

AGENCY FOR INTERNATIONAL DEVELOPMENT <b>PROJECT DATA SHEET</b>	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number _____ DOCUMENT CODE 3
---	---	--

2. COUNTRY/ENTITY CAMEROON	3. PROJECT NUMBER 631-0052
-------------------------------	-------------------------------

4. BUREAU/OFFICE AFRICA	5. PROJECT TITLE (maximum 40 characters) NATIONAL CEREALS RESEARCH AND EXTENSION - PHASE II
----------------------------	---

6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 12 31 94	7. ESTIMATED DATE OF OBLIGATION (Under 'B' below, enter 1, 2, 3, or 4) A. Initial FY 85 B. Quarter 1 C. Final FY 94
--	---

8. COSTS (\$000 OR EQUIVALENT \$1 = )						
A. FUNDING SOURCE	FIRST FY 85			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	( 2,510 )	( 440 )	( 2,950 )	( 23,024 )	( 12,398 )	( 35,422 )
(Loan)	( )	( 3,605 )	( 3,605 )	( )	( 3,605 )	( 3,605 )
Other U.S.						
1.						
2.						
Host Country		916	916		25,445	25,445
Other Donor(s)						
<b>TOTALS</b>	<b>2,510</b>	<b>4,961</b>	<b>7,461</b>	<b>23,024</b>	<b>41,448</b>	<b>64,472</b>

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ARDN	111	080	080			35,422	3,605	35,422	3,605
(2)									
(3)									
(4)									
<b>TOTALS</b>						<b>35,422</b>	<b>3,605</b>	<b>35,422</b>	<b>3,605</b>

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)	11. SECONDARY PURPOSE CODE
---	----------------------------

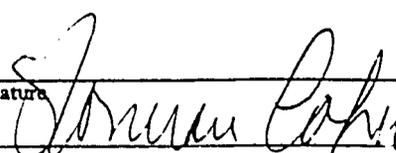
12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)
A. Code
B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To continue to develop Cameroonian institutional capacity to provide high quality research on maize, rice, sorghum and millet and to facilitate utilization of research results by farmers. Cereals research will be integrated into a cropping systems approach to food production and be aimed at the problems of farmers.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 06 36 11 38 04 04	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other (Specify)
---	--

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a \_\_\_\_\_ page PP Amendment.)

17. APPROVED BY	Signature:  Title: Director, AFR/PD	Date Signed MM DD YY 11 05 84
		18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 06 05 84

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON D C 20523

ASSISTANT  
ADMINISTRATOR

NOV 23 12 45 PM '84  
EXECUTIVE SECRETARIAT

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THRU: AA/PPC, Richard A. Derham *RD*  
FROM: AA/AFR, Mark L. Edelman *MLE* NOV 8 1984  
SUBJECT: Cameroon - National Cereals Research and Extension  
Project, Phase II (631-0052)

I. Problem: Your approval is requested for a grant of \$35,422,000 and a loan of \$3,605,000 from the Foreign Assistance Act, Section 103 appropriation, to the Government of the Republic of Cameroon (GRC) for the National Cereals Research and Extension Project, Phase II. It is planned that \$2,950,000 in grant funds and \$3,605,000 in loan funds will be obligated in Fiscal Year 1985. Life of project is ten years.

II. Discussion: The purpose of the second phase of the National Cereals Research and Extension Project (NCRE) is to develop Cameroonian institutional capacity to provide high-quality research on maize, rice, sorghum and millet and to develop efficient transmission of the research results to the farmer. The five major objectives of NCRE, Phase I (631-0013) will continue to be addressed in Phase II in the following manner:

First, to further develop Cameroonian institutional capacity to perform cereals research, Phase II will increase technical assistance and counterpart participant training. The GRC has already doubled the operational budget for the Institute of Agronomic Research (IRA), the organization under which the NCRE project operates. A second objective, to further research programs, will also be advanced by these activities.

Thirdly, three additional Testing and Liaison Units (TLU's) will be established in agro-ecological zones not served by other research projects. Only one was created under Phase I. A fourth objective, establishment and maintenance of links and information exchange with international, African, and Cameroonian research institutions, will be enhanced by the continued support of the IRA.

Lastly, in order to fulfill the fifth objective of providing adequate physical facilities and equipment, the loan component of Phase II will finance construction of research staff housing, seed laboratories, warehouses, and offices.

2117  
C.C. 2117  
212

The first phase of the National Cereals-Research and Extension Project was authorized in August 1979 with LOP funding of \$7,697,000. A comprehensive evaluation of NCRE, Phase I determined that the production and quality of research was excellent and that the clientele (Cameroonian farmers and other agriculturalists) was receptive to the research results. A second phase of the NCRE is necessary to build upon the accomplishments of Phase I. Authorization of this ten-year project will further the policy of the Administrator and the Africa Bureau for long term agricultural research (State 015917 and AFR Memorandum, April 4, 1983).

In order to assess the progress being made toward achieving project objectives, four evaluations have been tentatively scheduled. An FY 1989 evaluation will be an independent, in-depth evaluation to review project accomplishments to date and to determine whether the project should continue into the final five years. Specific procedures for development of evaluation criteria and other actions relating to that determination are included in the Project Authorization (Section 4).

III. Financial Summary: The total cost of the project is \$64,472,000. Of this amount, A.I.D. will provide \$39,027,000 (\$35,422,000 grant, \$3,605,000 loan) over the ten year life-of-project. The GRC will contribute the remaining \$25,445,000. The dollar breakdown of the A.I.D. contribution is as indicated below:

	<u>First Year</u>		<u>Life-of-Project</u>	
	(\$000)		(\$000)	
	<u>Grant</u>	<u>Loan</u>	<u>Grant</u>	<u>Loan</u>
Technical Assistance	1,221		14,256	-
Training	54		2,303	-
Commodities	943		2,026	-
Construction		2,666	-	2,666
Other Costs	432	-	3,732	-
Contingency	300	667	2,232	667
Inflation	-	272	10,546	272
Evaluations	-	-	327	-
TOTAL	<u>2,950</u>	<u>3,605</u>	<u>35,422</u>	<u>3,605</u>
Total includes local currency of:			12,398	3,605

IV. Socio-economic, Technical and Environmental Considerations:

1. Analytical and technical considerations for the Phase II NCRE Project are drawn largely from the comprehensive

evaluation completed in October 1983. This evaluation analyzed performance of project activities to date for Phase I of the NCRE Project. The evaluation team recommendations were extremely favorable and, in recognition of the long gestation period between investment in research and increases in production, the team's recommendations for continued research input by AID over a longer period of time have been woven into the NCRE Phase II basic design strategy.

2. The Initial Environmental Examination for NCRE Phase I recommended a Negative Determination, which was approved by AA/AFR. The Phase II activity will not require a new IEE for continuation of the same types of technical assistance and training activities. However, a brief addendum has been prepared to cover the new loan funded construction component included in NCRE Phase II.

3. No human rights issues were raised with respect to this project.

V. Section 611 (a) of the FAA: The USAID/Cameroon has reviewed all the documentation prepared for this project and determined that engineering, financial, construction and other plans necessary to carry out the project, as well as a reasonably firm estimate of the cost to the U.S. Government, have been completed. The Executive Committee for Project Review (ECPR) concurred in this determination.

VI. Implementation: The implementation arrangements described in the Project Paper were reviewed in depth by the Project Committee and found to be both realistic and sufficient to carry out the project. To the extent that fertilizers and agricultural commodities are purchased, AID special procurement rules will be observed.

The Ministry of Higher Education and Scientific Research is the parent Ministry for the Institute of Agronomic Research (IRA) and complete technical, administrative and project implementation responsibility rests with the professional and executive staff of this institute.

VII. Review Committee Action: The Executive Committee for Project Review (ECPR), chaired by the DAA/AFR, met on June 14 to review a project paper amendment to the National Cereals Research and Extension Project. The ECPR decided, rather than approving the document as an amendment to the existing project, to approve it as a ten-year, phase two project, with funding for the second five years contingent, as noted, upon determinations based on a mid-term assessment.

VIII. Justification to the Congress: A Congressional Notification (CN) was submitted on October 30, 1984 and no objections were raised during the 15 days which followed.

IX. Waivers: Two vehicle waivers, one for source/origin and one for single source procurement, will be submitted to the Assistant Administrator for Africa upon the authorization of the project. The waivers are attached to the Project Paper.

X. Recommendation: That you sign the attached Project Authorization, and thereby approve life-of-project funding of \$35,422,000 in grant funds and \$3,605,000 in loan funds.

Attachment:

1. Project Authorization
2. Project Paper (including waivers)

Drafted: AFR/PD/CCWAP:WE<sup>LE</sup>lliott:10/31/84:632-8507:#1033K

Clearances:

GC:HMFry	<u>JSUM</u>	Date <u>11/9/84</u>
AAA/PPC/PDPR:EHullander	<u>[Signature]</u>	Date <u>11/14/84</u>

- 1 -  
UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON D C 20523

PROJECT AUTHORIZATION

Name of Country: Cameroon  
Name of Project: National Cereals Research and Extension  
Project - Phase II  
Number of Project: 631-0052

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the National Cereals Research and Extension Project - Phase II (the "Project") for the Government of the Republic of Cameroon, (the "Cooperating Country"), involving planned obligations of not to exceed thirty-five million four hundred twenty-two thousand United States dollars (\$35,422,000) in grant funds and three million six hundred five thousand United States dollars (\$3,605,000) in loan funds over a ten year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process to help in financing foreign exchange and local currency costs for the Project.

2. The Project will support: development of the institutional capacity of the Government of the Cooperating Country to carry out research on maize, rice, sorghum, millet and other cereals; development and implementation of research programs addressing farmers' problems and needs generally in the Cooperating Country; utilization of research results by farmers; establishment and maintenance of linkages and information exchange among International, African and Cameroonian institutions conducting agronomic and socio-economic research; and the provision of facilities and equipment for carrying out such research efforts.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms, and such other terms and conditions as A.I.D. may deem appropriate.

a. Interest Rate and Terms of Repayment: The Cooperating Country shall repay the loan to A.I.D. in U.S. dollars within forty (40) years from the date of first disbursement of the loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in U.S. dollars interest from the date of first disbursement of the loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum

thereafter on the outstanding disbursed balance of the loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Commodities, Nationality of Services: Commodities financed by A.I.D. under the Project shall have their source and origin in the United States in the case of grant funds and in the Cooperating Country or countries included in A.I.D. Geographic Code 941 in the case of loan funds, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have the United States as their place of nationality in the case of grant funds and the Cooperating Country or countries included in Code 941 in the case of loan funds except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall be financed only on flag vessels of the United States or the Cooperating Country, except as A.I.D. may otherwise agree in writing.

c. Condition Precedent to Disbursement: Prior to the disbursement of loan funds for each construction activity under the Project, or to the issuance of documentation pursuant to which disbursement will be made with respect thereto, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D., with respect to such construction activity, in form and substance satisfactory to A.I.D.:

- (1) an executed contract for architectural and engineering services with a firm acceptable to A.I.D., for the supervision of such construction activity;
- (2) plans and specifications, bid documents and time schedules for such construction activity; and
- (3) an executed contract with a firm acceptable to A.I.D. for construction services for such activity.

d. Covenants:

- (1) The Cooperating Country shall take appropriate measures to ensure adequate provision of counterpart staff resources, to complement A.I.D.-financed technical assistance.
- (2) The Cooperating Country shall ensure that each Cameroonian receiving A.I.D.-financed long-term participant training will agree to spend a minimum of five years working with the IRA cereals research and extension program following the award of his or her final degree.
- (3) The Cooperating Country shall undertake best efforts to ensure that appropriate quantities of credit and fertilizers will be available to cereals farmers.

(4) The Cooperating Country shall provide adequate financial support to maintain A.I.D.-financed equipment, vehicles and buildings after the completion of the Project.

5. The Cooperating Country shall maintain policies ensuring a free-market pricing system for food crops.

6. The Cooperating Country shall undertake best efforts to ensure that activities under the Project are coordinated to the maximum extent possible with activities under related projects, including but not limited to agricultural research projects funded by the IBRD.

4. Special Evaluation and related actions

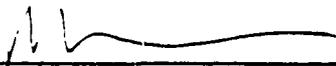
a. Not later than twelve [12] months from authorization of the Project, and after consultation with the Director, Office of Project Development, Bureau for Africa, the Director, USAID/Cameroon shall establish criteria for the evaluation of the Project to be conducted under paragraph [b] of this section.

b. The Director, USAID/Cameroon shall ensure that an independent and comprehensive evaluation of the Project is conducted in fiscal year 1989 by a broad-based team. Such evaluation shall determine the extent to which the major objectives, and related policy and other objectives of the Project have been advanced or accomplished during fiscal years 1985 through 1988 and shall recommend the extent to which the Project should be continued and/or modified for fiscal years 1990 through 1994.

Based upon the evaluation, and other appropriate studies, evaluations and considerations, the Director USAID/Cameroon shall determine generally the extent to which activities under the Project should be continued and/or modified in respect to activities during fiscal years 1990 through 1994. The Director USAID/Cameroon shall provide the Assistant Administrator, Bureau for Africa, with a copy of the final evaluation report and of his determinations, in time for consideration in the FY 1990 program planning cycle. Obligations for fiscal years 1990 through 1994 shall, in addition to those for each of the other fiscal years during the life of the project, be subject to the availability of funds in accordance with the OYB/allotment process, as provided in paragraph 1 of this Authorization.

c. Any provision of this Section 4 and any element of the evaluation criteria developed pursuant to paragraph [a] may be amended by written agreement or exchange of cables between the Director, USAID/Cameroon and the Director, Office of Program Development, Bureau for Africa.

d. The Project Agreement shall include standard and any other provisions necessary to permit the Director USAID/Cameroon at any time on or after September 30, 1989 to discontinue assistance under the Agreement upon thirty days written notice to the Cooperating Country and based upon a determination made under paragraph (b) of this section. Any such action shall be taken only after prior consultation with the Assistant Administrator, Bureau for Africa, and in accordance with A.I.D. delegation and other provisions then applicable.

  
\_\_\_\_\_  
M. Peter McPherson  
Administrator  
November 28, 1984  
\_\_\_\_\_  
Date

Clearances:	Date	Initial
Mark L. Edelman, AA/AFR	<u>mlc 4/7/84</u>	<u>mlc</u>
Richard A. Derham, AA/PPC	<u>RD 11/21/84</u>	<u>RD</u>
<i>for</i> Howard M. Fry, GC	<u>11/9/84</u>	<u>JEF</u>

GC/AFR:JScales:10/16/84

/

PROJECT PAPER

NATIONAL CEREALS RESEARCH AND EXTENSION - PHASE II  
(631-0052)

Table of Contents

	<u>Page</u>
Amended Project Data Sheet	
I. <u>SUMMARY OF RECOMMENDATIONS</u>	
A. Grantee/Borrower and Executing Agency	1
B. Recommendations	1
C. The Project	1
D. Summary Financial Plan	2
E. Conditions Precedent and Covenants	3
F. Issues	4
II. <u>BACKGROUND</u>	
A. USAID Assistance in Cameroon's Agricultural Sector	5
B. Special Emphasis on Agricultural Research	6
C. Implementation Strategy for NCRE Phase II	6
III. <u>RATIONALE FOR EXTENDING THE NCRE EFFORT TO A SECOND PHASE</u>	
A. Background	7
B. The NCRE Project Origin	9
C. Evaluation of the Project	9
D. Status of Original Project Paper Outputs as of March 1984	11
E. Coordination and Complementarity of the World Bank's National Agricultural Research Project (NARP) with the NCRE Project	17
IV. <u>PROJECT DESCRIPTION OF PHASE II</u>	17
V. <u>AID AND GRC STRATEGY LINKAGES FOR NCRE PHASE II</u>	
A. Relationship to AID Strategy	25
B. Relationship to Government of Cameroon Cereals Research Strategy	26
C. Relationship to the CDSS	26

2

VI.	<u>PROJECT ANALYSES</u>	
	A. Financial Summary	27
	B. Financial and Recurrent Costs Analysis	36
	C. Economic Analysis	39
	D. Technical Analysis	47
	E. Social Soundness	54
	F. Administrative Analysis	64
	G. Environmental Analysis	65
VII.	<u>CONSTRUCTION SUMMARY</u>	65
VIII.	<u>IMPLEMENTATION ARRANGEMENTS</u>	
	A. Implementation Plan	66
	B. Procurement Plan	66
	C. Payment Methods and Implementation of Financing	67
	D. Monitoring and Evaluation Arrangements	67

ANNEXES

- (A) Revised Logical Framework -- to reflect expanded resources and inputs/outputs (1985-1995)
- (B) Detailed Procurement Plan and Waivers
- (C) Supporting Economic and Financial Exhibits
- (D) Detailed Engineering Analysis and Construction Program -- Including FAA 611(a) Statement
- (E) Specific Areas of Policy Concern Related to the Successful Implementation of the Expanded NCRE Project
- (F) Technical Assistance and Training -- Summary of Resources (1981-1995)
- (G) Statutory Checklist
- (H) Evaluation of National Cereals Research and Extension Project
- (I) IEE Supplement to Original IEE submitted for Phase I
- (J) Request for Assistance
- (K) FAA Section 611(e) Certification

1

PROJECT PAPER

NATIONAL CEREALS RESEARCH AND EXTENSION PROJECT - PHASE II  
(631-0052)

I. SUMMARY AND RECOMMENDATIONS

A. Grantee/Borrower and Executing Agency

The Grantee/Borrower will be the Government of the Republic of Cameroon (GRC) represented by the Ministry of Plan and Territorial Affairs. The Ministry of Higher Education and Scientific Research will be the executing agency.

B. Recommendations

1. That a grant in the amount of \$35,422,000 and a loan in the amount of \$3,605,000 be authorized for Phase II of the National Cereals Research and Extension (NCRE) project. Funding provided for the second phase of the NCRE project will bring the total U.S. contribution during Phase I and Phase II of the project (FY 1979 - FY 1995) to \$46,724,000 (\$43,119,000 in grant funding and \$3,605,000 in loan funding).

2. That a source/origin procurement waiver in the amount of \$60,000 be approved to procure six two-wheel drive station wagons from an AID Geographic Code 935 country.

3. That a single source procurement waiver in the amount of \$48,000 be approved to procure three AMC four-wheel drive vehicles.

C. The Project

Phase II of the National Cereals Research and Extension (NCRE) project will continue the development of the institutional capacity of Cameroon to provide high quality applicable research on cereal crops in different ecological zones of Cameroon, and to facilitate transmission of research results to the farmer. Phase II of the NCRE project will also continue to facilitate the development of appropriate linkages and feedback mechanisms so that agronomic breakthroughs, improved inputs and improved farming practices support small farmer needs and requirements. Testing and Liaison Units (TLUs) will be expanded from one to four in different ecological regions of Cameroon, and will continue to design the methodology of the field tests, coordinate the testing program, study and analyze the results, coordinate the research projects' activities with other organizations and, most importantly, service farmer needs.

D. Summary Financial Plan

Total costs of Phase II of the NCRE project, covering a ten-year period, are estimated at \$64,472,000. AID will fund 60.6 percent and the GRC will fund 39.4 percent of these costs. (See Part VI and Annex C for a detailed breakdown of projected expenditures for both AID and GRC contributions.

(\$000)

	<u>USAID</u>				<u>GRC</u>		<u>TOTAL</u>	
	<u>GRANT FUNDS</u>		<u>LOAN FUNDS</u>		FX	LC	FX	LC
	FX	LC	FX	LC				
Technical								
Assistance	12,403	1,853	--	--	--	--	12,403	1,853
Training	1,755	548	--	--	--	--	1,755	548
Commodities	1,173	853	--	--	--	--	1,173	853
Other Costs	--	3,732	--	--	--	--	--	3,732
Construction	--	--	--	2,666	--	--	--	2,666
Cash Costs	--	--	--	--	--	13,596	--	13,596
Subtotal	15,331	6,986	--	2,666	--	13,596	15,331	23,248
Contingency	1,533	699	--	667	--	--	1,533	1,366
Inflation	5,833	4,713	--	272	--	11,849	5,833	16,834
Evaluations*	327	--	--	--	--	--	327	--
Subtotals	23,024	12,398	--	3,605	--	25,445	23,024	41,448
Totals	35,422		3,605		25,445		64,472	

\*Including Contingency Inflation

E. Conditions Precedent and Covenants

The following conditions precedent and covenants shall be included within the Project Agreement of Phase II of the NCRE project.

1. Conditions Precedent to Disbursement

Prior to first disbursement or the issuance of any commitment documents under the Project Agreement, the Government of Cameroon shall furnish in form and substance satisfactory to AID:

a. For the Loan only:

An option of counsel, acceptable to AID, that the Loan Agreement has been duly authorized and/or ratified by and executed on behalf of the Government of Cameroon and constitutes a valid and legally binding obligation of the Government of Cameroon in accordance with all its terms.

b. For the Loan and Grant:

A statement of the name of the person acting as authorized representative of the Government of Cameroon, and the names of any additional representatives, together with the specimen signatures of each such authorized representative.

2. Additional Disbursement

Conditions Precedent to Disbursement for Construction Services (For the Loan Only)

Prior to disbursement of the Assistance for each construction activity under the Project Agreement, or to the issuance of documentation pursuant to which disbursement will be made with respect thereto, the Government will, except as AID may otherwise agree in writing, furnish to AID, with respect to such construction activity, in form and substance satisfactory to AID:

a. an executed contract acceptable to AID, with a firm acceptable to AID, for architectural and engineering services and for construction supervision of such construction activity;

b. plans and specifications, bid documents and time schedules for such construction activity; and

c. an executed contract for construction services for such activity with a firm acceptable to AID.

### 3. Covenants

a. The Government of the Republic of Cameroon agrees to provide, in a timely manner, counterparts for the members of AID-financed technical assistance team.

b. The Government agrees that Cameroonians receiving AID-financed long-term participant training will spend a minimum of five years working with IRA cereals research and extension program following the completion of their final degree.

c. The Government agrees that every effort will be made to ensure that suitable quantities of fertilizers and credit will be available to cereals farmers.

d. The Government agrees to provide adequate financial support to maintain AID-financed equipment, vehicles and buildings after the project has ended.

e. The Government agrees to maintain its policy of a free-market pricing system for food crops.

### F. Issues

The effective utilization of the research results on cereal crops to meet the growing demand of food crop production in Cameroon depends upon a variety of changes in policies in Cameroon. The major areas of required policy changes include population growth, marketing, and the timely provision of essential agricultural inputs. USAID/Cameroon believes that the GRC has a keen awareness of its needs in all of these areas; moreover USAID/Cameroon is working with the GRC to develop the required policy changes through the RAPIDS presentation and a proposed population project, and through studies being conducted under the Agricultural Management and Planning project. Annex E describes specific areas of policy concern which need to be addressed during the life of Phase II of the NCRE project.

## II. BACKGROUND

### A. USAID Assistance in the Agricultural Sector

From its inception, the USAID program in Cameroon has emphasized agriculture. In the early years of the program the development needs of Cameroon were neither well enunciated by the GRC nor coherently addressed by USAID. Several small interventions were instituted in areas where it appeared a development need existed. Both the experiences with these interventions and a continuing GRC policy evolution led USAID, in the early 1980's to re-examine its development strategy in Cameroon and to sharpen its program focus on the agricultural sector.

At the same time, the GRC has clearly signaled its desire that American assistance play a major role in the food-crop sector. Cameroon's Fifth Five-Year plan came into existence in 1981 showing clear signs of an increased recognition of the rural economy's role in Cameroon's development progress and the essential requirement for increased emphasis on food production. This new plan calls for systematic introduction of food-crop research, greater credit availability for food-crop farmers, priority in the distribution of improved seeds, increased areas of cultivation for food crops, and programs to reduce post-harvest losses.

The GRC has recognized the predominant capability of the United States in agriculture and has sought program assistance in training, research, analysis, and extension. USAID has responded with a program that will capitalize on this special U.S. competence. It is helping to build and staff an agricultural university modeled after the U.S. Land-Grant system integrating academic and technical training, research and extension. USAID/Cameroon has been in the forefront of introducing the land-grant model of agricultural education in Francophone Africa and believes it has played a significant role in facilitating this policy decision by Cameroon. USAID/Cameroon began the present National Cereals Research and Extension project and enlisted technical assistance from the International Institute for Tropical Agriculture (IITA) to carry out a program of scientific and applied research on cereal crops. It instituted a project to assist the GRC undertake a national agricultural census and perform annual agricultural surveys to provide the data base for enhanced agricultural planning. It refocused its efforts in seed multiplication to strengthen linkages with research and provide

for the possibility of moving the operation into the private sector. The result of the foregoing has been distinctive and substantial progress over a wide range of the agricultural sector.

B. Special Emphasis on Agricultural Research

Agriculture research is one of the mainstays in USAID/Cameroon's program. The GRC has itself recognized the importance of agricultural research in its Fifth Five-Year Development Plan and underlined its continuing and growing importance.

The USAID/Cameroon Country Development Strategy Statement (CDSS) enunciates Mission strategy to assist the GRC develop the institutions needed to carry on research and development, including training of the Cameroonian staff necessary to continue these activities.

C. Implementation and Strategy for NCRE Phase II

Over the last six months Institute of Agronomic Research (IRA) and USAID/Cameroon have conscientiously worked out the technical details and planning for a strategy to modify, expand and extend the project under a second phase by about ten years. Special ad-hoc working committees met at frequent intervals to resolve technical, financial and other concerns related to this strategy. At a joint (IRA, IITA and USAID) review session on March 15, 1984 the basic terms and conditions of the proposed Phase II were agreed upon by all parties.

The main strategies and basic parameters of the first phase of the NCRE project remain intact. However, in order to more successfully accomplish the project's long-term goals in cereals research and the Government of Cameroon's institutional development objectives, additional resource inputs over a greatly expanded time frame will be needed from both AID and the GRC. This second phase of the NCRE project is directly related to Agency recognition that agricultural research institution building initiatives in developing countries must be pursued on the basic premise that success depends on a firm commitment to long-term involvement by both donors and recipients alike.

The basic mix of project components, assumptions and agricultural research priorities remains the same as those identified in the original project paper. With this in mind,

the intent of Phase II is not to alter the established set of goals and objectives of the NCRE project, but to highlight the absolute necessity for additional resources (human and financial) and time to satisfy Cameroon's long-term cereals research needs.

III. RATIONALE FOR EXTENDING THE NCRE EFFORT TO A SECOND PHASE

A. Background

Earlier this year, the Administrator confirmed (State 015957, dated January 18, 1984) that the Agency is ready to provide increased resources to the support of research activities. The Africa Bureau's Agricultural Research Strategy (AFR Memorandum of April 4, 1983) states: "the nature and magnitude of the task of strengthening national agricultural research systems, and the time required to develop cooperative and complementary programs to produce useful production technologies, requires that donor assistance programs be cast in a long-term framework--ten to twenty years. This will require a more flexible and evolutionary approach to project design and implementation."

In the past year the GRC has more than doubled its operational budget for the Institute of Agronomic Research (IRA), the organization responsible for all agricultural research and the parent organization under which the National Cereals Research and Extension project (NCRE) operates. An assessment of the potential of agricultural research in Cameroon has also led the GRC to seek World Bank assistance to make major improvements in the infrastructure of Cameroon's agriculture and livestock research centers and to strengthen its research programming and administrative capacity.

The initiatives being taken by the GRC and the sharpening of the USAID/Cameroon strategy over the past three years auger for a full commitment now to the long-term needs of this endeavor. This commitment is two-fold: to address the GRC's long-term needs to firmly establish its institutional capability for cereals research while addressing the immediate need for adaptive research; and, to reinforce extension activities under the project to ensure that research being conducted is relevant, that results are put in a form that is available to the farmer, and that time is allowed for the extension role of the land-grant model agricultural university at Dschang to come on line. The original NCRE project paper had suggested that these objectives be accomplished through a series of phased projects.

What is required, especially in institution-building, is continuity and assured commitment. Bringing in high-level technical assistance personnel to both perform and teach certain functions, and then leaving behind counterpart personnel with lesser academic credentials and little practical experience to "carry on," can only assure the "building" of a second-rate institution and a shortening in height of the Agency's policy pillar. Past design efforts have traditionally been geared toward "strengthening" and "reinforcing" with little regard for excellence. NCRE Phase II is designed to leave behind a quality institution which can interact on a peer basis with fellow national and international research institutes rather than forever being a country-cousin dependent upon outside advice and guidance. It is only with this achievement of excellence that the institution itself can be assured of viability, longevity and the ability to contribute.

The Institute of Agronomic Research and its agricultural experiment stations are the main sources of technological innovation and packages for small-farmer food producers in the rural areas of Cameroon. As in most developing countries, national agricultural research institutions find it difficult to maintain contact with extension services and the ultimate users of their product. The NCRE project in Cameroon provides direct support to Cameroon's Institute for Agronomic Research for this purpose through the concept of the Testing and Liaison Unit (see section III.D.3) which was introduced to link research, extension and the farmers. Success to date has prompted the desirability of immediate expansion.

The relationship between the Institute for Agronomic Research and the Agricultural University at Dschang presents yet another rationale for a second phase of the NCRE project. IRA had previously been under the General Delegation for Scientific and Technical Research (DGRST)--an autonomous ministerial level organization under which all research activities in Cameroon were conducted. In February 1984, the various research institutions of DGRST were absorbed into a new Ministry of Higher Education and Scientific Research. This new Ministry therefore has oversight of both the Agricultural University and IRA. The new Minister is the former Director General of the University and was the prime moving force in gaining GRC adoption of the land-grant model concept. The distinct possibility of future amalgamation of research institutions and the university system fits perfectly within the land-grant system approach and is a bonus to the long-term involvement which USAID/Cameroon and the University of Florida have embarked upon with the agricultural university.

As stated above, the IBRD has also recognized the great potential of Cameroon's system of research institutions and has worked with both the GRC and USAID/Cameroon in developing a major project to strengthen the research programming, administrative capacity and infrastructures of both IRA and the Institute for Livestock Research (IRZ). The design of this IBRD initiative has been undertaken in close collaboration with USAID/Cameroon to assure a complementarity of efforts and to avoid duplication.

#### B. The NCRE Project Origin

The NCRE project was authorized by the Assistant Administrator for Africa on August 17, 1979 in the amount of \$7,697,000. Its purpose is to develop the institutional capacity of Cameroon's Institute of Agronomic Research to provide high quality research on maize, rice, sorghum and millet, as well as to develop efficient linkages to facilitate transmission of research results to farmers. The project is implemented within IRA, which is now under the Ministry of Higher Education and Scientific Research. On January 13, 1980 the NCRE project contracted with IITA for the provision of high-level researchers to implement the critical technical assistance component of the project. A chief of party, eight researchers and an administrative assistant have been stationed in various agronomic zones of Cameroon to conduct research and undertake studies relevant to the farmers of those regions.

#### C. Evaluation of the Project

An evaluation of the project (see Annex H) was conducted in September and October of 1983 by two evaluation consultants: a former Dean of the College of Agriculture at the University of Nebraska, and a former Director of the Cooperative Extension

Service at the University of California, Berkeley. They were assisted by the USAID Project Officer and Evaluation Officer and the IRA Coordinator of Cameroon's National Cereals Program.

This comprehensive evaluation of the NCRE project analyzed performance of project activities to date with particular emphasis on the effectiveness of the project in contributing to sector goal objectives. Evaluation team recommendations were favorable and, in recognition of the long gestation period between investment in research and increases in production, the evaluation strongly recommended continuing resource inputs by AID over a longer period of time.

The evaluation's recommendations form the basis of this Phase II Project Paper.

The evaluation also highlighted several potential problem areas which further support the need for expanding the time-frame and resource inputs for the NCRE project:

- The relatively short time-horizon had induced some project researchers to conduct too many experiments over too wide an area in order to satisfy the numerous clientele who want the results as rapidly as they can be generated. The demand for research results and improved varieties, and the enthusiasm of NCRE researchers, could therefore conceivably result in developing technological packages accepted by farmers and parastatals prior to adequate testing and verification.
- The evaluators noted that the Testing and Liaison Units' role in strengthening the relationship between research, extension and farmers has been constrained due to the fact that the project has only one operational TLU.
- The evaluators recommended that additional equipment be procured and several uniform laboratory-warehouses be constructed to enhance the productivity of the technical assistance team and their counterparts. This gap was also highlighted by CGIAR in the report of its Five-Year Review of the IITA program held in 1983.
- The evaluators concluded that the training program as planned in the existing NCRE Project Paper is

inadequate in terms of the targeted academic degree levels proposed for participants to be trained by the project. The evaluators recommended that every IITA researcher should eventually be replaced by Cameroonians holding the Ph.D. degree. Hence, returned participants with B.S. or M.S. degrees should be sent back to the United States for further training, after working at IRA for at least one year. Training to the Ph.D. level will also help to ensure that the returned participants will have adequate salaries and status to function effectively in the Cameroonian system.

D. Status of Original Project Paper Outputs as of March 1984

1. Development of Cameroonian-Staffed Institutional Capacity for Research on Maize, Rice, Sorghum and Millet

Two Cameroonians have been trained and returned to their positions as counterparts in the NCRE project development. The first obtained a Ph.D. in Maize Breeding from North Dakota State University and is presently a counterpart of the NCRE Maize Breeder in the Yaounde region. The second obtained a B.S. in Rice Agronomy and an M.S. in Rice Breeding from Louisiana State University. He returned in 1983 and is presently a counterpart of the NCRE Rice Agronomist in the Dschang region. A third (non-project trained) person with a Ph.D. in Maize Agronomy from North Dakota State University (1983) has been hired by IRA and assigned to work with the NCRE team.

Presently, there are six Cameroonians in the U.S. working for the following degrees: an M.S. in Rice Agronomy at Louisiana State University; an M.S. in Cereals Agronomy and Extension at South Dakota University; an M.S. in Cereals Agronomy and Extension at the University of Missouri; an M.S. in Grain Storage Entomology at Kansas State University; an M.S. in Maize Breeding at Cornell University; and a B.S. in Cereals Agronomy at California State University. These participants will be returning to Cameroon throughout the next two years. In addition, one participant will depart shortly to study for an M.S. degree in Plant Pathology.

2. Development and Implementation of Research Programs for Maize, Rice, Sorghum and Millet, including Trial Demonstrations on Farmers' Fields

a. Maize Improvement and Breeding Program:

Numerous internationally known maize materials from IITA, CIMMYT, national maize improvement programs in Africa, varieties previously developed by IRA, and local varieties provided by farmers were planted to determine which maize materials grow best and where. All nine provinces in the three major agroclimatic zones (Lowland Rain Forest, Lowland Savannah and Mid-Altitude Subtropic) were covered. These trials were conducted at: (1) ten different IRA stations; (2) parastatals and rural development projects such as the Societe de Developpement de Coton (SODECOTON), the Mission de Developpement du Nord-Ouest (MIDENO), the Societe de Developpement du Ble (SODEBLE), and the Centre National d'Etudes et d'Experimentation du Machinisme Agricole (CENEEMA); and (3) farmers' fields. The results proved these newly introduced varieties in some cases, to give twice as much yield when compared to varieties commonly used in these locations. The new promising varieties have been advanced into national variety trials that will lead to identification of stable, disease resistance varieties suitable for specific agroclimatic zones in Cameroon. In northern Cameroon, where rainfall is limited, separate observational trials have been conducted to identify promising early to medium maturing varieties of maize. A program to genetically refine maize varieties and to maintain their purity for the future development of foundation seed is also underway.

b. Maize Agronomy Program

The maize agronomy unit in IRA-Garoua has conducted a series of agronomy trials in several IRA stations, parastatals and farmers' fields in the North, Northwest and Southwest of Cameroon. Additional experiments were also carried out at the Karewa Experimental Farm in an effort to explore the potential for off-season maize production under irrigation in the Benoue Valley. The main objective of the maize agronomy research project is to develop appropriate and improved packages of cultural practices for maize farmers, and to evaluate the relative interaction and impact of climatic, soil and management constraints on the productivity of maize and maize-based cropping systems. Initial results have confirmed

the high potential of the lowland savannah region for successful maize production when improved and appropriate packages are used. Agronomists are also conducting a series of palatability tests in collaboration with the Ministry of Agriculture, SODECOTON and the World Bank's Center-North project. The Maize Agronomists are determining the performance and yield effects of the following factors: varieties; method of application and amount of fertilizers; differential effect of the preceding crops on maize response to fertilizers; impact of frequency and type of weed control; planting dates; liming and phosphorus application on maize grown in ferralitic soils of the Adamaoua region, and plant population density. The maize research program deals with maize as a monocrop, intercropped, and in rotation with legumes such as groundnuts and cowpeas.

c. Rice Improvement and Breeding Program:

The Rice Breeder and Rice Agronomist are concentrating their efforts in developing high-yielding rice varieties for two major irrigated rice development projects: the Upper Noun Valley Development Authority (UNVDA) located in the Northwest Province; and the Societe pour le Developpement de la Riziculture de la Plaine de Mbo (SODERIM) located in the Western Province. These two irrigated rice projects need research support to develop new technologies which will increase total rice production. A research program is also underway to develop technologies for growing upland rice at the small-farm level. During the last two growing seasons hundreds of rice varieties, lines and cultivars were introduced from IITA, the International Rice Research Institute (IRRI), the Institut de la Recherche Agronomique Tropicale (IRAT), the national programs in India, China, Taiwan and Sri Lanka. These materials have been screened and tested at appropriate sites under different ecological conditions with the objective of identifying high-yield potential in combination with resistance to blast, leaf scold, brown spot, lodging and cold. Results to date have identified several disease resistant varieties which out-yielded previously recommended varieties.

d. Rice Agronomy Program

Trials have included study of nitrogen response, nitrogen management (Urea vs Ammonium sulfate), phosphorus response, plant population density, the effect of incorporating the green algae Azolla, green manuring with Sesbania aculeata, seedling age effect, and weed management. Trials have also included evaluating the yield of sweet potato varieties which can be

incorporated into the rice farming systems. Results to date have proven that green manuring of transplanted rice with Sesbania aculeata can increase yield by up to 34% and Azolla incorporation can increase yield up to 10%.

e. Sorghum and Millet Program:

This program is conducted by the IRA-Maroua station in the Extreme North Province. Its primary objective is to select and breed suitable sorghum and millet varieties which are both high yielding and stable across a range of environments including a rainfall range of 400 to 1500 mm. Numerous sorghum materials from ICRISAT, Upper Volta, Nigeria, and the IRA collection of transplanted sorghum (Muskwari) were screened to identify lines for variety release or for a future hybridization program. The following criteria are being given major importance in selection: high yield potential; drought tolerance; short to medium plant stature; and resistance to striga, grain mold, leaf diseases and stem borers. The program is being conducted in close collaboration with the research program of the World Bank's Center-North project and the staff of SODECOTON. In addition, varieties are being developed for incorporation into the farming system of the IBRD/FAC supported rice project Societe d'Expansion et de Modernisation de la Riziculture de Yagoua (SEMRY) in northern Cameroon. The sorghum breeder is also conducting a program to study the intercropping of sorghum with photo-intensive erect cowpea cultivars in collaboration with the Bean/Cowpea CRSP and has started a sorghum hybridization program between two local varieties and thirteen selected exotic materials.

