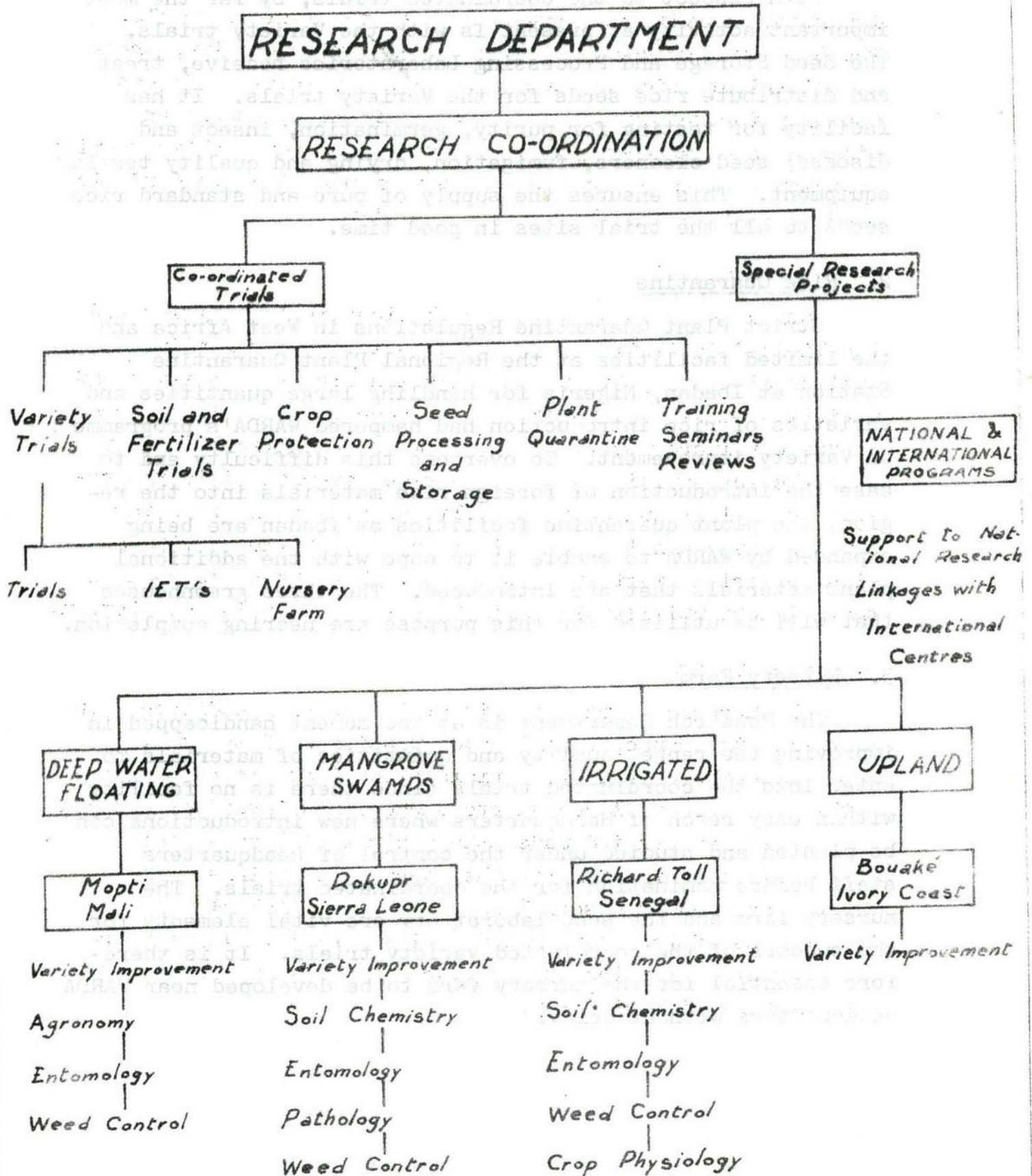
### A. The Research Structure

WARDA's overall research programme can be divided into three main parts, viz:

- a) Coordinated trials of Varieties, Fertilizer and Crop Protection at a network of locations in the region with the aim of establishing a direct impact on rice development in the region. This programme is fully supported by such important components as the Seed Processing and Storage Centre, the Plant Quarantine Centre and Training of Field Assistants who conduct the trials.
- b) Special Research Projects for reinforcing existing research work and for filling existing gaps in rice research in the region, backstopped by available knowledge and experience at the international level. It also includes direct support to national research programmes and linkages with the international research institutes. These projects have been classified into Variety Improvement, Soil Fertility and Crop Protection. Various aspects of these subjects are distributed and integrated according to the ecology and the existing activities and facilities of the regional centres as indicated above.
- c) Research coordination which involves planning, project formulation, negotiation for funding, and the implementation and supervision of the approved projects. These are done by headquarters staff located in Monrovia, Liberia.

The present structure of the WARDA Research Department is presented in the chart.

# THE WARDA RESEARCH STRUCTURE



### 1. Seed Storage

With respect to the coordinated trials, by far the most important activity at present is with the Variety trials. The Seed Storage and Processing Laboratories receive, treat and distribute rice seeds for the Variety trials. It has facility for testing for purity, germination, insect and disease; seed cleaners, fumigation, drying and quality testing equipment. This ensures the supply of pure and standard rice seeds to all the trial sites in good time.

### 2. Rice Quarantine

Strict Plant Quarantine Regulations in West Africa and the limited facilities at the Regional Plant Quarantine Station at Ibadan, Nigeria for handling large quantities and varieties of rice introduction had hampered WARDA's programme on Variety improvement. To overcome this difficulty and to ease the introduction of foreign rice materials into the region, the plant quarantine facilities at Ibadan are being expanded by WARDA to enable it to cope with the additional plant materials that are introduced. The three greenhouses that will be utilised for this purpose are nearing completion.

### 3. Nursery Farm

The Research Department is at the moment handicapped in improving the range, quality and quantities of materials to enter into the coordinated trials since there is no facility within easy reach of Headquarters where new introductions can be planted and studied under the control of Headquarters staff before nomination for the coordinated trials. The nursery farm and the seed laboratory are vital elements for the success of the coordinated variety trials. It is therefore essential for the nursery farm to be developed near WARDA Headquarters without delay.

The farm will be utilized for the following main purposes:

- a) for first stage study of introduced varieties,
- b) for the selection of new entries including early generation material in the initial evaluation test,
- c) for the preliminary variety tests and variety demonstration plots,
- d) seed multiplication plots for the coordinated trials (the present arrangement whereby seeds are collected from various sources is highly unsatisfactory and is resulting in seed admixtures, poor germination and delay in sending seeds from one site to the other, and therefore jeopardizing the success of the coordinated trials),
- e) variety maintenance plots for a Genetic Seed Bank,
- f) seed control and purification plots for the Seed Laboratory,
- g) training purposes for production specialists and field assistants.

#### 4. Training

The WARDA training programme is handled at four levels:

- a) Training of field assistants primarily designed to enable the assistants to conduct the WARDA coordinated trials under the supervision of senior national scientists: it enables uniformity and higher standards of conducting the trials.
- b) Training rice production specialists - normally a six month course similar to that run by IRRI: this enables trainees to return to their countries to conduct local courses for extension workers.

- c) Short-term specialised training of 4-6 weeks duration, the numbers of participants varies according to subject matter which covers such fields as seed multiplication, water management, rice milling and processing; storage, etc.
- d) Training of research personnel in support of the WARDA research programmes and subsequently for national research personnel. The courses will vary from short-term periods of 6 months to 2-3 years for higher degrees in recognised institutions.

#### 5. Research Review Meeting

WARDA conducts a Research Review Meeting every year at which a Research Report incorporating all the results obtained from the coordinated trials are presented and discussed.

The Research Meeting gives scientists and delegates an opportunity to critically review the overall programme and to revise, modify or to expand the set of coordinated trials.

In order to best serve rice research workers and extension personnel in West Africa and to provide outsiders with a clear and comprehensive picture about rice research in West Africa, it has been proposed that all research activities on rice in the member countries should be annually summarized and included in the WARDA Research Report. By pooling all valuable information on rice research annually into a single document, this approach should have a good impact and be a good example of a joint effort and effective cooperation. Proposals made in this respect to member countries, IRAT and IITA have been favourably received.

The annual research report may prove to be an up-to-date and a handy document, not only for research and extension workers in West Africa, but also for other rice workers, organizations and countries as it will cover all research activities on rice in West Africa.

Seminars on specialised subjects such as Breeding, Pathology, etc. will be organized every year to give the opportunity of exchanging ideas and improving our knowledge on these subjects.

#### 6. Research Coordination

The Research Department is headed by a Research Coordinator who is assisted by the Coordinators for Variety Improvement and Soils and Fertilizer Use and an Agronomist/ Statistician. In view of the increasing load of work, a Research Adviser is to be appointed to assist the Research Coordinator.

The Coordinating centre for WARDA's research activities is at its headquarters in Monrovia. Effective linkages with the International Institutes, a strong coordination of on-going research at the National Research Centres of member countries and a large number of well designed coordinated trials are of paramount importance for increasing rice production in West Africa. In this respect, it should be realized that many research stations in the region are poorly staffed and equipped, and that national boundaries quite often limit the free flow of information and experimental results. It is WARDA's task to overcome these hurdles and to make maximum use of existing manpower and facilities in the region. The planning of assistance in staff, equipment and facilities with regard to the existing organizations in the region has been done in such a way as to avoid duplication of effort with maximum returns. As such, maximum use will be made of the infrastructure available at certain major centres like IITA, Bouake (Ivory Coast), Richard Toll (Senegal), Mopti (Mali) and Rokupr (Sierra Leone) and of an organization like IRAT.

The entire WARDA research programme is being managed in such a way as to integrate the special research projects with the coordinated trials; integrate research activities at the



various research centres by providing scientific team leader who ensures that there is integrated approach to research and also integration and coordination according to the various disciplines.

#### 7. Special Research Projects

WARDA's plans for Special Research Projects in varietal improvement (W-2) are the reinforcement of breeding work at Mopti (Mali) for deep water and floating rice at Rokupr (Sierra Leone) for mangrove swamp rice and at Richard Toll (Senegal) for irrigated rice. WARDA's role in breeding work for rainfed rice will be limited in nature as varietal improvement for this type of rice cultivation is being carried out both at IITA (Ibadan, Nigeria) and Bouake (Ivory Coast).

Studies on soil fertility and soil management (W-3) are planned for Rokupr (Sierra Leone) and at Richard Toll in Senegal.

Research on insect pests, diseases and weeds (W-4) are to be conducted in an integrated way with the variety improvement projects at Rokupr, Mopti and Richard Toll. Screening varieties and large numbers of selections for resistance against pests and diseases will form the major part of these activities.

The Research centres at Rokupr, Mopti and Richard Toll were selected both on ecological basis and the rice production problems found there (see below). As far as possible, multi-disciplinary team work is envisaged for each of the centres according to prevailing problems.

#### 8. Coordinated Trials

The coordinated trials are designed and managed in such a way as to obtain quick and reliable results on varietal performance, best fertilizer practices and plant protection measures under the various rice growing conditions in West Africa.

The first set of Coordinated Trials designed to provide information on the best varieties available for each area and on optimum fertilizer rates was planted in June/July, 1973 at 27 locations. They were approximately 75 trials in all. About 12 insect control trials and another 30 variety trials were conducted in member countries which conducted trials on the crop in November/December, 1973.

For each trial, detailed guidelines and instructions were issued along with data collection and trial information sheets to enable a proper interpretation of the results obtained. The seed rice for the Coordinated Trials were supplied by member countries, IRRI, Thailand and others and are treated before being redistributed to member countries for sowing.

A sound programme of coordinated trials and effective links between WARDA and the National Extension Services should lead to a rapid introduction of improved varieties and better cultural practices among the rice farmers in West Africa.

#### a) Planning the Regional Trials

The results obtained from the special research projects are expected to provide the scientific support for the coordinated trials. In particular, the variety improvement project at Bouake and IITA (Rainfed), Rokupr (Mangrove), Mopti (Deep flooding/floating), Richard Toll (Irrigated rice) when well established, are expected to give direct support to the coordinated variety trials. Breeding materials from the research programmes and those introduced from outside the region are entered into an initial testing programmes for adaptability to varying rice growing conditions in West Africa. This first phase of the programme is being concentrated in a few stations within specific ecological zones and where special rice production problems exist.

Selection against the major environmental problems could be made at the following stations:

- i) Diseases - Suakoko, Liberia; Rokupr, Sierra Leone; Bouake, Ivory Coast; IITA, Ibadan, Nigeria, etc.
- ii) Insects - Mopti, Mali; IITA, Ibadan, Nigeria; Rokupr, Sierra Leone, etc.
- iii) Iron toxicity - Rokupr, Sierra Leone; Suakoko, Liberia, etc.
- iv) Salinity - Rokupr, Sierra Leone; Richard Toll, Senegal, etc.
- v) Cold tolerance and photoperiodism - Kaedi, Mauritania; Richard Toll, Senegal; Sapu, Gambia; Libore, Niger, etc.
- vi) Drought tolerance - Bouake, Ivory Coast; Nyankpala, Ghana; IITA, Ibadan, Nigeria and Sikasso, Mali.

General selection on yield parameters will be combined with these studies.

Promising lines from this test are promoted into trials with larger plots and replications to assess yield performance before the best adapted varieties are promoted into the regional variety coordinated trials.

WARDA provides the running costs of these trials including salaries of field assistants and labour, tools and equipment, chemicals and fertilizers, etc.

b) Ecological Background for Rice Cultivation

In designing the coordinated trials, one should take into account the following important factors:

- i) Rainfall distribution pattern and evapotranspiration.
- ii) Solar distribution and temperature pattern.

- iii) Soil types and types of culture
- iv) Level of management
- v) Characteristics of varieties utilized
- vi) Incidence of pests and diseases.

These factors are closely interrelated. The environmental potential for rice growing in West Africa is set primarily by the climate and the soils. The soils themselves reflect the influence of the climate. The classification adopted for the various ways in which rice is grown in West Africa is based largely on how water is made available to the crop.

The interacting factors between the plant, climate, the soil and management factors largely determine the yield of a particular crop of rice.

The important climatic differences within the broad West African belt are due to simple mechanisms of the general circulation of the atmosphere over the area. The belt is fed by moisture laden air from the Atlantic and dry harmattan winds from the north. While the southern winds have equitable temperature, the harmattan is cold during the northern winter and hot in summer. The WARDA region can thus be broadly divided into:

- i) area of short summer rains as found mainly in the north of the region,
- ii) area of two rainy seasons separated by a short dry spell and a longer dry season during the northern winter,
- iii) coastal areas of heavy and long periods of rainfall due to the effect of the sea and the coastal alignment.

Generally, a minimum rainfall of 600mm per year distributed within one season (mono-modal) is essential for an upland rice crop. This is typical of the areas in the first group. The bimodal zone (second grouping) requires 1000-1200mm of rain and the heavy rainfall belts receive over 2400mm rainfall per annum. In terms of rainfall the best conditions for rainfed rice are found in the forest zones with a rainfall distribution pattern of 150-180 days (mono-modal distribution).

c) Responses of Rice Varieties to Ecological and Management Factors

At the outset, it is recognized that cultivated rice has a very high demand for water during its growth period. Adequate and well distributed rainfall is therefore an important factor for high yields. Moisture stress for long periods at critical growth stages like seedling or flowering stages can result in total crop failure. Prolonged and heavy rainfall resulting in high humidity encourages the incidence of diseases and pests.

Seasonal variation in day length is small for the whole area, but it is sufficient in some places notably in the north of the region, to affect varieties which are sensitive to it. For example, at Mopti ( $15^{\circ}\text{N}$ ), the mean sunshine in December is 11 hours 30 minutes, but in June, it is 13 hours. Variation at Rokupr ( $9^{\circ}\text{N}$ ) is around 0.5 hours. However, average daily sunshine hours at Rokupr for December and June are 7 hours 30 minutes and 5 hours 30 minutes respectively due mainly to the cloudiness of the atmosphere during the crop season. Clear skies at Mopti and longer sunshine hours give it an overriding advantage over Rokupr for photosynthesis. However, the vast temperature differences during crop growth (June -  $32.5^{\circ}\text{C}$  for Mopti and  $22.2^{\circ}\text{C}$  for Rokupr) suggests a higher evapotranspiration rate at Mopti. The average total rainfall are 530mm and 2500mm per annum for Mopti and Rokupr respectively, practically none falling at Mopti in December.

Most West African rice varieties are sensitive to photoperiods and are therefore usually grown only during the main crop season even for irrigated rice. Apart from the effect of moisture, there appears to be a strong interaction between photoperiodism and temperature. It is essential to compare the situations at Mopti and Rokupr so as to have an idea of the impact of environment on pest and disease incidence as well as crop yields in the West African region.

Under hot and dry, sunny conditions, moisture that is consumed by the plant is high but on the other hand, pest and disease incidence is often minimal. If moisture supply is adequate under such conditions and management is good, yields are much higher compared with situations with warm, moist, cloudy conditions where pest and disease incidence, short sunshine hours may be the most important yield limiting factors even where management may be good. Mopti typifies the first example and Rokupr the second. Modifications of the above factors occur in varying degrees all over West Africa. Since varieties react differently, one of the major objectives of the WARDA variety and crop improvement programme is to raise or adapt rice varieties that fit within the prevailing ecological situation and to adopt production methods that maximise the conditions.

The most desirable feature about good soils for rice cultivation are their ability to retain moisture, as well as native and applied nutrients and also making available the nutrients to the plants for growth. Soils in the region such as halomorphic soils (Senegal, Gambia, Nigeria) and those with iron or aluminium toxicity problems (Liberia, Sierra Leone, Ivory Coast) need good management, particularly with regard to proper water control coupled with the use of resistant varieties. Soils on which rainfed rice is produced are the least productive mainly due to poor nutrient status, their vulnerability to drought conditions either as a result of the soil type or the land form. This type of cultivation is again

highly vulnerable to pest and disease attack. The coordinated fertilizer trials attempt to provide answers to some of these problems.

Under deep water or floating rice cultivation, the uncertainties about the flood waters as related to planting time, damage due to heavy floods and loss of grain during harvest result in low yields.

Management practices are more often a reflection of the historical development of rice culture in the countries. In most parts, rice cultivation is primitive and rice cultivation either on intensive basis under irrigation or through large scale land preparation by machines, is new. At the experimental level, management is often a reflection of the quality of the staff in charge of the trial and the means at his disposal.

#### B. The Development Department

The ultimate objective of WARDA is regional self-sufficiency in rice at the earliest possible time and this can be achieved in the field through increased production and efficient storage, processing and marketing. These activities depend on well conceived national programmes aimed at reaching as many as possible the innumerable small farmers cultivating between one and six acres (0.4 to 2 ha) of rice as well as the small huller operators and the semi-government owned larger mills.

It is the responsibility of the Development Department to add expertise to national agricultural planners (who are generally overwhelmed with work) in their efforts to devise programmes for increased rice production and improved storage and milling programmes and techniques.

The Department is also WARDA's main contact with international Financing Agencies which finance agricultural

or rural development programmes in the region. It works in close relations with these agencies and often joins them in project identification, appraisal and evaluation. Two of these are the International Bank for Reconstruction and Development (IBRD) and the African Development Bank (ADB).

The Development Coordinator directs the activities of the five Divisions of the Department which are:

### 1. Project Design

This Division is primarily charged with the responsibility of identifying, formulating, preparing and evaluating rice projects for member states, either exclusively or in collaboration with other financing agencies, and of making general studies on rice problems in the region. To achieve these objectives, a team of experts in rice agronomy, irrigation (land and water management), economics and storage and processing has been assembled at the Headquarters for undertaking jointly specific projects based on requests by member states. WARDA has an important coordinating role to perform in order to avoid wastage of money through the duplication of studies on development trends.

### 2. Project Quantification

This Division is mainly a support for the Design Division in projects that involve civil engineering works. Estimating of quantities, construction costs and design drawings will be the main duties of this Division. The data and design recommendations coming from this Division can be used for inviting tenders from construction firms.

### 3. Loans Management

This Division is being set up at the request of member countries to assist them in finding financing for attractive development projects from Banks, etc. As an alternative, the Division might be in a position to recommend direct financing



of such projects by WARDA when its resources permit. In addition, the Division will also be involved in the financial analysis of projects in order to satisfy the need of each particular financing agency.

#### 4. Seed Multiplication

WARDA is producing foundation seeds of improved rice varieties for its member countries at its Seed Multiplication Centre in Richard Toll, Senegal. Certified seeds for distribution to farmers are to be produced from these through the seed multiplication schemes of each member country. This may prove the fastest way of improving the yield and quality of rice varieties now planted in the region.

Moreover, the seed centre will assist in accelerating the introduction of new promising varieties. WARDA with its international contacts can acquire and import the necessary seed direct from the Breeder and multiply it for the benefit of the national multiplication stations and ultimately the West African farmers. The WARDA seed multiplication centre could also constitute a seed bank that can be placed at the disposal of countries facing urgent needs for rice seeds in an emergency.

#### 5. Production Mechanisation

Research into mechanisation of rice production is of special interest in West Africa. A joint UNDP/FAO/Netherlands small scale mechanisation project is already in progress, but WARDA plans to carry out large scale mechanised rice production studies to fill the gap in the present studies. An experimental unit of 100 ha will be set up at Richard Toll, Senegal for studies on irrigated rice, while another study on 5 ha on mangrove rice cultivation will be carried out at Rokupr, Sierra Leone. The technical objectives will be to determine the most suitable type of equipment for each farm operation,

the best methods of carrying out each operation and the optimum combination of mechanised field operations. From the economic standpoint, the following will be investigated: the time required by and the unit cost of each operation, the input/output ratio, the optimum economic combination of mechanised rice production systems.

The station will assist in testing machines which might be imported in large quantities by member governments. Such a service will diminish the risk of importing machines which are less adapted to the prevailing conditions in West Africa. Improvements and modifications can be suggested and these effected by manufacturers on a series of machines before they are exported to the various countries in the region.

#### C. Documentation Division.

The WARDA Documentation Centre and Library are located at the Headquarters in Monrovia. Its main aim is to collect, analyse and disseminate information relevant to rice in West Africa. It achieves this by providing information in the form of indexes on all aspects of rice production in West Africa to the member countries and to any organization concerned with rice. The service takes the form of collecting, cataloguing, indexing and publicising these documents in the form of printed indexes in English and French, enabling all relevant documents to be retrieved in response to requests for literature on specific subjects. There is also a question and answer service based on the indexes, while a library to serve the needs of WARDA staff is being established at the Headquarters. The publication of a quarterly reference journal entitled "World References on Rice for West Africa" has been undertaken in collaboration with IITA, Ibadan, IRAT, Paris and TPI, London.

This Division has a Laboratory for Microfilming, Reprography and Photography.

#### D. The Communications Division

This Division handles the translation into French or English of all documents prepared by the Secretariat and the staff at the Headquarters. It designs the layout of documents, arrange their printing and distribution. It also assists the Executive Secretariat in Public Relations and in the preparation and release of information about WARDA to the press and public.

#### E. The Statistics Division

This Division deals with the collection, analyses and storage of statistical data on the different aspects of rice production in member countries and from information available in the Documentation Centre. The statistical data are obtained either by visits to member states or through replies to specific questionnaire sent out by the unit. The unit services the other departments and divisions of the Association by carrying out different types of analyses for them. It carries out its work by applying computer techniques and makes use of the computer facilities in Liberia on contract basis.

The data collected will be published as an Annual Rice Statistics Report. The data could also assist in deciding, planning and implementing rice policies in the region, as well as for updating information on rice development in West Africa.

P A R T III

STATE OF PROGRESS 1974 - 1975

The activities of the Association have expanded tremendously largely as a result of increased staffing at all levels and also of increased financial support for the research and development programmes. The Executive Secretary maintained contacts with Co-operating States and Organisations and established profitable relationship with new partners.

Contributions to the Administrative budget of the Association were paid at a faster rate by Member States. Levels of contributions were \$394,170 (99.7%), \$383,922 (90.1%) and \$270,247 (54.2%) for 1972, 1973 and 1974 respectively as at October 31, 1974.

Participation at international meetings improved during the year. Member States are requested to kindly extend invitations to the WARDA Secretariat when discussing their rice research and development programmes. The advantages to be derived are mutual and obvious.

#### A. Administration and Finance Division

Work during the period under review, for the Finance, Procurement and Personnel units comprising this Division, has been aimed at adjusting the structure and the flow of activities to the requirements of a new developing organization.

Pursuant to the recommendations on mechanised accounting, a NCR accounting machine was imported and installed. The first part of the year was devoted to training of two bookkeepers on the use of the NCR accounting machine in order to make maximum use of all the possibilities it offered. Cards for posting of all transactions were printed and tested.

The existing coding manual was reviewed and all the accounts

of the Association was mechanically processed as far back as from its inception. Most of the missions from donor organisations during the current year have found the system responding to their requirements and to provide for satisfactory controls.

A complete audit was performed by the External auditor for the period ending December, 1973. Also to comply with Financial Regulation XIV.1(d), a firm of Chartered Accountants - LIBSCO & Co. Ltd. - was appointed internal auditor effective October 1, 1974. The firm cooperated with Messrs. Issifu Ali & Co., our external auditors, in carrying out a preliminary audit for the period January 1 to September 30, 1974. The main requirement of all donor organisations is that of a proper budgeting system which incorporates short-term, mid-term and long-term planning. The TAC mission in September/October, 1974 re-emphasised this. We are therefore recommending the addition of a new budget unit to the Finance Section. This will necessitate some modification to our present set-up:

(a) replacement of the present NCR accounting machine by a faster, bigger capacity machine with more memories and which will be better suited for our work.