3. Develop and Operate a Testing and Liaison Unit (TLU) to Transmit Agronomic Research Results to Extension Agencies and Farmer's Problems to the Researchers

The TLU is located at IRA-Bamenda in the Northwest Province which covers 18,000 square kilometers and has a population of about one million inhabitants. Accomplishments include:

a. Training

Three two-week courses in methods of farming systems research were conducted for Ministry of Agriculture field demonstrators and parastatal extension agents. The total number of extension workers trained in 1982 and 1983 were 110. Training objectives were: (1) to familiarize the participants with basic principles

of food crop production; (2) to teach them how to work with farmers in extending improved methods of crop production; (3) to instruct them in carrying out basic socio-economic surveys; and (4) to train them in conducting on-farm demonstrations. At the end of the course the participants were given an improved variety of maize seed with instructions on setting out an on-farm maize demonstration as well as a questionnaire to collect preliminary information on population statistics, farming practices and names of key village contact persons. The TLU technical assistance team visits each of the participants in the field to observe the maize demonstrations and to collect the questionnaires. Thus far, the survey has provided useful information on local farming systems, cropping calendar, maize/rice crop rotation, land tenure, labor, livestock, credit, and extension services.

b. On-Farm Demonstrations and Trials

This activity has observed and measured the performance of improved maize varieties on farmers' fields in various areas, demonstrated the advantage of using improved varieties with or without fertilizer, identified constraints to increased maize production on village farms, and provided preliminary insights which will aid in the development of an on-farm research methodology to ultimately determine the recommendations to be extended to all farmers in a given area.

c. Economic Surveys

Several Marginal Rate of Return (MRR) analyses based on budget analysis of various varieties and fertilizer usages were performed. Growing an improved variety as opposed to a local maize showed a 125,000 FCFA increase in net benefit per hectare for those farmers who switched from production of the local variety without fertilizer to production of the improved variety using a moderate fertilizer rate. It was also determined that 63% of this increase was attributable to the influence of fertilizer on the improved variety. It is important to note that the fertilizer used (20-10-10) in obtaining these favorable results is not the most suitable but is presently the only type available to farmers through cooperatives. The availability of more suitable fertilizers should therefore increase yields even more.

4. Establish and Maintain Links and Information Exchange with International, African and Cameroonian Institutions Conducting Agronomic and Socio-Economic Research

The NCRE project is in constant contact with scientists from IITA, IRRI, CIMMYT, ICRISAT, and other international agricultural research centers. The leaders of the cereals improvement programs of these international agricultural centers have visited NCRE researchers and reviewed their individual programs. In addition, NCRE researchers visit almost annually the international research centers that deal with crops relevant to their individual research. During 1981 and 1982 the NCRE team held a workshop where agronomists, representatives from IITA, the World Bank, FAO, IRAT, and directors of parastatal organizations met for three days to discuss the results and work plan of the NCRE team. In January 1984 this workshop was transformed into a National Cereals Research Program Seminar at which NCRE researchers, their Cameroonian counterparts, and researchers sponsored by other donors presented the results of their efforts and discussed their individual research plans.

5. Adequate Physical Facilities and Equipment for Carrying Out the Cereals Research Program

The evaluation clearly points out that an insufficiency of supplies and field laboratory equipment is having a constraining influence on the NCRE researchers ability to effectively undertake their duties and responsibilities. Although IRA has made considerable effort to insure that proper facilities and equipment are available to researchers on the NCRE technical assistance team, most of the field locations report a lack of modern equipment to be the largest single constraint to their productive research output.

Common complaints among researchers are that available plant and soil testing equipment is old and outdated, and that the quantities of equipment on hand are not sufficient to permit them to perform at optimum levels of efficiency. The procurement plan for this project paper supplement (see Annex B) identifies the specific equipment needs to support project research activities and the procedures to avoid delays in delivery of the commodities to IRA/NCRE research sites in Cameroon. The problem of adequate physical facilities is also being addressed and a revised program for engineering and construction (see Annex D) will focus all available resources on providing the required physical facilities (i.e., laboratory-houses, office space, and residential quarters).

E. Coordination and Complementarity of the World Bank's National Agricultural Research Project with the NCRE Project

The GRC is in the process of negotiating with the World Bank a five-year project entitled, "Cameroon National Agricultural Research Program." The total cost of the project, including IBRD and GRC contributions, is 45.9 million dollars. Seventy five percent of the budget, or 34.4 million U.S. dollars, will be allocated to strengthen the managerial and administrative capabilities of IRA and its sister livestock research institute (IRZ) in conducting relevant research programs. The project will provide technical assistance in areas which are not covered by the NCRE project, i.e., research management, finance and accounting, biometrics, agronomy of root and tuber crops and horticulture, as well as provide additional complementary construction of houses, laboratories and office space at agricultural experiment stations. The project will establish a library/documentation center and a radio network as well as provide mini-computer installations and agro-meteorological instruments. Finally, the project will provide IRA with training programs for 9 Ph.D. and 20 M.Sc. degrees in areas corresponding to its technical assistance component.

The IBRD design team believes that the TLU concept is key to the success of all agricultural research endeavors. They agreed, however, that continuity and consistency of application in this concept is essential and therefore requested USAID to expand the role of TLU's under a second phase of the NCRE project rather than have a parallel effort in its own project. This collaborative design effort resulted in USAID/Cameroon's agreement to include three additional TLU's in different agroclimatic zones within NCRE Phase II. In fact the IBRD's loan agreement will have as a condition precedent the GRC's acceptance of these additional TLU's within the expanded NCRE project.

The IBRD project, designed in close collaboration with USAID/Cameroon, provides those complementary institution building elements absent in the NCRE project yet essential for the strengthening of IRA as an institutional entity.

IV. PROJECT DESCRIPTION OF PHASE II

Phase II of the National Cereals Research and Extension project (NCRE) will continue the development of Cameroon's institutional capacity to provide high-quality research on cereal crops and to facilitate transmission of research results to the farmer, toward the goal of increasing food production.

The five outputs, as stated in the original project paper will remain the same, but will be significantly augmented in order to ensure that institution building goals are achieved and that research programs are developed for all agroclimatic zones in Cameroon. Specific achievements for each of these outputs by the end of Phase II will be as follows:

A. Development of Cameroonian-Staffed Institutional Capacity for Research on Maize, Rice, Sorghum and Millet

Project experience during Phase I of the NCRE project has made it clear that the Cameroonian capacity to conduct research on maize, rice, sorghum, and millet can only be developed if Cameroonians hold Ph.D.s and have experience which parallels that of the expatriate researchers who they will replace. The original project paper called for an inadequate number of Cameroonians to be trained to the Ph.D. level and also allowed for only a brief period of overlap between the technical assistance team and the Cameroonian counterparts trained to the M.S. degree level. Although academic degrees are certainly a prerequisite to the conduct of sound and comprehensive research programs, such academic training must be closely followed by several years of field experience under the close supervision of veteran researchers.

To address this reality, the training and on-the-job plan provided by the NCRE second phase requires that Cameroonian counterparts work in the field with the technical assistance team for one year, undertake graduate training to the M.S. level, return to Cameroon for an additional one year work experience, return to the U.S. for additional training to the Ph.D. level, and then return to Cameroon to work for an additional three years under the guidance of a senior researcher before the departure of their expatriate counterpart. Since some Cameroonian counterparts have already obtained their Ph.D.'s and are presently working with the technical assistance team, and others are presently in the U.S. obtaining their graduate degrees at the M.S. level, it will be possible for some of the technical assistance team to depart as early as June 1986, while others will be required to remain in Cameroon as late as December 1994.

The following list summarizes long-term participant training requirements for the NCRE project activity:

Proposal for Additional Long-Term Participant Training

<u>Status</u>	<u>Degree</u>	<u>Subject</u>	<u>Location</u>
1. To be selected	M.S. & Ph.D.	Agr. Econ.	Yaounde
2. On-Board	Ph.D.	Ext. Agronomy	Yaounde
3. On-Board	M.S. & Ph.D.	Cereal Agronomy	Garoua
4. On-Board	M.S. & Ph.D.	Sorghum Breeding	Maroua
5. To be selected	M.S. & Ph.D.	Sorghum Agronomy	Maroua
6. On-Board	Ph.D.	Rice Breeding	Dschang
7. On-Board	Ph.D.	Rice Agronomy	Dschang
8. On-Board	Ph.D.	Maize Breeding	Bamenda
9. On-Board	M.S. & Ph.D.	Maize Agronomy	Bamenda
10. On-Board	M.S. & Ph.D.	Ag. Economics	Bamenda
11. On-Board	Ph.D.	Ext. Agronomy	Bamenda
12. To be selected	M.S. & Ph.D.	Ag. Economics	Ekona
13. On-Board	Ph.D.	Ext. Agronomy	Ekona
14. To be selected	M.S. & Ph.D.	Ag. Economics	Foumbot
15. To be selected	M.S. & Ph.D.	Ext. Agronomy	Foumbot

The total number of long-term participants during Phase I and Phase II of the project is fifteen. Nine of these participants will be obtaining both M.S. and Ph.D. Degrees and the remaining six will obtain Ph.D. Degrees only. Together with the two Ph.D.'s who are already on board, this will total 17 counterparts, complementing the IITA technical assistance team entirely (minus the Chief of Party and the Administrative Assistant).

By the end of Phase II, the Institute of Agronomic Research (IRA) will have developed the institutional capability to carry out research and advanced farmer field trials on maize, rice, sorghum, and millet, in keeping with the country's needs and to develop the necessary linkages to facilitate transmission of research results to farmers. As noted in the chart above, trained Cameroonians will be placed in all of the seven research stations of IRA, including Yaounde, Garoua, Maroua, Dschang, Bamenda, Ekona, and Foumbot, providing expertise for all the ecological zones of Cameroon.

B. Development and Implementation of Research Programs for Maize, Rice, Sorghum, and Millet, Including Field Trial Demonstration on Farmers' Fields

The objectives of the agronomic program will be to increase maize, rice, sorghum, and millet yields through developing improved varieties with disease and insect resistance adapted to the major ecological zones. The researchers will develop management practices to permit optimum performance of new varieties in terms of sustained yield and disease resistance. Maize and sorghum management practices will include interplanting and succession planting using legumes to increase nitrogen fixation. Root and tuber crops will also be worked into maize cropping systems. In the case of rice research, recommendations will include crop rotations. The researchers will develop packages of cultural and management practices for optimum maintenance of farm productivity and economic returns, and will test these packages of practices at the farm level.

Research programs for maize, rice, sorghum and millet will continue during Phase II of the NCRE project. Phase I has shown that the agronomic problems of cereal production in Cameroon are numerous and too complex to be addressed by the two agronomists currently working on the project, for the following reasons:

1. Variations in Cameroon's altitude, latitude, annual rainfall, distribution patterns and soils.
2. The variety of cropping practices such as mixed cropping, double cropping and multiple cropping superimposed with wide diversities in cultural practices such as land preparation, planting methods, weeding, disease and pest control, use of chemicals and fertilizers, and methods of harvesting.

To address these problems, Phase II of the NCRE project will provide three additional agronomists. These will include a maize agronomist in Yaounde, a maize agronomist in the Northwest Province, and a sorghum agronomist in the Extreme North Province. These agronomists will greatly enhance the research of the cereals breeders by determining appropriate planting methods, fertilizer needs, etc. They will also contribute to the extension efforts of the TLUs by conducting more demonstration and field trials and developing extension materials.

An additional six technicians will also be added to the original ten-man IITA team in order to pursue the research programs.

These will include three agricultural economists and three extension agronomists to work at the three additional TLUs as described in the following section.

When recruitment is complete, the NCRE/IITA technical assistance team will consist of the following personnel:

<u>Position</u>	<u>Location</u>	<u>Position Status</u>	<u>Termination Date</u>
1. Chief of Party	IRA-Yaounde	Continuing	December 1994
2. Project Admin	IRA-Yaounde	Continuing	September 1986
3. Maize Breeder	IRA-Yaounde	Continuing	March 1986
4. Maize Agronomist	IRA-Yaounde	New (1)	September 1987
5. Sr. Agr. Economist	IRA-Yaounde	New (2)	December 1994
6. Sr. Ext. Agronomist	IRA-Yaounde	New (3)	September 1990
7. Cereals Agronomist	IRA-Garoua	Continuing	March 1993
8. Sorghum Breeder	IRA-Maroua	Continuing	December 1994
9. Sorghum Agronomist	IRA-Maroua	New (4)	December 1994
10. Rice Breeder	IRA-Dschang	Continuing	September 1991
11. Rice Agronomist	IRA-Dschang	Continuing	March 1990
12. Maize Breeder	IRA-Bamenda	Continuing	September 1992
13. Maize Agronomist	IRA-Bamenda	New (5)	December 1994
14. Agriculture Econ.	IRA-Bamenda	Continuing	March 1993
15. Extension Agronom.	IRA-Bamenda	Continuing	September 1991
16. Agricultural Econ.	IRA-Ekona	New (6)	December 1994
17. Extension Agronom.	IRA-Ekona	New (7)	March 1991
18. Agricultural Econ.	IRA-Foumbot	New (8)	December 1994
19. Extension Agronom.	IRA-Foumbot	New (9)	December 1994

C. Develop and Operate Testing and Liaison Units (TLUs) to Transmit Agronomic Research Results to Extension Agents and Farmers' Problems to the Researchers

During the first two operational years (1982-83) of the NCRE project, one TLU was established in the predominantly maize

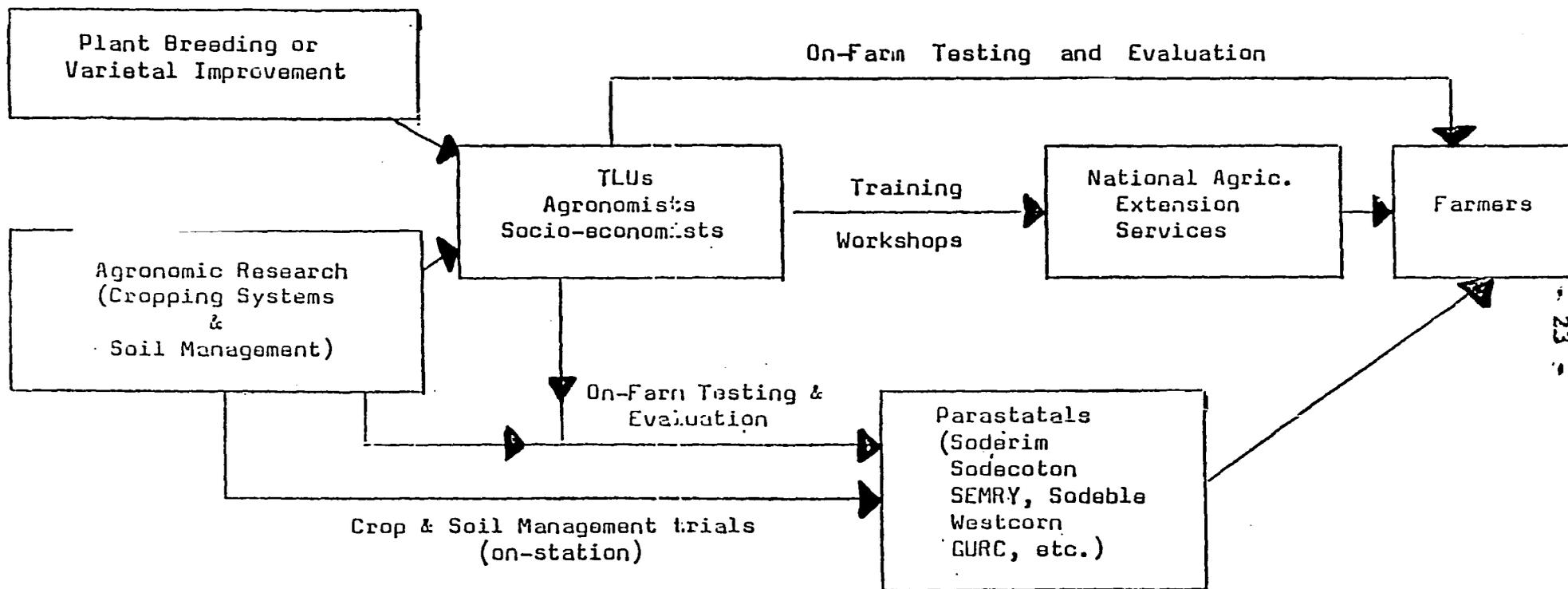
producing area of Cameroon's Northwest Highlands. This TLU consists of one NCRE Extension Agronomist and one Agricultural Economist, two IRA counterparts and several field assistants. The unit has undertaken a farming systems research approach to accomplish the following tasks: Agro-socio-economic surveys; on-farm trials; on-farm demonstrations of improved varieties and agronomic practices; and the training of extension agents from the Ministry of Agriculture and parastatals. The role of the TLU in establishing the linkages between research, extension and farmers is illustrated in the diagram on the following page.

Because of the clearly stated dependence of the IBRD project and IRA on the TLU concept to interface between researchers, extension workers and farmers, and for the concept to more effectively perform its function with a broader geographic coverage, three additional TLU's will be established in other agro-ecological zones, each staffed with an agronomist and an agricultural economist. The new areas are: (1) Yaounde, which represents the mid-altitude zone and derived savannah zone where farming systems are predominantly shifting cultivation of bush fallow with maize, groundnuts and root crops in mixed systems. (2) Ekona, which represents the low-altitude and humid forest zone, where major farming systems include tree crop plantations such as rubber and oil palm as well as a small-farm production system with maize, banana and root crops. This zone also has potential for the introduction of upland and irrigated rice which are being developed by the NCRE project for the Mbo Plains. (3) Foumbot, which represents the highly populated and intensive food-crop production areas in the Western Province.

These areas were specifically decided upon by USAID, the IBRD and IRA following the recommendations of the project evaluation team and are based on differences in agroclimatic zones, geographic coverage and farming system patterns.

Within the existing framework of the TLU strategy and rationale, certain activities will be augmented to further the attainment of goals and objectives identified in Phase I of the NCRE project activity. A special effort will be made to identify Extension Agronomist and/or Agricultural Economist with experience or expertise to effectively diagnose, identify and respond to social factors affecting farmer adoption under the farming systems research approach. If this particular expertise is not readily available from within the IITA technical assistance team, USAID/Cameroon will fill this gap by calling upon locally available anthropologists or sociologists on a short-term contractual arrangement to prepare special studies

Role of TLUs in Establishing Linkages Between Research, Extension and Farmers



and analyses during the implementation phase. Additionally, diagnostic farming-systems surveys will be introduced at selected project areas. These surveys will be jointly conducted by the TLU Extension Agronomists and Agricultural Economists. The surveys will include, but not be limited to:

1. description and analysis of the traditional cereals production systems in relation with other food and cash crops;
2. identification of agronomic constraints such as soil fertility, pests and diseases; and
3. assessment of the opportunities and limitations in existing farming systems. Factors to be considered will include availability of inputs, labor demand, marketing opportunities, etc.

TLU staff will also conduct on-farm testing and evaluation trials in consultation with NCRE and IRA researchers and IITA headquarters. The criteria for choosing variables and technological packages for on-farm trials will be based on the findings of the farming-systems surveys and the available technologies and practices.

D. Establish and Maintain Links and Exchange of International, African, and Cameroonian Institutions Conducting Agronomic and Socio-Economic Research

During Phase I of the project linkages with IITA, CIMMYT, IRRI, and other international research institutes were strengthened, by information sharing and by exchange visits. These linkages will be further strengthened during Phase II of the project. Cameroonian counterparts will be trained in how to utilize information from these institutes and also how to provide information from the Cameroonian research experience.

In addition, linkages within Cameroon with the university and other research institutes will be strengthened. As described in the Administrative Analysis Section of this Project Paper, the Institute of Agronomic Research (IRA) has been placed under the newly formed Ministry of Higher Education and Scientific Research, together with the universities. This reorganization will greatly facilitate an exchange of information and improved cooperation. Committees have already been created at the University Center at Dschang which include researchers from

IRA. These committees are charged with the selection of research protocols and for the creation of journals. Such close cooperation will prevent the possibility of duplication of research and will allow researchers to use each other's findings to further their own research.

E. Adequate Physical Facilities and Equipment for Carrying Out the Cereals Research Program

Phase II of the NCRE will fund the construction of 485m<sup>2</sup> of office space and seven seed laboratory/warehouses in order to facilitate the carrying out of the cereals research program. Field laboratory and research equipment, as listed in Annex C, Table 3 will also be provided.

V. AID AND GRC STRATEGY LINKAGES FOR NCRE - PHASE II

A. Relationship to AID Strategy

AID's Food Sector Assistance Strategy for Sub-Saharan Africa gives priority to planning and policy analysis, increasing farmer participation in decision making, and building institutions--research, training, extension--which provide appropriate technology, information, and inputs for increased productivity. One of the most important components of this strategy focuses on the necessity for AID to make a long-term commitment in building national agricultural research institutions by providing training and technical assistance as well as capital and operating cost support. The strategy statement emphasizes that the nature and magnitude of the task of building national agricultural research systems, and the time required to develop cooperative and complementary programs to produce useful production technologies, requires that external donor assistance be cast in a long-term framework of 10 to 20 years.

The NCRE program's emphasis on the firm development of IRA's institutional capacity to undertake quality adaptive research to meet small-farmer needs in Cameroon, particularly in the area of food crops, is in line with this strategy of long-term assistance to national research systems. This second phase of the project represents a recognition of the additional time and resources required for AID to be fully responsive to the true magnitude of the tasks to be performed and the long gestation period between investment in research and increases in production.

B. Relationship to Government of Cameroon's Cereals Strategy

The Government of Cameroon's Fifth Plan (1981-1986) acknowledges a strong commitment of resources for the continuation of on-going programs being conducted by IRA with emphasis on food crops. Quality agronomic and farming systems research have been identified as key factors in successful implementation of the country's long-term food production plan. The GRC has placed considerable emphasis on the distribution of multidisciplinary research units throughout the country with coverage of all standard climatic zones in the more densely populated provinces. Existing research units for cereals and food crops will be improved upon and expanded while new ones will be set up. Top priority has been assigned by the GRC to the search for more efficient and appropriate production techniques and the establishment of marketing channels so that national cereals production can be more competitive in the face of imports. GRC agricultural research priorities are right in line with AID's policy objectives and strategy to develop cooperative and complementary programs cast in a long-term assistance framework. The establishment of new TLUs and increased numbers of researchers planned for NCRE Phase II is supportive of and consistent with the GRC's strategy.

C. Relationship to the CDSS

The Fiscal Year 1984 CDSS pinpoints that at the core of Cameroon's emphasis on a balanced development strategy is a clear focus on the rural sector, and agriculture in particular. Consistent with this emphasis USAID/Cameroon agrees that the agricultural sector is key to unlocking the long-term development potential of Cameroon and that therein should lie the focus of its development resources.

In this context, AID is concentrating its assistance in those areas where the United States has special competencies and particular interests--helping Cameroon to increase food production. Heading the list of requirements to help increase food production in Cameroon is the necessity to develop improved crop varieties and techniques for different ecological zones. The NCRE project activity proposes to eliminate a major constraint to raising food production in Cameroon--the proper adaptation of agronomic research results and applied technology in the various agroclimatic zones in the country. This proposed second phase of the NCRE project reinforces USAID's commitment, as stated in the CDSS, to continue to assist the GRC develop its

important institutional entity responsible for carrying out food crop (specifically cereals) research and development activities, including the training of the staff necessary for the GRC to eventually independently continue these activities.

VI. PROJECT ANALYSES

A. Financial Summary

Total costs\* to extend the life of the NCRE project under a second phase as described above are estimated at \$64,472,000. AID will fund 60.6 percent and the GRC will fund 39.4 percent of the costs. The summary of costs related to the second phase of the project is shown below:

<u>USAID</u>	<u>Amount</u>	<u>Percent</u>
Grant Funds	35,422,000	55.0
Loan Funds	<u>3,605,000</u>	<u>5.6</u>
Sub-Totals	39,027,000	60.6
<u>GRC</u>		
Cash Costs	<u>25,445,000</u>	<u>39.4</u>
Totals	64,472,000	100.0

1. USAID Funds

a. Grant Funds: \$35,422,000

(1) Technical Assistance: \$14,256,000

AID will fund 140.25 person years of long-term technical assistance in Cameroon (see Annex C, Table 1). The total long-term personnel costs are \$9,411,000 without allowing for inflation. This includes salaries, allowances, in-country and international travel costs, vehicle support and contract overhead costs. Salaries are calculated at a rate of \$6,000 per month of long-term personnel, \$1,101,000 is allocated for

---

\*All costs are given at January 1984 prices. A conversion factor of CFAF 350=\$1.00 has been used throughout.

vehicle operating costs over the life of the project, and \$1,419,000 for international and in-country travel of long-term personnel.

AID will also fund 20 person-months of short-term technical assistance at an estimated cost of \$205,000 and 16 work months for evaluations in FY 86, FY 89, FY 92 and FY 95 at an average cost of \$50,000 for each evaluation (4 person-months).

(2) Training: \$2,303,000

AID will fund training in the United States for 15 participants for combined M.S. and Ph.D. degrees at an estimated cost of \$1,251,000 (see Annex C, Table 2). \$504,000 is also budgeted to fund short-term training for technicians mainly in third-countries, and \$548,000 for in-country refresher and farming systems courses which will be offered by the Testing and Liaison Units to the Ministry of Agriculture and parastatal field extension workers. Each year approximately 400 extension workers will attend those courses for a period of two weeks.

(3) Commodities: \$2,026,000

USAID will fund vehicles, office furniture and equipment, furnishings and appliances, field laboratory and research equipment. See Annex C, Table 3 for a detailed description and cost break-down. Also, refer to Annex B for a detailed procurement plan and waiver requirements.

(4) Other Costs: \$3,732,000

Funding in the amount of \$657,000 is to be provided to cover about one third of the research costs. AID will also pay for the local costs of pre-extension operations and agro-socio economic surveys (\$696,000) to be conducted by the TLUs. Some locally-hired support staff (administrative personnel, drivers, secretaries) will be funded at an anticipated cost of \$460,000. A provision of \$1,653,000 is included to rent houses during the first two years of the project extension until completion of construction activities, and to maintain existing and new houses.

(5) Contingency: \$2,332,000

The provision for contingencies is 10% of above costs.

(6) Inflation: \$10,823,000

The inflation factor has been computed at 8 percent for the foreign exchange component of costs, and at 12% for the local currency component. The higher rate for the latter component reflects the assumption that Cameroon's inflation will remain higher than international inflation. Cameroon's internal inflation rate is expected to remain in the vicinity of 15% during the next few years. However, over a ten-year period it has been considered that a 12% rate is, on average, a realistic figure.

b. Loan Funds: \$3,605,000

(1) Construction Costs: \$2,666,000

USAID will fund the construction of 12 houses, 485 m<sup>2</sup> of office space and 7 seed laboratory/warehouses. Of the total costs, \$242,000 is allocated to A and E services and supervision control, and \$2,424,000 to actual construction costs (see Annex D).

(2) Contingency: \$667,000

The provision for contingencies is 25 percent of above costs.

(3) Inflation: \$272,000

Inflation is computed at 12 percent and compounded annually.

2. GRC Funds

a. Costs: \$25,445,000

(1) Personnel: \$6,656,000

Personnel costs include salaries/benefits of participants, incumbents of current positions, and project-created positions. The GRC will assign counterparts and support personnel to the new TA for an estimated total cost of \$2,821,000 (see Annex C, Table 4).

(2) Commodities: \$1,060,000

The GRC will purchase nine vehicles for the project and replace them every three years. This represents 30 vehicles for a total cost of \$340,000. The GRC will also supply office furniture and

some research and field equipment (\$720,000), including one irrigation system at Bambui in FY 1986 and seven tractors in FY 1990.

(3) Other Costs: \$5,971,000

The GRC will fund \$2,158,000 of research costs. This includes the purchase of fertilizers, pesticides and other research materials and in-country and international travel costs for the Cameroonian staff. It will provide a lodging allowance for each counterpart and finance maintenance costs of the houses built by AID when they are turned over to the GRC after the departure of the IITA advisors (\$398,000). The GRC will also pay for all operating costs of existing and new offices and seed laboratory-houses (\$685,000), including maintenance costs of equipment as well as vehicles support costs and office supply for counterparts (see Annex C, Table 5). The cost of transporting imported commodities from the port of Douala to project sites will be borne by the GRC (\$35,000).

(4) Inflation: \$11,849,000

Inflation is computed at 12 percent and compounded annually.

Table A.1

Summary Cost Estimate and Financial Plan  
(\$000)

	<u>USAID</u>		<u>LOAN FUNDS</u>		<u>GRC</u>		<u>TOTAL</u>	
	<u>GRANT FUNDS</u>		<u>FX</u>	<u>LC</u>	<u>FX</u>	<u>LC</u>	<u>FX</u>	<u>LC</u>
	<u>FX</u>	<u>LC</u>						
Technical								
Assistance	12,403	1,853	--	--	--		12,403	1,853
Training	1,755	548	--	--	--		1,755	548
Commodities	1,173	853	--	--	--		1,173	853
Other Costs	--	3,732	--	--	--		--	3,732
Construction	--	--	--	2,666	--		--	2,666
Cash Costs	--	--	--	--	--	13,596	--	13,596
Subtotal	15,331	6,986	--	2,666	--	13,596	15,331	23,248
Contingency	1,533	699	--	667	--	--	1,533	1,366
Inflation	5,833	4,713	--	272	--	11,849	5,833	16,834
Evaluations	327	--	--	--	--		327	--
Total								
Project Costs	23,024	12,398	--	3,605	--	25,445	23,024	41,448

Table A.2  
 USAID EXPENDITURES BY FISCAL YEAR - GRANT FUNDED  
 (\$000)

	FY 85 1/1/85 9/30/85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95 10/1/94 12/31/94	TOTAL
<u>TECHNICAL ASSISTANCE</u>												
. Long Term Advisory Services												
- Salaries and Allowances	339	1,332	1,224	1,152	1,152	1,116	972	792	612	576	144	9,411
- In Country and Inter- national Travel	51	201	185	174	174	168	146	119	92	87	22	1,419
- Vehicle Support	38	158	141	133	133	133	116	91	75	66	17	1,101
. Short Term TA	16	21	21	21	21	21	21	21	21	21	-	205
. Evaluation Team	-	50	-	-	50	-	-	50	-	-	50	200
. Contract Overhead Costs	67	263	244	230	233	227	201	166	133	128	28	1,920
<b>TOTAL Technical Assistance</b>	<b>511</b>	<b>2,025</b>	<b>1,815</b>	<b>1,710</b>	<b>1,763</b>	<b>1,665</b>	<b>1,456</b>	<b>1,239</b>	<b>933</b>	<b>878</b>	<b>261</b>	<b>14,256</b>
<u>PARTICIPANT TRAINING COSTS</u>												
. Long Term, United States	-	286	297	121	209	176	151	11	-	-	-	1,251
. Short Term, Third Country	19	25	35	35	55	55	65	65	75	75	-	504
. Short Term In-Country Training (TLU's)	35	57	57	57	57	57	57	57	57	57	-	548
<b>TOTAL Participant Training</b>	<b>54</b>	<b>368</b>	<b>389</b>	<b>213</b>	<b>321</b>	<b>288</b>	<b>273</b>	<b>133</b>	<b>132</b>	<b>132</b>	<b>-</b>	<b>2,303</b>

Table A.2 (Cont'd)

	FY 85 1/1/85 9/30/85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95 10/1/94 12/31/94	TOTAL
<u>COMMODITIES</u>												
. Vehicles	108	-	-	190	-	-	164	-	-	92	-	554
. Furnishing/Appliances	186	145	-	-	-	124	65	-	-	-	-	517
. Office Furniture/Equipment	130	-	-	53	-	78	-	-	37	-	-	298
. Field, Laboratory and Research Equipment	519	15	15	15	15	15	15	15	15	15	3	657
<b>TOTAL Commodities</b>	<b>943</b>	<b>160</b>	<b>15</b>	<b>258</b>	<b>15</b>	<b>217</b>	<b>241</b>	<b>15</b>	<b>52</b>	<b>107</b>	<b>3</b>	<b>2,026</b>
<u>OTHER COSTS</u>												
. Research Costs	67	82	80	75	75	73	66	52	40	38	9	657
. Extension Costs (TLU's)	45	72	72	72	72	72	72	72	72	72	3	696
. Local Salaries	35	46	46	46	46	46	46	46	46	46	11	460
. Office Supplies	27	35	32	30	30	30	26	21	16	15	4	266
. Rental Housing and Maintenance	258	324	192	153	153	153	134	105	86	76	19	1,653
<b>TOTAL Other Costs</b>	<b>432</b>	<b>559</b>	<b>422</b>	<b>376</b>	<b>376</b>	<b>374</b>	<b>344</b>	<b>296</b>	<b>260</b>	<b>247</b>	<b>46</b>	<b>3,732</b>
<b>SUB-TOTAL</b>	<b>1,940</b>	<b>3,112</b>	<b>2,641</b>	<b>2,557</b>	<b>2,475</b>	<b>2,544</b>	<b>2,314</b>	<b>1,683</b>	<b>1,377</b>	<b>1,364</b>	<b>310</b>	<b>22,317</b>
<u>CONTINGENCY</u>	300	306	264	261	243	254	236	163	138	136	31	2,232
<u>INFLATION</u>	-	281	503	809	1,015	1,409	1,720	1,422	1,475	1,761	428	10,546
<u>EVALUATION</u>	-	75	-	-	75	-	-	100	-	-	77	327
<b><u>TOTAL PROJECT COSTS</u></b>	<b>2,240</b>	<b>3,699</b>	<b>3,408</b>	<b>3,627</b>	<b>3,733</b>	<b>4,207</b>	<b>4,270</b>	<b>3,268</b>	<b>2,990</b>	<b>3,261</b>	<b>769</b>	<b>35,422</b>

Table A.3  
 USAID EXPENDITURES BY FISCAL YEAR - LOAN FUNDED  
 (\$000)

	FY 85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	TOTAL
<u>CONSTRUCTION COSTS</u>												
A/E Design and Supervision												
Control	123	83	36	-	-	-	-	-	-	-	-	242
Construction Costs	726	1,334	364	-	-	-	-	-	-	-	-	2,424
Subtotal	849	1,417	400	-	-	-	-	-	-	-	-	2,666
Contingency (25%)	212	355	100	-	-	-	-	-	-	-	-	667
Inflation (12% compounded)	-	170	102	-	-	-	-	-	-	-	-	272
TOTAL EXPENDITURES	1,061	1,942	602	-	-	-	-	-	-	-	-	3,605

Table A.4  
GRC EXPENDITURES BY FISCAL YEAR  
(\$000)

	FY 85 1/1/85 9/30/85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95 10/1/94 12/31/94	TOTAL
<u>SALARIES</u>												
Senior Personnel	154	206	206	206	206	206	206	270	270	270	68	2,268
Support Personnel	322	430	430	430	430	430	430	430	430	430	105	4,297
TOTAL Personnel	476	636	636	636	636	636	636	700	700	700	173	6,565
<u>COMMODITIES</u>												
Vehicles	34	34	34	34	34	34	34	34	34	34	-	340
Office Furniture	49	-	-	-	-	54	-	-	-	-	-	103
Field and Research Equipment	-	75	25	25	25	361	25	25	25	25	6	617
TOTAL Commodities	83	109	59	59	59	449	59	59	59	59	6	1,060
<u>OTHER COSTS</u>												
Research Costs	154	173	170	222	196	199	212	254	257	257	64	2,158
Rental Housing & Maintenance	19	9	13	32	25	25	38	64	74	79	20	398
Office Supply and Support of Services	143	238	273	270	271	275	287	288	288	288	74	2,695
Operating Costs: Buildings	18	24	78	78	78	78	78	78	78	78	19	685
In-Country Transport of Commodities	23	-	-	6	-	-	-	-	6	-	-	35
TOTAL Other Costs	357	444	534	608	570	577	615	684	703	702	177	5,971
Subtotal	916	1,189	1,229	1,303	1,265	1,662	1,310	1,443	1,462	1,461	356	13,596
<u>INFLATION</u>	-	143	313	525	726	1,618	1,276	1,747	2,158	2,590	750	11,849
<u>TOTAL GRC Contribution</u>	916	1,332	1,542	1,831	1,991	2,380	2,586	3,190	3,620	4,051	1,106	25,445

TABLE A.5

COST OF PROJECT INPUTS/OUTPUTS  
(\$000)

INPUTS	OUTPUTS					TOTAL	Percentage of total Project
	No. 1	No. 2	No. 3	No. 4	No. 5		
<u>USAID GRANT FUNDS</u>							
Technical Assistance	-	6,034	6,743	2,116	170	15,062	23.1
Participant training costs	1,755	-	548	-	-	2,303	3.5
Commodities	-	584	686	99	657	2,026	3.1
Other Costs	-	1,609	1,746	115	262	3,732	5.7
Contingency	176	822	972	233	109	2,312	3.6
Inflation	650	4,036	4,909	764	357	10,716	16.4
TOTAL	2,581	13,085	15,603	3,327	1,555	36,151	55.4
<u>USAID LOAN FUNDS</u>							
A/E Design and Supervision Control	-	-	105	-	137	242	0.4
Construction	-	-	1,050	-	1,374	2,424	3.8
Contingency	-	-	289	-	378	667	1.0
Inflation	-	-	118	-	154	272	0.4
TOTAL	-	-	1,562	-	2,043	3,605	5.6
<u>GRC FUNDS</u>							
Personnel	2,135	2,712	1,585	133	-	6,565	10.1
Commodities	-	197	209	37	617	1,060	1.6
Other Costs	-	3,518	2,051	367	35	5,971	9.1
Inflation	1,896	5,569	3,318	474	592	11,849	18.2
TOTAL	4,031	11,996	7,163	1,011	1,244	25,445	39.0
TOTAL PROJECT INPUTS	6,612	25,081	24,328	4,338	4,842	65,201	100.0
Percentage of Total Project	10.1	38.5	37.3	6.7	7.4	100.0	

- No. 1. Development of Cameroonian-Staffed Institutional Capacity.  
 No. 2. Development and Implementation of Research Programs for Maize, Rice, Sorghum and Millet.  
 No. 3. Establishment of Testing and Liaison Units and their costs.  
 No. 4. Coordination of Research Programs and Exchange of Information.  
 No. 5. Adequate Physical Facilities and Equipment for Carrying Out the Cereals Research Program.