(b) budgeting by departments and by projects. It will be necessary to modify the coding manual for the Secretariat to include a sub-ledger code indicating the department or location of the activity. This modification is now being prepared.

After a slow beginning, the Procurement Unit is now functioning properly. This unit together with that of the Liaison Officer have been giving very good service to the different departments of WARDA. It has established an inventory.

The Personnel Unit has continued to service WARDA on staff and personnel matters, maintaining adequate files of existing staff, a roster of available candidates for the different vacant posts, permanent contacts with insurance agencies regarding personnel insurance problems, and interviewing candidates and acting

as Secretary of the Appointments, Promotions and Disciplinary Committee.

A first version of the Financial and Staff rules was completed. It has been revised, updated and approved by the Executive Secretary.

#### B. Training

In pursuance of the Governing Council's decision on training at the Third Session in Abidjan, Ivory Coast in December, 1973, the services of Mr. Vernon Ross, Head of Office of Rice Production Training and Research and Rice Specialist, IRRI were obtained. He reviewed the short-term, mid-term and long-term training needs of WARDA. Of the three locations considered for WARDA's Training Center, Bouake, Ivory Coast was least suitable thus leaving two alternatives to choose from: the Agricultural Extension Training Center (AETC) at Johnsonville, Liberia or IITA, Ibadan, Nigeria.

##### a) Case for AETC - Liberia

Mr. Ross observed that existing physical facilities at the AETC could handle at least 40 trainees annually and that it would require a relatively small investment to put it into good operating condition. Although accommodation space was lacking, there are sufficient land and water resources to accommodate training in both irrigated and rainfed rice. Its nearness to the WARDA headquarters would permit the use of the applied research plots managed by the trainees to demonstrate the impact of new rice technology to visitors from Member States. He also felt that WARDA was fortunate to have a number of rice scientists at its headquarters in Monrovia and that these could serve as resource speakers. WARDA is building facilities for conducting yearly training programmes at AETC, Johnsonville.

##### b) Case for IITA

It was recognised that the IITA could only undertake the training every two years starting from 1975. IITA, it was

reported, has excellent training facilities and can carry out training in irrigated and rainfed rice, but is not a monocrop institute. It is conducting some research on rice. Moreover, its scientists would be available for lecture assignments. WARDA decided to take advantage of IITA courses whenever they were available and send additional trainees to Ibadan when courses on rice were offered. Unfortunately, it has now been learnt that the IITA cannot conduct the 1975 course for Rice Production Specialists and that due to its overall activities and staffing problems, cannot guarantee a course for 1976. However, IITA conducted the first course for Rice Production Specialists which was attended by 23 trainees between June and November, 1975.

c) Site Selection and Training Programme

The WARDA Secretariat feels that if the Rice Production Specialist Course (RPSC) must be done annually, the AETC Liberia is to be preferred. Although some investments would have to be made at the AETC in terms of provision of a dormitory, both locations lack training personnel.

Unfortunately, WARDA was unable to conduct a RPSC in 1974, even though most Member States nominated candidates for the course. Financial support for the course could not be obtained despite a lot of effort. To map out a better programme for the future, a new project entitled "Training Needs for the WARDA Region" was formulated and put forward to the USAID for financing.

To fully utilise the staff and facilities at the training centre, it is hoped that specialised production courses, e.g. in seed technology and the training of processing and marketing staff can be fitted into the otherwise slack period from January to April.

The training of Field Assistants who take records on WARDA's Coordinated Trials will continue. The first course was held in February, 1973 at the AETC, Johnsonville, Liberia and was attended by 37 participants. The second was held at the IITA, Ibadan from



January 2 to February 16, 1975. Twenty participants attended. This course emphasized the problems of plant protection and experimentation.

A training time-table shown below is envisaged in the new training project submitted to USAID for financing:

January	-	February:-	Training of Field Assistants
March	-	April:-	Specialised Training Programme
June	-	November:-	Training of Rice Production Specialists.

It is intended that members of staff of the training centre would take their annual leave in between courses, while the remaining time would be utilized for preparations for the next courses.

#### C. Seminars and Meetings

Seminars are regularly organized to tap existing rice knowledge in the region and elsewhere. The first three seminars on Varietal Improvement (with 39 participants), Soils and Fertilizer Use (with 44 participants) and on Plant Protection (attended by 44 participants) held in Monrovia, Liberia proved helpful in formulating and finalising arrangements for the Coordinated Trials (W-1). They also assisted in further improving on the WARDA Special Research Projects (W-2, W-3 and W-4). The first two were held in January, 1973, while the last one was in May, 1973. Two other seminars: the Project Managers Meeting and the Socio-Economic Aspects of Rice Cultivation were held in Monrovia, Liberia in February and April, 1974, respectively. All WARDA seminars were attended by scientists from all member countries, IRRI, IITA, IRAT, ILACO (Netherlands), FAO/UNDP, ECA, OAU/STRC, the Quelea Project in Chad, Upper Volta, USA, France, United Kingdom and The Netherlands.

#### D. Research Department

This Department has not grown as rapidly as it was intended. There are only three professional staff at headquarters and virtually no senior research scientist at any of the regional

research centres. The main reasons for this situation is the difficulty in obtaining qualified and experienced candidates, as well as, the limitation in the funding of the special research projects.

The coordinated trials were carried out with increased vigour during 1974. Results from the 1973 main season trials were assembled, analysed, interpreted and compiled into a research report which was discussed at the Annual Research Review Meeting from July 15 to 20, 1974 in Monrovia. The countries represented at the meeting were Ivory Coast, The Gambia, Upper Volta, Liberia, Mali, Mauritania, Nigeria, Niger, Sierra Leone and Togo. Also participating were representatives from AICRIP, IITA, IRAT and IRRI. The meeting discussed in particular, the results of the 1973 main season coordinated trials, but also discussed reports from national scientists. Ways and means of improving future trials were suggested.

Although certain concrete conclusions can be drawn from the results of the coordinated trial, the data represent observations for only one season and are therefore largely preliminary.

#### 1. Some Results from the Regional Coordinated Trials, 1973 Main Season

The coordinated trials, like the WARDA special research projects, are based on the types of rice culture that exist in the region and the climatic and ecological influences which have been mentioned above. In view of the strong association between each type of rice culture with water regime, the types of cultures have been simplified to reflect this association in planning the coordinated trials:

- a) Rainfed rice which depends entirely on rain. It is grown mostly under freely drained soil conditions although flat or lowland areas may suffer from temporary floods. The freely drained conditions are often referred to as upland.
- b) Irrigated conditions where the water is controlled.
- c) Deep flooded conditions where standing water levels of 30-100cm are obtained.

- d) Floating conditions with over one metre water depth.
- e) Mangrove swamp rice which is coastal or estuarine rice grown on soils that developed from mangrove vegetation.

In view of differences in varietal duration and in order to adapt the short duration varieties to areas with short growing seasons in terms of moisture availability and the cultivation of longer duration varieties under excessive or long moisture periods, the trials were sub-classified into short, medium and long duration trials.

During the first season, a total of 7 different types of variety trials were conducted. The trials were classified as follows:

- a) rainfed (short and medium duration);
- b) irrigated (short and medium duration);
- c) deep flooded combined with mangrove (medium and long duration); and
- d) floating rice cultivation.

Varieties were tested for their ecological adaptabilities and yield potential using such parameters as panicle weight and numbers; 100 grain weight; lodging resistance; varietal resistance to diseases, insect pests and toxic soil conditions and duration to maturity. In all, 60 varieties were tested.

Of all the varieties tested, IR 442 (IR 442-2-58) was tried under five of the seven major cultural conditions. An analysis of its reaction compared with (a) the best varieties in each trial or (b) with the poorest yielder in cases where IR 442 (IR 442-2-58) performed best, is given in the tables to illustrate the effects of (a) cultural conditions; (b) pest and disease attack; (c) crop duration; (d) rainfall or moisture availability; (e) sunshine (latitude); (f) management, as factors of ecological differences on the performance of this and other varieties.

The plant characteristics, grain yield and yield components of IR 442-2-58 grown under upland condition at IRRI - 1971 and 1972 wet seasons are compared with observations at Nyankpala, Ghana.

	I R R I		W A R D A	
	1971 <sup>+</sup>	1972 <sup>+</sup>	1973*	1974*
Grain yield (t/ha)	3.4	4.5	3.6	3.9
Plant height (cm)	83	98	104	97
Tiller number/sq.m.	322	-	-	-
Panicle no./sq.m.	305	204	519	442
Filled grains (%)	84	-	-	-
100-grain wt. (g)	2.39	2.44	2.4	2.4
Growth duration (days)	120	124	107	130
Photoperiod sensitivity - weekly sensitive				

+ De Datta et al. (1974) Proc. 1, WARDA Seminar, Rice Breeding and Varietal Improvement: WARDA Publication.

\* Results from Rainfed Medium Duration, Nyankpala, Ghana.

Table 1.

A COMPARISON OF THE PERFORMANCE OF IR 442 WITH LOCAL AND OTHER SELECTED VARIETIES IN THE REGIONAL VARIETY COORDINATED TRIALS FOR RAINFED RICE SHORT DURATION (MAIN SEASON 1973)

Site	Latitude	Rainfall (mm)	Varieties	Grain Yield (kg/ha)	Duration at Flowering	Lodging	Blast	Insects Borers
Nyankpala (GHANA)	9.3	960	IR 442	3527	92	1	-	-
			Cheke Chiao	697	57	10	-	-
			Mean (9)	2403	60	4	-	-
Sefa (SENEGAL)	12.5	919	IR 442	724	94	0	3	5
			SE 302G	4032	70	0	0	0
			Mean (9)	2125	76	3	2	2
IITA (NIGERIA)	7.2	555	IR 442	2744	87	4	4	4
			Soavina	754	66	8	2	2
			Mean (8)	1894	74	3	3	2
Sotouboua (TOGO)	8.0	580	IR 442	2196	97	0	1	-
			I Kong Pao	2306	85	0	5	-
			Mean (7)	1632	80	0	2	-
Bouake (I. COAST)	7.4	380	IR 442	966	105	0	4	0
			Dourado Precoce	2225	82	0	1	0
			Mean (7)	1341	90	1	2	1
Sikasso (MALI)	-	663	IR 442	0	108	0	0	1
			Dourado Precoce	3043	84	0	0	1
			Mean (7)	1255	93	5	1	1

Note: (1) Duration recorded at 50% flowering.  
 (2) Lodging recorded on a scale of 10.  
 (3) Disease, Insect and Soil Toxicities - recorded on a scale of 5.

Table 2. A COMPARISON OF THE PERFORMANCE OF IR 442 WITH LOCAL AND OTHER SELECTED VARIETIES IN THE REGIONAL VARIETY COORDINATED TRIALS FOR RAINFED RICE MEDIUM DURATION (MAIN SEASON 1973)

Site	Latitude	Total Rainfall (mm)	Varieties	Grain Yield (kg/ha)	Duration to Flwrg.	Lodging at Mat.	Leaf Blast	Insects Borers
Nyankpala (GHANA)	9.3	960	IR 442	3607	92	1	-	+
			SML Awini	2077	107	1	-	+
			Mean (12)	2940	97	4	-	
IITA (NIGERIA)	7.2	555	IR 442	1006	99	0	4	2
			Iguape Cateto	3058	91	2	1	2
			Mean (7)	1942	95	3	3	2
Rokupr (S. LEONE)	9.0	1589	IR 442	577	97	1	5	3
			T x 52.10.1	2593	99	3	1	2
			Mean (11)	1630	97	2	2	2
Bouake (I. COAST)	7.4	383	IR 442	440	106	0	5	2
			63-83	2464	95	1	1	2
			Mean (10)	1617	108	0	2	1
Suakoko (LIBERIA)	6.6	868	IR 442	1963	-	-	-	-
			H 4	2230	-	-	-	-
			Mean (11)	1378	-	-	-	-

Note: (1) Duration recorded at 50% flowering.  
 (2) Lodging recorded on a scale of 10.  
 (3) Disease, Insect and Soil Toxicities - recorded on a scale of 5.

Table 3.