\*Does not include \$327,000 for Project Evaluations.

## B. Financial and Recurrent Cost Analysis

### 1. Identification of the Recurrent Expenditure Implications

Table B.1 and Annex C detail new costs generated by the project which must be financed by the GRC. Almost all these costs will be of a recurring nature. As shown in Table B.1, annual recurring costs to the GRC engendered by the project will more than double between 1985 and 1995. This will represent an increase of \$740,000 (without allowing for inflation) or about 6% of total 1983/84 agricultural research expenditure. This increase is attributed to the hiring of additional researchers and support staff, the operating costs of buildings constructed for the project, the maintenance costs of equipment, and other costs of expanded project activities. After USAID's withdrawal, the GRC will take over support and replacement costs of all project equipment as well as the TLUs pre-extension activity costs resulting in an increase in annual recurring costs of an additional \$389,000 in constant dollars or 3.0% of total 1983/84 research expenditure. In total, the second phase project will therefore engender an increase of 9% in total research expenditures.

### 2. Assessment of the GRC's Ability to Meet Recurrent Costs

Cameroon's recent economic history displays a record of steady economic growth. Increasing petroleum revenues, a diversified agricultural sector, and large investments in development projects combined with continuous political stability and cautious fiscal policies, have enabled it to maintain a five to six percent GDP rate of growth in recent years. Cameroon also has a relatively good balance of payments position and its debt service ratio, which is estimated to have risen in the neighborhood of 15 percent in 1982, is still modest by international standards and at a level which Cameroon can easily absorb. The Government's budgetary revenues have increased significantly in recent years (32.8% in 1982/83 and 26.8% in 1983/84) and have been generated entirely from domestic resources. This no doubt reflects in part the budgetization of a portion of Cameroon's oil revenues. This growth in public revenue is expected to continue during the life of the project's second phase.

### 3. GRC Commitment to the Project

Agriculture remains the focus of the current Fifth Five-Year Development Plan (1981-1986). Cameroon is more than cognizant

of the transient, non-renewable nature of its petroleum resources and the concomitant necessity for its development to be firmly based on the agricultural sector and the industrial sub-sectors which other natural resources can competitively sustain (FY 1984, Cameroon CDSS). Oil revenues are expected to dwindle by the mid-1990s at which time agriculture and related industry are expected to again become the main source of growth. In the Fifth Plan, the Government acknowledges that: "A considerable effort is necessary to accelerate the development of agronomic research which is also a prerequisite for greater progress in agriculture." In fact, the budget of the Institute of Agronomic Research (IRA) has risen very rapidly in recent years and doubled from 1981/82 to 1983/84 to reach a total of \$12.7 million.

Since the execution of the NCRE (Phase I) original Project Agreement, the GRC has not defaulted on its commitments to the project. It has even exceeded the support stipulated. Indeed, the 1983/84 allocation of researchers and operating funds among agronomic research programs at IRA indicates that the cereals program is now one of the most important within the institution. Before the inception of the project, the emphasis was on estate and cash crops. The TLU in Bambui has proven to be successful and the government has formally requested the establishment of three additional units. The costs to be generated by an extension of the project have been thoroughly reviewed and accepted by the GRC officials. They are also aware of the fact that the proposed World Bank's Cameroon National Agricultural Research project will generate an additional 35% increase in total 1983/84 agricultural research expenditure, eight years after project inception. This illustrates the GRC's strong willingness to comply with the Fifth Five-Year Plan's objectives in agricultural research.

#### 4. Conclusion

In view of the high priority assigned to food-crop research, the continuing growth of the economy, the present GRC commitment to the project, and the GRC's historical track record in honoring its commitments, it can be safely assumed that additional recurrent and non-recurrent costs to be generated by the project's second phase can and will be absorbed by the government.

Table B.1

GRC PROJECT GENERATED RECURRENT COSTS  
AVERAGE PER YEAR  
(\$000)

	FROM 1981 - 1985	FROM 1985- 1995	AFTER USAID WITHDRAWAL
PERSONNEL	364	668	694
BUILDING AND HOUSES OPERATING COSTS	24	112	195
OFFICE SUPPLY AND SUPPORT OF SERVICES COSTS (1)	101	352 (2)	446 (2)
RESEARCH COSTS	118	215	272
OTHERS	-	-	129 (3)
TOTAL	607	1,347	1,736

- 
- (1) Includes operating costs of vehicles, laboratory, field and office equipment.
- (2) Includes depreciation which is not a cash expense, but is budgeted to provide for replacement of vehicles and equipment.
- (3) Mainly TLUs' pre-extension activities.

### C. Economic Analysis

#### 1. Cost-Benefit Stream and Rate of Return

The economic analysis of agricultural and rural development projects in areas such as agricultural research presents special problems, especially when the objective is to make ex ante analyses as a means of guiding investment decisions. An important inherent difficulty is in knowing how to predict when an insight or discovery will occur, if it will occur, and the time-lag between the development of such technology and its adoption. In order to properly estimate the rate of return of research, one also has to take into consideration the complementary technical inputs and the related marketing and extension costs incurred in order to realize the productivity gains resulting from adoption of the new technology. Phase I of the NCRE project provides very little information on those aspects since it has been in operation for only two full years. It is clearly too short a period of time to see gains in terms of production increases emerging from the project. Agricultural research investment takes longer to produce beneficial results than do other avenues of investment. The World Bank and other donors increasingly recognize that a time lag of perhaps a decade is needed between the beginning of research efforts and significant application of proven technology. Results from similar research projects are unavailable for extrapolation since virtually no attempts have been made thus far to estimate the rate of return to agricultural research in Cameroon.

However, as mentioned in the PP document for Phase I (see Section III/1 and Annex H), many studies made from an ex-post perspective to assess the role of agricultural research in economic development and to determine whether investments in such activities are economically viable, confirm that carefully implemented agricultural projects can be an efficient source of economic growth. Since most of those studies have been conducted in developed countries (mainly the U.S.) or in developing countries where institutions, social and agroclimatic environments are different from Cameroon, the conclusions reached cannot necessarily be transposed to Cameroon. However, the studies do tell a consistent story: realized rates of return are much higher and are generally two or three times greater than likely returns from alternative investment opportunities in the countries concerned. Economic returns to research activities in general typically exceed 20% a year and frequently are greater than 40%.

In view of the analysis problems mentioned above, it has not been deemed practical to attempt a refined calculation of the NCRE project's rate of return. However, in order to provide some basis for determining the project's worth, the following approach has been used:

- Assessment of project outputs in terms of potential economic gains.
- Estimation of the benefit stream required to justify the investment in the project.
- Judgment on the feasibility of achieving the required benefit stream.
- Qualitative evaluation of benefits less easily measured.

a. Assessment of Project Outputs in Terms of Potential Economic Gains

At the moment, it certainly appears that significant economic gains are to be expected from this project if long-term sustained efforts are followed. Considerable unfilled potential for maize, millet, sorghum and rice production still exists in Cameroon. Yields of maize are about one ton per hectare and sorghum and millet yields in the North average 800 kg per hectare. The NCRE researchers consider that with improved seed varieties, improved cultural practices and fertilization, maize yields of between 2.0 and 2.5 tons per hectare and sorghum and millet yields of 1.2 ton are obtainable with a relatively modest increase in production costs. Maize yields as high as 4.4 tons per hectare and sorghum yields of 6 tons per hectare have even been obtained from the results of on-farm demonstrations. At the present time, Cameroon is self-sufficient in maize and sorghum/millet production, with the equilibrium for each of the two crops being at about 400,000 tons per year. However, Cameroon is expected to move to a position of significantly greater demand by the end of the century. This will be complicated by the growth in urban population and the declining and aging rural population due to rural-urban migration. Maintaining full self-sufficiency for maize is predicted to require increases in yields and/or area cultivated, adding about 25% to the output of small-scale farmers and about 7% for sorghum and millet by the year 2000. The realization of additional production gains would leave a margin for exports to neighboring countries.

Rice consumption is projected to rise significantly from about 80,000 tons in 1983 to about 200,000 tons by the year 2000. The Government does not have a clear program for attaining self-sufficiency in rice production but feels that continuing and even expanding rice production would serve a number of goals. Domestic production (60,000 tons) is derived mainly from a large-scale parastatal enterprise, SEMRY, in the north. Recent evidence has shown, however, that northern rice production is not economically competitive with imports in the main consumption centers in the south. The NCRE project is working in collaboration with smaller-scale parastatal enterprises to develop suitable varieties in Southern Zones. Yields are presently about 4 tons per hectare and future yields of about 6 to 7 tons per hectare are considered obtainable. Nevertheless, a considerable amount of basic research remains to be done in identifying appropriate varieties. Although uncertainty is high, such research may ultimately have the highest pay-off to Cameroon's society and economy. This is a challenge that donors must accept when decisions are required for research project investments.

The Testing and Liaison Unit (TU) of the project addresses the problems of communication that exist between research, extension services and the farmers. The mechanisms of technology transfer to the farmers have unfortunately often been weak or inefficient in developing countries so that it becomes even more important for researchers to participate actively in the transfer process. The established TLU concept has already proven to be really successful in this aspect and has played a leading role in recognizing farmers' problems and the constraints inhibiting increased production. In view of these considerations, it can be safely assumed that the TLU component of the project's second phase will have a high economic pay-off. More TLUs will facilitate the adaptation of new technologies to the small farmers' needs and speed its transfer to them, resulting in increased productivity and incomes.

b. Estimation of the Benefit Stream Required to Justify the Investment in the Project

For the purpose of this analysis it has been assumed that the benefits will be mainly in increments to maize, sorghum, millet and rice production. They are the most dramatic of possible impacts of investments in agricultural research and also the one most easily measured. All the project and related costs have been identified, including the AID contribution, the GRC contribution, the recurrent costs to the GRC as a direct result

of the project, and incremental on-farm costs which will have to be incurred as a result of the adoption of the new technology. The first three categories of costs were presented in the financial section of this paper (see Tables A.1 to A.5). The incremental on-farm costs include mainly improved seeds costs, fertilizers at a non-subsidized price and labor costs. The period considered is 1981 to 2005. The costs exclude inflation since there is no reason to believe relative prices of outputs and inputs are likely to change. The present value of these costs have been calculated at a discount rate of 12% which reflects Cameroon's opportunity cost of capital (see Table C.1). Finally, different assumptions have been made to determine the incremental rate of production growth required to produce a present value of benefits equal to the present value of these costs.

Based upon a simulation of variously possible benefit streams, and employing moderate assumptions concerning the likely range of values obtainable from production benefits, the project should produce an acceptable rate of return under the following assumptions:

- . Significant gains in terms of production increases in maize, sorghum, millet and rice will start to emerge a decade after project inception.
- . From 1990 to 1995, 10% of areas under maize cultivation will be grown with new varieties and improved technology and increase to 17% between 1995 and 2005. Maize yields will increase from 1 ton per hectare to 2.3 tons per hectare as a result of the adoption of the new technology.
- . From 1990 to 1995, 5% of the areas under sorghum and millet cultivation will be grown with new varieties and improved technology and 12% between 1995 and 2005. Sorghum/millet yields will increase from 800 kg to 1.2 tons per hectare as the result of the improved technology.
- . The project will generate an annual increase in domestic rice production of 9,600 tons between the years 1990 and 2005.

Other possible combinations of production gains could certainly lead to comparable benefits. However, sensitivity analyses have shown that the required gains remain within the same conservative range.

c. Judgment on the Feasibility of Achieving  
the Required Benefit Stream

The increases in maize, rice, sorghum and millet production that are necessary to generate an internal rate of return that is at least equal to the opportunity cost of capital in Cameroon are very modest and obtainable given the unfilled production potentials identified above. Without doubt, production gains will in fact be much more important (see PP, Section 8-9). Part of the additional gains could be attributed to complementary technical inputs and related marketing and extension costs incurred in realizing the productivity gains. Nonetheless, the project itself will have generated the necessary technology to be disseminated. Extension cannot be effective unless there are profitable research findings to extend. Moreover, the assumptions set out above do not take into consideration the fact that the TLUs will also contribute to increases in production of other food crops. Although the TLUs will be cereals oriented, they will also participate in the dissemination of other food-crop research results. It therefore can be assumed that returns to the project will be acceptable and may even exceed Cameroon's opportunity cost of capital.

During future project evaluations, the Mission will be in a better position to measure the project's contribution to productivity increases for maize, rice, sorghum and millet production in Cameroon after improved technology becomes progressively more available for dissemination to the farmers. With this view in mind, the NCRE project is presently in the process of conducting a complete survey for the four basic crops in order to establish accurate benchmarks.

The major risk is that the adoption rate will not be as high as expected. The TLUs will certainly contribute to the minimization of this risk. It is nevertheless important to note that project such as this creates the necessary but not sufficient conditions for realization of the economic benefits ascribed to the project. Many of the factors leading to such gains are not within the project's control. Farmers will adopt new technologies only if they perceive that it is in their economic interest to do so, and if the necessary support services are adequate. While official pricing exists for trade crops, the prices of food crops are set by market forces. Evidence from the Fourth Five-Year Plan shows that production targets were more satisfactorily met for the latter crops. It appears that price formation was efficient and that agriculture was able to respond to growing demand within the existing

technological constraints. Based on past experience it can be assumed that market determined incentive prices for the NCRE crops will remain in force. On the other hand, there still exists a general lack of access to production inputs for food crops, while subsidized inputs are available for cash crops. The GRC is presently considering a program for the phased reduction of subsidies on those inputs, and is rethinking present policy on input procurement and distribution. This policy direction will be encouraged by the Mission and will be a covenant in the amended project agreement.

d. Qualitative Evaluation of Benefits Less Easily Measured

Other socio-economic benefits less easily measured than production gains should also be generated by the project. They should grow out of: (a) effects on income distribution between producers and consumers; (b) effects on employment and nutrition, (c) development of IRA institutional capacity.

Being traditionally produced, maize, sorghum and millet have been and are projected to continue to be produced and consumed by large numbers of people. Increases in production and productivity will therefore have wide-spread benefits for both producers and consumers, and promote social and economic equity. As new technology tends to lower unit costs of production, net incomes of adopting producers can be expected to rise. The net return per man-day of work in cultivating a hectare of maize with improved varieties and cultural practices can be increased by as much as three times compared to that obtained with local varieties and traditional practices. These gains from new technology will in turn accrue to those who consume the commodity. Particularly for commodities such as millet or sorghum which tend to have a low elasticity of demand, any significant increase in output will lower the real price. Since low-income groups spend a larger fraction of their budget on food than do high-income groups, lower sorghum and millet prices will confer disproportionately higher benefits to the poor. Studies by the IBRD and other development specialists also show that the adoption of new technology may have a positive impact on off-farm employment by creating increased demand for non-farm products by the producer. Additionally, the total availability of proteins and calories will very likely have exceeded that which would have prevailed in the absence of high-yielding varieties.

In addition to these general benefits, the project will substantially increase the technical skill level of those

Cameroonian scientists and technicians engaged in cereals research and pre-extension activities. When the NCRE project initially began, there were no Cameroonian researchers for sorghum and millet, only five for maize and two for rice. The number of researchers has now doubled and additional positions will be added. They will receive advanced degree training followed by several years of field experience under the close supervision of researchers. This should enable Cameroonian researchers to successfully continue research activities without assistance after the project will phase out. The development of this research capability is a factor that can not realistically be factored into the long-term rate of return equation but could be one of the most important project contributions.

## 2. Project Alternatives

Cost-effectiveness discussions are useful in assessing alternative ways in which resources could be expended and to evaluate the relative effectiveness of these expenditures in terms of the stated sector goals of increasing agricultural production and rural development. The main opportunity for achieving the project's goal appears to be an investment to strengthen the agricultural extension system for food crops. Evidence suggests that returns on research are sensitive to the time-lag between the development technology and its adoption, a factor that highlights the need to strengthen a country's extension service as its research capabilities expand. Even if some efforts have been made to improve the quality and quantity of Cameroon's extension services, mainly through parastatal organizations which are playing an increasingly active role in food crop production, extension services remain very fragmented and performance is highly variable. In those areas where the Ministry of Agriculture still has responsibility for food crop extension programs, the local agents are generally poorly equipped, underfunded, and still without any food-crop technical packages to extend. Less is known of the returns to investment in agriculture extension but returns to newer extension approaches, such as the Training and Visit System appear to be attractive. Extension is a critical area for involvement and the Mission intends to undertake an initiative in this sub-sector in the near future. Nevertheless, the potential development contribution of research is presently higher and of greater priority. The role of extension will become more important after research has produced the cost-reducing innovations and increased production packages to extend. The NCRE project is therefore the most logical sequence of actions in approaching the sector goal.

TABLE C.1

COST/BENEFIT ANALYSIS OF WORE PROJECT  
(\$000)

	FY79-FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
<b>I. COSTS</b>												
<b>A. USAID</b>												
Technical Assistance <sup>1</sup>	434	1,078	1,584	1,052	1,811	1,975	1,815	1,760	1,713	1,665	1,506	1,189
Participant Training	62	127	96	234	292	368	389	213	321	283	273	133
Construction	398	56	33	34	549	1,417	400	-	-	-	-	-
Commodities	-	61	239	509	943	160	15	258	15	217	241	15
Other Costs	48	38	56	10	432	559	422	376	375	374	344	295
Contingency	-	-	-	-	512	661	364	261	243	254	236	163
<b>TOTAL USAID</b>	<b>942</b>	<b>1,360</b>	<b>2,018</b>	<b>1,839</b>	<b>4,639</b>	<b>5,140</b>	<b>3,405</b>	<b>2,858</b>	<b>2,663</b>	<b>2,792</b>	<b>2,600</b>	<b>1,796</b>
<b>B. GRC - PROJECT AND RECURRENT COSTS</b>	<b>4,846</b>	<b>689</b>	<b>689</b>	<b>607</b>	<b>1,074</b>	<b>1,189</b>	<b>1,229</b>	<b>1,303</b>	<b>1,265</b>	<b>1,662</b>	<b>1,310</b>	<b>1,413</b>
<b>C. INCREMENTAL ON-FARM COSTS<sup>2</sup></b>	<b>-</b>	<b>8,100</b>	<b>8,100</b>	<b>8,100</b>								
<b>TOTAL COSTS</b>	<b>5,788</b>	<b>2,049</b>	<b>2,707</b>	<b>2,446</b>	<b>5,913</b>	<b>6,329</b>	<b>4,634</b>	<b>4,171</b>	<b>3,933</b>	<b>12,560</b>	<b>12,010</b>	<b>11,309</b>
<b>II. ESTIMATED BENEFITS<sup>3</sup></b>	<b>-</b>	<b>17,000</b>	<b>17,000</b>	<b>17,000</b>								

	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
<b>I. COSTS</b>													
<b>A. USAID</b>													
Technical Assistance <sup>1</sup>	933	878	261	-	-	-	-	-	-	-	-	-	-
Participant Training	132	132	-	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-	-	-	-
Commodities	52	107	3	-	-	-	-	-	-	-	-	-	-
Other Costs	260	247	46	-	-	-	-	-	-	-	-	-	-
Contingency	138	136	31	-	-	-	-	-	-	-	-	-	-
<b>TOTAL USAID</b>	<b>1,515</b>	<b>1,500</b>	<b>341</b>	<b>-</b>									
<b>B. GRC - PROJECT AND RECURRENT COSTS</b>	<b>1,462</b>	<b>1,461</b>	<b>1,736</b>										
<b>C. INCREMENTAL ON-FARM COSTS<sup>2</sup></b>	<b>8,100</b>	<b>8,100</b>	<b>13,600</b>										
<b>TOTAL COSTS</b>	<b>11,077</b>	<b>11,061</b>	<b>15,677</b>	<b>15,336</b>									
<b>II. ESTIMATED BENEFITS<sup>3</sup></b>	<b>17,000</b>	<b>17,000</b>	<b>28,100</b>										

- (1) Some of the costs related to the presence of the long-term technical assistance are included in line item "other costs", after 1985.  
 (2) Improved seeds, fertilizer, pesticides, incremental labor costs, interest on capital.  
 (3) Based on the assumptions mentioned in section VI.C.

Net present value of costs using a discount rate of 12% = \$55,934,000

Net present value of estimated benefits " " = \$56,239,000

#### D. Technical Analysis

##### 1. The Need for Basic and Applied Research

During the past two decades, progress has been made in the development of a global agricultural research system which can support national research programs. Since per capita food production in most LDC's is either stable (as in Cameroon) or declining, there is evidence that the system is not working as it should. James Johnston of the Rockefeller Foundation has listed the components of the global system as follows:

Basic research is conducted to increase man's knowledge and, thus, does not need to justify itself in relation to productive processes.

Supportive basic research holds some promise of contributing ultimately to some identified need (e.g. nitrogen fixation).

Applied research of a strategic nature consists of biological, chemical, physical or social science research aimed at solving problems affecting large areas or regions. The international agricultural research centers such as CIMMYT, IRRI, and IITA execute this type of research. Much of the resultant technology must be tested and further adopted before it can be transferred to the farmer.

Applied research of a tactical nature develops technology which can be used directly by farmers. It is supported by strategic research which develops improved varieties for further adoption. It requires an intimate knowledge of farm conditions and markets. The technology cannot be considered ready for release until it has been thoroughly tested on an adequate sample of farms under farmer management. This is the point where the system breaks down, particularly since experiments are conducted on economically important crops with little understanding of how the farmer would use the results.

Operational research concerns the integration of technology pertaining to various crops (and animals) into system adapted to the local farm situation. The research efforts are fully effective only when the recommended practices are integrated into a manageable and profitable system for the farmer. It is still, according to Johnston, the researcher's responsibility but must be carried out in cooperation with the extension agents, who often lack sufficient skills and training to extend the technology.

The National Cereals Research and Extension project concentrates upon applied research of a tactical nature at the four research stations and, for the extension liaison unit, an operational research. Maize and rice have benefited greatly from advances in applied strategic research, but Cameroon has not yet profited from the full extent of research done to date. Although less research has been done on sorghum, Cameroon can still benefit from research done in Africa and elsewhere.

2. Ecology, Climate and Needs for Applied Tactical Research in Maize, Rice and Sorghum/Millet in Cameroon

Each ecological zone in Cameroon has different problems which limit the maize and rice yields and which determine the direction of research. While Cameroon's maize yield was 92 percent of the average yield in Africa in 1961-65 and had increased 20 percent by 1975-76, Cameroon has better soils and climatic conditions than many African countries and is not taking advantage of it due to lack of applied tactical and operational research.

One of the major objectives of the research program should be breeding in resistance to pests and diseases as well as developing agronomic packages which maximize yields without requiring the heavy fertilizer and pesticide inputs which the small farmer often cannot obtain or afford.

a. Semi-Arid Lowlands (less than 1,000 mm of rainfall)

Almost all of the precipitation occurs during three or four months of the year. The lowlands grade into a true sahelian climate in the northern reaches and in the Mandara Mountains to the west. In some areas the soils do not have sufficient moisture for consistent successful maize cultivation. The soils are neutral or slightly acid and tend to be shallow and sometimes sandy on the uplands. Alluvial deposits have left pockets of silt, loam and clay which are more fertile and drought-resistant than upland soils.

The subsistence crops of the region are sorghums and millet. Relatively little maize is produced in the area. Rice has become an important cash crop in the Yagoua area under SEMRY. Rain-fed rice is grown where soil and water conditions permit.

Unimproved maize yields vary between 400 to 800 kg/ha. The North Cameroon Resource Survey stated that a moderate level of improved agronomic technology should lead to yields of

2,200-2,800 kg/ha. on favorable soils under farm conditions. The major cereals project of AID determined that the yield potential of newly developed maize composites in the Guinea Savanna was far higher than expected. When recommended practices are used, the yields reached more than 9,500 kg/ha. in experimental fields and 5,000 kg/ha. in farmers' fields. In this paper, USAID/Y uses 2,000 kg/ha. as a reasonable estimate of maize yields (with limited fertilizer, proper cultivation techniques and rotation/implementing) in the Garoua area.

Top priority should be given to developing acceptable short-season, drought-tolerant maize varieties for the North. Most consumers prefer white grained, demi-dent, floury maize varieties. Agronomic research on planting time and moisture considerations is critical for obtaining high yields because of maize's sensitivity to drought during tasselling. Resistance to stem-borer and leaf-diseases such as blight (Helminthosporium maydis) and rust (Puccinia polysora) should be bred into the maize varieties to maximize yields. To date there have been few problems with Striga (witchweed) parasitizing maize in Cameroon. The most suitable varieties presently available for the North are Sumaru 123, NCA and TZB (the first two were developed under the major cereals project). Upper Volta Early is disease-susceptible. Practically no work has been done on agronomy, pathology and other related disciplines in order to develop a package of acceptable production practices adapted to the local farming systems. Work should also be done on cropping systems to take advantage of residual fertilizers and intercropping with legumes.

Local rice varieties, grown using traditional cultivation practices, yield 800 to 1,500 kkg/ha. of paddy. According to the North Cameroon Resources Inventory, rain-fed rice under moderate inputs on clay soils should yield 1,600 to 2,000 kg/ha. of hulled rice, while irrigated rice under moderate inputs should yield 3,000-4,000 kg/ha. of hulled rice. For purposes of this project, we are using 1,600 kg/ha. as the anticipated yield for rain-fed rice under moderate inputs and 2,400 kg/ha. for irrigated rice produced with a higher level of technology.

Rain-fed rice is cultivated in the bottomlands. Since it competes with other wet season crops for labor, particular emphasis should be placed on research regarding planting date, fertilization and weed control. Rice planting must follow other main crops, but it must be harvested earlier. Some research has been done in the North, including work by IRAF personnel who conducted field trials with introduced Brazilian upland varieties such as daniella, IAC, Batatasi and Pratau.

Rice should have high yield and early maturity in the North. Cold tolerance is particularly important for irrigated dry-season rice. The varieties should be resistant to foliar diseases, particularly blast. Insects are not yet a major problem in the North. Seeds used in SEMRY are older IRRI varieties which are not particularly disease-resistant and which have long growing seasons. The SEMRY II project contained applied research directed towards the needs of the project. Almost no work has been done on rice agronomy in northern Cameroon.

Sorghums originated in Africa and species (or subspecies depending on the taxonomist) interbreed easily. Both Caffra and Durra types are found in Cameroon. Wet season sorghum accounts for 60 percent of the area planted in sorghum. There are five major types, some of which are early and some late. Yields vary from 400 to 700 kg/ha. in the Diamare plains around Maroua. Yields are higher in the Garoua area. The transplanted dry-season sorghums (the most common type is called Mouskouri) are grown on about 40 percent of the land in sorghum. The yield of common local Mouskouri may reach 1,500 kg/ha. under favorable conditions.

A relatively limited amount of penicillary millet is interplanted among sorghums, particularly in the Mandara Mountains. Millet acreage is about a tenth of that planted in sorghum.

Most local sorghums are tall (four meters) and prone to lodging. Yields are not particularly responsive to fertilizer. The inflorescence of early-season sorghums are subject to rot from head mold when grown in the Guinea Savanna. If planted late, these varieties are subject to midge attack and shoot fly. Leaf-diseases are common, as are covered smut, loose smut, and head smut. Striga infestation necessitates intensive weeding and also limits the number of years sorghum can be grown on the same field. Imported varieties are particularly susceptible to striga. Bird damage to ripening grain is heavy. IRAF 55, an improved variety is not suitable for all regions, and its red grains limit its acceptability. Other improved varieties do very poorly in farmers' fields.

Research in Cameroon should take advantage of work done under the major cereals project. That project did identify sorghum lines with some resistance to striga, leaf-diseases, shoot fly, and other diseases and pests. The NCRE should also concentrate on agronomic practices, particularly interplanting with grain

legumes and experimentation with inoculates to increase fixation of nitrogen in mixed sorghum/legume cropping systems. Since very short-stalked varieties may not be accepted because stalks are used for fences and construction in northern Cameroon, research efforts should concentrate on developing improved sorghums of an intermediate height. Efforts should also take into account consumer taste preferences (e.g., a white grained improved variety). In addition, detailed socio-economic research should be done on including sorghum in farming systems and spreading peak labor requirements more equitably through the growing system.

Millet is very drought-tolerant, gives consistent low yields, and it is susceptible to down mildew, smut and ergot.

The French had financed a field trials officer at Maroua under the major cereals project, and AID trained a sorghum breeder (who is now in charge of IRAF's food crops research). SAFGRAD, the successor project, is designed to develop and strengthen a regional research and testing program for cereals (sorghum, millet and maize), grain legumes (cowpea and peanut) and related systems, as well as training a cadre of agricultural scientists in the Sudanian sahelian zones of Africa. Screening of germplasm will be done at Samaru, Nigeria and Kamboinse Saria, Upper Volta. AID is expected to finance the posting of the Accelerated Crop Production Officer to Maroua under this project. FAC is planning to support varietal trials for sorghum at SEMRY's research station. One objective of the research would be to minimize labor requirements during peak demand periods for rice cultivation.

The proposed IBRD/FAO rural development project for Center North Cameroon includes support of agricultural and forestry research as well as crop production on sorghum, cotton and peanuts, with a lesser emphasis on maize and rice. This project places a very high priority on research in sorghum breeding and agronomy, but will not begin operations for at least a year. The project does not, however, finance agronomists and plant breeders.

b. Mid-Altitude Zones with 1,000 mm or more or Rain (Western Highlands and Adamaoua Plateau)

In the western highlands, crops are grown at altitudes between 1,000 and 2,000 meters, although some bottomlands are only 700 meters above sea level. Crops benefit from the nine-month long rainy season. The area has steep hillsides with soils derived

from basalt or gneiss that contain a high amount of organic matter. The soils are moderately to severely susceptible to erosion. Most soils have moderate to high agricultural value. The alluvial bottomlands need drainage and flood protection before they can be used for intensive agriculture.

Almost all arable land in Western Province is under permanent cultivation, even on slopes as steep as 25 percent. The percentage of land in crops is slightly lower in Northwestern Province. In order to limit erosion and maintain fertility, specific agronomic practices must be provided. Maize is the primary foodgrain, while rice has become a major crop in some areas under various development projects in the bottomlands.

The Adamaoua plateau is well-suited to both rice and maize, but relatively little of either crop is grown in this sparsely populated region.

Northwestern and Western Provinces have an excellent potential for increasing maize yields due to long, cool growing seasons. Research should concentrate on breeding for high yields in labor-intensive intercropping systems. Since maize is sensitive to altitude, testing must be done at various elevations before varieties are released. The major thrust of pathology research should be to control leaf diseases such as blight (Helminthosporium turcicum) and rust (Puccinia sorghi) and smuts.

Yield trials on imported and locally developed varieties have been carried out at Bambui and Dschang. The best mid-altitude varieties are Green Revolution (a long season hybrid which can yield ten tons ha.); Composite Camerounais d'Altitude (COCA - a long hybrid with a potential yield of nine tons); Bambui composite A (BACOA - early, five tons/ha.); Bambui composite B (slightly later six tons/ha.). These varieties need further testing for yield under farmer management as well as for disease and pest resistance. The germ plasm came from IITA, CIMMYT, East African Agricultural and Forestry Research Organization, IRAF and from research bodies in the U.S.

Research problems should concentrate on finding suitable cold-tolerant rice varieties with resistance to blast and stem borers. Currently used varieties are very susceptible to blast, and almost no work has been done to determine more resistant substitute varieties. The packages of agronomic practices should concentrate on determining proper planting dates and weed control methods. Some Brazilian upland varieties are being tested this growing season at Bambui and Babumgo substations of the Bambui research station.

c. Lowland Forest with Moderate Rainfall (Center South and Part of Eastern Provinces) and High Rainfall (Southwestern and Eastern Provinces and the Coastal Strip)

Although these two regions are grouped for discussion purposes, there are significant differences between them requiring extensive field trials to develop recommended agricultural practices for maize and rice.

Maize is one of the most common food crops in this area. Although the lowlands are well-suited to rain-fed rice, relatively little is grown at present, partially because yields are too low to provide sufficient return to the farmer. The soils in these areas are often rather acidic and heavily leached. The application of heavy doses of fertilizer to plantation crops in some areas of Southwestern Province has increased the acidity.

Maize can be grown during both wet seasons because of the bimodal rainfall pattern. Research should concentrate on high protein maize to increase protein availability in the diet. The research should also take into account that most maize is eaten green as corn on the cob. Ear rot and stalk rot are problems in both rainy seasons. Planting time should be adjusted to reduce the incidence of streak. The major focus of the agronomic work will be to find suitable cropping systems for each growing season and zone which maximizes the return per unit of land to the farmer.

The specific problems of the first rainy season (March-June) are low light reception due to overcast skies and high rainfall. To cope with this, research should be done into the development of maize with upright leaves so that other crops interplanted with maize are not shaded out. During the second rainy season (late August-November), the major breeding objective should be early maturity because the rains will often quit abruptly several weeks earlier than normal, thus reducing yield sharply. Ekona White and Dkona Yellow are the most suitable varieties tested to date for the lowlands but research should be done on disease and pest resistance as well as adaptability into the local farming systems.

Rice blast disease causes severe losses and research should concentrate on breeding resistance into the cultivars. In addition the low yield of most rice varieties in common use do not give an adequate return to the farmer. Breeding activities

should thus concentrate on developing high yielding, lodging-resistance varieties acceptable to local farmers. Increasing rice production also depends on developing a package of practices which gives special attention to soil and water management.

### 3. Other Food Crops Research

#### a. Rootcrops

The Canadian Government, with some Belgian support, is financing a rootcrops research project on cassava, cocoyam, taro and yams.

#### b. Legumes

IRAF has one researcher at Dschang who is working on legumes. Progress to date is limited and more should be done, particularly on cowpeas, soybeans, and other edible legumes, as well as the development of suitable agronomic practices and interplanting to improve soil nutrients. There are good varieties of groundnuts available for North Cameroon, which were developed in Nigeria and Senegal. More work is needed on varieties and agronomic practices for the humid areas as well as integration of groundnuts into multiple cropping systems. When conducting the farmer field trials/demonstrations, intercropping and successive cropping systems for cereals which involve legumes should be used.

#### c. Soil Science

Cameroon has a number of trained soil scientists and more are currently attending graduate schools. There are three Dutch soil scientists (FAO-financed) attached to the well-equipped soils laboratory at Ekona, which carries out high quality work. The existing FAO-supported pedology programs under IRAF can meet the soils science requirements for NCRE without further input from AID.

### E. Social Soundness Analysis

This section discusses population size, social structure, and organization of agricultural work in project area. It also addresses the problem of transferring research results in regions where the traditional approach to agricultural extension seems particularly ineffective. Experience with improved varieties in other countries indicates that most of the technological shift is spread through non-formal farmer-to-farmer methods, rather than through a formal extension service.

In many parts of Cameroon, the farmer growing subsistence crops is usually a woman. In other regions both men and women grow foodcrops. One of the key ways that women obtain stature in society is through foodcrop production. They decide what they will do and determine their own work schedule. The harvest from their own fields belongs to them, and they determine its end use. When a market exists for food crops, they sell their surplus and usually keep the income. Cultivation of food crops also gives women rights of usufruct to the property, so that although a man may be titular owner, the woman using the land cannot be dispossessed easily. Because of the scope of women's role in food production, we discuss it as a part of the whole, rather than devote a separate section to women farmers.

### The North

#### a. Population

The area of Northern Cameroon which will benefit most from the maize and rice research will be the plains dwellers of Benoue, Diamare, May-Danai and Longone et Chari departments (population about 1,534,000 in 1976). More than 80 percent of the population is "rural" while perhaps half of the urban inhabitants grow a large percentage of their own food.<sup>1/</sup> In addition, the overwhelmingly rural department of Margui-Wandala (Mandara Mountains) with its 496,000 inhabitants, will benefit from sorghum/millet research as well as the four plains departments.

#### b. Social Structure

Perhaps half of the plains dwellers are Fulani or Boulbe. They were, in the 17th and 18th centuries, cattle-owning semi-nomads who imposed a hierarachial form of government in the Maroua, Garoua and Adamaoua regions as a result of the great  Jihad  at the beginning of the nineteenth century. Cameroonian Fulani are organized into 21  lamindats . The Lamido (chief) still has considerable influence in local government and particularly in the use and allocation of land and in the implementation of agricultural production programs.

---

<sup>1/</sup> The Cameroonian census definition of "urban" is very broad and tends to include many large villages in what we would classify as rural districts.

At present, about 80 percent of the Fulani are sedentary and live by agriculture and cattle-raising. They often live in towns, and wealthier prominent Fulani prefer to hire laborers to farm their fields rather than do the work themselves. This is particularly true in the case of Fulani women who have inherited land under Islamic law. About 14 percent of the Fulani engage in a variety of occupations in the towns, particularly commerce. The semi-nomadic M'Bororo herdsmen speak a Fulfoulde dialect, but most Fulani do not consider them as true Fulani. Many Kirdi have adopted nomadic Fulani dress, customs and the Islamic religion. They are considered Fulani by assimilation. We do not have data on the degree to which "assimilated" Fulani cultivate their own lands.

Tribes along the Chadian border, including the Massa and Toupouri have avoided being submerged by the Fulani hegemony, although sometimes they have picked up the forms of Fulani social organization. These groups live in dispersed settlements and live by agriculture, livestock and fishing. Some of them have taken to modern agricultural technologies very rapidly.

The Mafa live in the Mandara Mountains and sometimes spill over into the nearby plains. The real social units are the individual hills covered with scattered dwellings and, for the most part, the individual household manages its own affairs. Some parts of the Mafa country may have population densities of up to 245 people per square kilometer, which strains the capacity of the rocky, steep hillsides to provide subsistence to the inhabitants. Usually the youngest son farms with his father and inherits the land and the older sons must go elsewhere.

c. Cropping Systems and Allocation of  
Agricultural Work

The most common crops of the plains are millet and sorghum (both rainy season and transplanted) which are sometimes supplemented by maize or rice. The northerners grow rice primarily as a cash crop. Peanuts may be eaten or raised for cash. They occasionally raise cassava, yam and sweet potatoes but these crops do less well in the North than in the South. They grow cotton as their main cash crop and eat fish from the rivers and Lake Chad. Beef is seldom eaten by the Fulani; they prefer to make money by selling and milk and will very rarely sacrifice a healthy animal for meat.

Most inhabitants of the central plains practice a shifting, extensive agriculture. They do not appear to have developed sophisticated intercropping systems similar to Hausa Nigeria.

In some areas, cotton rotates with sorghum on heavy soils and on sandy soils cotton may be followed by sorghum interplanted with peanut before prolonged fallow. Transplanted sorghums are grown in the clayey lowlands, without rotation or interplanting. In the Mandara, the Mafa use a complex system of mulching and intercropping to grow sorghum/millet and other crops on terraces. Even when the Mafa move to the plains, their cropping systems remain intensive.

Fulani men, if they can afford it, prefer to hire laborers to cultivate the fields. Fulani women work their own "kitchen gardens." In times of extreme labor shortage in the cropping cycle, Fulani women will work in their husband's fields, particularly if he does not have a high standing in the Fulani hierarchy. They prefer to trade or process food, rather than grow it. Non-Fulani men and women plow, plant, weed and harvest--the division of labor being based upon whether the man or woman owns (or has usage rights) to the fields. Women also grow peanuts and most other minor crops as well as sorghum/millet to meet household needs. Toupouri women receive two plots of their own land after marriage in addition to usufruct of other land allocated by their husbands. Mafa women help men cultivate sorghum and at the same time have their own fields of secondary crops (particularly peanuts).

The short rainy season places heavy demands on agricultural labor in order to grow sufficient food for subsistence. All members of the family must pitch in and work at these times, and the boundaries of traditional roles may be ignored in times of acute labor shortages.

#### d. Factors Affecting the Spread of Innovation

There are several factors behind the common judgment that "the peasant is very conservative and won't change his methods." The northern farmers live too close to the edge of subsistence to take unnecessary risks unless the change assures a maximization of production for the entire cropping operation. Shortages of labor at key points of growing season may prevent a farmer from adapting recommended planting/weeding dates. Subsistence farmers consider food for their families more important than cash crop production, but Cameroonian extension efforts have favored cash crops. Finally, working the land oneself is not a prestigious occupation for a Fulani.

We think the "conservative peasant" cliché is overstated. Many will accept changed technologies when given the change. Examples of innovation are:

- The Mandara terracing systems;
- The production of onions and other truck crops in Diamare;
- The rapid change into double-cropped irrigated transplanted rice cultivation in the SEMRY project; and
- The introduction of cotton and peanuts.

We expect, however, that the rate of change will not be very rapid in the North because of the risks of crop failure and low literacy rates.

People like localized varieties of sorghum (usually white). Strong local taste preferences must be considered when developing sorghum varieties (Red seeded IRAT 55 is not acceptable in some areas). In addition, sorghum stalks have many uses and a very short sorghum may not be accepted. On the other hand, if it isn't sorghum or millet, children, in particular, seem to accept anything that makes a gray white gruel. (Under the World Food Program, they eat millet, sorghum, maize and wheat soy blend.) Consequently, if a high-yielding white maize can be found, it will probably be accepted rapidly.

The traditional roles of men and women do not appear to limit agricultural innovation of and by themselves, but both sexes should be trained by extension personnel. However, the lack of traditional and modern organizations extending beyond near relatives among the northern women will probably mean the diffusion of innovation will be slow, since the extension worker will reach fewer people by indirect means. We have found little concrete information on the role of Fulani women in crop production. We think, however, that the success of innovations in the "kitchen garden field" will require Fulfulde-speaking female extension personnel.

Socio-economic testing of agricultural research results is absolutely essential. The recommended varieties and practices must appear to possess a clear superiority in terms of yield and maximizing "profitability" as well as minimizing risks. The farmer must be able to see the results. Inputs, when required, must be readily available and inexpensive, and the labor requirements must be manageable so as not to conflict with the peak demands of other crops.

## 2. The Highlands

### a. Population

The Cameroon highlands are densely populated agricultural districts, where the rural population sometimes reaches 290 people per square kilometer. Northwestern and Western provinces have about 2,016,000 people. The largest group in the highlands is the Bamileke. The Tikar of the Bamenda area make up perhaps a quarter, and the Widekum group represents about a tenth of the population. The rural population density is low among the Bamoun (who are highly urbanized).

### b. Tribal Structure

The typical structure of the Bamileke and other highland tribes consists of numerous chiefdoms with powerful ruling chiefs and associations that play an important political and social role. The Fon (chief) grants cultivation rights to male heads of families. Land can pass from one generation to another, but it goes to only one chosen successor. The other sons have to go elsewhere or rely on special allocations of land from the Fon. These factors have contributed to social tensions and provide the impetus behind the Bamileke enterprises and migration to the cities.

Women inherit directly both personal property and land usage rights from their matrikin, and female inheritors have the right to a portion of the bride-wealth payments for certain females in the matrilineage. Thus, a woman did not have to depend exclusively on her husband for land to provide sufficient food for her household.

### c. Cropping Patterns

Farms are small. In the Western Province, the average family of seven (three working adults) farms 1.3 hectares of assorted annual and perennial crops on land which may slope 25 percent. Every area of arable land becomes a corn, coffee or vegetable patch. The system incorporates numerous shrubs, trees, cereals and root crops all grown on the same ridge. Mulching, split ridging and many types of crops all contribute to erosion control and maintenance of soil fertility.

### d. Agricultural Roles

Women are generally responsible for almost all the food production and may spend up to 190 days of work a year on

agriculture alone. They often encroach upon coffee trees planted by men to plant their own annual crops.

The female administrative societies of many highland tribes were used to organize cooperative work in the fields, and the corn mill societies in the 1950's served as the nucleus of cooperatives and community development programs in the Northwest. Women often sell substantial quantities (35 to 40 percent) of food crops and exercise considerable control over the use of the proceeds. Many women have developed large-scale food trading businesses, but much of the Douala food trade is run by male wholesalers.

Men raise bananas, plantains and coffee, as well as build houses and repair fences. Rice cultivation, done primarily by men, is spreading rather rapidly where suitable land is available. Up to 60 percent of production reaches commercial markets. The recent turning of the "terms of trade" in favor of food crops and away from Arabica coffee has meant that men have begun to produce other foodcrops, including maize, for market. The recently announced cocoa and coffee price increase to producers may turn male farmers back to tree crops again.

e. Consequences for Agricultural Research and Extension

The most important factor is the overwhelming importance of women in food crop production. We are reasonably certain that male extension agents speaking to men about improved practices and varieties for women's crops does result in some loss of information in transmission before it reaches the female producer. Consequently, the most effective maize testing demonstration programs will probably be women working with other women in cooperatives, community development, or even through informal working groups or traditional associations. It would be an advantage to have one female member of the Contract Team hold the crop agronomist, extension agronomy or economist positions. At least one Cameroonian female extension agronomist should be recruited for the Bambui research station to supervise the field trial demonstration programs well before the end of Phase I. Extension personnel for women's crops should be predominantly female, but outside of community development programs they are the exception rather than the rule.

Traditional organizations, such as the Mansu society of superior female farmers among the Bamileke, the cooperatives, the development societies could be an important conduit of

information on both crops and can facilitate implementation of field trial and demonstration programs. Since the traditional role of the chief and queen mother includes responsibility for overseeing and supervising agricultural production, enlisting the support of the local Fon and the Mafo in the field testing and demonstration program should accelerate the transfer of the recommended practices.

The local habit of eating corn "green" on the cob instead of drying it, will, as maize consumption increases, improve nutrition and reduce protein deficiencies among children, especially if high lysine genes are bred into the recommended varieties.

The highlands are in the midst of an agricultural revolution. The adoption and adaptation of innovative agronomic practices and new varieties and crops should be very rapid. Since the farmers have sophisticated reactions to price changes, it is important that the advanced field tests and demonstrations in the highlands include micro-economic analysis before the particular package is "recommended" and extended on a widespread scale.

### 3. The Lowlands Forest Zone

#### a. Population

There are many different ethnic groups living in Center South and Eastern Provinces. Most have similarities in social and work organization. Eastern Province has a small, sparse and very poor population (366,000 inhabitants, 291,000 of whom live in "rural" areas). Center South Province, including Yaounde, has more than 1,497,000 inhabitants and 994,000 live in rural districts. It has some wealthy, densely populated cocoa regions, as well as very poor rural areas. Littoral Province includes Douala, and only 233,000 out of 935,000 inhabitants are considered as rural residents. About 420,000 of the 621,000 inhabitants of Southwestern Province live in the rural districts. For the purpose of this project, we are most concerned with Center South and Eastern Provinces.

#### b. Social Structure

A number of ethnic groups collectively known as Pahouin live in Center South and Eastern Provinces. Other forest tribes in these provinces, and in Southwestern and Littoral Provinces, have similar social structures. These people are patriarchal,

live in very small hamlets of 5 to 20 houses, often along a road, and are closely affiliated in the lineage group. There is less political and social cohesion than in the highlands. Until quite recently, most members of these groups were hunters and gatherers, rather than sedentary agriculturalists. Age groupings still tend to limit the activities to which each member of the lineage group is entitled. Adult manhood is reached only in marriage and the high brideprice of today, paid mostly in cash, delays marriage. Introduction of cash crops has weakened the principle of inalienable lineage holdings of land. Women are dependent on either husbands or fathers for allocation of land to grow food crops.

The "work team" is based on the traditional "machete" group, whereby several families cooperate in land clearing, cash crop plantation rehabilitation or other tasks. The teams have six to ten members and may be organized on the basis of age, sex, strength, friendship, proximity or family.

#### c. Farming Systems

In much of Eastern Province, the average annually cultivated area is about two hectares per family with three active adult workers. The family uses a much larger area over time because of the requirements of shifting cultivation. Food crop fields may be three to six kilometers away from the village, whereas perennial crops and firewood is closer. The limiting factor of food crop acreage is the family's ability to clear land.

Among the forest tribes, there is a sharp division of labor between the sexes. Men are responsible for cocoa and coffee production (although women work as laborers on those crops). Men clear away the forest for the main food crop fields where women grow a mixture of interplanted crops including manioc (the overwhelming food staple), cocoyams and plantains. In addition, the men traditionally cut the poles and build yam storage huts, while women work on the yam field. Employment in the cities, lumbering, and tree crop production have drawn many men away from land-clearing and yam-staking.

Growing food crops is still a rather demeaning activity for a man, although this attitude changes when the possibility of marketing specialty crops for the urban market is perceived. Rice was grown by men under forced labor while the original Douala-Yaounde railroad was under construction. It has not been a popular crop since then, but has recently shown signs of revival. Because young men are not permitted by tribal law to have cocoa and coffee plantations, food crop cultivation for the urban market may generate considerable employment and income.

Women are primarily responsible for feeding and clothing their children. Consequently, they grow most food crops. In addition to their main fields, they have a "peanut field" (named according to the season in which it is planted). This field includes manioc, maize, gumbo, pepper, green vegetables and plantains. Often women form workgroups and do all the work themselves, including clearing the bush from the field which had been fallow. In some areas, they also grow minor crops such as sweet potatoes, greens, and very early corn under irrigation for the urban market. Women have gone increasingly into food trading over the past two decades.

d. Implications for the Adoption of New Technologies

In sociological theory, the segmentation of social organization among the forest people should facilitate rapid modernization, but we think changes in agricultural technology probably will not occur as rapidly as in the highlands because of physical distances and small size of the hamlets. Despite the spread of the tree crops before and after World War II and the recent shift toward food crop production for sale,<sup>2/</sup> the small size of the settlements will hinder change in the less populated regions. Many places lack adequate road and transportation networks. The forest groups do not have the traditional drive towards commerce and marketing typical of the highland groups.

The Testing and Liaison Unit activities must specifically address the fact that women are primarily responsible for growing food crops. Provision should be made so that women supervise at least some of the field tests. It will be more difficult to find women with high levels of education to work with the program in the forest than in the highlands, but serious efforts should be made to have at least one Cameroonian woman as an extension agronomy officer in the forest zone.

The ZAPI-Est program has been quite successful in using teams of extension agents consisting of one woman and one man to cover the same district. The problem of protein deficiency is particularly acute in the forest region and the female extension agent has a better chance to teach some rudimentary child

---

<sup>2/</sup> In the 1950's, only two percent of the family cash income came from agricultural products other than cocoa in the Lekie area northwest of Yaounde. Now 40 percent comes from food crops.

nutrition, including substituting maize for some of the manioc in the diet. Consequently, the varieties recommended in the forest zone must clearly demonstrate much higher yields in order to compete with manioc. Maize varieties high in lysine should be tested because of high levels of an essential amino acid, thus improving nutrition.

A deliberate effort should be made to encourage the allocation of land to young men for market crop production as a part of rural development programs and thus reduce unemployment among unmarried men. The development of appropriate, effective and cheap hand tools may further reduce the stigma of food crop production.

If suitable high-yielding production packages were available for rice and the farmer obtained sufficient return for labor and land-clearing costs, it would become an attractive crop. Under the ZAPI-Est program, Dutch volunteers have experimented with cooperative workgroups engaged in rice production and have met with better than average success in the pilot activities. A serious effort should be made to use innovative leaders as key individuals in the formation of workgroups and in extending recommended practices in test demonstrations.

Given the problems in land-clearing and labor constraints, potential rice and maize agronomic and varietal recommendations should be tested regarding the micro-economic aspects of the farm enterprise as well as trade-offs with tree crop production.

#### F. Administrative Analysis

Significant changes have taken place in the administrative structure of the Institute of Agronomic Research (IRA) since Phase I of the project was designed. IRA was then placed under an organization called the National Office of Scientific and Technical Research (ONAREST). Since that time, there have been two major institutional changes. First, IRA, and its sister research institutes, were placed under the General Delegate for Scientific and Technical Research (DGRST), which was moved from Buea, in the Southwest Province, to Yaounde, the capital. Recently, in early 1984, DGRST was subsumed under a newly formed ministry, the Ministry of Higher Education and Technical Research. DGRST was made a "Department" of this ministry at an equal level as the Department of Higher Education which will direct the university system. The administrative effectiveness of IRA has been strengthened by each of the above changes and during the past year the GRC has more than doubled the IRA operational budget as a clear indication of its continued support and commitment to agricultural research in Cameroon.

The most recent organizational shift which placed IRA under the Ministry of Higher Education is viewed as an extremely worthwhile move. Now, the IRA, the Institute of Livestock Research (IRZ) are included under the same ministry which has oversight responsibility for the AID-funded Agricultural University at Dschang. This will greatly improve communication between the IRA and the university, which is crucial in order to foster improved research capability.

The IRA is regarded as one of the best managed organizations in Cameroon. The World Bank studied the IRA in 1983, and gave it a very favorable evaluation. The NCRE project has been instrumental in assisting the IRA improve its programming and planning capabilities. IRA project management and executive staff have already proven their ability to satisfy administrative responsibilities both at the field and headquarters levels.

#### G. Environmental

The second phase of the NCRE project will have minimal impact on the environment. Research to be undertaken during Phase II will again concern assisting farmers to raise improved varieties and increase yields without resorting to heavy fertilizer and other chemical inputs. The second phase will include a construction component (see Annex D - Detailed Engineering and Construction Program). Annex I serves as an addendum to the Initial Environmental Examination prepared for NCRE Phase I and discusses the proposed construction sites and how construction will affect water supplies, sewer capabilities, etc.

#### VII. CONSTRUCTION SUMMARY

A detailed engineering/construction analysis requires certain basic data: (1) a site map showing topography, access roads, existing buildings, proposed buildings and future plans for construction; (2) preliminary plans for proposed buildings and structures in sufficient detail to permit a reasonably firm estimate of quantities, materials, construction techniques and costs; and (3) preliminary architectural and structural drawings. For the construction planned under this project, general site locations are known but specific locations have not yet been determined and much of the above listed requirements are only partially available or not available. For example, there are drawings for houses being constructed under the original PP authorization but no site plans or drawings are available for the proposed laboratories and offices. Therefore,

actions are underway to identify which data remains to be collected, which activities must be pursued prior to construction and likely schedules and costs based on more readily available information. Because of the low level of detailed information available, and because of the amount of time that would be required to collect, synthesize and assess the additional requirements, an A/E firm should be contracted to collect the data as early as possible and proceed with preparation of plans and specifications that will permit more detailed estimates and provide a basis for the preparation of contract documents. In the meantime, a construction contingency of twenty five percent has been applied to overall construction cost to cover any unforeseen cost factors. See Annex D for the detailed construction program and schedule of activities.

## VIII. IMPLEMENTATION ARRANGEMENTS

### A. Implementation Plan

The basic project strategy remains the same as that stated in the original project paper. The geographic areas of focus have been expanded to include additional Testing and Liaison Units (TLUs) located at Nkolbisson, Ekona and Foubot. These new units will build upon a substantial base of knowledge and experience gained from the initial TLU activity located at Bamenda. The NCRE Phase II proposes to extend the current technical assistance, training and other support components to continue current research activities over a 10-year extension in the life of project implementation plan.

The core administrative, coordinating and decision making body for the second phase of project activities will continue to be IRA/NCRE with the IRA Director having final approval authority for all matters concerning GRC policy, budgetary support and institutional commitment. Key implementation resources will remain intact and those researchers and administrative officials having "vested interests" in the NCRE project will remain responsible for coordinating and managing implementation and the continued flow of additional NCRE resources and inputs. IRA will play the key role in identifying counterpart researchers and participants for long-term training opportunities provided by the project. See Annex F for a comprehensive schedule of training and technical assistance activities to be performed over the 10 year life of project extension.

### B. Procurement Plan

See Annex B.

C. Payment Methods and Implementation of Financing

<u>Method of Implementation</u>	<u>Method of Financing</u>
<u>TA</u> - PVO (U.S.)	FRLC
- Institutional Contract	Direct Pay
- Personal Services Contract	" "
Training	
- S&T/IT	Direct Pay
- Placed by Mission in Host Country	" "
Commodities	
- Purchase Order	Direct Pay
- Procurement Agency Contracts	Direct Letter of Commitment
Construction	
- Host Country Contract (Construction)	Direct Pay based on Modified F.A.R.
- Direct AID Contract or Host Country Contract (A&E Services)	Direct Pay
Other Costs	
- Purchase Orders	Direct Pay

Justification for departure from the three preferred financing alternatives:

Because of the complexities of various procurements it has been considered advisable to use a procurement agent. This procedure requires the issuance of direct letters of commitment. All payment documents are reviewed in AID/W and at the USAID/Cameroon Mission.

One of the Host Country Contracts under the construction category is for architectural and engineering services. Therefore the FAR method does not apply.

D. USAID Monitoring and Evaluation Arrangements

1. Project Management: The USAID/Cameroon Agricultural and Rural Development (ARD) division will continue to have overall responsibility for the management and control of all technical aspects of the NCRE Project. Close liaison will be maintained with the GRC/IRA to assure effective project implementation progress for the technical assistance, training and commodity/equipment procurement elements of the expanded NCRE activity.

The ARD agricultural research project officer will continue to direct and coordinate the flow of resources and inputs programmed for the NCRE Project. Responsibilities for the project officer will also include the review and approval of annual work plans proposed by the project's technical assistance contractor, IITA, and also approval of the IRA training plan for both short-term and long-term project funded participant training. The ARD project officer will also work directly with the USAID Project Development and Evaluation Office (PDE) to plan and program all NCRE project evaluations. Additionally, the agricultural research project officer will liaison with the USAID Supply Management Division (SMD) to ensure the prompt procurement of project vehicles, equipment and other supplies required to support the long-term NCRE cereals research effort in Cameroon.

USAID will also assist GRC/IRA with the coordination and monitoring of loan financed construction activities. The USAID general engineering officer will review and approve all architectural/engineering and construction schedules, contracts, and implementation progress reports as outlined in Annex D of this Project Paper.

2. Financial Management: The USAID Controller will review and approve all disbursement/reimbursement requests for conformity with AID payment methods and implementation of financing regulations, and will also ensure that adequate financial controls are followed.

3. Evaluation: Progress checks will be made throughout the course of the second phase of the NCRE activity to ensure that the program is accomplishing what is expected and keeping to the anticipated pace. Project resources have also been provided for four major evaluations which will call upon the services of outside consultants/experts to evaluate the NCRE activity with GRC/IRA officials, contract personnel and USAID project management staff. Evaluation objectives for the Phase II will follow along the lines of those already identified in the existing activity with cereal crop harvest times and cropping seasons being used to determine the scheduling of in-depth project evaluations. It will be critical that benchmarks be established by IITA researchers early to measure the project's contribution to increased productivity of maize, rice, sorghum and millet. Also, for the evaluations to be effective, reliable data will have to be collected on Cameroonian IRA staff, their educational levels, supporting

personnel, research and other physical facilities, research accomplishments including varieties released or at least identified, and the extent to which the research accomplishments constituted improvements.

Comprehensive in-depth evaluations have tentatively been scheduled for FY 1986, FY 1989 and FY 1994. The FY 1989 evaluation will be a critical, in-depth evaluation to determine whether obligation of funds for the final five years of the project should be approved. The evaluation will also consider whether positive results have emerged from policy dialogue between the GRC and USAID/Cameroon.

Specific procedures for development of evaluation criteria and related actions are included in the Project Authorization (Section 4). While the general objective of a long-term research program is achieved through a ten-year authorization, these provisions will enable the Mission and Bureau to assess, and if appropriate, modify or discontinue the Project or elements thereof at the mid-term point.

Project: National Cereals Research  
and Extension (Phase II)

Date: June 1984

Project Number: 631-0052

LOGICAL FRAMEWORK MATRIX - PHASE II

ANNEX A

NARRATIVE SUMMARY

OBJECTIVELY INDICATORS

MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

Goal: Increasing agricultural  
production and rural development.

Measures of Goal Achievement:  
1. Increases in food crop pro-  
duction.

Goal:  
1. GRC statistics, USAID-financed  
agricultural census and results  
of base-line study.

Goal Assumptions:  
1. a) GRC developmental and budget  
priorities continue to stress  
agricultural production/rural  
development.

b) Sufficient inputs and credit  
are available for food crops.

c) Precipitation remains normal.

2. Increased rural incomes.

2. Economic survey of TLJUs.

2. Implementation agencies continue  
to coordinate efforts to maximize  
effectiveness.

Subgoal: Building an institu-  
tional capacity for applied  
agricultural research.

Measures of subgoal achievement:  
1. Agricultural research insti-  
tutions conduct research  
programs.

Subgoal:  
1. Research Institution reports  
and periodic evaluations.

Subgoal Assumptions:  
1. That adequate human and financial  
resources continue to be provided  
to agricultural research.

2. Institutions staffed with  
trained Cameroonians.

2. GRC records and periodic  
evaluations.

2. That other donors provide suffi-  
cient assistance to other aspects  
of agricultural research.

Project Purpose: To provide addi-  
tional assistance to the develop-  
ment of a Cameroonian capacity to  
provide quality research on maize,  
rice, millet and to continue to  
facilitate utilization of research  
results by farmers. Cereals re-  
search will continue to be inte-  
grated into a cropping systems  
approach to food production and  
be aimed at the problems of  
farmers.

Conditions that will indicate  
purpose has been achieved EOPS:  
1. Cereals research program fully  
implemented without external  
assistance after December 1994.

1. Research institution records  
and periodic evaluations.

1. That sufficient number of Cameroon-  
ians are trained.

2. Produces research results  
relevant to problems faced by  
food crop producers and para-  
statal enterprises.

2. GRC records and periodic  
evaluations.

2. That GRC continues to place very  
high priority on cereals research.

NARRATIVE SUMMARY

OBJECTIVELY INDICATORS

MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

3. Meshing cereals research with research on other food and perennial crops to develop cropping systems recommendations for each agro-climate region.

4. Establishment of linkages:

a) With other national and international agricultural research centers.

b) With implementing agencies/institutions in Cameroon.

5. Establishment of adequate physical facilities for cereals research.

5. GRC records and site surveys.

3. That socio-economic analyses closely tie in with agronomic research and continue to be taken into account in designing research programs.

4. a) That results of field tests continue to be taken into account in designing future research.

b) That various ministries and institutions will coordinate research and work together on design and testing of extension practices.

5. That land be made available for research; construction completed as planned, and that maintenance and spare parts continue to be available.

Outputs:

1. Development of Cameroonian staffed institutional capacity to conduct applied national cereals programs.

2. Development and implementation of research programs for maize, rice, sorghum and millet including field trials demonstrations on farmers' field.

Magnitude of Outputs:

1. Cereals research staff including 18 researchers with Ph.D degrees by 1985.

2. Research Programs:

a) Long-term maize, rice, sorghum, and millet research plan 1981.

b) Begin implementation of research programs on stations starting in 1982.

1. GRC and USAID records.

2. GRC and research institutions records.

Assumptions of Outputs:

1. Personnel can be released for training and once trained remain attached to IRA.

2. Coordination between IRA and agencies utilizing research results; sufficient staff available; and funds available for operations.

#### NARRATIVE SUMMARY

3. Development and operation of Testing and Liaison Units (TLUs): to transmit agronomic research results to extension agencies and farmers' problems to the researchers and to determine economic and social consequences of agronomic research.
4. Establish and maintain an exchange of information with international, African and Cameroonian institutions conducting agronomic and socio-economic research.
5. Adequate physical facilities and equipment for carrying out the cereals research program.

#### Inputs:

1. AID
  - a. Personnel: long-term contract advisor
  - b. Participant training
  - c. Commodities
  - d. Construction
  - e. Other Costs

#### OBJECTIVELY INDICATORS

3. Testing and Liaison Units:
  - a. Establish first unit 1981 and 3 additional units in 1985.
  - b. Begin designing field tests 1981.
  - c. Analyze results 1982.
  - d. Research results released when high yielding, stable and diseases resistant varieties are obtained.
  - e. Farmer field trials executed and extension packages are distributed.
4. Continuous contact with institutions by FY 1981.
5. Adequate facilities for research in various distinctive ecological zones:
  - a. land
  - b. buildings
  - c. farm equipment
  - d. laboratory equipment

#### Magnitude of Inputs: (\$64.5 million):

1. AID (39.0 million)
  - a. Personnel (\$14.3 million) long-term and short-term advisors
  - b. Participants (\$2.3 million)
  - c. Commodities (\$2.0 million)
  - d. Construction (\$2.7 million)
  - e. Other Costs & Inflation/Contingencies (\$17.7 million)

#### MEANS OF VERIFICATION

3. GRC research institution records, field survey.
  4. GRC, USAID records.
  5. GRC records and evaluation.
1. USAID records, evaluations.

#### IMPORTANT ASSUMPTIONS

3. The extension services of the Ministry of Agriculture and the parastatal organizations collaborate with TLUs.
4. The Technical Assistance team and Cameroonian counterparts actively coordinate an exchange of information.
5. GRC makes land, planting materials and buildings available.

#### Inputs Assumptions:

1. That adequate funds are made available.

NARRATIVE SUMMARY

- 2. Host Country
  - a. Personnel
  - b. Land
  - c. Other Costs
  - d. Equipment
  - e. Buildings

OBJECTIVELY INDICATORS

- 2. Host Country: (\$32.4 million)
  - a. Personnel (salary) (\$7.7 million)
  - b. Land and Buildings (\$4.8 million)
  - c. Other Costs (\$8.1 million)
  - d. Contingencies/Inflation (\$11.8 million)

MEANS OF VERIFICATION

- 2. GRC records and evaluations.

IMPORTANT ASSUMPTIONS

- 2. That GRC continues to make funds available on timely basis.

10

## ANNEX B

DETAILED PROCUREMENT PLAN AND WAIVERS1. Responsibilities

Project procurement and contracting will be accomplished in several ways, depending upon the commodities or services to be procured.

USAID/Cameroon will act on behalf of the GRC for contracting technical assistance. This will be done through an amendment to the contract with the International Institute for Tropical Agriculture, extending the services of the present technical assistance team.

2. Source/Origin

Goods and Services financed by AID under the grant, will have their source and origin in the United States and the Cooperating Country, except as AID may otherwise agree in writing. Ocean shipping financed by AID under the grant shall, except as AID may otherwise agree in writing, be financed only on flag vessels of the United States or when shipment is under a through bill of lading issued by a U.S. flag carrier.

3. Commodity Eligibility

For purposes of this project, items procured in the host country and Cameroon having their verifiable origin in the United States will be considered of U.S. source and eligible for financing. Such procurement will be done in accordance with good commercial practices and AID regulations.

All commodities listed are eligible for AID financing.

4. Shelf Items

Imported shelf items having their origin in the United States Geographic Code 000 can be purchased without restrictions, except for the limitation on the total amount available for local procurement. Shelf items having their origin in Geographic Code 941 countries are eligible for local cost financing in unlimited quantities, save for the limit on local procurement funding. Shelf items having their origin in any country included in Code 999 but not in Code 941 are eligible if the price of one unit does not exceed \$5,000. For goods sold by units of quantity, e.g., tons, barrels, etc., the unit to which the local currency equivalent of \$5,000 is applied is that which is customarily used in quoting prices. The total amount of imported shelf items purchased from countries included in Code 999 but not in Code 941 may not exceed \$25,000 or 10% of the total local costs financed by AID for the project, whichever is higher; however, in no case will the total amount of such purchases exceed \$250,000 without first obtaining a specific geographic source waiver. Procurements in excess of the limits will be authorized only as source waivers in accordance with the provisions and limitations of Africa Delegation of Authority No. 140, Revised, and any redelegation thereunder.

**Best Available Document**

74

Imported shelf items produced in or imported from countries not included in Geographic Code 899 are ineligible for AID financing.

Procurement of imported shelf items shall conform to good commercial practices, shall be at reasonable prices, and shall not be in a manner which conflicts with local laws and practices.

Shelf item procurement procedures must be spelled out carefully in the Implementation Letter(s) so there will be no confusion on the part of the GRC as to what type of items are authorized to be procured.

#### 5. Delivery and In-Country Transport

All commodities imported specifically for the project will be shipped CIF Douala. In-country transport and insurance will be the responsibility of and paid for by the GRC. Suppliers will provide all risk marine insurance in the amount of 120% of the CIF of the commodities. AID's marking requirements for overseas shipments will be enforced.

#### 6. Title of Commodities

Commodities imported under the project will be titled to the Ministry of Agriculture.

#### 7. Custom Clearance

It is the responsibility of IRA to initiate documentation required for customs exoneration prior to the arrival of goods in Douala and to assure that such documentation is made available to the freight forwarder insufficient time to permit goods to be moved from port of entry promptly upon arrival.

USAID does not pay transportation costs beyond port of entry in Cameroon. The IRA is responsible for issuing an Order of Transit to its predetermined freight forwarder promptly upon commodity arrival to move such commodities out of the port of entry to its warehouse facilities and on to the appropriate project site.

#### 8. Condition of Goods upon Arrival

It is the responsibility of IRA to inspect goods upon arrival and report to the IITA technician and USAID/Yaounde, immediately thereafter, any shortages or damages so that appropriate insurance claim(s) can be initiated. In the event significant shortages or damages are encountered IRA will employ the services of an independent surveyor to prepare and submit a written report.

#### 9. Receipt and Utilization

IRA is responsible for the proper reception and clearances of incoming project commodities. Inspections of incoming shipments must be made, and receiving documents shall be annotated with comments on evident or possible damages/losses.

Reports of damages/losses must be made promptly; if incoming cargo has been procured in the United States, the contractor must file a claim against the ocean carrier or freight forwarder(s) involved. Once the contractor has filed its claim, the carrier must await the filing and adjudication of the claim to permit IRA to acquire more information and particulars about the claim. In most cases where damages or losses are noted, a picture of the damaged commodity and/or its container is the best possible evidence to be presented. Receiving documents properly annotated, are valuable. If damages or losses are not noted on the documents, however, there would be little or no possibility of having a claim settled.

IRA is required to put into project use all commodities procured for the project within one (1) year of receipt; USAID/Cameroon will inspect IRA's utilization reports as a matter of course.

#### 10. Commodity Summary

The following is a summary of commodities expected to be procured for project implementation. This list may be revised as necessary by the Contractor in collaboration with IRA and USAID/Cameroon.

All prices shown (with the exception of local procurement) are CIF Douala.

1. Vehicles: Estimated cost: 4WD \$16,000 ea. station wagon \$10,000 ea.

<u>FY</u>	<u>4-wheel-drive</u>	<u>station wagon</u>	<u>Cost</u>
85	3	6	\$108,000
88	5	11	190,000
91	4	10	164,000
94	2	5	<u>92,000</u>
TOTAL	14	33	\$554,000

2. Furnishings and Appliances:

Estimated Cost including transportation \$20,676 per set.

<u>FY</u>	<u>No. of Sets</u>	<u>Cost</u>
85	9	\$186,084
86	7	144,732
90	6	124,056
91	<u>3</u>	<u>62,028</u>
TOTAL	25	\$517,000

## 3. Office furniture and equipment cost estimate:

Typewriter	\$ 1,500 ea.
Copy machine	10,000 ea.
Air conditioner	1,000 ea.
Office furniture	3,000 set

<u>FY</u>	<u>Typewriter</u>	<u>Copy Machine</u>	<u>Air Cond</u>	<u>Office Furn.</u>	<u>Cost</u>
85	5	5	18	18	\$129,500
88	1	2	8	3	53,500
90	4	4	8	8	78,000
93	<u>3</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>36,500</u>
TOTAL	13	13	37	37	\$297,500

## 4. Lab and research equipment

<u>Equipment</u>	<u>Quantity</u>	<u>Price</u>	<u>Total Price estimate</u>
. Tractors and spare parts	7	X \$32,000	\$224,000
. Ohaus No. 310 Scales	14	X 100	1,400
. Ohaus No. 162 Scales	14	X 150	2,100
. Toledo Grain Scales	7	X 1,100	7,700
. Hand Operator Maize Shellers	15	X 80	1,200
. Seed Cleaners	5	X 200	1,000
. Seed driers (locally constructed)	5	X 1,000	5,000
. Dehumidifiers	7	X 250	1,750
. Maize Hand Planters	40	X 50	2,000
. Maize Rolling Injection Planters	7	X 200	1,400
. Rototiller (to be purchased locally)	2	X 2,000	4,000
. Programmable Calculators	11	X 175	1,925
. Digital Moisture Meters	4	X 1,500	6,000
. 35mm Cameras	2	X 300	600
. Slide Viewer	2	X 400	800
. Miniature Weather Equipment	2	X 3,000	6,000
. Radios	2	X 7,200	14,400
. Miscellaneous equipment (Tool sets, metal tape measure, husking pins, etc.)			5,000
. Pathology lab equipment, Nkolbisson			20,000
. Soils lab. equipment, Maroua			20,000
. Entomology lab. equipment, Nkolbisson			20,000
. Transportation			173,137
. Other equipment between FY 86 and FY 94			<u>133,000</u>
Total cost for lab. and research equipment			\$657,412

## Commodity Summary:

Vehicles	\$ 554,000
Furnishings and appliances	517,000
Office Furniture and equipment	297,500
Lab. Research Equipment	<u>657,412</u>
Total Cost	2,025,912

Waivers: (See Attachments I and II)

1. Source/origin waiver is requested for:  
Six two-wheel drive station wagons \$60,000
2. Proprietary procurement waiver is requested for:  
Three four-wheel drive AMC utility vehicles \$48,000

NOTE: Waivers were requested only for those vehicles which will be procured during FY 85. Future vehicle requirements will be periodically reviewed and decisions will be made based on project requirements and the availability of maintenance and spare parts support in Cameroon.

## 11. Procurement Schedule

This Procurement Schedule is based from the date of signing of the Project Paper Amendment. The schedule is only for those commodities which will be procured during FY 1985. Subsequent procurement schedules will be prepared after detailed review of the requirements.

<u>Target Dates</u>	<u>Action(s) to be taken*</u>
+ 30 days	Designate and appoint Authorized Agent(s) to do the procurement of U.S. and non-U.S. manufactured commodities. (USAID/ARD and SMD, IITA, IRA)
+ 60 days	PIO/Cs prepared (USAID/SMD)
+ 75 days	Advertising for U.S. source commodities (Authorized Agent) Procurement of non-U.S. source equipment initiated (Authorized Agent)
+ 135 days	Bids for U.S. source commodities received and evaluated (Authorized Agent)
+ 150 days	Awards made and Purchase Orders issued (Authorized Agent)
+ 195 days	All non-U.S. source commodities delivered to the project sites (IRA)
+ 375 days	Arrival of all U.S. source commodities in Cameroon. Processed through customs (IRA) Delivered to project sites (IRA)

\*Mission anticipates that the Authorized Agent will be USAID/Cameroon, as was the case with Phase I of the NCRE project. The GRC, however, will purchase the three four-wheel drive vehicles.