A COMPARISON OF THE PERFORMANCE OF IR 442 WITH LOCAL AND OTHER SELECTED VARIETIES  
IN THE REGIONAL VARIETY COORDINATED TRIALS FOR IRRIGATED RICE  
MEDIUM DURATION (MAIN SEASON 1973)

Site	Latitude	Total Rainfall (mm)	Varieties	Grain Yield (kg/ha)	Duration to Flwrg.	Lodging at Mat.	Leaf Blast	Insects Borers
Iba (NIGERIA)	7.2	555	IR 442	8641	93	0	4	2
			BD2	10604	91	10	2	2
			Mean (7)	9576	98	1	3	2
Badi (MAURITANIA)	16.1	-	IR 442	7191	91	-	-	-
			58/IR 382-7-2	8890	97	-	-	-
			Mean (9)	6404	96	-	-	-
Ilo (NIGER)	13.2	438	IR 442	6803	90	0	-	-
			58/IR 382-7-2	8534	93	0	-	-
			Mean (9)	5771	97	3	-	-
Kong (GHANA)	6.1	-	IR 442	5528	86	1	0	-
			58/IR 382-7-2	7190	94	0	0	-
			Mean (8)	5318	102	4	0	-
Kogoni (MALI)	15.5	-	IR 442	3713	95	0	-	0
			IR 5	5737	115	0	-	1
			Mean (9)	4716	107	2	-	1
Kamoussokro (I. COAST)	6.6	-	IR 442	4241	95	0	2	2
			IR 5	6548	101	0	1	3
			Mean (7)	4116	97	2	1	1
Kaloa (I. COAST)	-	-	IR 442	4634	-	0	2	1
			58/IR 382-7-2	4730	-	0	2	2
			Mean (7)	3866	-	0	2	1
Kwakoko (LIBERIA)	6.6	-	IR 442	3797	90	-	0	-
			IR 5	4949	114	-	0	-
			Mean (8)	3424	-	-	1	-
Kange (S. LEONE)	8.9	1589	IR 442	2032	110	1	1	1
			C13.E.3	2950	110	5	1	1
			Mean (9)	2262	125	2	1	1
Koueda (DAHOMEY)	7.6	-	IR 442	1720	108	0	2	3
			IR 5	2026	126	0	2	3
			Mean (9)	1429	113	0	2	3

- Note: (1) Duration recorded at 50% flowering.  
(2) Lodging recorded on a scale of 10.  
(3) Disease, Insect and Soil Toxicities recorded on a scale of 5.

Table 4.

A COMPARISON OF THE PERFORMANCE OF IR 442 WITH LOCAL AND OTHER SELECTED VARIETIES IN THE REGIONAL VARIETY COORDINATED TRIALS FOR DEEP FLOODED/MANGROVE - MEDIUM DURATION (MAIN SEASON 1973)

Site	Latitude	Total Rainfall (mm)	Varieties	Grain Yield (kg/ha)	Duration to Flwrg.	Lodging at Mat.	Leaf Blast	Insects Borers
Daikena (NIGER)	13.2	4381	IR 442	2569	133	0	0	-
			D 52-37 (Niger)	4426	124	6	0	-
			Mean (9)	3445	128	2	0	-
Rokupr (S. LEONE)	9.00	1539	IR 442	2262	109	0	2	0
			BH2	4522	107	0	2	0
			Mean (11)	3284	114	3	2	0
Odienne (IVORY COAST)	9.50	-	IR 442	4015	101	0	-	-
			L 102-8	4257	98	0	-	-
			Mean (10)	3001	111	1	-	-
Sikasso (MALI)	11.1	663	IR 442	4967	112	0	-	0
			Gambiaka Kokum	772	140	0	-	0
			Mean (7)	2588	126	1	-	0
Jenoi (GAMBIA)	13.2	-	IR 442	510	111	0	0	3
			SR 26	2670	111	5	0	0
			Mean (11)	1418	117	3	0	1

Note: (1) Duration recorded at 50% flowering.  
 (2) Lodging recorded on a scale of 10.  
 (3) Disease, Insect and Soil Toxicities - recorded on a scale of 5.



Table 5.

COMPARISON OF THE PERFORMANCE OF IR 442 WITH LOCAL AND OTHER SELECTED  
VARIETIES IN THE REGIONAL VARIETY COORDINATED TRIALS FOR  
FLOATING RICE (MAIN SEASON 1973)

Site	Latitude	Rainfall (mm)	Varieties	Grain Yield (kg/ha)	Duration at Flwrg.	Lodging	Blast	Borers
Mopti-Sud (MALI)	14.3	139	IR 442	3828	99	0	0	0
			Mali Sawn	1149	154	10	0	0
			Mean (11)	2083	128	9	0	0
Medium Zone Ibetemi (MALI)	14.3	163	IR 442	5049	98	0	0	0
			Mali Sawn	1637	150	10	0	0
			Mean (12)	3634	-	10	0	0
Daikena (NIGER)	13.2	438	IR 442	2700	108	0	0	0
			Mali Sawn	4160	136	7	0	0
			Mean (10)	2803	-	-	-	0
Lower Zone Ibetemi MALI)	14.3	163	IR 442	2422	118	10	-	-
			Cu La	3082	120	10	-	-
			Mean (11)	2093	125	10	-	-

- Note: (1) Duration recorded at 50% flowering.  
(2) Lodging recorded on a scale of 10.  
(3) Disease, Insect and Soil Toxicities - recorded on a scale of 5.

On the whole, comparable yields are obtained under rainfed conditions at Nyankpala, Ghana as at IRRI. The highest single yield of this variety (8.6 t/ha) was obtained at IITA, Nigeria under irrigated conditions. The highest yield for all the trials was obtained by BD2 at IITA under irrigated conditions (10.6 t/ha).

## 2. General Observations - Coordinated Trials

### 2.1. Variety Trials

2.1.1. Variety performance was strongly influenced by the following:

#### a) Rainfall intensity and distribution

(i) under limited rainfall conditions or short distribution periods, the short duration varieties performed best; however, the capacity to recover from drought was better with long duration varieties.

(ii) under heavy rainfall conditions and long distribution periods blast was prevalent; the longer duration varieties, particularly the local varieties performed best.

These observations more strongly affected the rainfed rice.

b) Intensive solar radiation - this proved to be a strong factor for high yields; the short duration varieties with weak photoperiod sensitivity - e.g. IRRI types, produced very high yields. However, there was no direct relationship between variety performance and solar latitude.

c) Regular and adequate moisture supply - under irrigated conditions, this was essential for high and stable yields; when this is combined with disease free atmosphere and high photo-intensity, as was the case in the northern parts of the region, ideal conditions are created for high yields.

- d) Fertile soil conditions - these are pre-requisite conditions for high yields as was observed at IITA.
- e) Ecological adaptability - most varieties had narrow spectra of adaptability in terms of the range of cultural conditions under which they can be grown. IR 442 however showed a high potential for wider ecological adaptability - it is however highly sensitive to moisture stress and disease and insect pest attack compared with most local varieties.
- f) Lodging - varieties which were susceptible to lodging produced erratic yields from site to site.
- g) Cultural practice - good cultural practices are essential for high and stable yields. This factor, above all, enabled varieties to fully express their yield potentials according to the varying ecological conditions.

2.1.2. The outstanding yields which exceeded 10 mt/ha on some sites with certain varieties clearly indicate the rice growing prospects of the WARDA region. Thus, there is definite scope for greatly increasing the unit yield per hectare over the present figures. The overall mean yield of the 7 variety trials was 3.3 mt/ha as compared with a general average of 1.5 mt/ha (1970 general estimate). This shows an average increase of 120 per cent over farmers yields.

The mean yields (mt/ha) from the trials were:

Rainfed = 1.9; Irrigated = 5.0; Deep flooded/Mangrove = 3.3 and Floating = 2.8. These are compared with the 1970 figures of 0.7 for Rainfed; 2.2 for Irrigated; 2.0 for Swamp conditions and 1.2 for Floating rice.

2.1.3. Future activity - there is need for basic studies

on soil conditions, climatic phenomena and disease incidence in support of the variety trial programme. Greater efficiency in recording field observation and data collection are essential for a sensible and logical interpretation of varietal performance.

## 2.2. Fertilizer Trials

2.2.1. As regards the use of fertilizers, the following preliminary conclusions can be drawn from the results:

- a) Rainfed cultivation - there was generally a strong response to phosphate fertilizers. This was accompanied by general N x P synergism; applied K gave positive yield response only in the Ivory Coast.
- b) Irrigated cultivation - there was a general response to nitrogen fertilizer as well as a strong N x P synergism; applied P gave strong positive yield response on some sites; synergetic effects were observed for N x K and N x P x K on some locations.
- c) Mangrove cultivation - the single trial reported showed strong positive response to N and an N x P x K positive interaction.
- d) Floating rice - the single trial reported for floating rice showed negative responses to applied fertilizers.

2.2.2. Future studies. A more comprehensive study of fertilizer use on rice in the region should in future take into consideration the following factors:

- a) The influence of certain rice varieties on fertilizer response in terms of growth, disease, variety duration, etc.
- b) The soil effect in terms of the physical and chemical status.

- c) Climatic effect - e.g. solar radiation, rainfall, etc.
- d) Cultural practices - the level of cultural practices including water management and method of fertilizer application.
- e) Economic considerations of fertilizer use.

### 3. Season 1974/75

It is expected that from experience gathered during the first season, there will be greater experimental precision and more rapid exchange of information and experimental data during the coming years.

Progress made during the 1974 main season with the coordinated trials are reported below.

Seed supplies from contributors, seed treatment and dispatch to test sites started early in May, 1974. Planning was delayed due to staff shortage and the slow supplies of seeds from national stations.

The position regarding the coordinated trials is shown in the table. At the time of writing this report, about 70 per cent of the results have been received and are being analysed. Approximately 65 per cent of the total trials planned were conducted by member states.

### 4. Special Research Projects

Dr. E.R. Vogel who was located at Rokupr, Sierra Leone under USAID assistance to WARDA as Entomologist resigned effective September 6, 1974. However, before leaving, the Entomologist had laid down two trials under mangrove, three under upland and three under irrigated conditions.

Under each cultural condition, one experiment was designed to find out whether the application of systemic granular

STATUS OF THE WARDA COORDINATED TRIALS  
IN THE MAIN SEASON 1974

COUNTRY	VARIETY		HERBICIDE		INSECTICIDE		FERTILIZER
	A <sup>1/</sup>	B <sup>2/</sup> ,	A <sup>1/</sup>	B <sup>2/</sup>	A <sup>1/</sup>	B <sup>2/</sup>	A <sup>1/</sup>
Dahomey	4	4	1	1	1	1	3
Gambia	9	9	2	1	1	1	2
Ghana	5	5	1	1	1	1	2
Ivory Coast	7	7	1	2	0	1	2
Liberia	4	4	1	2	1	1	0
Mali	13	13	0	1	0	1	2
Mauritania	2	2	1	1	1	1	2
Niger	7	7	1	1	1	1	3
Nigeria	8	8	0	3	0	1	0
Senegal	4	4	2	2	1	1	3
Sierra Leone	6	6	0	1	0	1	3
Togo	4	4	2	1	1	1	2
Upper Volta	4	4	0	1	0	1	1
	77	77	12	18	8	13	25

1/ Received.

2/ Planned.

insecticides at periodic intervals would control insect pests in rice fields over a long period and also to find out the effect on rice yields. The second experiment was to test the resistance to insect damage of 37 rice varieties under upland condition and 103 varieties under both mangrove and irrigated conditions. In addition, insecticide demonstration tests on 0.45 ha for upland and 0.11 ha for irrigated rice using the granular systemic insecticide Furadan were conducted.

The Entomologist also took part in training local Field Assistants at Rokupr.

Regarding the soil fertility studies, the French Government posted Mr. J.N. Bassil to Richard Toll as Associate Soil Specialist. Mr. Bassil's present assignment includes the supervision of the WARDA coordinated trials at Richard Toll; the study of soil P status in the Senegal Valley in association with the Pedologist at Richard Toll - Mr. Sonko, and making a complete inventory of available literature and records on soil studies and fertilizer use in the Senegal on rice. The latter study will form part of a guideline for more detailed soil and fertilizer study of rice in the Senegal and other parts of the WARDA region. Mr. J. Dallard was appointed as Associate Breeder at Bouake, Ivory Coast, under French Technical Assistance.

#### E. Development Department

The activities of the Department have been substantially stepped up largely due to increase in the number of its professional staff. This rose from four to ten. Twelve missions were undertaken in member countries for a total of 361 man-days. Details of the work carried out by the various arms of the Department are as follows:

##### 1. Direct Assistance to Member Countries

The Association gave priority to WARDA's Sahel members in project preparation. Requests were received from Senegal, Niger

and Mali and a mission visited these countries in February, 1974.

(a) Senegal

WARDA's assistance was requested for the resumption of a rice development project in Matam Department on the left bank of the Senegal River. However, with all the projects underway on both banks of the river, there are serious reservations about sufficient water for double cropping even on the 1,000 ha pilot plot. Water is however available for one rice crop in the rainy season and when the river is in flood. WARDA agreed with the Senegalese authorities until the Manantali dam is constructed, that the project be revised to develop the area for a single annual rice crop, but supplemented with an intermediate crop, sorghum or cowpea, which needs less water. This is temporarily held up for administrative reasons and the arrival of a French-speaking rural engineer.