13

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON D C 20523

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

THRU: DAA/AFR/WCA, Jay P. Johnson *J.P.J.*  
FROM: AFR/PD, Norman Cohen *N.C.*  
SUBJECT: Cameroon - National Cereals Research and Extension  
Project, Phase II (631-0052) Request for a Source/Origin  
Waiver and for a Waiver of the Requirements of  
Section 636(i) of the FAA

Problem: Your approval is requested for a waiver of procurement source/origin requirements from Geographic Code 000 (U.S. only) to Geographic Code 935 (Special Free World) and for a waiver of the requirements of Section 636(i) of the FAA to allow procurement of non-U.S. manufactured vehicles.

A. Cooperating Country: Cameroon  
B. Obligating Document: Project Authorization  
C. Project: National Cereals Research and Extension (631-0052)  
D. Nature of Funding: Grant  
E. Description of Commodities: Six two-wheel drive station wagons  
F. Approximate Value: \$60,000  
G. Probable Origin: Western Europe, Japan  
H. Probable Source: Cameroon

Discussion:

A. Source/Origin Waiver: In accordance with AID Handbook 1B, procurement of commodities from Geographic Code 935 source/origin under a grant financed project requires a waiver. Under Handbook 1B, Chapter 5B4a(7), a waiver may be granted for "such other circumstances as are determined to be critical to the success of project objectives." The authority to make such a determination and grant a waiver has been delegated to you by AID Delegation of Authority No. 40 as revised on December 29, 1981.

*71*

The purpose of this project is to develop Cameroonian institutional capacity to provide high-quality research on maize, rice, sorghum and millet and to develop efficient transmission of the research results to the farmer. To carry out their project tasks in an efficient manner, it is critical that the project technical assistance team have reliable two-wheel drive vehicles which can be maintained and serviced locally. The two-wheel drive station wagons for which the waiver is requested will be for the use of the technical assistance team members who are stationed in areas where there is no need for four-wheel drive vehicles.

Two-wheel drive vehicles are appropriate for project purposes but there is no dealer in Cameroon handling U.S. made two-wheel drive vehicles or spare parts. Renault-Cameroon offers four-wheel drive AMC vehicles, but such vehicles are not suitable or advisable for the project purposes because of high initial costs, low gas mileage and high operating costs. Two-wheel drive vehicles are approximately 40% less expensive than four-wheel drive vehicles. Other U.S. manufactured vehicles have no dealerships in Cameroon and there are no maintenance and spare parts support available locally.

B. Section 636(i) Waiver: In addition to the general source/origin rules governing the procurement of commodities, Section 636(i) of the FAA prohibits the procurement of non-U.S. manufactured vehicles. The provisions of Section 636(i), however, may be waived when special circumstances permit it. Under Handbook 1B, Chapter 4C2D(1)(B), special circumstances are deemed to exist if there is a present or projected lack of adequate service facilities and supply of spare parts. In the case of Cameroon, there is a present and projected lack of adequate service facilities and supply of spare parts for U.S. manufactured vehicles. The authority to find that such circumstances exist and grant a waiver has also been delegated to you by AID Delegation of Authority No. 40.

Under paragraph 4C2d(2) when a waiver is necessary, preference is to be given to procurement of vehicles which are assembled in the cooperating country or a Geographic Code 941 country using a substantial number of parts and subassemblies manufactured in the United States. In this case, there are no spare parts or service facilities in the cooperating country for vehicles manufactured or assembled in the cooperating country or the Code 941 countries, which use a substantial number of parts or subassemblies manufactured in the United States.

Recommendation: For the reasons given above, it is recommended that you:

- 1) approve a vehicle procurement source/origin waiver from AID Geographic Code 000 to AID Geographic Code 935;
- 2) conclude that special circumstances exist which merit the waiver of the requirements of Section 636(i) of the Foreign Assistance Act; and
- 3) certify that exclusion of procurement from free world countries other than the cooperating country and countries included in AID Geographic Code 941 would seriously impede the attainment of U.S. Foreign Policy objectives and the objectives of the Foreign Assistance Act.

Approved: AS Henry Jr

Disapproved: \_\_\_\_\_

Date: 11/30/84

<sup>208</sup>  
Drafted: AFR/PD/CCWAP:WElliott:10/23/84:632-8506:1152K

Clearances:

AFR/PD/CCWAP:HHelman	<u>7</u>	Date	<u>10/31/84</u>
AFR/CA:WFaulkner	<u>W Faulkner</u>	Date	<u>10/31/84</u>
SER/COM/ALI:SBulkin	<u>(Draft)</u>	Date	<u>10/23/84</u>
GC/AFR:JScalcs	<u>(Draft)</u>	Date	<u>10/23/84</u>

61

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON D C 20523

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

THRU: DAA/AFR/WCA, Jay P. Johnson *JPG*  
FROM: AFR/PD, Norman Cohen *N.C.*  
SUBJECT: Cameroon - National Cereals Research and Extension  
Project, Phase II (631-0052) Request for a waiver to  
Negotiate with a Single Source

Problem: Your approval is requested to waive competition to permit USAID/Cameroon to purchase vehicles from a single source. Details are as follows:

Cooperating Country	:	Cameroon
Nature of Funding	:	Grant
Description of Commodities	:	Three AMC 4 wheel-drive jeep type vehicles
Approximate Value	:	\$48,000
Probable Origin	:	U.S.
Probable Source	:	Cameroon

Discussion: The purpose of the project is to provide additional assistance for the development of a Cameroonian capacity to provide quality research on maize, rice, millet and sorghum and to facilitate utilization of research results by farmers. To reach project test sites as well as farmers wishing to utilize research results requires the use of all terrain vehicles. The supply of vehicles for Phase 1 was purchased by USAID/Cameroon, but vehicles for Phase 2 will be purchased by the Government of the Republic of Cameroon under the provision of Handbook 11.

Justification: Handbook 11, Chapter 3, Section 2.2.6 allows a waiver of competition and negotiation with a single source "when proprietary procurement is justified and the necessary equipment, materials, or spare parts are available from only one source taking into account any special requirements such as the need for in-country service capability." Proprietary procurement is justified under Section 2.2.5 of the same chapter when

"substantial benefits, such as spare parts, inventories, stronger local dealer organization, better repair facilities, or greater familiarity by operating personnel, can be achieved through standardizing on a particular brand."

In the present case proprietary procurement is justified on the basis of superior service and maintenance for AMC/Jeep vehicles. With the fleet of AMC vehicles that are used in other USAID projects, the Mission has both an inventory of spare parts and mechanics familiar with maintenance and repair requirements. Renault-Cameroon, the agent for AMC vehicles, has fully equipped facilities in Yaounde and Douala and is able to provide a line of spare parts and access to maintenance. To require the project to purchase a different brand of vehicles would require separate inventories for spare parts, which are, in fact, unavailable in Cameroon. Proprietary procurement of AMC/Jeep vehicles is clearly justified.

Negotiation with a single source, Renault-Cameroon is justified because it is the only dealer in Cameroon that provides sales and after-sales service of AMC vehicles including a line of spare parts and access to maintenance. No other dealer can provide the needed in-country service capability.

Recommendation: Based on the above justification it is recommended that you waive the requirement for competition to permit the Government of the Republic of Cameroon to purchase three AMC vehicles from Renault-Cameroon.

Approved: ASL

Disapproved: \_\_\_\_\_

Date: 11/29/84

Clearances:

AFR/CA:WFaulkner (draft) Date 10/15/84  
SER/COM/ALI:SBulkin (draft) Date 10/23/84  
GC/AFR:JScalés (draft) Date 10/23/84  
AFR/PD/CCWAP:HHelman HL Date 10/31/84

Drafted: AFR/PD/CCWAP: <sup>WE</sup>WELLIOTT:10/12/84:632-9066:1068K

8

FINANCIAL ANALYSISTable ILONG TERM TECHNICAL ASSISTANCE  
MAN YEARS

	FY85(1)	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95(2)	TOTAL
<u>Long-term Contract</u> <u>Advisor</u>												
Chief of Party	.75	1	1	1	1	1	1	1	1	1	.25	10
Administrative Officer	.75	1	-	-	-	-	-	-	-	-	-	1.75
Maize Breeder	1.5	1.5	1	1	1	1	1	1	-	-	-	9
Maize Agronomist	1.5	2	2	1	1	1	1	1	1	1	.25	12.75
Rice Breeder	.75	1	1	1	1	1	1	-	-	-	-	6.75
Rice Agronomist	.75	1	1	1	1	.50	-	-	-	-	-	5.25
Sorghum Breeder	.75	1	1	1	1	1	1	1	1	1	.25	10
Sorghum Agronomist	.75	1	1	1	1	1	1	1	1	1	.25	10
Cereals Agronomist	.75	1	1	1	1	1	1	1	.50	-	-	8.25
Extension Agronomist	3	4	4	4	4	4	2.5	1	1	1	.25	29
Agricultural Economist	<u>3</u>	<u>4</u>	<u>3</u>	<u>3</u>	<u>.75</u>	<u>37.75</u>						
TOTAL	14.25	18.5	17	16	16	15.5	13.5	11	8.5	8	2.00	140.25

(1) 9 months

(2) 3 months

Table 2

LONG TERM PARTICIPANTS TRAINING

<u>M.Sc. Followed by Ph.D. *</u>	Obligation of Funds (\$000)									
	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95
Extension Agronomist (4)	88	88	22	22	22	22	-	-	-	-
Agricultural Economist (4)	77	77	12	88	77	63	-	-	-	-
Cereals Agronomist (1)	11	11	22	22	11	-	-	-	-	-
Sorghum Breeder (1)	22	22	11	11	22	22	11	-	-	-
Sorghum Agronomist (1)	22	22	-	22	22	22	-	-	-	-
Rice Breeder (1)	22	22	22	-	-	-	-	-	-	-
Rice Agronomist (1)	22	11	-	-	-	-	-	-	-	-
Maize Breeder (1)	-	22	22	22	-	-	-	-	-	-
Maize Agronomist (1)	22	22	-	22	22	22	-	-	-	-
TOTAL (15)	286	297	121	209	176	151	11	-	-	-

( ) number of participants

\* Cameroonian Counterparts will work with the technical assistance for one year, leave to the U.S. for graduate training to the M.Sc. level, return to Cameroon for one year, leave again to the U.S. for additional training to the Ph.D. level. Training costs in FY 85, from original authorization:

Table 5

COMMODITIES AND OTHER COSTS  
GRC CONTRIBUTION  
(\$000)

	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95
<u>COMMODITIES</u>											
30 Vehicles	34	34	34	34	34	34	34	34	34	34	-
34 Sets - Office Furniture	49	-	-	-	-	54	-	-	-	-	-
Field and Research Equipment											
- 1 Irrigation system	-	50	-	-	-	-	-	-	-	-	-
- 7 Tractors	-	-	-	-	-	336	-	-	-	-	-
Others (1)	-	25	25	25	25	25	25	25	25	25	6
Total Commodities	83	109	59	59	59	449	59	59	59	59	6
<u>OTHER COSTS</u>											
Research Costs	154	173	170	222	196	199	212	254	257	257	64
of which in-country and international travel for counterparts	39	20	16	68	42	46	59	101	104	104	26
Rental housing and maintenance (2)	19	9	13	32	25	25	38	64	74	79	20
Office supply and support of services	143	238	273	270	271	275	287	288	288	288	74
- Existing Costs	76	101	101	101	101	101	101	101	101	101	25
- New Costs	67	137	172	169	170	174	186	187	187	187	49
Maintenance costs of office, laboratory and field equipment	-	20	20	20	20	20	20	20	20	20	5
Vehicle support costs	45	85	110	110	110	110	110	110	110	110	28
Office supply for counterparts	4	5	15	12	13	17	30	30	30	30	7
Others	18	27	27	27	27	27	27	27	27	27	9
Operating costs - Buildings:	18	24	78	78	78	78	78	78	78	78	19
- Existing Costs	18	24	24	24	24	24	24	24	24	24	6
- New Costs	-	-	54	54	54	54	54	54	54	54	13
In-Country Transport of Commodities	23	-	-	6	-	-	-	6	-	-	-
Total Other Costs	357	444	534	608	570	577	615	684	703	702	177

(1) Replacement of the equipment financed by AID in 1985 and purchase of additional needed equipment.

(2) Lodging allowance or rented houses for each counterpart before the departure of the TA, and maintenance costs of the 18 houses gradually made available to the GRC after the departure of the TA.

Table 4

GRC PERSONNEL EXPENDITURES  
(\$ 000)

	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	TOTAL
<u>SENIOR PERSONNEL*</u>												
Nkolbisson (4)	34	45	45	45	45	45	45	60	60	60	14	498
Garoua (1)	9	12	12	12	12	12	12	15	15	15	3	129
Maroua (2)	17	23	23	23	23	23	23	30	30	30	8	253
Bamenda (5)	43	57	57	57	57	57	57	75	75	75	19	629
Ekona (2)	17	23	23	23	23	23	23	30	30	30	8	250
Foumbot (2)	17	23	23	23	23	23	23	30	30	30	8	253
Dschang (2)	17	23	23	23	23	23	23	30	30	30	8	253
Total Senior Personnel (18)	154	206	206	206	206	206	206	270	270	270	68	2268
<u>SUPPORT STAFF</u>												
Existing Staff	196	261	261	261	261	261	261	261	261	261	65	2610
New Staff	126	169	169	169	169	169	169	169	169	169	40	1687
- Research Assistants (B.Sc.)	42	56	56	56	56	56	56	56	56	56	13	559
- Intermediate Assistants	32	43	43	43	43	43	43	43	43	43	9	428
- Laboratory Assistants	19	26	26	26	26	26	26	26	26	26	7	260
- General Field Workers	13	18	18	18	18	18	18	18	18	18	5	180
- Others (Drivers, Typists, etc.)	20	26	26	26	26	26	26	26	26	26	6	260
Total Support Staff	322	430	430	430	430	430	430	430	430	430	105	4297
TOTAL	476	636	636	636	636	636	636	700	700	700	173	6565

( ) number of counterparts.

\* The GRC has agreed to provide counterparts for the 18 long-term TA and to continue to pay salaries for all Cameroonians sent abroad by the project for study.

Table 3

COMMODITIES  
FY obligations (\$000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
<u>Vehicles</u>											
33 Cars	60.0	-	-	110.0	-	-	100.0	-	-	60.0	-
14 Four-Wheel Drive Vehicles	48.0	-	-	80.0	-	-	64.0	-	-	32.0	-
Total	108.0	-	-	190.0	-	-	164.0	-	-	92.0	-
<u>Furniture and Appliances</u>											
25 Sets	186.1	144.7	-	-	-	124.1	62.1	-	-	-	-
<u>Office Furniture and Equipment</u>											
13 Typewriters	7.5	-	1.5	6.0	-	-	-	-	4.5	-	-
13 Xerox Machines	50.0	-	20.0	40.0	-	-	-	-	20.0	-	-
37 Air Conditioners	18.0	-	8.0	8.0	-	-	-	-	3.0	-	-
37 Office Furniture	54.0	-	24.0	24.0	-	-	-	-	9.0	-	-
TOTAL	129.5	-	53.5	78.0	-	-	-	-	36.5	-	-
<u>Field, Research and Laboratory Equipment</u>											
7 Tractors and Spare Parts	224.0	-	-	-	-	-	-	-	-	-	-
14 Ohaus No 310 Scales	1.4	-	-	-	-	-	-	-	-	-	-
14 Ohaus No 162 Scales	2.1	-	-	-	-	-	-	-	-	-	-
7 Toledo Grain Scales	7.7	-	-	-	-	-	-	-	-	-	-
15 Hand Operator Maize Shellers	1.2	-	-	-	-	-	-	-	-	-	-
40 Maize Hand Planters	2.0	-	-	-	-	-	-	-	-	-	-
7 Maize Rolling Injection Planters	1.4	-	-	-	-	-	-	-	-	-	-
2 Rototiller	4.0	-	-	-	-	-	-	-	-	-	-
7 Dehumidifiers	1.8	-	-	-	-	-	-	-	-	-	-
5 Seed Cleaners	1.0	-	-	-	-	-	-	-	-	-	-
5 Seed Driers	5.0	-	-	-	-	-	-	-	-	-	-
11 TI-59 Programmable Calculators	1.9	-	-	-	-	-	-	-	-	-	-
4 Burrows Digital Moisture Meters	6.0	-	-	-	-	-	-	-	-	-	-
2 Nikon F11 Cameras	0.6	-	-	-	-	-	-	-	-	-	-
2 Kodak Caramate Slide Viewer	0.8	-	-	-	-	-	-	-	-	-	-

Table 3 (cont'd)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
2 Minature Weather Equipment.	6.0	-	-	-	-	-	-	-	-	-	-
2 Radio SR 206 Tranceiver	14.4	-	-	-	-	-	-	-	-	-	-
AR 210A Converter											
AR 247-2 Antenna and accessories											
. Pathology Laboratory											
Equipment - Nkolbisson	20.0	-	-	-	-	-	-	-	-	-	-
. Soils Laboratory											
Equipment - Maroua	20.0	-	-	-	-	-	-	-	-	-	-
. Entomology Laboratory Equipment -	20.0	-	-	-	-	-	-	-	-	-	-
Nkolbisson											
. Miscellaneous Equipment.	5.0	-	-	-	-	-	-	-	-	-	-
. Transportation	173.1	-	-	-	-	-	-	-	-	-	-
Others during the course of the project	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	3.0
TOTAL	519.4	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	3.0

- Vehicles: It has been assumed based on past experience, that vehicles will have to be replaced every three years.

- Furniture and Appliances: On average it has been assumed that each set of equipment will have to be replaced after five years.

- Office Furniture/Equipment: This type of equipment will be purchased locally and replaced after five years. Initially office furniture and air conditioners will be provided for cameroonian counterparts in offices build by AID. Afterwards replacement will be provided by IRA.

Field, Research and Laboratory Equipment: The list of equipment is based on needs expressed by the IRA researchers presently working within the project. It has been assumed that similar equipment will be needed in the new locations (Foumbout and Ekona). During the course of the project, \$15,000 per year has been allocated to purchase additional needed equipment.

## ANNEX D

DETAILED ENGINEERING ANALYSIS AND CONSTRUCTION PROGRAM

A. Construction Program: For this second phase of the project, construction is planned for twelve houses, seven laboratory warehouses and five offices. All construction will be on IRA property and will be distributed as shown in the Table below.

<u>IRA location</u>	<u>No. of Houses</u>	<u>Area of Office</u> (m <sup>2</sup> )	<u>Area of Warehouse</u> (m <sup>2</sup> )
YAOUNDE	2	125	234
GAROUA	1	9	234
MAROUA	2	47	234
BAMENDA	3	125	234
EKONA	2	94	234
FOURBOT	2	94	234
DSCHANG	0	0	234

The number of houses and area of office space and laboratory warehouse space was determined by analyzing requirements for staff and their counterparts needed to undertake the supplementary project.

B. Construction Cost Estimates cited in this report were based on unit costs of construction determined by analysis of past construction costs for similar facilities, after allowing for geographic differences and after updating using an estimated inflation rate of approximately fifteen percent over the last two years. Thus for houses and office buildings, unit costs of \$500 per square meter were used for Yaounde, \$550 per square meter for those locations in the West highlands and Northwest (Bamenda, Ekona, Fourbot and Dschang) and \$600 per square meter for Garoua and Maroua in the Northern regions. For laboratory warehouses, slightly lower unit costs of \$450, \$500 and \$550 per square meter respectively were used for the same geographic areas. Note that in computing required surface area of office, a thirty percent allowance was added to usable space to include requirements for walls, corridors, bathrooms, broom closets, canopies, reception/waiting area etc.

	<u>Cost of Houses</u> (Dollars)	<u>Cost of Office</u> (Dollars)	<u>Cost of Lab/Warehouse</u> (Dollars)	<u>Total cost</u> (Dollars)
YAOUNDE	200,000	62,500	105,300	367,800
GAROUA	120,000	0	128,700	248,700
MAROUA	240,000	28,200	128,700	396,900
BAIENGA	330,000	68,750	117,000	515,750
EKONA	220,000	51,700	117,000	388,700
FOUMNYOT	220,000	51,700	117,000	388,700
DSCHIANG	0	0	117,000	<u>117,000</u>
		TOTAL		2,423,550
		10% A/E DESIGN AND SUPERVISION CONTROL		242,355
		TOTAL COST (W/O Contingency)		<u>2,665,905</u>

C. Pre-construction Planning. The specific sites where construction will take place have not yet been identified. Site selection should be a joint effort by the Project Officer, Project Manager, the Director of IRA of the province concerned, the USAID Engineer and a representative from each service of the Ministry/Ministries concerned. With input from these various individuals the most suitable site will be selected from the point of view of functionality and cost effectiveness, while satisfying the overall needs and objectives of the project. The following schedule is only indicative of the approximate time frame in which construction could take place.

01

D. Indicative Pre-construction Schedule

<u>Activity</u>	<u>Duration</u>	<u>Approx. time frame</u>
1. Visit sites in field and select specific sites	2 weeks	1-15 May 1984
2. Select Surveyor to do field survey	6 weeks	16 May - 30 June 84
3. Field Survey of sites	4 weeks	2 July - 31 July 84
submittal of Survey maps	3 weeks	1 August - 22 August 84
4. Select A/E firm to do layout, design and plans and specifications including advertisement and award	10 weeks	23 August - 5 November 84
5. Layout, design Preliminary plans and Specifications by A/E	16 weeks	6 November - 29 February 85
6. Review of plans, Specifications and Estimates by USAID and GRC	3 weeks	1 March - 22 March 85
7. Preparation of final plans, specifications contract documents by A/E	4 weeks	25 March - 22 April 85
8. Advertise contract for Bids	4 weeks	29 April - 29 May 85
9. Select Contractor	2 weeks	3 June - 17 June 85
10. Award Contract	2 weeks	19 June 85 - 2 July 85
11. Initiate Construction	4 weeks	3 July 85 - 4 August 85

It is to be noted that appropriate engineering and design criteria will be developed by the A/E firm hired to prepare plans, specifications and contract documents. Considerations as to access to water, electricity, telephones etc will also be addressed by the A/E firm. Details about type of construction will be decided upon after due consideration of cost efficiency, functionality and harmony with existing buildings and the general environment.

E. Construction Schedule A detailed construction schedule will be developed by the A/E firm at the time of preparation of the contract document. It is recommended that all construction be undertaken simultaneously using several contractors because of the wide geographical dispersion of the sites. Normally construction at any one of these sites should be completed in nine months. However, eighteen months should be allowed for completion of construction because of interruption of the work during the rainy seasons (March to May and September to December). Based on the preliminary schedule shown above, it is expected that construction could start in early August 1985 and be completed by the end of January 1987.

F. Contract and Payment Procedure Because of the shortage of qualified personnel within the Ministry of Equipment to prepare plans and contract documents and administer, monitor and control the construction, it is recommended that an A/E firm be hired to prepare plans and contract documents as well as administer, supervise and control the construction. Such an A/E contract should be a direct AID contract in order to eliminate costly time delays involved with reviews and approvals through the various governmental levels. Government officials agree that a direct AID contract would be much more efficient during the construction boom period that Cameroon is presently undergoing, in view of the shortage of qualified personnel to execute and administer the contract.

It is recommended that Host Country "Modified FAR" Contracts be awarded for construction.

"FAR" is a form of project assistance where a fixed amount of reimbursement is made upon physical completion of a project, subproject or quantifiable element within the project " to cite from Appendix 3F, Paragraph B1 of HandBook 3, Part 1. Although not explicitly stated, routine inspection during the course of construction is normally not done with the FAR method.

However, because of the problems encountered with this method during the first phase of the project and with other projects using this method in Cameroon (unsatisfactory work and non completion of projects). It is recommended that there be routine inspection and submittal of progress reports by an A/E firm hired to do the supervision and control of the work.

Further, it is proposed that it be explicitly stated in the contract documents that there will be a site visit and pre-submission conference among prospective bidders, the Ministry of Equipment representative technically responsible for the project, the A/E representative and the USAID engineer. The purpose of the site visit and conference will be to afford bidders the opportunity to make significant comments, to clarify questions and to have concurrence on additional items of work that may have been omitted but which need to be inserted in the contract to assure completeness and practicability of the finished construction. In this way, there will be no recourse on the part of the contractor to requesting additional payment for needed supplemental work after the contract has been awarded.

93

It is also proposed that payments be made only at specific construction milestones such as completion of foundation, completion of structural framing (columns and beams), completion of roofing etc, and only after a joint inspection and report (at such milestones) by the A/E, the USAID Engineer and the Project Manager (GRC) or his technical representative.

During the preparation of the bid documents the A/E firm can assess what percent of value each milestone (eg completion of foundation work) will represent and on this basis establish the amount of each partial payment. In this way, payment will be in keeping with one of the essential principles of the FAR Method, that is, reimbursement based on planned outputs rather than inputs.

94

# memorandum

DATE: April 10, 1984

REPLY TO  
ATTN OF: Winfield S. Collins, P.E. PDE/GEO *WSC*

SUBJECT: 611 A (1) Certification NCRE Project Paper Supplement

THRU: Samuel T. Scott, Chief, Proj. Dev. and Evaluation Office. *ST*  
XII:

TO: Mission Director, USAID/Cameroon

This is to certify that I have examined existing as well as proposed plans and investigated engineering requirements for this project. I have also analyzed the engineering feasibility and construction costs as reflected in this Annex. Based on my evaluation of available data, I find the schedules and costs to be reasonable, and therefore recommend that you approve such schedules and estimates of cost in accordance with Section 611(a)(1) of the Foreign Assistance Act of 1961 as amended.

Approved: \_\_\_\_\_

Disapproved: \_\_\_\_\_

Date: \_\_\_\_\_



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

SPECIFIC AREAS OF POLICY CONCERN RELATED TO THE  
SUCCESSFUL IMPLEMENTATION OF NCRE PHASE II

The second phase of the National Cereals Research and Extension Project continues to focus on this primary objective, the development of Cameroonian institutional capacity to provide high quality applicable research on cereals crops and to facilitate transmission of research results to the farmer. The effective utilization of these results to meet the growing demand of food crop production in Cameroon depends upon a variety of interdependent forces and policies in the areas of population growth, marketing, and provision of inputs. USAID/Cameroon believes the GRC has recognized its needs in all of these areas and that they will be adequately addressed before completion of the project.

A. Population:

The population growth rate in Cameroon is approximately 2.7 percent per year. Although the country currently is close to self-sufficiency in foodstuffs, unchecked population growth and increased rural-urban migration can quickly outstrip any progress made in improving food crop production.

The question arises as to whether Cameroon is adequately addressing its population growth issue in light of its interest in increasing food crop production. Currently Cameroon is not experiencing population pressures and maintains a cultural heritage which is strongly pronatalist. Changes in perceptions will be slow and difficult to initiate. USAID/Cameroon already has made significant progress in this area utilizing the resources of the Future's Group RAPID presentation. Whereas in recent years it was impossible to entertain a dialogue with the GRC on population issues, the RAPID Presentation has broken the ice and received a very wide and significant audience in the GRC. The Futures Group has visited Cameroon on several occasions and places Cameroon's interest and sincerity in the subject among the top of those African nations it has visited. USAID/Cameroon is confident that this trend will continue and the GRC will make significant efforts in this area in the near future.

## B. Marketing:

The GRC generally allows the private sector to play a significant role in the country's development and places an overall reliance upon the market place for determining prices. Food crop prices have traditionally been determined by the open market without government interference or control. USAID/Cameroon expects this tradition to continue. Increased levels of food crop production will require expanded transportation and storage facilities. Cameroon currently is making major investments in its transportation system and aggressively promotes the creation of cooperatives such as those that would be expected to play a major role in the marketing of food crops. USAID/Cameroon believes that issues in this area are being adequately addressed by the GRC.

## C. Inputs:

Significant gains in the area of cereals research cannot be translated into visible gains in food production at the farm level unless the farmer has easy access to necessary inputs. These inputs include improved seed, fertilizers, herbicides, pesticides, credit, appropriate tools and agriculture extension service support.

1. Improved seed: The GRC Fifth Plan gives considerable attention to the importance of improved varieties of food crops in order to reach production targets. It has charged the Ministry of Agriculture with the operation of seed multiplication farms under the Food Development Authority (MIDEVIV). MIDEVIV currently operates 4 seed multiplication farms in 4 separate ecological zones in Cameroon. USAID is providing support for the largest of these under its North Cameroon Seed Multiplication Project. USAID has, as a secondary objective of the project, aimed at the eventual privatization of seed multiplication operations.
2. Fertilizers, pesticides, herbicides: These items are generally unavailable on the free market and are imported almost exclusively for use by large cash crop parastatals or for distribution by the Ministry of Agriculture directly. These items are subsidized at approximately 50 percent of their value, the subsidy being derived mostly from the difference between the export market prices and the controlled prices paid to

91

farmers for their cash crops. Although some of these products find their way to food crop production, they are neither the proper product nor are they available in sufficient quantities. USAID/Cameroon is developing a policy dialogue with the GRC aimed at increasing the importation of appropriate fertilizers and associated chemical products into Cameroon for use on food crops. Although initially retaining the subsidy, this would be gradually decreased and eliminated as farmers begin major involvement in food crop production. Since food crop prices are determined on the free market, pricing of inputs would also be determined by market forces.

3. Credit: Food crop production, as is true with most farming enterprises, requires capital outlays in advance for producing next season's harvest. Possession of available cash to purchase the needed inputs is especially difficult for low-income farmers whose small volume of sales barely cover their day-to-day family living costs. FONADER (National Fund for Rural Development) was created by the Cameroon Government in 1973 to promote economic and social development in the rural areas through credit and investment capital to farmers, cooperatives, development projects, etc. Therefore, it is the major supplier of funds for the development of the agricultural sector.

The primary way that FONADER extends credit to farmers is through marketing cooperatives. Inasmuch as marketing cooperatives have not been widely developed for small farmer food crops compared to export crops, this sector has not benefitted significantly from the FONADER low-interest credit. FONADER has shown interest in working with marketing cooperatives and USAID/Cameroon will continue to encourage their formation as levels of food crop production increase.

#### D. Agriculture Extension Service:

Currently it can be said that the majority of small holders are still without access to an effective food crop extension service. The ratio of farm families to extension works is about 270 to 1 which is more than adequate to ensure good coverage. The Ministry of Agriculture extension workers represent 48 percent of the total Cameroonian extension staff. The rest are part of parastatal organizations and development societies.

41

The GRC has developed a policy that when a parastatal or development society operates in an area, the Ministry of Agriculture staff would be reduced or taken over by the society. In effect, this policy often has led to duplication and waste of financial resources. Above all, these extension workers are concerned almost entirely with cash crops.

The GRC has recognized this problem and has asked USAID to assist in improving extension services in the food crop sector. Specifically, the GRC has asked USAID to assist in the creation of technical support centers as training centers for farmers and extension agents as well as mechanisms for transfer of agricultural technology. USAID/Cameroon conducted a detailed study of the Cameroon Extension Program in the latter part of 1983. This study provided a review of the agricultural extension network in each of Cameroon's 10 provinces and detailed recommendations of changes required. This study currently is under review by the GRC and preliminary indications are that USAID will be asked to assist in implementing some of the recommendations. USAID/Cameroon has complete confidence that necessary steps will be taken by the GRC to address the extension issue and is proposing the expansion of the role and number of TLU's as an intermediary step until the extension role of the Ministry of Agriculture and that of University of Dschang are allowed to develop.

	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
1 DIRECTOR PARTY (KAYI)	[Hatched]														
2 REGIONAL COORDINATOR (NYUK TAKIM)	[Hatched]														
3 ADMINISTRATIVE OFFICER (CHAMBEPLAM)	[Dotted] TO BE REPLACED BY CAMEROONIAN ADMINISTRATOR														
4 MAIZE BREEDER (CHUNG)	[Hatched]														
COUNTERPART (THE)	[Dotted]														
5 MAIZE AGRONOMIST (TONYE)	[Hatched]														
COUNTERPART (TONYE)	[Dotted]														
6 SENIOR AGRICULTURAL ECON. (To be nominated)	[Dotted]														
7 SENIOR EXTENSION AGRON. (ZEKENG)	[Dotted]														
COUNTERPART (ZEKENG)	[Dotted]														
8 CEREALS AGRONOMIST (TAILYRAND)	[Hatched]														
COUNTERPART (NGOUNGU)	[Dotted]														
9 SORGHUM BREEDER (DANGI)	[Hatched]														
COUNTERPART (KENG)	[Dotted]														
10 SORGHUM AGRONOMIST (To be nominated)	[Dotted]														
11 RICE BREEDER (JANAKIRAN)	[Hatched]														
COUNTERPART (JEUTOIG)	[Dotted]														
12 RICE AGRONOMIST (ROY)	[Hatched]														
COUNTERPART (TAKOW)	[Dotted]														
13 MAIZE BREEDER (EVERETT)	[Hatched]														
COUNTERPART (ZANGUE)	[Dotted]														
14 MAIZE AGRONOMIST (KIKAFUNDA-TWINE)	[Hatched]														
COUNTERPART (SONEH)	[Dotted]														
15 AGRICULTURAL ECONOMIST (Mc HUGH)	[Hatched]														
COUNTERPART (SAMATANA)	[Dotted]														
16 EXTENSION AGRONOMIST (NGOUNGU)	[Hatched]														
COUNTERPART (NGOUNGU)	[Dotted]														
17 AGRICULTURAL ECONOMIST (To be nominated)	[Dotted]														
18 EXTENSION AGRONOMIST (NASSAH)	[Hatched]														
COUNTERPART (To be nominated)	[Dotted]														
19 AGRICULTURAL ECONOMIST (To be nominated)	[Dotted]														
20 EXTENSION AGRICULTURAL (To be nominated)	[Dotted]														

IYA - NYOLA-BISSON  
 GAROUA  
 HAROUA  
 DSCHANG  
 BAHENGA  
 EKOUA  
 IFOUR-JECT

EXISTING IITA STAFF [Hatched] | 
 PROPOSED ADDITIONAL STAFF [Solid Black] | 
 CAMEROONIAN STAFF [Vertical Lines] | 
 LONG TERM TRAINING [Dotted]

5C(1) - COUNTRY CHECKLIST Cameroon

Listed below are statutory criteria applicable generally to FAA funds, and criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FAA Sec. 481. Has it been determined that the government of the recipient country has failed to take adequate steps to prevent narcotic drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?

NO

2. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) the debt is not denied or contested by such government?

NO

101

PAGE NO. 3M-4	EFFECTIVE DATE September 30, 1983	TRANS. MEMO NO. 3:43	AID HANDBOOK 3, App 3M
------------------	--------------------------------------	-------------------------	---------------------------

3. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? NO
4. FAA Sec. 532(c), 620(a), 620(f), 620D; FY 1982 Appropriation Act Secs. 512 and 513. Is recipient country a Communist country? Will assistance be provided to Angola, Cambodia, Cuba, Laos, Vietnam, Syria, Libya, Iraq, or South Yemen? Will assistance be provided to Afghanistan or Mozambique without a waiver? NO
5. ISDCA of 1981 Secs. 724, 727 and 730. For specific restrictions on assistance to Nicaragua, see Sec. 724 of the ISDCA of 1981. For specific restrictions on assistance to El Salvador, see Secs. 727 and 730 of the ISDCA of 1981. N/A
6. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property? NO

7. FAA Sec. 620(l). Has the country failed to enter into an agreement with OPIC? NO
8. FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. (a) Has the country seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters? NO
- (b) If so, has any deduction required by the Fishermen's Protective Act been made?
9. FAA Sec. 620(g); FY 1982 Appropriation Act Sec. 517. (a) Has the government of the recipient country been in default for more than six months on interest or principal of any AID loan to the country? (b) Has the country been in default for more than one year on interest or principal on any U.S. loan under a program for which the appropriation bill appropriates funds? NO
10. FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the amount of foreign exchange or other resources which the country has spent on military equipment? (Reference may be made to the annual "Taking into

109

PAGE NO. 3M-6	EFFECTIVE DATE September 30, 1983	TRANS. MEMO NO. 3:43	AID HANDBOOK 3, App 3M
------------------	--------------------------------------	-------------------------	------------------------

Consideration" memo:  
 "Yes, taken into account by the Administrator at time of approval of Agency OYB." This approval by the Administrator of the Operational Year Budget can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.)

Yes, taken into consideration by the Administrator at the time of approval of Agency OYB.

11. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?

NO

12. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? (Reference may be made to the Taking into Consideration memo.)

The GURC's payments are not in arrears.

13. FAA Sec. 620A; FY 1982 Appropriation Act Sec. 520. Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed an act of international terrorism? Has the country aided or

NO

104

abetted, by granting  
sanctuary from  
prosecution to, any  
individual or group which  
has committed a war crime?

14. FAA Sec. 666. Does the country object, on the basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. who is present in such country to carry out economic development programs under the FAA?

NO

15. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it transferred a nuclear explosive device to a non-nuclear weapon state, or if such a state, either received or detonated a nuclear explosive device, after August 3, 1977? (FAA Sec. 620E permits a special waiver of Sec. 669 for Pakistan.)

NO

16. ISDCA of 1981 Sec. 720. Was the country represented at the Meeting of Ministers of Foreign Affairs and Heads of Delegations of the Non-Aligned Countries to the 36th General Session of the General Assembly of the U.N. of Sept. 25 and 28, 1981, and failed

Cameroon did reserve on various aspects of the Communique which were detrimental to U.S. interests. This was taken into account by the Administrator at the time of approval of the Agency OYB.