(b) Mali

Assistance was requested for three projects, but WARDA dealt with two.

The first project involves the "Office du Niger" which offers an enormous potential. In spite of the drought, while grain production declined in areas of the same latitude, rice yields in the "Office du Niger" area increased by nearly 50 per cent. The first part of the investigation, summing up the situation and proposing terms of reference, has been completed and accepted by the Mali authorities. The entire study is expected to be finished by March, 1975.

The second project concerns the northern part of the country which has been hardest hit by the drought. It is far from supply centres and difficult to reach, but has some lakes with potential for intensive agriculture. Among the lakes, the Horo is easiest to harness and studies and development work started about 30 years ago on this. When the River Niger is in flood,



the lake can be easily filled through a canal. Soil management is simple since there is no irrigation or drainage network and small dykes and accurate levelling are unnecessary because the water does not flow out. WARDA was requested to study possible improvements, particularly the chances of double cropping. So far, the WARDA mission has identified varietal improvement as the first priority. Those recommended have a cycle of less than 130 days, do not shatter badly and their yields are twice to thrice those now in use by the farmers in the area. It is also felt that rice cultivation should be expanded from the present 2,000 to 6,000 hectares.

(c) Dahomey

WARDA in 1973 had studied a possible expansion of the Domego-Ahlan area, but this has since been found incompatible with the expansion of the SADEVO (Oueme Valley Development Company) area. Discussions between the WARDA mission and the Dahomey authorities in May, 1974 brought out the importance of carrying on the studies undertaken by the UNDP/FAO project now nearing completion. The aim is to determine the feasibility of building a small retaining dam on one of the tributaries of the Oueme. The additional area to be gained for irrigation will make for better utilization of the existing rice mill and of the equipment financed by ADB for land development. WARDA has offered its assistance to Dahomey in drawing up a request for funding these studies.

(d) Togo

WARDA was requested to look into two projects. SORAD of the Savannahs, which had received partial financing, and SORAD Maritime, where the low volume of the water from the Sio limits the project size that could be submitted to the World Bank. A WARDA mission visited Togo in May, 1974 when feasibility studies began and exchanged views on rice cultivation.

(e) Liberia

A study was undertaken on the economics of small-scale rice milling. WARDA also investigated, for the Liberian Government, the feasibility of building a modern rice mill at Monrovia with a capacity of six tons of paddy per hour.

(f) Ghana

WARDA assisted Ghana in studying the problems of three government rice mills in the northern part of the country, whose performance was considered inadequate. No mill which parboiled rice operated satisfactorily, but it is possible that the application of modern parboiling techniques could assist in producing good quality rice, reduce the rate of brokens and increase milling yield.

(g) The Gambia

WARDA's mission to the Gambia in September, 1974 was initially a case study. But following this first mission, the Gambia considered it necessary to ask for WARDA's assistance in preparing the second phase of the Agricultural Development Project in the McCarthy Island Division. Initially this involves assistance to the project management which is undertaking an identification study of the second phase.

2. Case Studies

WARDA has been somewhat cautious in preparing projects. Its intervention has been mainly in the form of preliminary or identification studies and consultations. No feasibility study has yet been made. This is due to several reasons. Our sub-region has a great diversity of types of rice cultivation and management systems. Economic conditions, too, vary greatly. Techniques producing identical physical effects result in different rates of returns, depending on the country, because of the differences in producer prices of paddy and inputs.

Another reason is that the WARDA team is composed of experts from highly diverse backgrounds, with sometimes different approaches to problems. Finally, there are language problems which sometimes are obstacles.

A certain run-in period therefore seemed necessary before WARDA could achieve full capacity in the matter of project preparation.

The first field missions and the Rice Project Managers' Seminar have enabled the Department to profit from on-going projects. Two missions were sent to the Gambia and Upper Volta.

a) Agricultural Development Project (ADP) in The Gambia

The ADP in the McCarthy Island Division appears an example that could be applied in the sub-region on a wide scale. It involves small-scale irrigation. The pilot project, now in its second year, was studied. The project relies on large-scale participation by the population and its development units are adapted to the working capacity of the villages. The missions' report will be released as soon as it has been reviewed and approved by the Government of The Gambia.

b) Kou Valley Development, Upper Volta

It is one of the biggest and oldest projects of intensive rice cultivation. It started in 1970, covers 1,200 ha and has averaged 13 tons per hectare with double cropping. The project uses gravity irrigation from a diversion dam. Land was mechanically cleared and allotted in sizes of one hectare per family. All farm work is done by hand, except for threshing. Draft animals are also being introduced. WARDA studied the project in July, 1974.

3. Cooperation with Financing Institutions

Agreements for cooperation have already been concluded or are under negotiation with the World Bank and the African

Development Bank. In this context, WARDA's cooperation with the World Bank dates back to October, 1973 when WARDA's Rice Processing and Storage Engineer and Rice Mechanization Specialist joined the World Bank appraisal mission to East Central and South Eastern States of Nigeria. WARDA in June-July, 1974 took part in an appraisal mission of the World Bank concerning an integrated development project in Sierra Leone. As a result, the World Bank requested that a WARDA expert follow the progress of the project by visits at regular intervals. Although this was not possible, this type of cooperation would seem highly valuable and should be put into practice whenever possible.

#### 4. General and Sectoral Studies

WARDA has worked out the draft of a regional model for rice production which could serve as the basis of a study aimed at self-sufficiency in rice in West Africa. The draft of the model was discussed at the seminar on the socio-economic aspects of rice cultivation which formulated recommendations. With the help of an FAO consultant, the methodology is going to be developed by drawing up a model simulating the behaviour of a small producer in an area of Liberia on which the necessary data are available. Subsequently, a model for each country may be envisaged.

On the same subject of self-sufficiency in rice, a study is underway to determine rice requirements in 1980 and to ascertain national rice plans and projects so as to make recommendations for consideration by the governments. As the joint ECA-FAO project concerning this problem could not be carried out for budgetary reasons, UNDAT (The United Nations Development Advisers' Team) based at Niamey, has been asked for assistance.

#### 5. Seed Multiplication

This project is being carried out at Richard Toll, Senegal. Owing to delay in land redevelopment, only one harvest was

possible in 1974. Because of excessive salinity in the low-lying area, only 30.5 hectares, out of 50, were planted. The breakdown of varieties is as follows:

SE302 G	20.0 ha
IR 442	2.0 "
IR 20	1.5 "
CICA 4	1.0 "
IR 5	0.5 "
Total	<u>25.0 ha</u>

In addition to these varieties intended to meet the demand of member countries, 5.5 hectares were planted with varieties to be used in the coordinated trials and new varieties introduced from IRRI and IITA.

The assistance given by the Governments of Senegal and Sierra Leone which assigned a crop and a seed superintendent respectively to the project is sincerely appreciated.

The crops grew satisfactorily. Weeds and pests raised some problems. Inadequate installations prevented adequate weed control in a part of the area (about 5 per cent) which was therefore abandoned.

Member countries should make full use of the services offered by the project: supply of foundation seed, assistance in setting up and operating national seed multiplication centres and quick introduction of promising varieties. Quantities of seed of various varieties are already available.

#### F. Statistics Division

The Statistics Division has gathered and processed data on the rice economy of the sub-region covered by WARDA. Although some data, especially those on areas, are missing, the tables should be very useful for planning and project preparation.

Member countries should amend those provisional documents

as soon as possible so that they can be published.

#### G. Documentation Division

The first documentalist was recalled by his administration in July, 1973 and could not be replaced before April, 1974. The second indexer and the two associate experts could not be recruited. These difficulties interfered with the normal course of operation.

It was possible to prepare the first bibliographic index. Its publication was delayed several months because the contract for the use of the computer of Bong Mine Company was not approved in time.

The first issue of the World Rice References for West Africa has been translated and released.

Recording work is continuing on the sources of information on all subjects of rice cultivation and processing. Technical and statistical sources in the member countries have been identified and are being tapped. Sources outside the sub-region are being surveyed and exchanges of documents have started.

The first documents collected from the member countries and all WARDA publications since its inception have been micro-filmed.

The number of works in the library is increasing steadily (there are about 1,500 at present), and WARDA has subscribed to technical journals and about 15 dailies of member countries.

A mission is scheduled to go to Bangui, Central African Republic to microfilm the documents related to rice cultivation in West Africa at the Inter-African Bureau of Soils.

#### H. Communications Division

The Communications Division was created in September, 1974,

out of the former Editing and Translating Unit of the Documentation, Data Processing, Editing and Translation Division. Its main activities have been carried out in the fields of translation, printing of publication and public relations.

Translation activities dealt primarily with the documents of the Project Managers Meeting, of the Seminar on Socio-Economic Aspects of rice cultivation, the Annual Research Review Meeting, the WARDA Research Report and of the documents of the November/December, 1974 Ibadan Meetings. Work has also started on the layout and the printing of the final edition of the 1974 Annual Rice Statistics.

As far as Public Relations activities are concerned, the Division assisted in preparing a series of histograms for a slide show, on the occasion of the visit to WARDA by the President of the Republic of Liberia, and in organizing a "Field Day" at Richard Toll, Senegal, which was attended by the Minister for Rural Development, H.E. Mr. A. Senghor, numerous high government officials, members of the diplomatic corps and the press.

P A R T IV

ACTIVITIES OF THE ASSOCIATION



The network analysis has been revised to cover every project within the overall programme. Staffing is also improving.

The Executive Secretary continues to pay visits to Co-operating States and Organizations to ensure financing for the various projects and also to brief them on progress being made. He also visits Member States to keep them informed about the activities of the Association and discusses problems encountered in implementing the various projects.

He will attend the meetings of the Consultative Group on International Agricultural Research (CGIAR) and visit USAID Washington, D.C. in July and November, 1975.

The Phase I of UNDP project assistance to WARDA comes to an end in June, 1975. A Phase II UNDP programme of Assistance has been negotiated for another thirty months thereafter.

#### A. Administration and Finance Division

The 1975 programme of work of the different units of the WARDA Administration and Finance Division is as follows:

##### Finance Unit

- a) Establishment and implementation of a new coding system including sub-ledger codes for divisional location of activities at Headquarters;
- b) Implementation of a new reporting system on expenditure according to requirements of CGIAR;

- c) Maintenance of up-to-date budget;
- d) All other activities presently carried out by Finance.

Procurement Unit

- a) Purchase of equipment for outreach programmes;
- b) Maintenance of complete inventory and numbering of same according to source of funds and location, project and country;
- c) Contacts with eventual external suppliers, and
- d) Other activities being now routinely carried out.

Personnel Unit

- a) Identification, contacts and recruitment of personnel for new projects;
- b) Continuation of on-going programmes.

In general, the Division will try, during the year, to strengthen the administrative activities of WARDA in order to provide better logistic support to Headquarters and field activities.

The FAO has agreed to finance under the Training component of the UNDP/FAO/WARDA Project a number of short-term fellowships for WARDA administrative staff. The Deputy Executive Secretary will go to France for two-months training in French language. The Finance Officer, the Personnel Officer and the Procurement Officer will travel to FAO Headquarters, Rome, Italy, and go through all the FAO Administrative machinery and, on their return, try to utilize the experience gained in their respective units.

## B. Research Department

The future of both the coordinated trials and the special research projects have been strongly influenced by the visit of the major donor Agents between August and September, 1974. The USAID mission took a detailed look at the Variety Improvement (W-2) and the Plant Protection (W-4) projects. The Consultative Group on International Agricultural Research (CG) and the Technical Advisory Committee (TAC) studied the progress of the coordinated trials and the overall WARDA research projects and particularly the relationships with the national and international institutions. The United Kingdom (UK) was specifically interested in the implementation of the Soil Fertility project (W-3) at Rokupr, Sierra Leone.

The U.K. financed project at Rokupr is about to start. The first phase of the programme which is to last for three years also makes provision for research assistants in the two fields of variety improvement and soil chemistry. Research equipment were also supplied. The USAID has financed the construction of a laboratory, greenhouse, screenhouse and cold store for seeds at Rokupr. The USAID also provided such items as water pumps and electricity plants in Rokupr in an effort to improve the social and working conditions at that station. The USAID also finances an Entomologist and his assistant as well as Weed and Pathology assistants. In addition, it provided vehicles and research and field equipment.

While the Rokupr project is being implemented, the Mopti and Richard Toll projects have been finalised and funds are

being sought for their implementation.

The CG/TAC mission was concerned at the present time of the value of the coordinated trials in many countries, the effectiveness of their implementation, as well as, the possibility of integrating the overall WARDA research programme and effective linkages with national and international institutions.

Here is a summary of the main suggestions made by the teams for an improvement in the research programme:

- i) the integration of the special research projects as a whole and also with the coordinated trials;
- ii) the strengthening of national research capabilities;
- iii) the need to develop strong multi-disciplinary research teams;
- iv) the need to review the coordinated trials to take into greater consideration the local research problems and to involve all national research scientists in this exercise;
- v) the need to establish both the short-term and long-term training needs of the region.

On this basis, the Secretariat has appointed four consultants, two from FAO and two from member states to visit member countries so as to provide guidelines for the improvement of the coordinated trials and make proposals for the overall improvement of the WARDA research programme as well as make proposals on national and regional training needs.

## 1. Schedule of Main Activities in the Department

### a) Coordinated trials

- i) the introduction of suitable rice materials for the various rice growing conditions in West Africa for entry into the initial evaluation tests and the coordinated trials;

- ii) the establishment of a network of stations in the region where the initial evaluation trials could be effectively conducted; the establishment of a nursery seed farm in support of the coordinated trials;
- iii) the general supervision of the present trials; the implementation of new protocols; strengthening of the present staffing position at headquarters; the analyses and report of the trials at the Annual Research Review Meetings;
- iv) to ensure the proper functioning of the seed storage and processing centre and the development of Plant Quarantine facilities at Ibadan, Nigeria.

All these activities are now in progress either by WARDA staff or with the use of consultants.

#### b) Special Research Projects

- i) negotiating with host governments to establish integrated WARDA research teams with national research teams;
- ii) the implementation of W-2 and W-3 at Rokupr financed by the U.K., as well as the Plant Protection programme financed by USAID; this entails staff recruitment, identification and purchase of equipment, etc.;
- iii) the development of facilities and programmes of work for the two research assistants financed by France and located at Richard Toll for W-3 and at Bouake for W-2;
- iv) the establishment of adequate administrative support for research teams at Mopti, Rokupr and Richard Toll as necessary;
- v) the coordination of all these activities into an integrated network.

#### c) General

- i) a detailed study of the local rice research problems in member states and institutions, the collation of such information for national research activities;
- ii) a review of the WARDA research and coordinated trial projects in the light of established WARDA format and new ideas collected through the study of national needs taking into consideration the views expressed by the donor Agents;

- iii) the establishment of the necessary working linkages between WARDA and national research institutions, as well as with the international institutions;
- iv) the formulation of an overall research needs of WARDA in terms of personnel, equipment and facilities and ways and means of achieving these needs after finalization of discussions with financing countries and institutions;
- v) the planning and the implementation of the WARDA training programmes for both the short-term and long-term needs of member states and the Association;
- vi) the operation of the WARDA seed multiplication centre at Richard Toll and the establishment of a sound link between the WARDA foundation seed programme and the national seed programme.

## 2. Training

The USAID has recently signed an agreement to give support to the WARDA training programme. This involves the construction of a dormitory, and land development for rice production and other training facilities. The USAID is to provide equipment and running cost of the training centre which will be utilized to train the Field Assistants for the WARDA coordinated trials and Rice Production Specialists. Other specialised courses in such fields as water management, rice processing, rice mechanisation, etc. will also be conducted at the centre as mentioned above. The USAID has also approved the financing of a Seed Processing Laboratory on the site adjacent to the Seed Storage Centre at the University of Liberia farm, Johnsonville, Liberia. These facilities will also be utilized for training in addition to research.

As part of its long-range support to WARDA in providing research personnel, USAID is expected to give short-term train-

ing fellowships to West African graduates in universities and institutions abroad to introduce such graduates to standard procedure in rice research.

### C. Development Department

Development activities are being intensified and diversified in several areas.

In the field of project preparation, current studies (Matan project, Niger Office, Lake Horo, Phase II of the Gambian agricultural development project, etc.) will be completed. In addition, it will be possible to give direct assistance to member countries requesting it.

Case studies will be continued. The Government of Ghana has already been approached for a study of the experience gained in Northern Ghana regarding large-scale mechanization of rainfed rice cultivation.

The Department is going to try to identify and propose an investigation into mechanization of wetland rice cultivation.

WARDA also feels that it would be useful to make a case study on swamp development for intensive rice cultivation. In many member countries, swamp development offers the greatest potential for intensifying rice cultivation.

A case study is to be undertaken on institutions promoting rice cultivation. Inadequate administrative structures are slowing down development in many member countries. A study of SODERIZ in Ivory Coast may prove useful for determining a desirable type of institution.

Cooperating with financing institutions is to be continued and expanded. WARDA is ready to help member countries and financing sources in speeding up the launching of rice projects. It would be desirable that, as far as possible, WARDA should take part in appraisal missions concerning rice projects in the member countries financed by the World Bank and the African Development Bank.

In the field of general and sectoral studies, WARDA has begun to gather data for an economic study on the use of fertilizer and other inputs in rice growing in the region. Studies on the rice production model are to be continued.

Following the Rice Project Managers' Seminar, a catalogue of rice development projects is being prepared for the region, on the lines of FAO's CARIS Project. The catalogue, which would be periodically updated, will contain basic data on the various projects and help intensify exchanges of information.

A draft project on production mechanization has been drawn up. Contact has been made with the International Project for Rice Mechanization (UN GP4/1 TF INT 43 Neth) to assess the possibilities of the continuation of this project at Richard Toll, Senegal as part of the WARDA Production Mechanization Project with effect from this year.

The seed multiplication project will continue to be improved. The area of the farm is being expanded to 75 hectares so that it will be possible to introduce crop rotation to improve seed purity. Seed processing equipment is to be installed.



In the field of documentation, it is planned to publish a quarterly 250-unit bibliographic index and an annual retrospective index of technical documents on rice. World Rice Reference for West Africa are to be published on a regular basis.

WARDA will participate in the global CARIS Project and the AGRIS II Project (network of specialized services) when they are launched. To this end, it would be desirable for WARDA to set up a data bank on rice in West Africa to serve as a CARIS and AGRIS II input centre.

#### D. Communications Division

The Communications Division deals with Translation, editing, printing of publications, public relations and will take charge of the language laboratory. When fully staffed, it will include three translators, two scientific editors, one graphic artist and two language teachers.

All documents and publications are to be produced in English and French. This constitutes a heavy work-load for the translation team. Besides, the translators are expected to prepare a bilingual glossary of terms with definitions used in all fields of activity related to the rice crop.

The division will ensure that all the publications of the Association are issued at the appropriate times. It will also issue reports of seminars and meetings of the governing bodies of the Association such as the Scientific and Technical Committee and the Governing Council.

Up to now, all documents are mimeographed. It is essential to upgrade the quality of our printed materials both from the point of view of presentation and quality. We were limited by financial constraints in the past. The possibility of purchasing a complete offset printing equipment (e.g. a Rotaprint) is presently under study.

To date, only 25% of the WARDA's Headquarters Professional Staff can be considered bilingual. This means that communications are sometimes difficult even within the Departments or the Divisions. It is considered essential that every staff member acquires a reasonable knowledge of the other language.

The French teacher and the English teacher who will staff the language laboratory will mainly teach the WARDA staff members "the other language," thus facilitating direct communication between them. This they will do by a job-oriented curriculum which they will elaborate upon together. They might also be requested, from time to time, to assist the translation team.

Being a very young organization, WARDA has kept its public relations activities at a minimum level, having concentrated most of its efforts on the implementation and reinforcement of its Research and Development activities. It is necessary that WARDA creates and promotes its own image in order to generate the necessary political and economic support for its programmes. The public relations of WARDA will, of necessity, be directed towards a varied audience consisting of the Member Governments, Cooperating Governments and agencies, Cooperating research institutions and the general public.

APPENDIX I

WARDA INTEGRATED BUDGET 1975-1978

1. Budget proposal W1 - 1976
2. Budget proposal W1 - 1976. Remarks.

Table 1. Summary of costs by Organizational Unit and Object of Expenditure.

Table 2. WARDA 1975 Budget. Summary of Source and Application of Funds.

Table 3. WARDA 1976 Budget. Funded and required provisions.

BUDGET PROPOSAL W-1 - 1976

I. a) Salaries - Professional Staff (1)

(i) Research Co-ordinator	-	\$38,786.00
(ii) Assistant Research Co-ordinator	-	35,000.00
(iii) Agronomist	-	22,969.00
(iv) Variety Improvement Co-ordinator	-	40,174.00
(v) Soil Fertility Co-ordinator	-	35,647.00
(vi) Consultants (2)		
a) Travelling	-	\$990.00
b) Per diem (105 days)	4,851.00	
c) Honorarium - (105 days)	-	6,930.00
d) Others	-	<u>2,200.00</u>
		<u>14,971.00</u>
		<u>\$187,547.00</u>

b) Salaries - General Service Staff (1)

(i) Bilingual Secretary/Administrative Assistant (11 months)	-	7,276.00
(ii) Senior Typist (English)	-	4,822.00
(iii) Clerk-Typists (2)	-	10,000.00
(iv) Typist (French)	-	3,310.00
(v) Driver	-	2,286.00
(vi) Messenger/Cleaner	-	<u>1,378.00</u>
		<u>\$29,072.00</u>

c) Equipment and Supplies plus Maintenance

(i) Office equipment	-	3,300.00
(ii) Supplies	-	2,200.00
(iii) Fuel and Maintenance	-	<u>3,300.00</u>
		<u>\$8,800.00</u>

d) Travels of Personnel (3)

(i) Research Co-ordinator

- Passages - (i) Project supervision - Rokupr, Richard Toll, Mopti, visit National Institutions 3x45 days - \$1,980.00
- (ii) IRRI Review Meeting & Asian tour (20 days) - 2,200.00
- (iii) CG Washington (10 days) - 2,200.00
- (iv) Governing Council (15 days) - 330.00
- (v) Others (15 days) - 2,200.00

\$8,910.00

Per diem - (105 days) including terminals

- 4,620.00

\$13,530.00

(ii) Variety Improvement Co-ordinator and Agronomist

- Passages - (i) West African trips (3) (round trip - 90 days) - \$5,887.00
- (ii) Conferences/Seminars (30 days) - 3,300.00

\$9,187.00

Per diem

- 5,280.00

14,467.00

27,997.00

Total (I) =

\$253,416.00

II. Training and Seminars (allow 2 candidates/country)

a) Research Workshop/Review Meeting (4)

Delegates

(i) Travel - 26 delegates - \$8,580.00

(ii) Per diem - 4 days x  
26 delegates - 4,805.00

13,385.00

Interpreters

(i) Travel (2) - 2,200.00

(ii) Honorarium - 2,746.00

(iii) Per diem - 739.00

5,685.00 = \$19,070.00

b) Seminar

- 20,000.00

c) Field Assistant Training

Candidates

(i) Travel (26) - 10,010.00

(ii) IITA charges @ \$550<sup>(5)</sup>/  
student/month - 19,800.00

29,810.00

Interpreters

(i) Travel (2) - 2,200.00

(ii) Per diem - (2x45 days) - 4,158.00

(iii) Honorarium -(2x45 days) - 15,444.00

21,802.00

Training Associates/Lecturers

(i) Travel (2) - 770.00

(ii) Honorarium (Assoc.) -  
(880/month) - 2,640.00

(iii) Honorarium (other  
Lecturers) - 1,100.00

4,510.00 = \$56,122.00

d) <u>Research Report and Symposium</u>	
(i) Translation & editing	} - \$5,500.00
(ii) Materials	
Total (II)	= <u>\$100,692.00</u>

III. Seed Storage and Processing Centre

a) Operational Costs

(i) <u>Salaries/Wages (1)</u>	
Seed Superintendent	- \$16,075.00
Laboratory Assistant	- 3,300.00
Messenger/Lab. Apprentice	- 1,378.00
Driver	- 2,286.00
Labour	- 2,200.00
Travelling	- <u>1,100.00</u>
	26,339.00

(ii) <u>Supplies and Maintenance</u>	
Office equipment	- 1,100.00
Supplies including chemicals	- 2,200.00
Maintenance/Fuel	- 2,200.00
Utilities	- <u>1,100.00</u>
	6,600.00

(iii) Airfreight Costs (allow \$1.00/kg)

a) Seed Distribution

Mauritania	- 88.00
Senegal	- 154.00
Gambia	- 242.00
Sierra Leone	- 220.00

00.002	Liberia	-	-
00.002	Ivory Coast	-	264.00
00.005	Ghana	-	132.00
00.008	Togo	-	132.00
00.008	Dahomey	-	154.00
00.008	Nigeria	-	132.00
	I I T A	-	132.00
00.008	Niger	-	198.00
00.008	Mali	-	264.00
00.008	Upper Volta	-	88.00
			<u>2,200.00</u>
00.008	b) Seeds Collection	-	2,200.00
00.008	c) Distribution - Her- bicides & Insecti- cides including the Initial Evaluation Tests, handling charges.	-	<u>1,650.00</u>
			38,989.00 = <u>\$38,989.00</u>

b) Investments/Equipment

1 Pick up - - -

Laboratory equipment -  
glassware and miscellaneous  
equipment ( - 1,650.00

1,650.00

Total (III) = \$40,639.00

IV. Nursery Farm (7)

Investment - Land Development/Equipment

Laboratory and storage space - 5,000.00  
Land clearing and development - 2,500.00  
Irrigation pumps (6 - 8")- (2) - 3,080.00