PAGE NO. 3M-8	EFFECTIVE DATE September 30, 1983	TRANS. MEMO NO. 3:43	AID HANDBOOK. 3, App 3M
------------------	--------------------------------------	-------------------------	-------------------------

to disassociate itself from the communique issued? If so, has the President taken it into account? (Reference may be made to the Taking into Consideration memo.)

17. ISDCA of 1981 Sec. 721.  
See special requirements for assistance to Haiti.

N/A

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria.

a. FAA Sec. 116. Has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that contemplated assistance will directly benefit the needy?

NO

2. Economic Support Fund Country Criteria

a. FAA Sec. 502B. Has it been determined that the country has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, has the country made such significant improvements in its human rights record that furnishing such assistance is in the national interest?

NO

10/1

b. ISDCA of 1981, Sec. 725(b). If ESF is to be furnished to Argentina, has the President certified that (1) the Govt. of Argentina has made significant progress in human rights; and (2) that the provision of such assistance is in the national interests of the U.S.?

N/A

c. ISDCA of 1981, Sec. 726(b). If ESF assistance is to be furnished to Chile, has the President certified that (1) the Govt. of Chile has made significant progress in human rights; (2) it is in the national interest of the U.S.; and (3) the Govt. of Chile is not aiding international terrorism and has taken steps to bring to justice those indicted in connection with the murder of Orlando Letelier?

N/A

Sec. 133 Notwithstanding any other provision of this joint resolution, none of the funds appropriated under section 101(b) of this joint resolution may be available for any country during any 3-month period beginning on or after October 1, 1982, immediately following the certification of the President to the Congress that such country is not taking adequate steps to cooperate with the United States to prevent narcotic drugs and other controlled substances (as listed in the schedules in section 202 of the Comprehensive Drug Abuse and Prevention Control Act of 1971 (21 U.S.C 812) which are produced, processed, or transported in such country from entering the United States unlawfully.

The President has made no such certification.

Wm

Prepared by: AFR/CA William Faulkner 103/83

Clearances:

AFR/CA: RHynes RAHynes  
GC/AFR: JScates \_\_\_\_\_  
IO/UNP: CEDillery CS  
AF/C:DO'Dell Dell

A N N E X H

E V A L U A T I O N O F  
P H A S E I

PROJECT EVALUATION SUMMARY (PES) - PART I

Project Symbol U-417

<p>1. PROJECT TITLE</p> <p>National Cereals Research and Extension Project</p>	<p>2. PROJECT NUMBER</p> <p>631-0013</p>	<p>3. MISSION/AGENCY OFFICE</p> <p>USAID/Cameroon</p>
<p>4. EVALUATION NUMBER (Enter the mission number assigned by the reporting unit e.g., Country of AID/W Administrative Code, Fiscal Year, Serial No. beginning with 100, 1000, etc.)</p> <p>631-84-1</p> <p><input checked="" type="checkbox"/> REGULAR EVALUATION    <input type="checkbox"/> SPECIAL EVALUATION</p>		

<p>5. KEY PROJECT IMPLEMENTATION DATES</p> <p>A. First MIC-AG or Equivalent FY <u>79</u></p> <p>B. Final Collection Expected FY <u>85</u></p> <p>C. Final Incent Delivery FY <u>85</u></p>	<p>6. ESTIMATED PROJECT FUNDING</p> <p>A. Total \$ <u>13,313,000</u></p> <p>B. U.S. \$ <u>7,697,000</u></p>	<p>7. PERIOD COVERED BY EVALUATION</p> <p>From (month/yr.) _____</p> <p>To (month/yr.) _____</p> <p>Date of Evaluation Review _____</p>
--	---	---

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAN, PIC, which will present detailed request)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
---	---	--------------------------------

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAN, PIC, which will present detailed request)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Baseline information should be collected to better measure project achievements	Atayi Moustafa Thompson	December, 1983
2. IRA should hire more counterparts (specialties as listed in PES) for IITA technicians	Eckebil	June, 1984
3. Additional long-term training should be included in the project	Moustafa	May, 1984
4. Establish clear strategy to strengthen linkages and cooperation with MINAGRI's extension service	Moustafa Eckebil Atayi	January, 1984
5. Based on USAID/IITA/IBRD investigations, USAID project officer should make recommendations as to (a) how many (if any) additional agronomists should be hired (b) how many Testing and Liason Units should be added and where, and (c) how many people should staff TLU's. Recommendations should carefully weigh recommendations in PES	Moustafa	December, 1983

<p>9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS</p> <table> <tr> <td><input checked="" type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input checked="" type="checkbox"/> PIC/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIC/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIC/P</td> <td>_____</td> </tr> </table>	<input checked="" type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIC/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIC/C	<input type="checkbox"/> Other (Specify) _____	<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIC/P	_____	<p>10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT</p> <p>A. <input type="checkbox"/> Continue Project Without Change</p> <p>B. <input type="checkbox"/> Change Project Design and/or</p> <p><input checked="" type="checkbox"/> Change Implementation Plan</p> <p>C. <input type="checkbox"/> Discontinue Project</p>
<input checked="" type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIC/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIC/C	<input type="checkbox"/> Other (Specify) _____											
<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIC/P	_____											

<p>11. PROJECT OFFICER AND HOST COUNTRY OR OTHER BANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)</p> <p>Abdel Moustafa, USAID</p> <p>Elvin Frolik, consultant</p> <p>George Alcorn, consultant</p> <p>Jacques Eckebil, IRA/DGRST</p> <p>Emmanuel Atayi, Chief of Party</p> <p>Randal Thompson, USAID</p>	<p>12. Mission/AID/W Office Director Approval</p> <p>Signature: <i>Ronald D. Levin</i></p> <p>Typed Name: Ronald D. Levin</p> <p>Date: 12/7/83</p>
---	--

110

## S U M M A R Y

### Project Description

The National Cereals Research and Extension Project (631-0013) proposes to develop the institutional capacity of the Institute of Agronomic Research (IRA) to provide high quality research on maize, rice, sorghum, and millet, as well as to develop linkages to facilitate transmission of the research results to the farmer.

The project agreement was signed on August 31, 1979, setting the PACD as June 30, 1985. In June, 1983, PACD was extended until December 31, 1985.

The project is being implemented by the Institute of Agronomic Research, a branch of the General Delegation for Scientific and Technical Research (DGRST) in collaboration with the International Institute of Tropical Agriculture (IITA) of Ibadan, Nigeria.

Nine IITA researchers have been stationed in various climatic zones of Cameroon to initiate research relevant to the farmers of these various zones. Research stations are found at Bambui, Dschang, Maroua, Nkolbisson, Fombot, and Ekona.

### Evaluation

The first evaluation of the project was conducted during September and October, 1983 by two outside consultants, Elvin Frolik, agricultural research expert, formerly Dean, College of Agriculture, University of Nebraska, Lincoln, and George B. Alcorn, agricultural extension expert, formerly Director, Cooperative Extension Service, University of California, Berkeley. Their evaluation report is attached to this summary. The consultants were assisted by the USAID Project Officer, Abdel Moustafa. A review session to discuss the evaluation findings was held in October, 1983. Comments made in this meeting are included in this summary.

### Evaluation Findings

The evaluation team concluded that the NCRE project is an excellent one. The success to date is due to several factors:

- (1) there existed a great need for strengthening research on cereal grains in Cameroon;
- (2) the project is well conceived;
- (3) within funding limitations, the GURC is very supportive of the project;
- (4) USAID is providing substantial funding and considerable leadership;
- (5) IITA has assembled an unusually capable staff to help the Cameroonians conduct research and institution building;

111

- (6) the production and quality of research conducted to date is excellent; and
- (7) the clientele (Cameroonian farmers and other agriculturalists) are receptive to the research results.

#### Potential Problem Areas

The team pointed out some potential problem areas and offered recommendations to address these areas. These areas and recommendations include:

##### 1. Testing and Liaison Units (TLUs)

(1) The evaluators noted that the TLUs have played a limited role to date in strengthening the relationship between research, extension, and farmers, due to the facts that (a) there is heretofore only one TLU in the country; (b) the NCRE program is relatively new and (c) the extension staff as a whole is not trained in agriculture and cannot function in any effective teaching role without some considerable instruction (see page 23-24).

(2) The TLUs must chart their course carefully and be sure that they do not traverse over into the domain of extension, which is under the purview of the Ministry of Agriculture and other parastatals. The TLUs should cooperate with the extension services through the provision of technical information, planting materials, furnishing research persons at training schools for village workers and at other places, and performing other similar functions, but not in conducting extension programs directly (see page 46).

(3) Two additional TLUs should be added, one at Ekona and one at Nkolbisson. There should be only one person staffing each TLU rather than two. This individual should be the "liaison person" between research and extension, "a sort of broker bringing two persons (researcher and farmer user) together but not being a principal". Individuals conducting operational research, or field trials, should be titled researchers, not TLU liaison staff (see page 77).

##### 2. Additional Researchers

IITA and USAID should hire the following additional researchers:

- (1) Cereal Agronomist at Foumbot
- (2) Cereal Agronomist at Nkolbisson
- (3) Cereal Agronomist at Maroua

Justification for these additional researchers is found on pages 75-76.

USAID should consider increasing the amount of training funded by the project to assure that counterparts for the above recommended researchers are adequately trained.

112

During the review session for the Frolik/Alcorn report, Ayuk-Takem, Maize Breeder and Coordinator for the NCRE project asserted that a cereals agronomist with a strong background in soil science is needed at Garoua. In addition, a maize breeder to immediately begin varietal improvement work is required. Dr. Ayuk-Takem also recommended that the proposed maize research agronomist for Foubot might also work with Dr. Kikafunda-Twine to carry out maize agronomic trials in the highland zone of Cameroon, as well as in Foubot.

Dr. Ayuk-Takem also recommended that a second agronomist is needed at Nkolbisson so that better coverage is achieved for the three Provinces of Centre, South, and East.

Dr. Ayuk-Takem recommended that where NCRE staff are based some sort of financial assistance should be accorded to those stations by the NCRE Project, since in some cases, these stations share the same facilities with NCRE staff (e.g. vehicle, repairs, fuel, some research supplies, etc.)

In addition, the evaluation report pointed out, and this fact was again stressed by A M Maimo, the Deputy Director of IRA at the evaluation review meeting, that the researchers have been dispersing their efforts too much. The evaluators found that the researchers have been planting experiments in areas too remote from their base. As a consequence, the researchers struggle to properly supervise their experiments and have difficulty being on site for the major steps of their research protocols. This fact speaks strongly for increasing the number of researchers.

It was decided at the evaluation review meeting that the exact number of new researchers to be recommended would emerge from the USAID/IITA/IBRD efforts to design a project supplement, to take place in November, 1983.

### 3. Counterparts

Since the project attempts to build-up IRA's capacity to conduct research, it is critical to assess the number and qualifications of counterparts; currently, there are an inadequate number of qualified counterparts for the researchers (see pages 29-30).

### 4. Long-Term Training

Two participants have returned from the United States, five are currently in the United States, and two are expected to start their graduate training soon.

The evaluators concluded that the long-term training program as planned in the project is inadequate in some respects. The evaluators concluded that all long-term trainees should receive PhDs, so that they will have an adequate salary and status to function effectively in the Cameroonian system. Two additional participants should be trained, in rice agronomy, physiology and entomology (see page 41).

### 5. Measuring Project Impact

The evaluators recommended that certain steps be taken to better measure the project's contribution to increased productivity of maize, rice, sorghum, and millet. They recommend that benchmarks be established and data later collected on Cameroonian IRA staff, their educational levels, supporting personnel, research physical facilities, research accomplishments including varieties released or at least identified, and the extent to which the research accomplishments constituted improvements (see pages 33-37).

### 6. Required Government of Cameroon Commitments

In the short-run, if the NCRE project is to continue its success, the Government of Cameroon will have to assure that:

(1) IRA research centers are better equipped. Buildings and research equipment are sorely lacking and must be improved immediately (see page 48)

(2) IRA must hire more scientists and technicians to be counterparts for the IITA researchers. An effort should be made at a high governmental level to review recruitment practices so that an adequate number can be hired.

(2) Cameroon should establish at the national level a Board which will have the function of approving for production in Cameroon all cereal crop varieties released and/or recommended by the IRA or by any other agency or individual (see page 75)

In the long-term, if the research capacity is to be successfully institutionalized and linked to the small farmer, the Government of Cameroon will have to make certain far-reaching commitments. These include:

(1) Expenditure of more funds to the development of an extension service and mandating improved cooperation between research bodies, parastatals, and the Ministry of Agriculture.

(2) Establishment of a full-scale seed program. This will include seed laws, a seed certification program, and a seed tasting laboratory (see pages 46-47).

(3) Improvement of roads and communication facilities and services, to better link the small farmer to improved technologies (see page 46).

(4) A re-assessment of the pricing-marketing system of food crops (see page 47).

(5) A reinforcement of the professional status of research scientists and more assistance for their publication of articles and presentation of papers at professional society meetings (see page 47).

(6) An improvement of the input-distribution system.

164

AN EVALUATION  
OF PROJECT 631-C013

NATIONAL CEREALS RESEARCH AND EXTENSION

---

THE GOVERNMENT OF THE UNITED REPUBLIC OF CAMEROON

UNITED STATES AGENCY FOR INTERNATIONAL  
DEVELOPMENT

INTERNATIONAL INSTITUTE FOR TROPICAL AGRICULTURE

---

YACOUNDE, CAMEROON

Elvin F. Frolik and George B. Alcorn

October, 1983

## TABLE OF CONTENTS

	<u>PAGE</u>
I. ACKNOWLEDGEMENTS.....	1
II. INTRODUCTION AND TERMS OF REFERENCE.....	2
III. RESPONSES TO ISSUES IN THE PROJECT PAPER.....	4
IV. RESPONSES TO THE QUESTIONS LISTED IN THE SCOPE OF WORK.....	9
V. DISCUSSION.....	45
VI. SUMMARY.....	48
VII. ACRONYMS.....	50
VIII. REFERENCES.....	51
IX. APPENDICES.....	54
i. THE PROVINCES AND CAPITAL CITIES OF THE UNITED REPUBLIC OF CAMEROON.....	54
ii. IRA CENTERS, STATIONS AND SUBSTATIONS (ANTENNE).....	55
iii. MAP OF CAMEROON.....	56
iv. CONFERENCES HELD AND SITES VISITED.....	57
v. STATUS OF MAIZE VARIETIES BEING GROWN IN CAMEROON AT THE TIME NCRC BEGAN ITS RESEARCH ACTIVITIES.....	70
vi. REQUIREMENTS FOR A PROSPEROUS AGRICULTURE.....	72
X. APPENDUM.....	75

1/16

## ACKNOWLEDGEMENTS

The Evaluation Team<sup>1/</sup> received excellent cooperation in the course of making the review for the evaluation of USAID Project No. 631-CO13, the NCRE, IRA, DGRST. The Cameroonian, USAID, and IITA officials and staff members were all most helpful in providing information, making arrangements for conferences and trips of inspection, and generally in making the assignment productive and pleasant. It is almost unfair to name names because so many helped so much in so many ways. Yet we feel we would be remiss if we did not mention Dr. Abdel M. Moustafa, USAID/Yaounde, Project Officer, and Dr. Emmanuel A. Atayi, Chief of Party, IITA Team, NCRE, IRA, who jointly provided most effective leadership during the course of the review and who so efficiently handled the logistics of the assignment, especially during the approximately three weeks spent in traveling over the country. Credit is also due to Dr. Moustafa for contributing directly to this Report the responses to those sections of the Scope of Work having to do with construction, procurement of equipment including vehicles, and the participant program.

We deeply appreciate the interest that Mr. Ronald D. Levin, Director, USAID Mission, Cameroon, took in the Evaluation, including his presence and helpful suggestions made at the final presentation of the review.

We are indebted to the Director of IRA, Dr. Jacques-Paul Ekebil, for taking time from his busy schedule to provide pertinent information and counsel concerning the Evaluation. His assistance contributed substantially to our assignment.

---

<sup>1/</sup> Elvin F. Frolik, Consultant, Agricultural Research Management, (ISU) (formerly Dean, College of Agriculture, University of Nebraska, Lincoln).

AND

George B. Alcorn, Consultant, Agricultural Extension, USAID (formerly Director, Cooperative Extension Service, University of California, Berkeley).

We appreciate and can never repay the hospitality of so many Cameroonians and USAID and INTA staff members, and oftentimes their wives, in inviting us to luncheons and dinners. We were especially honored to dine at the homes of the Fon of Bamouka; Moslem Judge Akali of Ndop and Klan Chief Lawan Siddiki of Yoideo.

In summary, we shall never forget Cameroon - the friendly hospitality of its people, the complex variety of environmental conditions accompanied by the never ending beautiful scenery, its great potential agriculturally, its rapid economic progress, and its importance among the nations of West Africa. We sincerely hope that through our assignment we will have contributed something to the welfare of the deserving people of Cameroon.

## II. INTRODUCTION AND TERMS OF REFERENCE

An in-depth review, for the purpose of making an evaluation, was conducted in Cameroon during the period of 27 August through 11 October, 1983, of USAID Project No. 631-CO13, the National Cereals Research and Extension Project (NCRE). The project did not get fully underway until early 1982 and is to be in effect through December 1985.

Copies of the basic documents consisting of the Project Paper (A1) <sup>1/</sup> Project Grant Agreement between the United Republic of Cameroon and the United States of America for National Cereals Research and Extension (A2); and the contract for National Cereals Research and Extension between USAID Yaounde, American Embassy, and the Institute of Tropical Agriculture, Nigeria, Ibadan (A3) are in the official files of USAID/Yaounde and were made available to the members of the Evaluation Team.

The Terms of Reference were provided in the "Scope of Work for the Evaluation of the NCRE, 631-CO13" (B1). It was agreed early in the review that Elvin F. Frolik, George B. Alcorn and Abdel Moustafa would prepare

---

<sup>1/</sup> The letters and numbers in parenthesis correspond to the references listed in Section VIII.

112

responses to the issues presented (BI) which now appear in this Report. Randal Thompson, utilizing the contents of the above report as well as drawing upon her own observations and those of the other members of the Evaluation Team, prepared the Project Evaluation Summary as required by AID.

In assembling needed information, the Evaluation Team reviewed, in addition to the above, in varying degrees, a series of documents listed in Section VIII. Numerous conferences were held with groups and individuals who are directly involved in IRA, NCRE, or who have at least some interest in the Project. Site visits and conferences outside of Yaounde were made on two major trips over the country, each taking about 10 days. The first included the North West, West, South West and the Littoral Provinces; and the second the Extreme North, North and Adamaoua Provinces.

Specifically what was expected of the Evaluation Team, how the review, was to be conducted, and the information to be included in the Report were clarified and in fact to some extent developed in a series of conferences held at various times during the course of the review. In addition to the Evaluation Team these conferences were all attended by Mr. William Litwiller, Dr. Abdel Moustafa and Ms. Randal Thompson. Others joined in from time-to-time.

In addition to the above, on 31 August, Dr. Bernard D. Wilder, Acting Director, USAID/Camercon, and Mr. Stanley Handleman, Acting Deputy Director, briefed the team on the type of information and recommendations which would be of prime importance to the top administration of the USAID Mission.

Taking into account the instructions provided as outlined above, the background information gained, and in the time available, the members of the team have made the Project Evaluation as presented in this Report.

### III. RESPONSES TO ISSUES IN THE PROJECT PAPER.

Determine whether assumptions of Project, and its design logic are still valid, and whether Project activities, as currently undertaken will lead to Project objectives, whether Project objectives should be changed (B1)

The various issues in the Project Paper (A1) and our responses are as follows:

Issue: Develop Cameroonian capability to more adequately cover research and production development of maize and rice (sorghum and millet subsequently added) while developing high yielding disease and insect-resistant varieties of maize and rice and companionable production system for distribution to farm holders, and to develop a small, highly-skilled extension capability to distribute research results to the smallholder.

Response: The choice of the word "companionable" is open to question. A more direct phrasing and what is actually being done is 'making studies on maize, sorghum and millet - not rice - in mixed "cropping systems"

The IRA is a research organization. It should provide resource people to help train extension workers but to state as a part of the purpose "...to develop a small, highly-skilled extension capability..... is to overstate IRA's role in extension. It should be borne in mind that extension is the responsibility of the Ministry of Agriculture and of the parastatals and authorities which are closely associated with that Ministry, and not of the DGRST. This is in no way to say that the role of the IRA is not to generate research results and varieties which will be of prime value to and utilized by farmers.

Issue: The purpose of the National Cereals Research and Extension Project (NCRE) is to develop the institutional capacity to provide high quality research on maize, rice, sorghum and millet, as well as to develop efficient linkages to facilitate transmission of the research results to the farmer.

Response: The above statement is acceptable but it should be elaborated by stating that the linkages should be established jointly with those organizations and individuals who have the prime responsibility for supervising and training the extension workers at the village level.

Issue: The objectives of the Project are:

(a) To develop the institutional capacity to provide high quality research on maize, rice, sorghum and millet.

(b) To develop efficient linkages to facilitate transmission of the research results to the farmer.

Response: Cogently stated. We agree fully.

Issue: The researchers design the tests and supervise personnel of the extension services and/or parastatal organizations who, in turn, supervise the farmers executing the tests.

The farmer field trial/demonstrations should also shorten the time required for testing prior to the general release of research results. We propose the establishment of TLU to design the methodology of the field tests; coordinate the testing program; study the results, including the socio-economic impact of the proposed recommendations; feed back the results and other problems facing farmers to the researchers for further research and translate the research results into recommendations for extension personnel.

JRA has made sufficient progress on maize research to permit implementation of trials on farmers' fields. The international (rice) research institutions have built up a backlog of results which are ready for testing in Cameroon.

Little research has been done on tropical sorghum and millet, but some has been carried out in Cameroon.

Response: Sentence 1 - We disagree. It is not a proper function of researchers to ".....supervise personnel of the extension services and/or parastatal organizations.....". This is the function of higher ranking

121

staff within these respective organizations. It is a proper function of the researchers to design demonstration plantings, provide seed and planting plans, provide appropriate counsel, and participate in training schools as needed by the cooperating organizations.

With reference to the last two paragraphs of the above issue, there is sufficient background information and there are varieties available to conduct experimental trials on farmers' fields, either by researchers or by the TLU staff, or both, and actually both are underway. As of 1983, the first section of the last sentence is not correct. There is a great deal of research underway on sorghum and millet in the tropics.

Issue: . . . . .GJRC agencies and Ministries implementing agricultural programs coordinate efforts to improve their efficiencies. . . . .

Response: The team found excellent cooperation between NCRE and a number of the parastatals and authorities. NCRE also has good liaison with the IRA Center Chiefs, Provincial Delegates of Agriculture and Projet Semencier.

Issue: . . . . .Small producers must have access to improved technology.

Response: Agreed.

Issue: . . . . .that adequate human and financial resources will be provided for agricultural research and that other donors provide adequate assistance to other aspects of agricultural research. . . . .

Response: GJRC, through IRA, is no doubt doing its best to provide the necessary resources. However, there is an acute shortage of people trained to the Masters and Ph.D. levels in agriculture and, further, there exists a similar shortage of persons trained to the baccalaureate level in agriculture, who would be eligible to undertake graduate training. So, on this point of adequate human resources, the above assumption is not valid.

With regard to financial resources, IRA has lagged somewhat in providing physical facilities for the staff of scientists working on

111

cereals. This can perhaps be attributed to a lack of the necessary finances

On the other donors, the Team lacks sufficient information to make a valid judgement. There do appear to be quite a number of donors but, almost without exception, those contacted expressed a strong preference for IRA doing all of the research on cereals, thus enabling them to concentrate their efforts on education and other aspects of agricultural production. (an exception is that SEMRY did not request assistance on rice research)

Issue: The TLU will have at the end of Phase II, an Extension Agronomist, an Economist, a Rural Sociologist, a Chief Training Officer and a Publications Officer. All except the Senior Extension Agronomist should be on board at the end of Phase I.

We assume that:.....the Social Scientists are permitted to participate in designing the methodology for the field tests and will cooperate with the biological scientists.

Response: Inasmuch as the IRA has not had extension responsibilities delegated to it, the term "Extension Agronomist" may not be appropriate. Perhaps "Agronomist or Economist, cooperating with Extension" would be more in order.

"An Economist" is acceptable since there are already two on the IITA staff. The addition of a Rural Sociologist is acceptable only as a replacement for one of the Agricultural Economists, should one of them leave the IITA staff before the Project is phased out. We would place a low priority on the position of a Training Officer. What is needed is solid subject matter to teach - the "arranging" of schools and training sessions can and should be done largely by other agencies.

The position of Publications Officer should be at the IRA level or possibly even higher - it does not belong at the Cereals Division level.

The first portion of the last paragraph should be removed. This type of thinking appears to imply that there needs to, be a "bridge, i.e.

123

someone else, between plant scientists working in agriculture and farmers. Persons doing applied research (and presently that is the only kind being carried on by NCPE) must, as a part of their job, be close to farmers to assess their needs and to plan experiments which will help to solve those problems. They can often do this best directly, not through someone in another discipline. The best example we saw of direct assistance to a farmer was that of Dr. Dangi, sorghum breeder, conducting a variety test on the farm of Chief of Clan, Lawan Siddiki, at Yoldeu in the Extreme North Province. Chief Lawan had seen some of Dangi's plantings elsewhere and asked for further assistance. Dangi proposed planting a variety test on land which had not been farmed previously. The Chief accepted and provided the necessary land and farming operations, with Dangi supervising the research. When viewed on 21 September, the test looked very good. It constitutes an almost dramatic demonstration of what can be done; i.e., converting bush to first-class farming land in three months time. Chief Siddiki is extremely pleased with the development. With 16 villages being involved, the spread of influence will be substantial.

The assumption that ".....the Social Scientists.....participate in designing the methodology for the field tests....." borders on the ludicrous. We believe they could contribute almost nothing to designs of biological experiments. The assistance of a biostatistician would be much more in order.

We think the best use of social scientists can be made by their working primarily within their own disciplines. Cooperation among all agricultural scientists is highly desirable, but to imply that one should serve as a "crutch" for another is not realistic. As these various scientists maintain close liaison, each can best determine what assistance from the others and what types of cooperation are indicated.

In summary, the basic objective of the Project should be modified slightly to read somewhat as follows: "Strengthen Cameroonian research capabilities to more adequately cover varietal improvement and production

124

practices of maize, rice, sorghum and millet. Special attention should be given to mixed cropping systems. The highly variable and complex environmental conditions of Cameroon must be recognized. Special problems resulting from multiple cropping and producing moukwari crops have to be dealt with in the research programs. Incorporation of storage and palatability qualities in cereal grains is important along with the more traditional aspects of incorporating insect and disease resistance in new varieties. Finally, capability should be strengthened in the IRA to provide appropriate technical backstopping for extension programs."

Question: Is the Number of Technicians Adequate?

Responses from NCRI staff:

- (1) Bambui: Assuming that Dr. Everett will be at Bambui, and that Dr. Kikafunda-Twine will be able to concentrate on maize agronomic research, no more IITA technicians needed here.
- (2) Dschang: Yes.
- (3) Maroua: No. Need sorghum agronomist to be stationed at Maroua to serve the entire sorghum growing area. Also another sorghum breeder to be stationed at Garoua. Do not want TLU.
- (4) Nkolbisson: No. Need TLU to cover East, South and Central Provinces. Not many parastatals and authorities in this general area so need for extending research results greater than in some other portions of the country.
- (5) Ekona: T.J. Ambe, Agronomist, made a plea for IITA technicians - agreed that TLU would be acceptable. He stated that the area is one of the most promising for maize - two crops can be grown annually - one during the rainy season and the other on swamp land in the dry season. Chung, on the other hand, says that Ekona gets too much rain - 2284mm. annually (C2) - to grow maize for grain. In both 1982 and 1983, vivipary was very serious in Chung's tests. Main use for maize is for eating green.

125

Responses from Evaluation Team:

- (1) Bambui: Shift Kikafunda-Twine from TLU to full-time maize research. McHugh to handle TLU.
- (2) Marcua: Add one sorghum/millet research agronomist.
- (3) Nkolbisson:
  - (a) Add TLU - one agronomist with extension background and experience in conducting replicated field trials - to work on maize.
  - (b) Add one maize research agronomist.
- (4) Ekona: Add TLU - one agronomist with extension background and experience in conducting replicated field trials - to work on maize.
- (5) Foumbot: Add one maize research agronomist.

Question: Are the Technicians located in the most appropriate agroclimatical zones relative to the need for agronomic research required for increased food production?

Responses: Taking into account where IRA Centers and Stations are located, where the respective crops are adapted, and where the parastatals and authorities are operating, the answer in general is "yes". This applies to both present and proposed staff. The explanation by crops for the above is as follows:

(1) Maize Breeding. Maize is grown to some extent in all ten Provinces, although it is probably not the best cereal for the northern part of the country where annual rainfall is 300mm. or less. The two maize breeders and their counterparts will cover the principal maize growing areas - Dr. Chung the lowlands (under 300m. elevation) and Dr. Everett the highlands (above 300m. elevation).

(2) Maize Agronomy

- (a) Kikafunda-Twine located at Bambui.
- (b) TLU at Bambui.

- (c) Maize Agronomist to be stationed at Fombot
- (d) TLU at Ekona.
- (e) Maize Agronomist to be stationed at Nkolbisson to cover the East, South and Central Provinces.
- (f) TLU at Nkolbisson.
- (g) Talleyrand stationed at Garoua to cover the Adamacua North and Extreme North Provinces, wherever maize is of significant importance.

(3) Sorghum/Millet

- (a) Sorghum/millet breeding  
Dangi stationed at Marcoua will handle these crops. Sorghum grown chiefly in 400mm. to 1000mm. rainfall areas and millet grown chiefly in the 200 to 400mm rainfall isoyets (C1).
- (b) Sorghum/millet agronomist to be stationed at Marcoua and will parallel Dangi's geographic area of work.

(4) Rice

- (a) Rice Breeding.  
Janakiram stationed at Dschang to cover entire nation.
- (b) Rice Agronomy  
Roy stationed at Dschang, to parallel the work of Janakiram.

Question: What is the relationship and degree of cooperation between NCF (IITA) staff and IRA permanent staff, with respect to the following:

(1) Is it adequate?

Response: Yes.

(2) How does each technician (IITA) fit into the overall personnel structure of IRA stations?

Response: All present and proposed IITA technicians fill and will fill on an ad hoc basis critical needs at the IRA stations.

(3) What are contributions to agricultural research management decisions?

Response: Ayuk-Takem states that IITA staff are included in the making of such decisions.

(4) How are the technicians project management skills?

Response: Appear to be entirely satisfactory.

(5) Are they efficient in planning, organizing, monitoring and administering the project?

Response: In general the technicians are incorporating in their field experiments comparisons which will generate information and improved varieties which will meet vital needs of Cameroonian agriculture.

The experimental designs used (in most cases randomized complete block design) are appropriate, except that in a few cases of agronomic research the split-plot design might have been preferable (see # 5-p.373). The latter design could reduce the danger of human error in conducting the experiments as well as enhancing the precision on the most important comparison being made. The number of replications used is generally appropriate. In some cases the technicians appear to be running too many experiments over too wide an area. There were a few cases of unsatisfactory stands and possible mix-ups where planting and treatments have been delegated to others. Generally, the principal investigator should be present when tests are planted, treatments (such as fertilizers) applied, and at harvest. Depending upon the particular experiment, some additional inspections during the growing season are also desirable. It is recognized that with roads in Cameroon being what they are and communication facilities being inadequate, the above will not be possible 100% but it should be the goal. The proposed additional staff will cut down on the areas to be covered by the maize researchers, which should enable each one to give more personal attention to each of his field experiments.

Question: Was adequate supporting staff (technicians, laborers) been assigned for each program?

Response: A total of 13 technicians are listed (D4) for the NCRE Project of whom four are presently in training. All stations where NCRE work is underway are shown as having one or more technicians and in addition Njombe and Ntui are shown as having one technician each. The situation at the respective stations is as follows:

- (1) Nkolbisson: Has three technicians who should be sent abroad for short-term training.
- (2) Dschang: Reported being short of both technicians and laborers.
- (3) Marcoua: Answered this question in the negative.
- (4) Garoua: Talleyrand stated that he has no technicians, although one is listed for Garoua (D4)
- (5) Bambui: No direct response from staff. Seven technicians are listed for this Station (D4)
- (6) Summary: In the "Scope" conferences, this question did not receive a great deal of attention, which would make it appear that it does not constitute a major problem. However, the Evaluation Team recommends that a further check be made in order to obtain a more definitive answer to this question so that corrective action (if any is needed) can be taken.

Question: What is the quality of technical assistance

Response: This question implies degree of motivation, qualifications, and over-all capabilities of IITA staff.

The Evaluators congratulate CURC, DGRST, IRA, USAID and IITA on assembling an outstanding staff. These technicians as a group would measure up well with agricultural research organizations over the world. They are well trained, have good native ability, are highly motivated, conscientious and sincerely interested in helping Cameroon improve its agricultural sector.

Of the nine members of the technical staff, all but one have Ph.D. degrees, one in agricultural economics (Atayi), and the rest

in plant breeding and/or agronomy, including soils. McHugh has a Masters degree in agricultural economics. All of the respective highest degrees were earned at excellent universities (land grant in all cases in the U.S.) in Australia, Canada, India and the United States. The diversity of educational institutions represented adds strength to the team. Most of the IITA staff had prior professional work experience in addition to their strong academic backgrounds.

Every effort should be made to maintain the present high staff standards in future hirings.

Another noteworthy fact is that nine of the ten IITA staff members have lived, gone to school, and/or worked in more than one country prior to coming to Cameroon. Thus they did not have to undergo the "cultural shock" so commonly experienced by expatriates who have previously lived in only one country. All of the nine staff members already on location appear to be comfortable and happy with their surroundings and living conditions - an important factor in expatriates doing good professional work.

Question: What is the educational level and number of IRA staff/ researchers associated with and/or assigned to the project?

Response:

IITA Staff Member

Emmanuel A. Atayi, Ph.D

Toby Chamberlain

Jay Chung, Ph.D.

Cameroonian Counterpart

Jacob A. Ayuk-Takom, Ph.D.

Passan Ezechiel, Degree in Law,  
Baccalaureate + additional year

Jean-Bosco Zangue, B.Sc. Scheduled  
to become participant and being  
replaced by Charles Thé, Ph.D.

✓ 130

IITA Staff MemberCameroonian Counterpart

Animesh C. Roy, Ph.D.

Takow Julius A., M.Sc. (recently returned from studying at Louisiana State University).

D. Janakiram, Ph.D.

Fabien Joutong when he completes M.Sc degree at Louisiana State University in 1984.

Henry Talleyrand, Ph.D.

Ngoumou Nga Titus, B.Sc.

Om P. Dangi, Ph.D.

Partial - Kenga Richard. Ingénieur de Travaux.

J. Kikafunda-Twine, Ph.D.

Ms. Pauline Zekeng, M.Sc.

Dermot McHugh, M.A.

Marc Samatana, Engineer Agronome

Leslie Everett, Ph.D.

Jacob A. Ayuk-Takem, Ph.D.

In addition to the Counterparts, each Station where NCRE staff are located should have entomology and plant pathology staff available, to whom the plant breeders and agronomists could turn when problems in these areas occur which are beyond their capability to handle. Presently the situation in this respect is as follows:

Staff Available

<u>Station</u>	<u>Entomology</u>	<u>Plant Pathology</u>
Nkolbisson	None	None
Dschang	None	Dr. Samuel Nzietcheng, Chief of Station, and Dr. Joseph Tchatchaoua recently returned from ten years residence in Germany.
Naroua	Moffi Ta Ana (works on cowpeas)	None
Garoua	None	None

<u>Station</u>	<u>Entomology</u>	<u>Plant Pathology</u>
Bambui	None	Claude Nankam, B.Sc. (to leave shortly for advanced study in the U.S.A.).

The development of the University Center at Dschang offers some potential for access to staff disciplines needed by NCRE. The plan for ten staff members from the University of Florida to be in residence at Dschang, along with the Cameroonian staff, should make available a variety of talents useful to NCRE staff. In turn, it should also be possible for the University to call on NCRE staff located in that general area to give occasional lectures to students taking courses in their respective disciplines. The services of the University staff might also be utilized in supervising research done in Cameroon but to be used for a dissertation in partial fulfillment of requirements for the Ph.D. degree from an American University. This would be of special interest in the participant program.

Question: Is adequate office and working space provided for each project technician?

Response:

- (1) Emmanuel A. Atayi: Office space adequate.
- (2) Toby Chamberlain: Office space adequate.
- (3) Jay Chung: Shares office with Counterpart -- should have private office. Has no working space.
- (4) Animesh C. Roy: Modest office which Roy considers adequate. Also he considers working space adequate.
- (5) D. Janakiram: Same as (4) above.
- (6) Henri Talleyrand: Has fine office in a house leased by IRA leased since there is presently no IRA station at Garoua.

- (7) Cm P. Bangi: Has good, air-conditioned office. States he needs space for technician and also cold room for seed storage.
- (8) Kikafinda-Twine and Dermot McHugh at Bambui: Ms. Zekeng and Mr. Samatana share one office. Need space for secretaries and clerks, a conference/library room, and a laboratory room. Have one small store and need another. The best solution would be a seed house which would encompass: driers; a place to process crop samples brought in from the field; cold storage room for storing seed as well as other storage space; work room for putting up seed and for other uses, a room for storing fertilizers and preferably a separate one for storing pesticides; cubicles for technicians; space for workers to come in when it rains; space to store experimental equipment and small tools; and toilets and wash-up rooms.
- (9) Summary: Each IRA Station where NCRE staff are located should have a seed house as described for Bambui above. This has been recognized by Mustafa. He has plans underway for such construction with USAID funding. However, USAID funds are presently available for construction of only one such seed house (Nkolbisson), for which specifications have already been drawn up.

Question: Is the project in general receiving adequate support from the GJRC, DCPST and IRA?

(1) Response of Cameroonian Officials

- (a) GJRC: Dr. Wankwe, Joseph Amizobel, Ministry of Planning, represented the GJRC on part of the field trip to the West, South West and Littoral Provinces, and on the entire trip to the Extreme North, North and Adamoua Provinces. He expressed some concern over the manner in which USAID funds are made available to the GJRC but appeared to be pleased with the technical aspects of the Project.

- (b) DGRST: Calls were made on the following DGRST officials: Nya Ngatchou, Director of Programs; Paul Nchoji Nkwi, Deputy Director of Programs; and Victor Sunday Balinga, Conseiller Technique. Although the question was not put directly, it appeared that these officials are pleased with the NCRE project and are generally supportive.
- (c) IRA: A number of conferences were held with Dr. Jacques-Paul Ekebil, Director and Malao Mapri Anthony, Deputy Director of the IRA. Both expressed satisfaction with NCRE, except that the Director made a plea for more integration of the USAID/IITA and the IRA programs.
- (2) Response of Evaluation Team: The GURC, through the DGRST and IRA appears to be giving both financial and moral support to the NCRE to the extent that Cameroonian resources permit. The chief constraint is the lack of qualified Cameroonian Nationals to fill the counterpart line positions - and only time can take care of this. Dr. Mustafa working closely with the appropriate GURC officials is proceeding as rapidly as possible to send worthy Cameroonians (participants) to the United States to earn baccalaureate masters, and Ph.D. degrees (as the case may be).

The need for greater integration was emphasized by Ekebil and Baboule, and mentioned by Ayuk-Takem and others. The problem appears to be sufficiently serious in the minds of these Cameroonian officials that it should not be ignored, i.e. left with the hope that it will "go away". To some extent the coming "on track" of fully qualified Cameroonian Nationals in the counterpart positions so that an end to the presence of IITA advisors is in sight, will help to alleviate situation. Meanwhile, the IITA staff should encourage their Cameroonian counterparts to assume as much responsibility as their capabilities will permit and give them all credit due whenever and wherever possible. The number one priority should be on institutional building and only secondly on carrying out programs, important as the later are.

Finally, there needs to be a clear understanding between IRA and USAID on just what needs to be done, and what can and what cannot be done. Babcule asked for complete control of all funding, regardless of source. U.S. laws and AID policies and regulations must of course be taken into consideration in any allocation of funds. A full understanding can only be reached by the appropriate IRA and USAID officials sitting down together, putting all cards on the table and arriving at the best possible solution. All personnel involved in the NCRE should then be advised on the agreed course and requested to abide by same.

Questions: Is any equipment needed to facilitate project progress?

Response: This question can best be answered by stating that generally the lack of equipment constitutes the single largest constraint in progress being made by the NCRE. There is little research equipment available to NCRE personnel. The situation by locations is as follows:

Nkolbisson: Maize breeder needs a seed drier. Chung wants hand planters. Charles Thè thinks that the maize breeders should have a tractor-operated maize planter. In view of tests being conducted over a wide geographic area, the Evaluation Team believes that a supply of hand planters would be the best solution at this time.

There should also be a number of moisture testers procured to assure having at least one in working order when a test is being harvested.

Dschang, Mbo Plain, and UNVDA: The rice team has little in the way of research field laboratory equipment available.

The soils and plant pathology laboratories at Dschang are very inadequately equipped, for example, two pressure cookers substitute for autoclaves. Roy is a well-trained soil scientist. Better use could be made of his capabilities if he were provided with at least

13

minimum equipment for soil testing. There is a well equipped soils laboratory at Ekona operated by well qualified staff, but the staff is over-taxed. The two IRA plant pathologists, although not counterparts, could contribute substantially more to the rice research program if they had a suitably equipped plant pathology laboratory.

At the Santchou Antenna on the Mbo Plain, the equipment consists of a hand-operated thresher (a step above manual beating) and a hand-propelled cleaner (fan and shaker) - both old and outmoded.

Research field equipment is on order from IRRI (IRA funds). Requested but not funded are a soil and plant analyzer, along with other laboratory equipment. IRA has funds to equip the plant pathology laboratory.

Maroua: Dungi does his seed processing at the Guiring Station. He has no seed processing equipment. Sorghum and millet are threshed by hand-beating and winnowing in the wind. There is no electricity at Guiring. A seedboro thresher is on order.

Crop processing facilities will be developed at the Moda Farm, a 600 hectare tract in the Maroua vicinity.

Garoua: Talleyrand has virtually no field or laboratory equipment.

Bambui: Have a modern fairly well equipped plant pathology laboratory. Otherwise there is a general lack of research field and laboratory equipment. With the concentration of NCRE staff (both IRA and IITA) at this Station, appropriate field and laboratory equipment should be procured as rapidly as possible. A seed drier and cold storage facilities for storing seed constitute prime needs.

Bambui should have top priority after Nkolbisson for one of the seed houses being planned by Moustafa/USAID.

Special note: One of the "hang-ups" in procuring equipment may be the possible delays in clearing Cameroonian customs. A delay of

two years in one case was reported to the Evaluation Team.

Question: What has been done so far in the area of research on each crop?

Response: All of the results of experimental work conducted in 1982, and tests underway in 1983 are well and thoroughly documented (D-4) (D-5) (E-7) and (E-9). It would be redundant to repeat the information here. The experimental results present are impressive with regard to both extent and quality.

Question: Are the interpretation of results and conclusions drawn realistic?

Response: The IITA staff have shown the level of significance at the 5% level and the C.V. (E7) for most of the experiments reported for 1982. Dangi even reported the level of significance at the 1% level for one experiment. Further, for most of the maize agronomic experiments the d.f., M.S., and F values are reported.

For the TLU data, the levels of significance at the 5% level were shown for a limited number of tests. A number of line graphs were presented where there were only two variables, for which Y and R<sup>2</sup> values were reported.

The above statistical analyses make for careful and cautious interpretations of experimental data. In the reporting there probably could and should be more emphasis placed on the danger of placing too much emphasis on too few years' results.

Question: How will the research results benefit project beneficiaries, the Cameroonian farmers?

Response: The use of research results should benefit the Cameroonian farmers via higher yields and/or qualities, lower per unit costs and more farm income.

Question: How are the results being extended to farmers?

Response: Since NCRE conducts considerable research in cooperation with parastatals, there already exists a close linkage between research and the farmer, - and therefore research results are immediately available to their farmer clientele. The same may be said of the tribal units and Credit Unions with whom NCRE works in a limited way.

NCRE attempts in a small way to reach farmers not associated with parastatals, tribal units or credit unions via the TLU (the TLU's outreach activity is noted elsewhere in this Report).

While there is a lack of adequate publications the TLU is contemplating some radio activity. The placing of demonstrations and trials in strategic places (lead farmers) can also be done so that "spread of influence" can be maximized.

Question: Are research techniques being transferred to Cameroonian staff such that research can be continued after technicians leave?

Response: The Team members saw no basic evidence to the contrary. Attention is called to the response on page 15, which shows the names of Counterparts working with each IITA staff member, respectively. Briefly, four of the IITA staff positions are matched with staff of adequate experience and academic background to continue the research involved in a satisfactory manner after the IITA technicians leave; five are matched with Counterparts where attainment of higher academic degrees would be desirable; and one IITA staff member has a counterpart on only a part time basis, and this counterpart needs more academic training.

To the extent that Counterparts are available and have sufficient academic training, the transfer appears to be progressing satisfactorily; in fact, the same can be said in those situation where the Cameroonian Nationals presently lack adequate academic training to ultimately occupy

senior staff positions. If arrangements are made to provide the necessary additional academic training, if those persons are reassigned to their present positions after earning higher degrees, and if, meanwhile, the expatriates are retained in their present assignments long enough for all of the above to take place, the net result should be an unusually well qualified staff of Cameroonians carrying on cereal crop research.

A very encouraging note on filling staff positions with qualified Cameroonians is the participant program. Persons are being sent to earn academic degrees in the U.S. as rapidly as worthy candidates can be identified. The fact that candidates are carefully screened before being accepted is commendable - a person lacking necessary native ability, sincere interest, and/or motivation is a poor investment as far as further academic training is concerned.

In summary, the answer to the question is a "conditional" yes. It will take a considerable period of time before enough Cameroonian Nationals attain the level of academic training and necessary experience in research to fill all positions labeled as "Counterpart". However, there is no question but that, given adequate time and retaining expatriates until an orderly transfer is possible (position by position) the Cameroonians can continue the research without interruption -- their more recently acquired academic training should even give them some advantage over their expatriate Counterparts.

Question: What role has the TLU played in strengthening the relationship between research, extension and clients?

Response: On the positive side one can recite the following: (a) the TLU works closely with the IRA and in some instances there is no differentiation made between the TLU and the other components of IRA; (b) the TLU has worked effectively with MIDENO, including the ULG consultants from England who are

assisting in setting up Extension Training Schools. The ULG consultants state that in the future MEDMO will look to the TLUs as subject matter specialists; (c) the extension agents who have participated in the TLU school at Bambili College are most enthusiastic about the course; (d) the NCRE program involves a number of parastatals and tribes, so that NCRE researchers are linked closely with the decision makers in the parastatals and the tribal units (all extension is targeted at the decision makers who are not in all cases the farmers themselves).

On the other hand in the larger frame of reference of Cameroonian agriculture it must be admitted that to date the TLU has only played a limited role in strengthening the relationship between research, extension and farmers (clients). This can be attributed to the following: (a) there is only one TLU in NCRE in the entire country; (b) the NCRE program is relatively new; (c) the extension staff as a whole is not trained in agriculture and can't function in any effective teaching role without some considerable instruction.

Question: How have the socio-economic surveys, training of farm demonstrators, and testing elite varieties in the farmers' fields contributed to narrowing the gap between researchers and farmers?

Response: This question especially the use of the word "gap" implies that the researchers in the NCRE are not in close contact with farmers and their problems. This not true. NCRE staff at present are doing only adaptive research. They are in no sense of the word involved in basic research such as molecular biology or genetic engineering. Their work takes them over the country. They are in contact with "delivery systems" of agricultural research and have experimental plots directly on parastatals, tribal and traditional farmer fields.

The direct answer to the question is 'not to a great extent' because (1) the program is relatively new; (2) so far research has not proceeded far enough to make important recommendations re: elite varieties and (3) farm demonstrators still lack sufficient subject matter ability and/or confidence and are restricted by lack of transport inputs and effective ways of contacting large numbers of farmers.

No reading was obtained on the effectiveness of socio-economic surveys in this respect, but "an Agro-Socio Economic Survey of Farmers in the North West Province of Cameroon" (G2) published in 1983 by the TLU is of interest to the biological researchers and should be of some assistance to them. The survey does contain pertinent information even though in the words of the authors, answers to the questionnaire leave much to be desired. A second survey is currently underway.

Question: What is the relationship between TLU and the overall organizational structure of the Extension Service in Cameroon?

Response: The relationship of the TLU to the overall organizational structure of the Extension Service in Cameroon has been largely limited to the North West and South West Provinces, where contacts were initiated at the Provincial Delegate levels. Three schools or courses by the TLU have been held in which TLU first contacted the Provincial Delegate of the Ministry of Agriculture who in turn contacted the Divisional Delegates and they perhaps in turn the Sub-directors of Agriculture. The Provincial Delegates selected the participants and invited them to attend. The first such course was conducted in the North West Province. Success of this course led to the holding of the second school in the North West Province for which ten participants were chosen by the Provincial Delegate from from each of his five Divisions. The third school, following the same protocol from the Provincial Delegate downward, was held in the South

144

West Province.

Another relationship has to do with field demonstrations. Village agents follow TLU's instructions and were provided with mini-kits to put out farm plot demonstrations (the demand for mini-kits exceeded the supply). The demonstration plantings are not replicated. Some concern might be raised that NCRE employees of IRA are supervising the staff of another Ministry i.e., the Extension agents of the Ministry of Agriculture. However, really this activity is just an extension of the training schools already approved by the Ministry of Agriculture -- and further the feed-back from the farm demonstrations should be of value to the researchers.

Replicated trials run entirely by TLUs on parastatals, tribal lands and traditional farms constitute research and therefore are not in conflict with extension of the Ministry of Agriculture.

Demonstrations, however, put out on farms by the TLUs without the involvement of Extension agents could be viewed as usurping the functions of the Extension agents. Such programs are strictly extension -- not research -- and therefore not a proper function for the TLU. TLU means "Testing Liaison Unit". The implication is clear.

Everyone including extension administrators seem to agree that the extension organization should serve as a linkage between research and farmer users of information. However, only six of the fifty participants at the second North West TLU school had ever visited IRA. One major reason given was that research and extension are in different Ministries within the Government. They are recruited with minimum grade school education and placed in rural areas. There they not only lack sufficient knowledge of agricultural subject matter but they also suffer from lack of transport, inputs, farmer organizations through which to operate, and lack of contact or linkage with the research units. Consequently they are confined to walking distances from their villages and devote the major part of their time to non-teaching

19/2

activities, i.e. making surveys, gathering statistics  
arranging events, etc.

We had the opportunity of meeting with eleven extension agents at the Bamibili Regional College of Agriculture Training School being conducted by MIDENO. The training courses in progress had to do with food crop production, extension methods, and the making of socio-economic surveys. These participants were obviously being greatly stimulated by the course.

When asked what were the main problems of doing extension teaching in their respective areas, their answers were first the lack of an organization of farmers through which to work and thereby enhance their spread of influence, secondly the lack of transport, and third availability of "inputs". Some thought should be given to the first concern because the "one on one" method of teaching is too slow and expensive to be effective. An established farmers organization through which to teach was a prerequisite in many American states to the positioning of local extension agents. Some of the Cameroonian agents mentioned that they seek to make contacts by attending market days -- but this 'one on one' spread of influence is too slow, which they recognize. Their companion concern was "how to win acceptance". This obviously can only come and be maintained by knowing the subject matter and being in close linkage and contact with research in order to be up-to-date.

The relationship between the TLU and the Extension Service should be greatly enhanced by the TLU activities because (a) the training of the Extension staff cannot be objected to by the Extension Service. They are getting their staff trained and as a matter of fact they cooperate fully in the endeavor and (b) the reciprocal arrangement in assisting by the Extension staff in socio-economic agricultural surveys -- a feed-back to the researchers resulting in more pertinent research results in an arrangement that is mutually beneficial to both NCRE (TLU) and the Extension Organization.

The relationship between the TLUs and the Extension Service will be enhanced because: (a) extension is getting their staff better trained by the subject matter specialists of the NCRE; (b) the TLU is getting assistance of the village workers in conducting socio-economic surveys.

Question: What is the relationship between the TLU and Cameroonian food crop production parastatal organizations, e.g. SEMRY, SODECOTON, WESTCORN, etc.?

Response: The TLU works with parastatals, e.g. MIDENO, WADA, SEMRY, SOBEREM, and UNWDA, and credit unions in putting out replicated field trials. The TLU will incorporate its training into MIDENO's program in the North West Province. The Evaluators were also told that the TLUs will work with SODECAO in the South, SODECOTON in the north, EAPI in the East and UCCAO in the West, and hopefully still others, in the future. Westcorn, the Evaluators were told is at present inactive.

Question: Is one TLU sufficient? If not, how many additional units are needed and where?

Response: The World Bank suggests three more TLUs one each at Fombot, Nkolbisson, and Maroua or Garoua. The Evaluation Team recommends two more TLUs, one at Ekona and one at Nkolbisson.

We would recommend that no TLU be considered for northern Cameroon for the following reasons:

- (a) Dr. Boli Babouli, Chief of the IRA Center at Maroua, stated that he is not interested in having a TLU.
- (b) Since 1974 at the request of GURC, SODECOTON has undertaken to give advice and assistance for food crop production in the whole of northern Cameroon, with the exception of the SEMRY rice and the Mandara mountain areas. SEMRY provides food crop advice to farmers. The Mandara mountain area is obviously under the influence and decision making of one tribe.

(c) Starting with the 1985 season the IRA Director has programmed SAFONAB/Cameroon to engage in pre-extension trials in farmer fields (LI).

(d) In all the north the Extension organization has 232 agents who are not well trained at all and are encumbered with other jobs and lack of facilities and transport. SODECOTON has approximately 1000 agents in the field who (1) provide inputs (seeds, fertilizer, credit); (2) technical information from research to farmers and help them apply "inputs" and (3) market crops for farmers. SODECOTON is closely linked with both farmers and researchers. Thus it was decided early on in the NCRE program not to station or contemplate a TLU in the north.

(e) The introduction of a TLU in the north could lead to a competitive situation with other existing agencies.

A question arises as to whether Fombot or Ekona would be the better place to station a TLU. The Evaluators opted for Ekona which has a well equipped and operating soils laboratory, and is a research center. A TLU at Nkolbisson station with all the resources there, headquarters for IRA and three of its Centers, and servicing Eastern, Southern and Central Provinces, has in our own view considerable merit.

Question: Is the USAID/IITA Project leading to a Cameroonian-staff institutional capacity working on maize, rice, sorghum and millet research?

Response:

Maize: Situation favorable with respect to breeding. Dr. Jacob Ayuk-Takem is a capable maize breeder of long standing. We recommend that Dr. Everett be stationed at Bambui, where the two researchers can complement each other.

14/1

This arrangement would be in accordance with Dr. Ayuk-Takem's wishes.

Dr. Chung's incoming Counterpart, Dr. Charles Thè, has recently completed his Ph.D. degree at North Dakota State University. He should "mature" rapidly into a senior scientist under Dr. Chung's tutelage.

Dr. Talleyrand has a highly motivated and capable counterpart in Nga Ngounou Titus. However, Titus has only a baccalaureat degree, and hence it will be five years at best before he completes his Ph.D. degree. Thus, expatriate help will be needed here for perhaps another seven or eight years.

Assuming that Pauline Zekeng also shifts to maize agronomy research, she will continue to be the Counterpart for Dr. Kikafunda-Twine. She has her Masters degree but should get a Ph.D. Thus it would be perhaps another five years before she could take over from Dr. Kikafunda-Twine.

Sorghum and Millet:

Breeding: Dr. Dangi has only a "partial" Counterpart with a baccalaureate degree. So rather slow progress is being made here towards a Cameroonian National replacing Dr. Dangi.

Agronomist (proposed): No identifiable Counterpart.

Rice: Counterpart for Dr. Roy just starting; and Counterpart for Dr. Janakiram is still in training in the U.S., subject to being assigned here.

TLU: (assuming Evaluation Team recommendation for one person in each TLU is accepted)

At Bamui, Mr. Dermot McHugh has as a Counterpart, Mr. Marc Samatana, Socio-Economist. It is not known what is planned for further graduate study for Mr. Samatana. At Nkolbisson and at Ekona, no identifiable Counterparts for proposed TLU expatriates.

Question: Is the USAID/IFITA Project leading to research programs for maize, rice, millet and sorghum, including demonstrations on farmers' fields?

Response: (a) For research programs on maize, rice, millet and sorghum, the answer is definitely "yes". This is well documented in (C1) (D4) (D5) (E7) and (E9); (b) For demonstrations on farmers' fields: The TLU has been quite active in setting up demonstrations on farmers' fields. In 1982, the TLU set out 13 on-farm rice and maize demonstration/trials. In their 1983 Work Plan somewhat fewer demonstration/trials are called for. However, with the courses they have been conducting for Extension agents, including training them to set out on-farm demonstrations, an unknown but larger number were no doubt set out.

Question: Will activities of the TLU result in transmitting agronomic information to Extension agencies as well as transmitting farmer concerns to researchers?

Response: Aside from the comments made previously which set forth the positive results of the TLU programs and the accompanying constraints and difficulties, there is only the question of whether institutional and/or political rigidities will hamper the TLU's progress.

The Project recognizes the lack of linkages between research and extension which are due in part to the fact that agricultural research activities and extension functions are segregated within two distinct and vertically structured institutions (the DGRST under which IRA operates and the Ministry of Agriculture). The TLU is an attempt to bridge that gap with the TLU doing "operational research" on farmer field testing, conducting demonstrations, training extension agents, making socio agro-economic surveys, and transmitting information from researcher to farmer and vice versa.

Question: Are present activities leading to an exchange of information with international, African and Cameroonian institutions conducting agronomic and socio-economic research?

149

Response: Lists of all of the above three types of institutions with which NCRM is collaborating are available (D4, page 31), and (D5 pages 8 and 9). Lists in the two reports are not synonymous and both should be referred to in order to get the complete story. The number of institutions with which NCRE is cooperating is indeed impressive.

Depending on the crop in question, periodic visits to inspect and help evaluate entries in field trials in Cameroon are made by scientists from IITA, IRRI, ICRISAT, CEMMT, and SAFGRAD. Data obtained from NCRE are summarized regionally with those from other countries. The regional reports are then made available to all of the cooperators as well as to others.

In addition to tests at IRA-Stations and their respective antennas, Dr. Chung had tests in 1983 on lands of the following: ~~GENEWA~~, MIDEVIV, Njombe Center, Ekona Center, Sanguere Projet Semencier, Mayo Galke SODECOTON, Farmer Fossett, Nkwen MIDENO, Wassande SOEABLE, SOBEUOTON, and Farmer Ngaoundere. Maize agronomic tests were also conducted on a number of the above.

The rice investigators, in addition to tests at IRA Stations and antennas, have trials in 1983 on lands of the following: MIDEVIV; SODEREM; UNRDA, Ndop Plan, Bambui; Agrilagdo Project-Karewa Experimental Farm; Baigom Rice Farm; and a farmer's field near Tingoh.

Sorghum and/or millet trials in 1983 are being conducted on lands of the following (in addition to IRA Station and antennas): Agri-Logdo, Kerawa; SEVRY, farmer field near Maroua (Striga); and Clan Chief Lawan Siddiki, Yoldeu, B.P. 111, Maroua.

TLU provided seed for tests and/or demonstrations on farms through MIDENO; UCCAO; WABA; SFPC Credit Unions; the Community Development Training Center in Kumba; farms of Nyan Ndi, John Ntum at Tingoh, Denacios Nyco at Tingoh and Ojong Jacob at Osayo Cbang; and at the Government Technical College Tongo.

The above list of organizations and individual farmers on whose lands experiments and demonstrations are being conducted speaks for itself, in showing the close collaboration between

148

NCRE staff and other organizations and farmers. Not all of the above Cameroonian organizations conduct research but some do and all are obviously much interested in research results generated by NCRE. In turn, NCRE staff benefit a great deal from their contacts with the other organizations and individual farmers.

Question: Are present activities leading to adequate physical facilities and equipment for carrying out cereals research programs?

Response: The current situation and needs for space and equipment are given in previous sections. The situation and needs can be summarized by stating that overall there is a need for more office space, more working space, for seed houses and for research equipment -- both field and laboratory.

Plans are underway for construction of some seed houses. USAID, through Dr. Moustafa, is moving as rapidly as possible in the procurement of equipment, as detailed in a subsequent Section of this Report.

In summary, the answer to the question is a conditional "yes". Progress is being made but whether the physical facilities will ultimately be "adequate" cannot be answered at this time.

Question: How can the Project's contribution to increased productivity of maize, rice, sorghum and millet in Cameroon be better measured?

Response: The initial provision for measuring inputs and outputs are given in the Logical Frame Matrix included in the Project Paper (A1). With the added experience gained in pursuing the Project which is now well into its second year, additional guidance can be suggested, as follows:

First of all, using available yields and production statistics for Cameroon to measure possible increases down the line is not recommended for the following reasons: (1) Since there are numerous other programs underway to increase yields, how does one assess the

amount of the increase that can be attributed to NCRE? and  
(2) the accuracy of the available statistics on crop yields and  
production is subject to considerable question. It is noted  
that a program is getting underway to conduct a census in the  
country with assistance from USAID/USDA. This program will no  
doubt generate more accurate data than are now available, but  
may come too late to establish the needed initial benchmarks.  
Also, it is not known whether or how often the census will be  
conducted in future years, an important consideration if it  
were to be used as a measure of change.

In view of the above limitations, the following steps are  
suggested to measure progress and improvement:

(1) Make a complete inventory of the IRA Cereals Programme to  
establish benchmarks, the source to be the record of the  
Director's office and of each IRA Station and respective antennas.  
The situation at the time Project 631-0015 was launched will be  
determined by the following:

- (a) Names of staff, educational levels of each, discipline and  
crops worked on.
- (b) Names and educational level of technicians and their  
respective areas of work.
- (c) Number of secretary/typists.
- (d) Availability of laborers.
- (e) Physical facilities:         
  1. Land - number of hectares.
  2. Irrigation facilities, if any.
  3. Office space and equipment.
  4. Laboratory space and equipment.
  5. Stores, crop processing facilities and storage space.
  6. Field (farming) equipment.
  7. Research field equipment.

- (f) As complete a list of varieties as possible which had been released or at least identified and recommended for planting in Cameroon or some portion thereof by IPA (an initial attempt to do this has been made by Dr. Atayi - see appendix v). To the extent that seed stocks of such varieties are still available, they should be evaluated by including them in field trials.
- (g) A compendium of research data, interpretations, conclusions and recommendations derived therefrom, as found in annual reports, technical publications, popular bulletins and leaflets, and other possible sources. Any recommendations being made to farmers at the time of launching of Project 631-CC13 should be tested through field trials by the respective crop agronomist.
- (h) It is to be noted that experimental work and extension or extension-type activities on cereal crops had been, and, in fact, are still underway by various other agencies, often supported, at least in part, by other donors. An indepth inventory and analysis of these other programs would be very time-consuming and perhaps not worthwhile. However, the names of these organizations together with a list of their personnel doing research on cereal crops, and a summary of their programs and accomplishments at time of "launching" would be useful.
- (2) NIRE to make a survey for the four crops being worked on, to establish the "state of the art" on farms at time of "launching" as follows:
- (a) Where parastatals produce the crops directly or control the source of seed and chemicals applied, get from them the following information (by crops):
1. Hectarage planted with each variety.
  2. Type and amount of fertilizer applied.
  3. Type and amount of pesticides (including herbicides) applied.
  4. Cultural practices including such factors as land preparation, rate, method and time of planting, hand weeding, etc.

- (b) Where farming is not done by a parastatal directly or under parastatal control, obtain the same information as in (a) above through a farm survey, using appropriate design to do the sampling. ICRE is fortunate in having a staff member of Dr. Atayi's capability in designing and carrying out farm surveys. He should also be given the leadership responsibility for extracting the appropriate data from the parastatals.
- (c) It has been found that prior to the time of commercialization of agriculture, farmers (1) may not know what varieties they are growing, (2) may think they know but be wrong on identifying their varieties, or (3) have seed stocks with such a high degree of mixtures and/or so much outcrossing that variety name has little or no meaning. To the extent that this is true, a survey based on the farmers' responses may not contribute a great deal.

An alternative to getting the information from farmers orally, is the so-called "drill box survey". The term is not applicable in Cameroon because there are few drills, but the principle is. In this type of study, the "surveyors" go to the individual farms at time of planting and take a sample of seed. All of the samples are then assembled and planted at a station or at some other suitable location in single row plots. Also included in the planting are known seed sources of the varieties which farmers think they are planting, along with other recommended varieties. At the appropriate time or times for each crop respectively, "experts" identify (as best they can) each farmer's sample with respect to variety and mixtures present. Through properly-designed sampling methods, this system will provide fairly accurate data on which varieties are being grown, and to what extent the varieties being grown are "diluted" or conceivably "enriched" by mixtures. Incidentally, such plantings lend themselves very well to holding of extension field meetings -- a farmer likes to see "his" variety in comparison with those of other farmers and to get an accurate identification of same along with degree of mixtures present. Typically, the program results in the farmer obtaining new seed stocks if need for same is indicated.

152

In summary, if the above suggested procedures are carried out there will be available dependable benchmarks as the situation existed at the time of launching of Project 651-CC15, covering Cameroonian IRA staff, their educational levels, supporting personnel, research physical facilities, research accomplishments including varieties released or at least identified, and the extent to which the research accomplishments constituted improvement. Secondly, the "state of the art" as being carried out through parastatals as well as by "traditional" farmers will be ascertained through contacting the parastatals and through on-farm surveys, including "drill-box" samplings and plantings. The degree of progress made can then be determined at any time desired by applying the corresponding measurements, i.e. obtaining analogous data.

The above does not constitute an insurmountable task. To the extent necessary, the above program can be substituted in part for the types of surveys conducted by NCRE in the past (G2).

A valid criticism of the above suggested program to measure progress is that it is already somewhat late -- the benchmarks should have been established at the time of or prior to the time Project 651-CC15 was activated. Nothing can be done about that now and any further delay will only add to the problem. It is believed that reasonably accurate initial benchmarks can be established at even this somewhat late date. Further, there would appear to be no good alternative to measuring progress and assessing outputs as customarily called for by AID in the Log Frame, and as emphasized by Acting Director, Bernard B. Wilder, in a briefing session held on 31 August 1985.

Question: Do present progress and results justify an increase in project inputs during the life of the present Phase?

Response: (1) Background: The evaluators are deeply impressed with the conceptual planning, the quality and motivation of both

the IITA and the Cameroonian segment of IRA, the methodology employed to carry out the Project, and the quality and extent of accomplishments, in the relatively short time that the Project has been underway. As indicated earlier there is also a good receptiveness on the part of Cameroonian farmers and other agriculturists for research information and improved varieties

A word of caution may be in order. The demand for research results and improved varieties on the one hand, and the enthusiasm of the researchers on the other could conceivably result in recommendations being made and accepted prior to an adequate number of years testing for verification. The same holds for release or identification of varieties to be recommended. Should recommendations be made on the basis of inadequate testing, the farmer might suffer losses through reduced yields, with concomitant repercussions on the NCRE staff specifically, and on the IRA and USAID in general. However, considering the maturity and good judgement of the IITA and Cameroonian staff members of NCRE, such premature recommendations are really not anticipated.

(2) Conclusion and Recommendations: In view of the above very strong showing under Project 651-0013 to date and in order to expedite goals under the 5-Year Plan of the GURC, the Evaluation Team recommends that much of the proposed increase in program as outlined above, be activated during the life of the present phase. Specific priorities have not been established. However, attention should be given first to procurement of equipment and building construction in order to maximize the production of the present staff, and secondly on adding more staff. This general priority is suggested even though it is recognized that there is a pressing need for additional staff, and that they could substantially and rapidly enhance both the research

and training components of the project. GURC/USAID should move as rapidly as possible to increase cereal production in Cameroon. Such investment of funds on the part of both GURC and the Government of the United States appears to be fully justified.

Question: When should the next evaluation take place and what type of evaluation should it be?

Response: We suggest that the next evaluation take place at or near the end of Phase I, and that it be conducted similarly to the present one.

Question: Should the future evaluation(s) include project design experts to start designing Phase II of the Project?

Response: We feel, definitely, yes.

Question: What is the status of the long term training?

Response: USAID is responsible for administering the long term training program. According to the Project Paper, AID will finance participants for M.Sc and Ph.D. degrees, nine to the M.Sc. degrees and three Ph.D.

A. Presently there are five participants in the United States as follows:

<u>PARTICIPANT</u>	<u>DEGREE</u>	<u>DISCIPLINE</u>	<u>UNIVERSITY</u>	<u>DATE OF Departure</u>	<u>DATE OF Return</u>
1. Fabien Jeutong	M.Sc.	Rice Agronomy	Louisiana State	March 62	Dec. 64
2. Edward Ngong- Nassah	M.Sc.	Cereals Agro- nomy & Exten.	South Dakota State	April 61	May 64
3. Christie Ngundam	B.Sc.	" " "	Univ. of Missouri	Dec. 60	Dec. 63

<u>PARTICIPANT</u>	<u>DEGREE</u>	<u>DISCIPLINE</u>	<u>UNIVERSITY</u>	<u>DATE OF DEPARTURE</u>	<u>DATE OF RETURN</u>
4. Bernard Seneh	B.Sc.	Cereals Agronomy	California State University Fresno	June 82	Dec. 84
5. Cletus Asanga <sup>1/</sup>	a. B.Sc.	" "	Oklahoma State	Dec. 81	July 83
	b. M.Sc.	Grain Storage Entomology	Kansas State	Aug. 83	Dec. 84

B. Two participants have returned this summer after completing their graduate programs as follows:

<u>PARTICIPANT</u>	<u>DEGREE</u>	<u>MAJOR</u>	<u>UNIVERSITY</u>	<u>DATE OF DEPARTURE</u>	<u>DATE OF RETURN</u>
1. Charles Thè	Ph.D.	Maize Breeding	South Dakota	Oct. 81	July 83
2. Julius Takow	(a) B.Sc.	Rice Agronomy/	Louisiana State	Jan. 80	-
	(b) M.Sc.	Rice Breeding	" "	-	Aug. 83

C. Two participants are expected to start their graduate training shortly as follows:

<u>PARTICIPANT</u>	<u>DEGREE</u>	<u>MAJOR</u>	<u>UNIVERSITY</u>	<u>DATE OF DEPARTURE</u>	<u>DATE OF RETURN</u>
1. Jean Langue	M.Sc.	Agronomy	University of Minn or Univ. of Missouri	-	-
2. Claude Nankan	M.Sc.	Plant Pathology	(To be determined)	-	-

Both returned participants, Mr. Takow and Dr. Thè have been as counterparts for Drs. Janakiram and Chung, respectively.

D. The following observations have been noted during the evaluation:

- The number of participants and level of education they are receiving contribute to IRA's institutional strength.
- Delay of sending participants to the United States has slowed the rate of project progress.

<sup>1/</sup> Participant succeeded in obtaining B.Sc. in 10 months. IRA and USAID allowed the participant to utilize the remaining fund to get his M.Sc.

c. IRA is highly committed to sending additional candidates for training as soon as qualified Cameroonians become available.

d. Participants presently in the United States are not pre-assigned to project researchers (IITA). The assignments are made only after their return to Cameroon.

e. Inadequate overlapping will occur between the trained IRA participants, and project technicians during the Phase I of the project.

f. The training program as outlined in the Project Paper is inadequate: e.g. two to Ph.D. level, nine to M.Sc. level and three to B.Sc. level. Senior IRA staff and evaluators strongly believe that every IITA researcher should eventually be replaced by Cameroonians holding the Ph.D. degree. It was stated frequently that Cameroonians with degrees less than Ph.D. do not receive adequate salary to keep them interested in their jobs nor have enough status to get full IRA support. Hence, returned participants with B.Sc. or M.Sc. degrees should be sent back to the United States for further training, after working for the IRA for at least one year and proving to IRA administration that they are good and dedicated researchers.

g. IRA staff and project technicians highly recommend, and evaluators concur, that two Cameroonians, in addition to the Counterpart positions listed should be trained as follows:

1. One participant to the Ph.D. level in the area of rice agronomy/physiology to work closely with the rice agronomist and breeder. This is essential since rice production in Cameroon faces several physiological constraints with respect to cold and photoperiods.
2. The second Cameroonian should be trained in the area of entomology to the Ph.D. level, since IRA does not have an entomologist.

Question: What is the status of the short term training?

Response: Four participants employed by the Upper Noun Valley Development Authority (UNVDA) have received training in IITA. Moreover, six IRA employees have received training at IITA and the International Rice Research Institute (IRRI). At least ten additional Cameroonians will receive short term training in international agricultural research Centers.

Question: What is the situation with respect to construction?

Response: In Project Implementation Letter (PIL) dated August 23, 1980, Mission reserved \$144,000 from the Project grant for construction of several facilities as follows: (a) IRA-Bambui: Enlargement of an office, laboratory building and warehouse and construction of field shed; (b) IRA-Njembe: construction of field shed and warehouse; (c) IRA-Yaounde: construction of field shed; (d) IRA-Maroua: renovation of a house

Project records indicate that construction at IRA Bambui and Maroua have been completed at the cost of \$61,000.

Evaluation of IRA facilities indicated that the Institute does not have acceptable facilities for storage, warehousing, or field laboratory working areas in Yaounde, Bambui, Dschang (IRA-Mbo), Maroua and Garoua. Funds were not allocated when the project was designed to finance the badly needed five uniform laboratory-warehouse buildings. It has been determined that each such unit would cost \$100,000 to \$125,000. The USAID-IITA Contract is being modified so that \$125,000 can be used to construct one unit in Yaounde. Also, the unused funds from PIL No. 1 (\$85,000), will be utilized to erect a second unit in Bambui. There is a consensus that warehouses/laboratories are most needed at the above mentioned locations. Funds for construction of three additional units in Maroua, Garoua and

158

Dschang, respectively, should be allocated during the design of the Phase II of the project.

B. Residential houses: In USAID P/L No. 2, dated June 18, 1981, Mission reserved \$540,000 for construction of three houses at IRA-Yaounde, two houses at IRA-Dschang, and one house at IRA-Bamenda.

a. Bamenda: The construction was completed this summer and the house is occupied by Dr. Kikafunda-Twine. IRA has also provided a house for Mr. McHugh.

b. Dschang: Construction came to a halt when banks refused to extend additional credit to the contractor. The Governor's office in Dschang is in the process of procuring the services of another construction firm. When construction is completed, one of the two houses will be occupied by Dr. Roy who is presently residing in a rented house. IRA-Dschang has already provided a house for Dr. Janakiram.

c. IRA-Yaounde Construction of the three houses is progressing at a very slow rate. Drs. Atayi and Chung, and Mr. Chamberlain now reside in rented houses. They will move to the new IRA houses, once they are constructed. Dr. Talleyrand, IRA-Garoua, will continue to occupy a rented house, and Dr. Everett, who will probably be assigned to IRA Bamendi, will have to rent a house in Bamendi.

Question: What is the situation with respect to commodities?