Manual rotary weeder - \$100 x 2 -	220.00
Multi-purpose seeder -\$90 x 2 -	200.00
Power tiller (8 - 14hp) -	
\$600 x 2	1,320.00
Sample thresher - \$400 x 2 -	880.00
Sample winnower - \$400 x 2 -	880.00
Miscellaneous equipment -	<u>1,100.00</u>
	15,180.00

Operational Cost

UN Volunteer/Peace Corps -	1,100.00
Field Assistant -	2,200.00
Labour -	2,200.00
Fuel and Maintenance -	1,100.00
Fertilizers, Herbicides, etc. -	220.00
Travelling -	1,100.00
Miscellaneous -	<u>1,100.00</u>
	9,020.00
Total (IV)	= <u>\$24,200.00</u>

V. Expenditure - Plant Quarantine

Laboratory equipment -	5,500.00
Labour and other miscellaneous costs -	<u>5,500.00</u>
	11,000.00
Total (V)	= <u>\$11,000.00</u>

VI. Expenditure - Co-ordinated Trials Points

Field Assistants

a) Salaries

Mauritania - Kaedi - \$165x2x12 -	3,960.00
Senegal - Sefa, Richard Toll,	
Djibelor - \$209x6x12 -	15,048.00

The Gambia - Jenoi, Sapu	- 96.80x4x12 -	\$4,646.00
Sierra Leone - Rokupr, Mange	- 102x4x12 -	4,910.00
Liberia - Suakoko	- 154x2x12 -	3,696.00
Ivory Coast - Bouake, Man, Odienne, Ferkessedougou	- 330x8x12 -	31,680.00
Ghana - Kpong, Nyankpala	- 145.20x4x12 -	6,970.00
Togo - Mission Tove, Sotouboua	- 167.20x4x12 -	8,026.00
Dahomey - Houeda, Ina	- 246.40x4x12 -	11,827.00
*Nigeria - IITA Ibadan, Badeggi, Bernin Kebbi, Ilushi	- 198x8x12 -	19,008.00
Niger - Kolo	- 275x2x12 -	6,600.00
Mali - Mopti, Sikasso, Kogoni	- 154x6x12 -	11,088.00
Upper Volta - Banfora, Vallee du Kou	- 220x4x12 -	10,560.00
		<u>138,019.00</u>

b) Operating Cost at \$300 per Trial

Mauritania	(6* + 5 <sup>+</sup> ) x \$330 -	3,630.00
Senegal	(11* + 5 <sup>+</sup> ) x 330 -	5,280.00
The Gambia	(13* + 5 <sup>+</sup> ) x 330 -	5,940.00
Sierra Leone	(15** + 5 <sup>+</sup> ) x 330 -	6,600.00
Liberia	(11* + 5 <sup>+</sup> ) x 330 -	5,280.00
Ivory Coast	(17* + 5 <sup>+</sup> ) x 330 -	7,260.00

\* Main Season Trial

+ Dry Season Trial

Ghana	(8* + 5 <sup>+</sup> ) x \$330	-	\$4,290.00
Togo	(6* + 3 <sup>+</sup> ) x 330	-	2,970.00
Dahomey	(8* + 3 <sup>+</sup> ) x 330	-	3,630.00
Nigeria	(7* + 5 <sup>+</sup> ) x 330	-	3,960.00
I I T A	(6* + 5 <sup>+</sup> ) x 330	-	3,630.00
Niger	(10* + 3 <sup>+</sup> ) x 330	-	4,290.00
Mali	(14* + 5 <sup>+</sup> ) x 330	-	6,270.00
Upper Volta	(5* + 3 <sup>+</sup> ) x 330	-	<u>2,640.00</u>
			65,670.00
			= \$203,689.00
c)	Treatment in 30 stations		<u>100,000.00</u>
	Total (VI)	=	<u><u>\$303,689.00</u></u>

VII. Initial Evaluation Tests and Preliminary Variety Trials (8)

10 Stations

a) Operating Costs

(i)	Supervisors (5)	-	\$50,000.00
(ii)	Labour cost and land preparation	-	5,500.00
(iii)	Fertilizers, Insecticides, labels, etc.	-	1,100.00
(iv)	Fuel and maintenance of motor bikes	-	<u>1,100.00</u>
			57,700.00

b) Investment Cost

(i)	Field Laboratories and storage facilities	-	20,000.00
(ii)	Experimental field development	-	5,500.00
(iii)	Motor bikes for supervisors	-	6,600.00
(iv)	Subsidised furniture supervisors	-	<u>5,500.00</u>
			37,600.00

Total (VII) = \$95,300.00

\* Main Season Trial  
+ Dry Season Trial

VIII. Incidentals including inflation - \$16,064.00

GRAND - TOTAL ..... = \$845,000.00

SUMMARY BUDGET - COORDINATED TRIALS

1975

I.	(a)	Salaries - Professional Staff and Consultancy	-	\$187,547.00
	(b)	Salaries - General Service Staff	-	29,072.00
	(c)	Equipment, Supplies and Maintenance	-	8,800.00
	(d)	Travels of Research Personnel	-	27,997.00
II.		<u>Training and Seminar</u>		
	(a)	Research Workshop/Review Meeting	-	19,070.00
	(b)	Field Assistants Training	-	56,122.00
	(c)	Research Report and Symposium	-	5,500.00
	(d)	Seminar	-	20,000.00
III.		<u>Seed Storage and Processing Centre</u>	-	40,639.00
IV.		<u>Nursery Farm</u>	-	24,200.00
V.		<u>Expenditure - Plant Quarantine</u>	-	11,000.00
VI.		<u>Expenditure - Co-ordinated Trials</u>	-	303,689.00
VII.		<u>Initial Evaluation Tests, etc.</u>	-	95,300.00
VIII.		Incidentals including inflation	-	<u>16,064.00</u>
IX		GRAND TOTAL	=	<u>\$845,000.00</u>

## BUDGET PROPOSAL - W1 - 1976

### REMARKS

#### 1. Professional Staff

In view of the volume of work in the Department with the implementation of the special research projects, adequate planning and administration, the WARDA research programme cannot be managed by a single Research Co-ordinator. It should be noted that the Research Co-ordinator was recruited mainly to plan and supervise the co-ordinated trials. This position has since changed with the implementation of the special research projects, support to national research and administering the WARDA training programme. It is therefore essential that if high standards are to be maintained, a competent assistant be immediately appointed to the Research Co-ordinator.

#### 2. General Service Staff

It is now apparent that two typists cannot cope with the present load of work in the Department especially as the activities continue to expand. A pool of four typists is suggested for the 1976 financial year. These typists will also provide service for the Seed Storage and Processing Centre.

#### 3. Initial Evaluation Trials

It has been suggested by some member states that it would be preferable to assign properly trained local personnel as supervisors of the Initial Evaluation Trials instead of U.N. Volunteers who may not have relevant experience and also, who may not provide the continuity that is needed. Appointments at Research Assistant levels are suggested.

4. Additional investment by way of providing field laboratories and storage facilities for the Initial Evaluation Trial sites and for the Nursery Farm are necessary.

5. Seminars

In addition to the Annual Research Review Meeting, a seminar is planned for 1976.

6. Other Items

Most other items have been kept at the 1975 level.

7. Budgeting

These new elements and possibly inflationary trends are included in the 1976 budget.

## WARDA 1975 BUDGET

Summary of Costs by Organizational Unit and Object of Expenditurein U.S. Dollars

	BUDGET 1975	BUDGET 1976	BUDGET & PROJECTED 1977	PROJECTED 1978
<b>1. EXECUTIVE SECRETARY</b>				
Executive Offices	139,103	162,749	167,024	183,800
Administration and Finance	227,711	250,211	245,432	270,000
Common Staff Costs	107,474	114,956	126,452	139,100
Salary Adjustment	( 89,976)	( 95,736)	( 86,162)	( 77,600)
Governing Council	46,000	47,000	51,700	56,900
Other Costs	37,359	53,020	58,322	64,200
TOTAL DIRECT COSTS	467,671	532,200	562,768	636,400
Capital Items	34,400	9,900	11,000	32,100
TOTAL EXECUTIVE SECRETARY	<u>502,071</u>	<u>542,100</u>	<u>573,768</u>	<u>668,500</u>
<b>2. COMMUNICATION AND DOCUMENTATION</b>				
Communications	70,215	90,128	91,541	100,700
Documentation	76,607	80,078	84,486	93,000
Common Staff Costs	26,028	3,090	3,399	4,400
Other Costs	13,885	-	20,000	22,000
TOTAL DIRECT COSTS	186,735	173,296	199,426	220,100
Capital Items	65,177	12,000	-	-
TOTAL COMM. & DOCUM.	<u>251,912</u>	<u>185,296</u>	<u>199,426</u>	<u>220,100</u>

Table 1 (2)

Summary of Costs by Organizational Unit and Object of Expenditure

	BUDGET 1975	BUDGET 1976	BUDGET & PROJECTED 1977	PROJECTED 1978
<b>3. DEVELOPMENT DEPARTMENT</b>				
Headquarters Staff	402,141	421,132	388,445	427,300
Salary Adjustment	( 5,674)	-	-	-
Field Staff: Sub-Contract	110,451	210,000	210,000	231,000
Seed Multiplication Center	142,444	142,444	156,690	172,400
Mechanization	-	130,000	130,000	143,000
Common Staff Costs	41,395	13,680	15,060	16,600
Training	227,050	459,000	522,000	574,200
Others	36,880	35,500	17,050	18,800
<b>TOTAL DIRECT COSTS</b>	<b>954,687</b>	<b>1,411,756</b>	<b>1,439,245</b>	<b>1,583,300</b>
Capital Items	264,000	-	-	-
<b>TOTAL DEVELOPMENT</b>	<b>1,218,687</b>	<b>1,411,756</b>	<b>1,439,245</b>	<b>1,583,300</b>
<b>4. RESEARCH DEPARTMENT</b>				
W1 - Programme	213,040	205,131	225,644	248,200
Rokupr Station	123,000	185,000	183,000	201,300
Richard Toll Station	10,000	83,000	91,300	100,500
Bouake Station	10,000	83,000	91,300	100,500
Mopti Station	-	83,780	167,560	184,300
Common Staff Costs	64,478	80,574	88,631	97,500
Other Direct Costs	508,534	848,117	932,925	1,026,200
<b>TOTAL DIRECT COSTS</b>	<b>929,052</b>	<b>1,568,602</b>	<b>1,780,360</b>	<b>1,958,500</b>
Capital Items	986,330	412,728	15,000	16,500
<b>TOTAL RESEARCH</b>	<b>1,915,382</b>	<b>1,981,330</b>	<b>1,795,360</b>	<b>1,975,000</b>



Table 1 (3)

Summary of Costs by Organizational Unit and Object of Expenditure (Contd.)

	BUDGET 1975	BUDGET 1976	BUDGET & PROJECTED 1977	PROJECTED 1978
<b>5. FIELD CO-ORDINATION</b>				
Field Staff	-	60,000	66,000	66,000
Common Staff Costs	-	25,000	27,500	27,500
Others	-	90,000	99,000	99,000
<b>TOTAL DIRECT COSTS</b>	-	175,000	192,500	192,500
Capital Items	-	155,000	-	-
<b>TOTAL FIELD CO-ORDINATION</b>	-	330,000	192,500	192,500
<b>6. GENERAL OPERATING COSTS</b>				
Building and Grounds	15,620	10,752	11,827	13,000
Motor Pool	7,900	20,300	22,330	24,600
Communications	19,270	25,170	27,687	30,500
Office and Miscellaneous Supplies	25,780	16,746	18,122	19,900
Common Operating Equipment	4,530	26,030	37,363	41,100
Others	15,000	10,000	11,000	12,100
<b>TOTAL COMMON COSTS</b>	88,100	108,998	128,329	141,200
Capital Items	-	10,000	11,000	12,100
<b>TOTAL GEN. OPERATING COSTS</b>	88,100	118,998	139,329	153,300
<b>TOTAL DIRECT COSTS (1-5)</b>	2,538,145	3,860,854	4,174,299	4,590,800
<b>TOTAL CAPITAL ITEMS (1-5)</b>	1,349,907	589,628	26,000	48,600
<b>TOTAL BUDGET</b>	3,976,152	4,569,480	4,339,628	4,792,700

Summary of Costs by Organizational Unit and Object of Expenditure (Contd.)

	BUDGET 1975	BUDGET 1976	BUDGET & PROJECTED 1977	PROJECTED 1978
<u>7. BY OBJECT OF EXPENDITURE</u>				
<u>OPERATING</u>				
Personnel Service Costs	2,100,892	2,982,121	3,502,707	3,912,766
Consultants	66,610	54,971	56,468	62,115
Operational Travel	108,452	105,697	128,147	104,662
Building	833,000	192,000	-	-
Equipment	524,806	475,821	74,363	94,809
Vehicles	108,400	82,400	27,246	24,563
Maintenance and Repairs	20,050	46,072	22,888	35,552
Communication and Freight	37,747	48,047	48,012	30,456
Others	176,195	582,351	479,797	527,777
<b>TOTAL OPERATING</b>	<u>3,976,152</u>	<u>4,569,480</u>	<u>4,339,628</u>	<u>4,792,700</u>

WARDA 1975 BUDGETSummary of Source and Application of FundsNo. 1 SUMMARY OF SOURCES AND APPLICATION OF FUNDS

<u>Total Funds Available</u>	1975 (US\$)	1976 (US\$)	1977 (US\$)	1978 (US\$)
<u>CONTRIBUTION TO WARDA:</u>				
Member Countries	497,737	577,296	719,867	811,900
CGIAR	550,000	845,000	876,200	963,800
FRANCE	174,600	62,910	46,211	50,800
USAID	767,000	362,000	387,000	425,700
KUWAIT	81,644	-	-	-
SWITZERLAND	62,000	46,000	47,000	51,700
UNFUNDED (CASH)	860,050	1,748,330	1,418,660	1,559,600
TOTAL	2,993,031	3,641,536	3,494,938	3,863,500
Cash Received on Grants	-	-	-	-
Grants Receivable at year end	-	-	-	-
Earned Income	-	-	-	-
TOTAL FUNDS AVAILABLE	2,993,031	3,641,536	3,494,938	3,863,500
Grants in Kind	983,121	927,944	844,690	929,200
TOTAL RESOURCES AVAILABLE	<u>3,976,152</u>	<u>4,569,480</u>	<u>4,339,628</u>	<u>4,792,700</u>
<u>Application of Funds to Operations</u>				
Executive Secretary	467,671	532,200	562,768	636,400
Communication & Documentation	186,735	173,296	199,426	220,100
Development Department	954,687	1,411,756	1,439,245	1,583,300
Research Department	929,052	1,568,602	1,780,360	1,958,500
Field Coordination	-	175,000	192,500	192,500
General Operating Costs	88,100	118,998	139,329	153,300
TOTAL OPERATING	2,626,245	3,979,852	4,313,628	4,744,100

Table 2 (2)

## Summary of Source and Application of Funds (Contd.)

	1975 (US\$)	1976 (US\$)	1977 (US\$)	1978 (US\$)
<u>Capital Acquisitions:</u>				
Executive Secretary	34,400	9,900	11,000	32,100
Communication and Documentation	65,177	12,000	-	-
Development Department	264,000	-	-	-
Research Department	986,330	412,728	15,000	16,500
Field Coordination	-	155,000	-	-
<b>TOTAL CAPITAL</b>	<b>1,349,907</b>	<b>589,628</b>	<b>26,000</b>	<b>48,600</b>
<u>Funds Applied to:</u>				
Unexpended Balances	-	-	-	-
Member Countries	-	-	-	-
UNDP/FAO	-	-	-	-
France	-	-	-	-
USAID	-	-	-	-
CGIAR	-	-	-	-
<b>TOTAL APPLICATION OF FUNDS</b>	<b>3,976,152</b>	<b>4,569,480</b>	<b>4,339,628</b>	<b>4,792,700</b>
<b>No. 2 FUNDS PROVIDED AND EXPENSES</b>				
<u>BY ACTIVITY</u>				
<u>Executive Secretary &amp; General Office</u>				
Member Countries	406,869	503,928	608,410	687,864
UNDP/FAO	101,584	92,000	42,000	46,116
France T.C.	10,000	10,000	10,000	11,529
Kuwait	37,448	-	-	-
Unfunded	15,000	30,000	30,000	32,074
<b>TOTAL FUNDS PROVIDED</b>	<b>570,901</b>	<b>635,928</b>	<b>690,410</b>	<b>777,583</b>
<b>TOTAL EXPENSES</b>	<b>570,901</b>	<b>635,928</b>	<b>690,410</b>	<b>777,583</b>
<b>UNEXPENDED BALANCE</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Table 2 (3)

## Summary of Source and Application of Funds (Contd.)

	1975 (US\$)	1976 (US\$)	1977 (US\$)	1978 (US\$)
<u>Communication and Documentation</u>				
Member Countries	54,506	53,966	90,113	101,484
UNDP/FAO	150,312	116,500	92,000	103,761
France T.C.	25,000	30,000	30,000	34,587
France	8,100	-	-	-
Kuwait	28,264	-	-	-
Unfunded	5,000	10,000	10,000	10,000
TOTAL	271,182	210,466	222,113	249,832
TOTAL EXPENSES	271,182	210,466	222,113	249,832
UNEXPENDED BALANCE	-	-	-	-
<u>Development Department</u>				
Member Countries	36,362	19,402	21,344	22,552
UNDP/FAO	244,381	311,000	288,000	334,376
FAO/Netherlands	10,000	-	-	-
USAID	504,000	259,000	289,000	316,550
France S.M.C.	142,444	-	-	-
France	166,500	185,354	202,901	230,580
France T.C.	43,000	46,000	46,000	57,645
Peace Corps (US)	10,000	10,000	10,000	11,529
Netherlands	-	10,000	10,000	11,529
Switzerland	62,000	46,000	47,000	51,700
Unfunded	-	525,000	525,000	566,146
TOTAL	1,218,687	1,411,756	1,439,245	1,602,607
TOTAL EXPENSES	1,218,687	1,411,756	1,439,245	1,602,607
UNEXPENDED BALANCE	-	-	-	-

Table 2 (4)

## Summary of Source and Application of Funds (Contd.)

	1975 (US\$)	1976 (US\$)	1977 (US\$)	1978 (US\$)
<u>Research Department</u>				
CGIAR	625,000	845,000	876,200	963,800
USAID	263,000	103,000	98,000	109,150
U.K.	100,000	100,000	100,000	115,290
FRANCE	20,000	20,000	-	-
UNDP/FAO	11,400	-	-	-
Peace Corps (U.S.)	20,000	20,000	20,000	23,058
Kuwait	15,932	-	-	-
Unfunded	860,050	893,330	701,160	747,740
TOTAL	1,915,382	1,981,330	1,795,360	1,959,038
TOTAL EXPENSES	1,915,382	1,981,330	1,795,360	1,959,038
UNEXPENDED BALANCE	-	-	-	-
<u>Field Coordination</u>				
Unfunded	-	330,000	192,500	203,640
TOTAL	-	330,000	192,500	203,640
TOTAL EXPENSES	-	330,000	192,500	203,640
UNEXPENDED BALANCE	-	-	-	-
<u>SUMMARY</u>				
Funds Provided/Requested	3,976,152	4,569,480	4,339,628	4,792,700
Total Estimated Expenses	3,976,152	4,569,480	4,339,628	4,792,700
Unexpended Balance	-	-	-	-

Table 3 (1)

## WARDA 1976 BUDGET

Funded and Required Provisions (US\$)

	<u>1976 Budget</u>	<u>Requested from Member States</u>	<u>Fully Funded by Other Donors</u>	<u>New Grants Required</u>
<u>Executive Secretary</u>				
Staff Costs	416,180	320,180	66,000	30,000
Other Direct Costs	116,020	116,020	-	-
Capital Items	9,900	9,900	-	-
TOTAL	<u>542,100</u>	<u>446,100</u>	<u>66,000</u>	<u>30,000</u>
<u>Communication and Documentation</u>				
Staff Costs	173,296	28,796	134,500	10,000
Other Costs	-	-	-	-
Capital Items	12,000	-	12,000	-
TOTAL	<u>185,296</u>	<u>28,796</u>	<u>146,500</u>	<u>10,000</u>
<u>Development Department</u>				
Staff Costs	1,103,812	19,402	550,000	534,410
Seed Multi lication Center	142,444	-	-	142,444
Mechanization	130,000	-	-	130,000
Other Direct Costs	35,500	-	20,000	15,500
Capital Items	-	-	-	-
TOTAL	<u>1,411,756</u>	<u>19,402</u>	<u>570,000</u>	<u>822,354</u>
<u>Field Coordination</u>				
Staff Costs	85,000	-	-	85,000
Other Direct Costs	90,000	-	-	90,000
Capital Items	155,000	-	-	155,000
TOTAL	<u>330,000</u>	<u>-</u>	<u>-</u>	<u>330,000</u>

Table 3 (2)

	1976 Budget	Requested from Member States	Fully Funded by Other Donors	New Grants Required
<u>Research Department</u>				
W-1 Staff Costs	285,705	-	265,705	20,000
Training and Seminars	330,691	-	100,691	230,000
Plant Quarantine	11,000	-	11,000	-
Seed Storage Center	38,198	-	38,198	-
Other Direct Costs	258,228	-	258,228	-
Capital Items	171,178	-	171,178	-
TOTAL	<u>1,095,000</u>	<u>-</u>	<u>845,000</u>	<u>250,000</u>
<u>Rokupr Station</u>				
Staff Costs	70,000	-	70,000	-
Other Direct Costs	115,000	-	115,000	-
Capital Items	18,000	-	18,000	-
TOTAL	<u>203,000</u>	<u>-</u>	<u>203,000</u>	<u>-</u>
<u>Richard Toll Station</u>				
Staff Costs	10,000	-	-	10,000
Other Direct Costs	128,000	-	-	128,000
TOTAL	<u>138,000</u>	<u>-</u>	<u>-</u>	<u>138,000</u>
<u>Mopti Station</u>				
Staff Costs	10,000	-	-	10,000
Other Direct Costs	73,780	-	-	73,780
Capital Items	323,550	-	-	323,550
TOTAL	<u>407,330</u>	<u>-</u>	<u>-</u>	<u>407,330</u>



Table 3 (3)

	<u>1976 Budget</u>	<u>Requested from Member States</u>	<u>Fully Funded by Other Donors</u>	<u>New Grants Required</u>
<u>Bouake Station</u>				
Staff Costs	10,000	-	-	10,000
Other Direct Costs	128,000	-	-	128,000
TOTAL	<u>138,000</u>	<u>-</u>	<u>-</u>	<u>138,000</u>
 <u>TOTAL RESEARCH:</u>				
Operations	1,468,602	-	858,822	609,780
Capital	512,728	-	189,178	323,550
TOTAL	<u>1,981,330</u>	<u>-</u>	<u>1,048,000</u>	<u>933,330</u>
 <u>General Operating</u>				
Building and Grounds	10,752	10,752	-	-
Motor Pool	20,300	20,300	-	-
Communications	25,170	25,170	-	-
Office & Miscellaneous Supplies	16,746	13,746	3,000	-
Common Operating Equipment	26,030	3,030	23,000	-
Others	20,000	10,000	10,000	-
TOTAL	<u>118,998</u>	<u>82,998</u>	<u>36,000</u>	<u>-</u>

## APPENDIX II

### LIST OF PUBLICATIONS

Publications completed during the period are:

1. Dahomey, Dome-Go Ahlan Project, Identification Mission, February 1974.
2. Rice in West Africa, March 1974.
3. WARDA Seminar Proceedings No.1: Rice Breeding and Varietal Improvement, May 1974.
4. Identification Mission Report-Prospective Study for Development of Rice Cultivation at Office du Niger, Mali, June 1974.
5. WARDA, What it is, what it does, how it works, revised edition, June 1974.
6. Annual Research Report of WARDA, July 1974.
7. WARDA Publications (January 1973/April 1974), August 1974.
8. WARDA Newsletter: Vol. 1 No.1 December 1973  
Vol. 2 No.1 March 1974  
Vol. 2 No.2 June 1974  
Vol. 2 No.3 September 1974  
Vol. 2 No.4 December 1974.
9. Cataloguing and Indexing Method at WARDA Documentation Centre, October 1974.
10. Current Bibliography No.1, November 1974.
11. Annual Rice Statistics (Draft), November 1974.
12. World Rice References for West Africa No.1, December 1974.
13. Case Study No.1 - The irrigated rice cultivation area in the Kou Valley, Upper Volta, (Draft), January 1975.
14. WARDA Seminar Proceedings No.3: Socio-Economic Aspects of Rice Cultivation in West Africa, February 1975.
15. Rice varieties recommended in the WARDA Region, April 1975.
16. What WARDA can do for you, April 1975.
17. Case Study No.2 - The Mac Carthy Island Pilot Irrigation Project in the Gambia Economy (Draft), April 1975.