Response: Vehicles located in areas other than northern Cameroon are very difficult to maintain and deteriorate very rapidly. A total of \$75,000 was allocated in the newly revised budget of the USAID/IITA Contract to purchase five 4-wheel drive sedan vehicles. The Rice Breeder and Rice Agronomist stated that travel from Dschang to Ndop and Mbo plains in the pickup and carryall is very exhausting. They would prefer to use passenger cars when roads permit. Number of vehicles procured, their locations and condition, and assignees are summarized in the following table:

107

Registration No.	Make-Model	Purchased by	Base Location	Assigned To	Observations
1. IT 11704	Chevy-Blazer	USAID	Nkolbisson	Chamberlain	Present condition: fair.
2. Unregistered	Chevy-Blazer	USAID	Nkolbisson	-----	Received in poor condition and was never put the road. It is currently being repaired.
3. IT 11705	Chevy-Blazer	USAID	Douala	Staff	Normally kept in Douala for staff business in town. Present condition: good.
4. IT11652	Chevy-Pickup	USAID	Dschang	Roy	Present condition: fair.
5. IT11697	Chevy-Pickup	USAID	Bambui	TLL	Present condition: fair.
6. IT 11715	Chevy Blazer	USAID	Bambui	-----	Not presently functioning due to extreme body deterioration.
7. IT 11710	Chevy-Blazer	USAID	Maroua	Dangz	Present condition: good
8. IT 11697	Chevy-Pickup	USAID	Garoua	Talleyrand	Present condition: good
9. CS 258 AS	AMC-Cherokee	NCRE	Dschang	Janakiram	Present condition: good.
10. CS 259 AS	AMC-Cherokee	NCRE	Nkolbisson	Cheng	Present condition: good.
11. CS 323 AT	AMC-Cherokee	USAID	Nkolbisson	Atayi	Present condition: good.
12. CS 326 AT	AMC-Cherokee	USAID	-----	-----	Currently in Nkolbisson. To be assigned to a staffperson expected shortly. Condition: poor (recurring engine problems).
13. IT 15057	AMC-Cherokee	USAID	Bambui	TLO	Present condition: excellent.
14. IT 15058	AMC-Cherokee	USAID	Bambui	TLO	Present condition: excellent.

167

## V. DISCUSSION

The NCRE is conducting an excellent program, doing credit to EGRST, IRA, USAID, and the IITA. The unusual success to date appears to be due to several factors as follows: (1) there existed a great need for strengthening research on cereal grains in Cameroon; (2) overall, the project was well conceived; (3) within funding limitations, the GURC is very supportive of the project; (4) USAID is providing substantial funding and considerable leadership as well; (5) IITA has assembled an unusually capable staff to help the Cameroonians conduct research and in institutional building therewith, and (6) lastly, the clientele (Cameroonian farmers and other agriculturists) are receptive, to the research results.

The production of the NCRE staff to date is striking (C1, C4, D4, E1, E7, E9, and G2, ), both with respect to extent of experimental data reported and research underway. The quality of research is excellent. The problems selected to be worked on and the methodology employed in conducting field experiments demonstrate high native ability, good academic training, and mature judgement on the part of the NCRE, IRA staff. The programs of the TLU, with extension aspects have been well conducted and equally well received.

Officials of various parastatals and authorities stated that they are conducting limited experimental trials on cereal grains only because to date they have not had available sufficient good solid experimental data and improved varieties from any other source. Generally, they expressed a desire to discontinue their present research on food crops if IRA will assume the full responsibility for same (SEBRY is an exception in that the officials expressed no desire for IRA taking over their rice research).

The challenge to IRA, NCRE, is crystal clear -- provide the necessary staff along with physical facilities and operating budgets to do the indicated research. And time is of the essence -- the clientele want the results as rapidly as they can be generated. The continued role of USAID in strengthening the research programs is a very important one.

161

The receptiveness of the clientele for research results is good but it also contains some potential risk. The risk involved is that on the basis of inconclusive data (commonly resulting from an insufficient number of years' testing) farmers might adopt agronomic practices or plant new varieties which would conceivably result in lowered rather than increased yields. Should this occur, NCRE might be blamed. The only defense against too early farmer -- adoption is continuous and adequate counsel, cautioning against drawing conclusions from too limited data.

The TLU must chart their course carefully since this constitutes the "E" part (Extension) of the NCRE. They must proceed carefully since IRA is a research organization, and Extension is the responsibility of the Ministry of Agriculture. We see the role of TLUs as cooperating with Extension through providing technical information, planting materials, furnishing resource persons at training schools for village workers and at other places, and performing other similar functions, but not in conducting extension programs directly.

The Evaluators have not attempted to get into the problem of how many stations and antennas there should be, nor where they should be located. The "Terms of Reference" did not call for such an analysis. Rather we have made our recommendations within the framework of Stations and antennas as they now exist, and as plans have been made to strengthen those already in existence and to add others.

The importance of institutional building has been presented elsewhere. It cannot be overemphasized. Also, as pointed out elsewhere, the problem of "integration" should receive early attention and be resolved. The problem is important and any difficulties that could arise therefrom must not be allowed to interfere with the progress of the excellent program underway.

A good infrastructure is essential to the successful utilization of the results of agricultural research. Much improvement is needed in Cameroon in roads, and in communication facilities and services.

The ultimate success of any plant breeding program is closely tied to a full-scale seed program. In the latter respect Cameroon has a long ways to go. It is our understanding that the country has no seed law, no seed certification

program, and little in the way of a seed testing laboratory. The Foundation Seed Program being conducted by MIDE/IV presently lacks adequate facilities for processing. It is hoped that Phase II of the USAID Seed Multiplication Project will result in rapid improvement in the general area of seeds. Ultimately, there will need to be facilities and appropriate programs to make available good seed of all improved varieties.

Although marketing is not the responsibility of NCRE, it seems in order to call attention of some of the current problems. For example, the officials of UNVDA expressed concern over the fact that they still have 15% of the 1982 rice crop on hand. Those at SEMRY 2 stated rather emphatically that the GURC will have to raise the import duty on rice because imported rice can be laid down in Cameroon at lower prices than SEMRY's cost of production. SEMRY expects to produce 70,000 tons of rice in 1984 vis-a-vis an estimated annual consumption in Cameroon of 90,000 tons.

Mr. Martin Kouebo, Director, pointed out that SODEBLE has 25,000 tons of 1982 maize in storage, which represents about one-third of their annual production. Harvest of the 1983 crop will start in November. It was also reported to us, but not confirmed, that traditional farmers in the highlands of western Cameroon commonly have to accept low prices for maize which is surplus to their own needs. This results at least in part from the fact that they are forced to sell soon after harvest because they lack storage facilities.

Although the prime function of both Cameroonian and expatriate scientists attached to the NCRE is conducting of applied research and making the results therefrom available to the clientele in an appropriate manner, the professional welfare of these scientists should not be overlooked. Only in this way will good staff be recruited and retained.

The scientists should be permitted -- in fact encouraged -- to use some fraction of their time (the amount being agreed upon in advance) to the type of research, the results of which will lead to publication in scientific journals. Also provisions should be made to allow time and travel money for the scientists to present papers based on their research accomplishments at professional society meetings.

In summary, the NCRE is an excellent example of an outstanding program where foreign assistance is involved. It has made remarkable progress. There are problems involved -- non insurmountable -- which should be resolved -- some now and others as the Project moves along.

## VI. SUMMARY

The purpose of the National Cereals Research and Extension Project No. 631-CO13, is to more adequately cover research and production development of maize, rice, sorghum and millet in Cameroon while building institutional research capacity on these four cereals and to develop efficient linkages to facilitate transmission of the research results to farmers.

The Project was designed to utilize fully the resources and germplasm of the international research centers (IRA, ICRISAT, etc.), national programs, especially those in nearby countries, as well as from local and other sources; to produce and identify varieties which are superior under the local agro-ecological conditions (which are many) in Cameroon; and to develop suitable agronomic practices including mixed and multiple cropping regimens. The findings are further tested under field conditions of farmer management by Testing Liaison Unit (TLUs). Also the TLUs as the name implies are responsible for liaison with other organizations to assist the latter in bringing research results to farmers.

USAID contracted with IITA to be the executing agency. The project did not get fully underway until early 1982, so it has been in operation for less than two years.

It is recommended that providing adequate facilities and equipment for present staff, both expatriate and Cameroonian, be given top priority, with expansion of the number of expatriate staff coming second.

The Evaluators found the IITA expatriate staff of cereal breeders, agronomists and administrators to be most outstanding and performing

164

excellently in cases under less than ideal conditions.

The caliber of the Cameroonian Counterparts who will as time goes on replace all of the IITA staff is likewise very good. An excellent participatory program is underway, which will provide the academic training as needed for the complement of the Cameroonian staff.

With respect to staffing, the Evaluators recommend a total of three TLU, each one consisting of only one individual -- the present unit to remain at Bambui, with the two additional ones to be located at Ekona and Nkolbisson, respectively. It is suggested that Dr. Kikafunda-Twine remain at Bambui and be assigned full-time duties as maize research agronomist, and that Dr. Leslie Everett, corn breeder, be stationed at Bambui. Additional maize research agronomists would be located at Foubot and Nkolbisson, respectively, and a sorghum/millet research agronomist would be stationed at Marcua. It will be noted that in addition to the present staff of ten, the above plan calls for an additional five scientists.

The TLU staff members must proceed carefully in their programs to provide the necessary liaison and yet not usurp the role of Extension.

Although not part of the function of NCRE, the importance of a good seed program, the desirability of enabling staff, both Cameroonian and expatriate, to make professional progress, and the importance of a sound infrastructure, are emphasized.

Finally it is recommended that the next evaluation take place late in 1985, i.e. at the completion of Phase I, and that the evaluation be conducted similarly to the present one except that a project design expert should be included on the Team.

VII. ACRONYMS

AID:	Agriculture and Rural Development (USAID)
CENEMA:	Centre National d'Etudes et d'Expérimentation du Machinisme Agricole
CIAT:	International Center for Tropical Agriculture
CICP:	Consortium for Integrated Crop Protection (Berkeley, California, U.S.A.)
CIMBAT:	International Maize and Wheat Improvement Center
CRSP:	Collaborative Research Support Program
DGRST:	Délégation Générale à la Recherche Scientifique et Technique
FAO:	Food and Agricultural Organization
ICRISAT:	International Crops Research Institute for the Semi-Arid Tropics
IITA:	International Institute of Tropical Agriculture
IRN:	Institut de la Recherche Agronomique
IRAT:	Institut de Recherches Agronomiques Tropicales
IRRI:	International Rice Research Institute
MIDENO:	Mission de Développement du Nord Ouest
MINAGRI:	Ministry of Agriculture
MIDENV:	Mission de Développement des Cultures Vivrières
MSVAT:	Multiple Sorghum Variety Adaptation Trial
NCPE:	National Cereals Research and Extension Project
SAGRAD:	Semi-Arid Food Grain Research and Development
SEMY:	Société d'Expansion et Modernisation de Riziculture à Yagoua
STPC:	Small Farmer Production Credit
SOEBLE:	Société de Développement du Coton
SOECAO:	Société de Développement du Cacao
SODERIM:	Société pour le Développement de la Riziculture de la Plaine de Mbo
TLU:	Testing and Liaison Unit
UCCAO:	Union Centrale des Coopératives Agricoles de l'Ouest
UNVDA:	Upper Noun Valley Development Authority
USAID:	United States Agency for International Development
WADA:	Wun Area Development Authority
WARDA:	West African Rice Development Association
ZAPI:	Zone d'Action Prioritaires Intégrés de l'Est

## VIII REFERENCES

### A. Documents and Agreements

1. Project Paper 631-CO15 NCRE. USAID Cameroon, May 11, 1979
2. Project Grant Agreement between the United Republic of Cameroon and the United States of America for National Cereals Research and Extension, AID Project Number: 631-CO15. August 31, 1979
3. Agency for International Development Negotiated Contract No. 631-CO15-C-CO-1004 - Contract for NCRE. 631-CO15. January 13, 1981. USAID Yaounde. American Embassy B.P. 317 Yaounde, Cameroon

### B. Scope of Work and PES

1. Scope of work for the evaluation of the NCRE, 631-CO15, 1983 USAID/GURC.
2. Instructions for completing form AID 1530-15 and 15A, Project Evaluation Summary (PES) - Part I & II. AID/Washington

### C. IRA - Structure and Programs

1. Ayuk-Takem, J.A. Some highlights about the Cereals Program of the IRA.
2. The Ekona Research Center. March, 1985 DGRST, IRA.
3. MIDENO. Adaptive Research Programme.
4. Programmes de Recherches. 1983-1984. DGRST, IRA. Republique Unie du Cameroun.
5. Summary of research structures and staffing pattern of the Institute for Agronomic Research as of 1980.

### D. Briefing Papers for Evaluation Team

1. Evaluation procedures. (single typed sheet).
2. Design and evaluation of AID assisted projects. November 1980 Training and Development Division, Office of Personnel Management. AID/Washington.
3. Africa Bureau Agricultural Research Strategy. April 4, 1983. Africa Bureau, Office of Technical Resources, Agriculture and Rural Development Division. AID/Washington.

4. NCRE September 3, 1983. DGRST, IRA, United Republic of Cameroon, DGRST IRA, USAID, IITA.
5. NCRE of the IRA, IRA-IITA-USAID. June, 1983. DGRST, IRA, United Republic of Cameroon.
6. USAID/Cameroon. Office of Agricultural and Rural Development, United Republic of Cameroon. July 17, 1982. USAID.
7. Executive summary - AID priorities for research in agriculture January 10, 1983. Draft. USAID/Washington.

E. Progress Reports and Work Plans

1. USAID Cameroon. Summary of USAID Present Contribution to Agricultural Research in Cameroon. USAID Cameroon. Yaounde, Cameroon
2. HART, Thomas G. NCRE Project 631-0013 Project Work Plan 1981-1985 March 31, 1982. National Cereals Research and Extension Project United Republic of Cameroon. Yaounde, Cameroon.
3. HART, Thomas G. NCRE Project 631-0013 Project Quarterly Progress Report for the period 1 April - 30 June 1982. National Cereals Research and Extension Project, United Republic of Cameroon. Yaounde, Cameroon
4. HART, Thomas G. NCRE Project 631-0013 Quarterly Progress Report. 31 December 1982.
5. ATAYI, E.A. NCRE Project 631-0013 Quarterly Progress Report. 31 March 1983.
6. ATAYI, E.A. NCRE Project 631-0013 USAID/IITA/IRA - Cameroon. Quarterly Progress Report. 30 June 1983.
7. National Cereals Research and Extension Project NCRE Annual Report 1982. USAID/International Institute of Tropical Agriculture. IITA. Revised August 1983.
8. NCRE 1981-1985. USAID/IITA.
9. NCRE 1983. USAID/IITA.

F. DGRST

1. Organization Charts for DGRST and IRA.

168

G. Research Publications of IRA-NCRE

1. Summary information sheet for the IRA Bambui Station. IRA Bambui, Box 80 Bouenda, NW Province, U.R. Cameroon.
2. An agro-socio-economic survey of farmers in the NW Province of Cameroon. 1983. TLU, NCRE, IRA, USAID, IITA.

H. World Bank

1. Report of the Cameroon National Agricultural Research Project Preparation Mission. February 2, 1983. Food and Agricultural Organization of the United Nations, Rome.
2. Aide-Memoire-Cameroon National Agricultural Research Project Appraisal Mission April/May, 1983; May 12, 1983.

I. Miscellaneous

1. Le Projet Westcorn. 1970-1982.
2. Evaluation of small farmer livestock and development project 631-0015, June, 1983. USAID/Cameroon.
3. Ngong-Nassah, Edward N. March, 1982. Communication skills for development professionals. Paper submitted to the Dept. of Rural Sociology, South Dakota State University, Brookings.
4. \_\_\_\_\_ . November, 1982. Some reflections on two agricultural Extension Services, in Cameroon Middle Africa, and in South Dakota - USA. Submitted to the Dept. of Adult and Higher Education, South Dakota State University, Brookings.
5. Steel, Robert G., and James H. Forrie. 1930. Principles and procedures of statistics - a biometrical approach. McGraw-Hill Book Company. N.Y., N.Y., USA.

J. Itinerary and Program

1. Moustafa, Abdel M. Tentative Program and Itinerary of USAID Evaluation Team. August 29, 1983. USAID Cameroon.

II. Provinces and other Organizations

1. Gwathmey, C.O. and M.T. Fubress. Sept. 1983. 1983 SAFGRAD pre-Extension trials in Cameroon: Context, design, materials, and implementation.

IX. APPENDICES

Appendix 1: The Provinces and Capital Cities of the United Republic of Cameroon

October, 1983

	<u>PROVINCE</u>	<u>CAPITAL CITIES</u>
1.	Centre	Yaounde
2.	South	Ebolowa
3.	East	Bertoua
4.	West	Bafoussam
5.	Littoral	Douala
6.	South West	Buea
7.	North West	Bamenda
8.	Extreme North	Maroua
9.	North	Garoua
10.	Adamoua	Ngoundere

## Appendix ii

I.R.A. CENTERS, STATIONS AND SUB-STATIONS

PROVINCE	CENTER	CROP / SECTION	STATION	SUB-STATION ALTITUDE
CENTRAL	NKOLBISSON	PERENNIAL AND FOOD CROPS	- NKOLBISSON (C) 750m (2) 1507mm (3) - NKOFIVONE (S) - JAGOMBI KANG (SW) 2360mm - FOUNBOT (W) 1000m 1750mm	- ABONG-EBANG (E) - BERTOUA (L) 620m 1156m - SANTA (NW)
	NKOLBISSON	FORESTRY	- NKOLBISSON (C)	- BILABO (F) - MBALHAYO (E) - MAROUA
	NKOLBISSON	SOILS		
LITORAL	NYOMBE	FOOD AND FRUIT CROPS	- NYOMBE (LT) 40m, 2634mm - DSCHANG (W) 1375m 2300mm - DAFBUI (NW) 1420m 2630mm	- EKONA (SW) - FOUFOUT (W) 1000m, 1719m - BAGANGTE (W) - SANCHOU (W) 720m, 1300 - BADOUNGO 1170m - UPPER FANG 1982m
EXTREME NORTH	MAROUA	FOOD AND TEXTILE CROPS	- MAROUA - DJAHENGOL  - MAROUA - GUIRING	- MAKEDI, MACA - GLOMPOU, BERE - SOUCOURDOU, SANGUERE - TCHATHALI, TOUBORO - FIGOLE, GULLALE - NDUCK
SOUTH WEST	EKONA	- SOILS  FOOD, PERENNIAL AND TEXTILE CROPS	- EKONA 460m 2130mm  - DIAMBDA 5767mm	- LYSOKA 2065mm - NIETE - MANDI

(2) Capital letters in parenthesis refer to Provinces



Appendix iv: Conferences and Sites Visited<sup>1/</sup>

Saturday, 27 August 1985

Conference

Abdel M. Moustafa  
Leslie Everett, Corn breeder, IITA  
Emmanuel Ayikoe Atayi, IITA, Chief of Party

Monday, 29 August

Conference on Assignment

William Litwiller, Chief of ARD Division, USAID

Conference on Evaluation

Randal Thompson, Project Evaluation Officer, USAID  
William Litwiller  
Abdel M. Moustafa  
Emmanuel Ayikoe Atayi

Tuesday, 30 August

Conference at IRA Headquarters, Nkolbisson

Maimo Mapri Anthony, Deputy Director, IRA  
Abdel M. Moustafa  
Emmanuel Ayikoe Atayi

Wednesday, 31 August

Bernard D. Wilder, Acting Director, USAID/Cameroon  
Stanley Handleman, Acting Deputy Director, USAID/Came  
Abdel Moustafa

Conference on Report Preparation

Randal Thompson  
Abdel Moustafa  
Emmanuel Atayi

---

<sup>1/</sup> George B. Alcorn and Elvin F. Frolik participated in all conferences and site visits listed. Titles for persons are given only for the first time that a name appears.

112

Calls on DGRST Officials (with Moustafa)

J. Nya Ngatchou, Director of Programs  
Paul Nchoji Nkwi, Deputy Director of Programs  
Victor Sunday Balinga, Conseiller Technique

Friday, 2 September

Conference on Report Preparation

Randal Thompson  
Emmanuel Atayi  
Abdel Moustafa

Tuesday, 5 September

Bambui Station, Staff Conferences

Dr. Jacob A. Ayuk-Takem, Chief of Station, Nation  
Coordinator of Cereals Program  
Dr. Foncho Peter, Plant Physiologist  
Dermot McHugh, IITA, TLU  
Dr. J. Kikafunda-Twine, IITA, TLU  
Ms. Pauline Bekeng, TLU (Counterpart to  
Kikafunda-Twine)  
Dr. Jay Chung, IITA, Nkolbisson Station, Maize  
Breeder

Visit to MIDENO (no plot visits -- raining)

Mr. Andrew Ndonyi, Deputy Project Manager  
John Parkinson, ULC Consultants Ltd., Extension  
and Training Advisor  
I.C. Walton, ULC Consultants Ltd., Agronomist

Bambui Station Field Plot Inspection

Jacob A. Ayuk-Takem and staff.

Wednesday, 7 September

Conference at Credit Union Project, Bamenda

Ken Kerkhoff, Management Advisor  
Alfred Foneng, Agric. League Manager  
Joseph Bote, Agric Officer  
M.M. Fusindamukong, League President

Conference at Wum Agricultural Development  
Authority (WADA)

Frank Rauch, Agronomist

Site visit to MIDENO Center, Mbengwi

Claude T. Kamsu, Chief of Center  
Tambo Muluh, Assistant Chief of Center and Trial  
Supervisor  
Cletus Fombo, Extension Supervisor  
Mrs. Juliet Forgwen 1/, Extension Supervisor

Visit MIDENO Training Center at Bambili, Regional  
College of Agriculture

Eleven Extension Agents (Trainees)

Conference on Responding to Scope of Work

Dr. Jacob A. Ayuk-Takem  
Dr. Jay Chung  
Dr. J. Kikafunda-Twine  
Mr. Santatana Marc, Socio-Economist  
Mr. Dermot McHugh  
Ms. Paul Bekong

---

1/ Not present

175

Thursday, 8 September

Conference and inspection of NCRE Rice Plots,  
UNVDA at Ndob

Dr. Jacob A. Ayuk-Takem  
Dr. D. Janakiram, IITA, Rice Breeder  
Dr. Animesh C. Roy, IITA Rice Agronomist  
Niba Gregory Nkoh, Director General, UNVDA  
Wanki Samuel Bawe, Chief of Production and Research,  
UNVDA  
Bambui Station Staff  
Randal Thompson

Visit to NCRE Maize Plots at Babungo IRA Substation

Femie Titus, in charge of Substation  
Two Farmer Cooperators

Visit to the Fon of Bamounda, Ndob, North West Province

Visit to Alkali (Akady), Moslem Judge, Ndob

Friday, 9 September

Call on Thomas Tata Fojoung, Provincial Delegate of  
Agriculture for North West, Bamenda

Visit Corn plots and Conference at Station de Fombot  
at Bafoussam.

Dr. Ernest Monthé, Director of Station

Site Visit to Farm and Conference with Dr. George  
Muna (Manager Westcorn) and Private Entrepreneur

Saturday, 10 September

Dschang Station (IRA) Staff Report Slide Presentation

Mr. Samuel Nzietcheng, Chief of Station  
Dr. Joseph Tchatchoua, Plant Pathologist  
Dr. D. Janakiram, IITA Rice Breeder  
Dr. Animesh C. Roy, IITA, Rice Agronomist  
Mr. Joseph Wankwe, Ministry of Plan & Industry

176

Dschang Station Field Plot Visit - Rice Research

Conference on evaluation on Dschang Station at  
Climaticue Hotel, Dschang

Evaluation Team

Dschang Station Staff

Sunday, 11 September

Inspection of Dschang Station Laboratories

Visit to University Center Dschang and Informal  
Visit with Cameroonian University of Florida  
Staff at Joseph Busby Home

Dr. Robert Marston, President, University of Florida  
Dr. Ken Tefertiller, Vice President for Agriculture,  
University of Florida

Dr. William L. Fritchett, University Center of Dschang  
and University of Florida.

Dr. Daniel O. Spinks, University Center of Dschang  
University of Florida

Dr. Bernard Wilder, USAID

Mr. Stanley Handleman, USAID

Mr. Rene Owona, President, University Center, Dschang

Monday, 12 September

Sanchou Antenna - Site Visit and Inspection of Rice  
Research Plots (Mbo Plain)

Dr. D. Janakiram

Dr. Animesh C. Roy

Dr. Joseph Tchatchoua

Visit to SCDERIN Rice Mill (near Sanchou)

Hanein Moogo Laurent

Monsieur E. Foula

Visit to Niombe Center, including Trip over Field At  
Michel Foyet, Chief of Center

111

Tuesday, 13 September

Conference and Laboratory Visits, Ekona Station at Buea

Mr. J.I. Nuisetja, Acting Chief of Center  
Dr. G.N. Symje<sup>1/</sup>, Chief of Center  
Mr. Jerome Tumentah Ambe, Agronomist  
Dr. T. Tsurizi, Benchmark Soils Project, University of  
Hawaii (short term)

Thursday, 15 September

Conference at IRA Headquarters, Nkolbisson

Dr. J.P. Ekebil, Director General, IRA  
Mr. Maimo Mapri Anthony, Deputy Director, IRA  
Abdel M. Moustafa

Friday, 16 September

Conference in Mr. Litwiller's Office re: World Bank  
Proposal for Agricultural Assistance in Cameroon

Mr. William Litwiller  
Jean-Claude Balcer, Bank Mondiale, Washington, D.C.  
Abdel M. Moustafa

Saturday, 17 September

Conference on Seed, Yaounde

Gary W. Bittner, Project Officer, North Cameroon  
Seed Multiplication Project.

Monday, 19 September

Conference on World Bank Suggestions for 3 Additional  
TLUs

Mr. William Litwiller  
Mr. Larry Dominessy, Deputy Chief, ARD Division  
Mr. Abdel M. Moustafa  
Ms. Randal Thompson

---

1/ Not present

116

Monday, 19 September (cont.)

Briefing Summary Presented by Evaluators to IITA and  
QUINQUENNIAL REVIEW TEAM, Yaounde

<u>Name</u>	<u>Title</u>	<u>Home Country</u>
Dr. Louis - CROUCH	Management Officer	Dominican Republic
Dr. James M. TERRI	Cassava Breeder	Tanzania
Dr. Patricia ROBERTS PICHETTE	TAC Secretariat	Canada - presently stationed in Rome
Dr. W. COFFMAN	Rice Breeder	Cornell University
Dr. Edgard Normanha	Cassava Breeder	Brazil

IITA QUINQUENNIAL TEAM

Dr. Eugene R. TERRY	Director International Programs	Sierra Leone
Dr. KAUNG ZAY	IRRI Liaison Researcher	Burma

Tuesday, 20 September at Maroua

Visited USAID Officer and Maintenance Garage  
in Maroua

Conferred with William C. Slocum, Agent de  
Liaison, USAID Cameroon, and Mr. McKay  
in charge of maintenance garage.

Conference with Sani Tonge Elie, Divisional  
Delegate for Agriculture

Conference with Maroua Center DGRST/IRA Staff

PERSONNEL

NON-FRANCOIS

Roli Baboulo	Chief of Center, IRA Maroua	B.P. 33, Maroua
Wariawe Joseph	C.E.	MINPI/D/PRCG, Yaounde
Ga P. Dangi	Sorghum & Millet Breeder	B.P. 33, Maroua
Nankam Claude	NCRE Plant Pathologist	B.P. 90, Bamenda
M.T. Fobasso	Project SAFGRAD, Chief Section Cereals	B.P. 33, Maroua
Kenga, Richard	Assistant Sorghum and Millet Breeder	B.P. 33, Maroua
Makonichou, T.	Assistant Peanut Breeder	B.P. 33, Maroua
Richard B. Chalfant	Principal Investigator, Bean/Cowpea CRSP	GA. Coastal Plain Expt. Sta. P.O. Box 748 Tifton, GA 31793
Moffi Ta'Ana	Entomologist CRSP/Cowpeas	B.P. 33, Maroua
Henri Talleyrand	NCRE Cereals Agronomist	B.P. 435, IPA, Garoua
C. Owen Owarhney	ACEP Agronomist/SAFGRAD Project	B.P. 33, Maroua
Jal Joffre	Service Experimentation SONECOTON	B.P. 302, Garoua
Schilling, TT	Peanut Breeder	B.P. 33, Maroua
Renou A	Antomologiste - Coton	B.P. 33, Maroua
Abdel M. Moustafa	Project Officer	USAID, Yaounde

Tuesday, 20 September (cont.)

Dinner at Maroua Airport hosted by Mr. Boli Tache Baboule, Chief of IRA Center, Maroua,

Guest of honor: Amadou Tidjani, 1st Deputy Divisional Officer.

Wednesday, 21 September

Presentation of Sorghum and Millet Program

Dr. Cm P. Dangi, Sorghum and Millet Breeder.

Visit to IRA Guiring Research Station

Visit to IRA Djoungol Field Testing Area

Visit to Striga Control Experimental Plots at Ndonboli Village

Visit Sorghum Variety Test at Yaldio (Farmer Field)

Hosted by Clan Chief Lwan Siddiki, Tribal Chief of 16 villages

Tuesday, 22 September

Visit SAFGRAD Pre-Extension Sorghum Trial on Farmer's Field near Meme.

Shown by C.O. Gwathmey, ACPO Agronomist.

Visit SAFGRAD Pre-Extension Millet Trial on Farmer's Field North of Kourgui on Limani road.

Visit SAFGRAD Pre-Extension Sorghum and Maize Trials near Ngutchéwé.

Visit NCRE Sorghum Trials at Tuétalé IRA/SCDECOTON Antenna

Visit Seed Multiplication Center, Tuétalé.

Friday, 23 September

Visit NCRE Sorghum Trials at SEMRY II, Naga Conference with SEMRY II Officials.

Mr. Lombardo, Chief d'Institute

Mr. Lonleu Etienne, Chief of Production

Friday, 23 September (cc)

Session on Response to Scope

Present: Baboule, Ayuk-Takem, Moustafa, Atayi,  
Joseph Anizobei Markwe (Ministère du Plan), Dangi,  
Kikafunda-Twine.

Saturday, 24 September

Visit Socounda IRA Antenna

Inspected MSVAT.

Visit Projet Semencier at Sanguere

Tito Beca, Chief of Party

Joseph Elang 1/, Chief of Project

Arnet W. Jones, Project Coordinator (stateside).

Suha Satana, Finance and Accounting

Visit Agrilagdo Project Karewa Experimental Farm

Mr. Aboubakar, Chief of the Farm Project

Robin FL Digby, Engineer

Inspected Rice Experimental Work

Dr. D. Inabiram

Inspected MSVAT

Dr. Cm. P. Dangi

Monday, 25 September

Visit to Délégation Provinciale d'Agriculture du  
Nord, Garoua

Mr. Gourlemond, Provincial Delegate of Agriculture

Mr. Dabou Moise, Chief of Service, Provincial Nord, and  
Deputy Provincial Delegate of Agriculture.

Visit to SODECOTON, Garoua

Mr. Gruson, Directeur du Développement de SODECOTON

Visit to Talleyrand's Office in House Leased by  
IRA, Garoua

Boli Babouli, Chief of IRA Center

Henry Talleyrand, NCRE Cereals Agronomist

1/ Not present

192

Monday, 26 September (cont.)

Ing. Ngounou, Nga Titus, Talleyran's Counterpart

Visit to IRA Sangwere Antenna

Maize Agronomic Trials

Visit Projet Semencier Farm, Sangwere

Chung's maize variety trial, and isolation of variety 7843 seed increase.

Tuesday, 27 September

Visit IRA Antenna de Ichollire

Mr. Duelebure

Maize agronomic tests

Maize variety test

Visit SODECOTON Headquarters near Antenna de Ichollire

Wednesday, 28 September

Visit SODEBLE at Wassandé

Martin Kouebo, Director General

Samuel Njinembo Zoh, Deputy Director

Maize agronomic tests

Maize variety trial

SODEBLE wheat variety test

SODEBLE maize and wheat production fields

Thursday, 29 September

Conference with Ronald Levin, Director of the USAID Mission in Cameroon, Yaounde

Friday, 30 September

Conference on the Response to Scope of Work for the Nkolbisson Station

Mr. Bakala, <sup>1/</sup> Chief of Nkolbisson Station

Mr. Charles Thè, incoming Counterpart for Dr. Jay Chun

Mr. Zangue Cheuka, present Counterpart for Dr. Chung

scheduled to depart in the near future to study for M.Sc. degree in the U.S.

Mr. Ezekiel Passam, Counterpart for Mr. Toby Chamberla

1/ Not present

103

Friday, 30 September (cont)

Dr. Abdel M. Moustafa  
Dr. Emmanuel Atayi  
Mr. Toby Chamberlain

Conference on NCRE, IRA

Director Jacques-Paul Eckebil  
Deputy Director, Tony Maimo  
Dr. Abdel M. Moustafa

Monday, 3 October

Conference on completing Evaluation Report

Mr. Samuel Scott, Chief of Project Development  
and Evaluation Division, USAID  
Mr. William Litwiller  
Dr. Abdel Moustafa  
Ms. Randal Thompson

Conference on CICP Assignment in Cameroon

Dr. J.E. Hunter, Professor of Plant Pathology,  
Cornell University, Ithaca, N.Y., CIGP Consultant  
Dr. George Teetas, Professor of Entomology, Texas  
A&M University, College Station, CIGP Consultant

Wednesday, 5 October

Conference on Extension in Cameroon

Dr. Emmanuel A. Atayi  
Mr. William Kelso, USAID Consultant on Extension

Conference on Completing Evaluation Report

Mr. Larry Dominessy  
Mr. William Litwiller  
Dr. Abdel Moustafa  
Ms. Randal Thompson

124

Tuesday, 11 October

Presentation of Findings and Recommendations  
of the Evaluation Team (open meeting)

A total of approximately 45 people invited to attend by Dr. Moustafa. Exact attendance not known because Report "went to press" before meeting held

Persons Not Previously Listed

Dr. Emmanuel F. Deganus, Administrator, International Programs, IITA, Ibadan, Nigeria

Dr. Yoel Efron, Program Leader, Cereal Improvement Program, IITA, Ibadan, Nigeria.

Appendix v. Status of Maize Varieties Being Grown in Cameroon at the Time When the NCRE Began Its Research Activities

6 October 1985

Emmanuel A. Atayi

At the time when the NCRE Project activities effectively began in early 1982, a number of improved maize varieties had already been recommended and were being cultivated in Cameroon. Some of these were exotic varieties introduced from neighboring countries and also from as far as the Caribbean region, while others were hybrids from Eastern and Southern Africa.

The IRA started its active maize breeding work in early 1970 and has since released many varieties for both lowland and highland ecologies; it is difficult, however, to estimate how extensively they are grown. The IRA varieties are characteristically tall, high in ear position and susceptible to stalk and root lodging. In addition, their performance has been rather unstable (location specific), although they have shown a high level of resistance to major local diseases, e.g. blights and rusts.

Most of the varieties grown by traditional small farmers are known to be degenerated seeds of unknown origin or a mixture of the above-mentioned varieties. A majority of the agricultural parastatal organizations in Cameroon grow exotic varieties from various sources.

Below is a list of maize varieties that existed prior to the beginning of NCRE activities in Cameroon:

VARIETIES DEVELOPED BY IRA

Lowland

Ekona White  
Ekona Yellow  
Ekona Mixed Color  
Ekona Synthetic  
MLC (Multi-locational Composite)  
BS 2 (Bambui synthetic ?)

Highland

BACCA  
BACCB  
COCA  
CCCAB  
Polyhybrid 290  
BS 1  
BS 2

VARIETIES INTRODUCED

Lowland

TZB (from IITA)  
TZPB (" " )  
Cuban Yellow (Caribbean region)  
Samaru 123 (Nigeria)  
NCA (Nigerian composite A)

Highland

SAW (South Africa)  
GRH (Green Revolution Hybrid)  
H 632 (University of Hawaii)  
H 614 (Hybrid from Kenya)  
SR 52 (Zimbabwe)

Average grain yield of these varieties in 1982 local variety performance trials ranged from 4.1 to 4.6 tons for lowland and 4.6 to 6.0 tons for highland. (see tables attached)

As it is shown in Tables 2 to 19 in NCRE 1982 Annual Report, yield performance of these varieties which served as check entries in 1982 trials was up to 51 percent below the best introduced varieties.

COMPARISON OF CAMEROONIAN LOWLAND MAIZE VARIETIES IN 1982

VARIETIES	L O C A T I O N				Y I E L D S (T/ha)						Mean Across Locations
	NYOMBE (40m)	SANGUIERE (210m)	MODELLE (380m)	MAROUA-GUIRING (410m)	SOKOUN- DOU (120m)	NIUJ (500m)	EKONA (460m)	BERTOUA (650m)	BEFANG (650m)	BABUM- CO (1776m)	
Ekona White	5.6	2.6	4.4	4.9	1.8	3.8	5.2	4.4	6.1	4.7	4.4
Ekona Yellow	5.1	3.9	4.6	4.8	2.4	4.0	6.3	4.7	6.0	4.1	4.6
Ekona Mixed Colour	4.7	2.5	4.8	4.7	2.1	3.2	5.4	4.0	6.4	4.2	4.2
Ekona Synthetic	6.0	2.4	4.5	4.4	2.1	3.8	5.6	4.3	6.2	4.3	4.4
M L C	3.7	2.3	4.2	4.1	2.5	3.1	5.4	3.7	5.6	6.1	4.1
B S 2	5.0	2.5	4.5	4.5	2.4	3.6	4.3	4.7	5.9	4.6	4.2
LOCAL CHECK	4.4 <sup>xx</sup>	2.3 <sup>xx</sup>	2.1 <sup>xx</sup>	5.2 <sup>xx</sup>	3.6 <sup>xx</sup>	3.2 <sup>x</sup>	4.8 <sup>xx</sup>	1.5 <sup>xx</sup>	4.2 <sup>xx</sup>	3.2 <sup>xx</sup>	3.5
Location mean	4.9	2.6	4.2	4.7	2.4	3.5	5.3	3.9	5.8	4.5	4.2
ISO (St)	0.2	0.7	1.2	0.5	1.0	0.5	0.8	1.5	1.0	1.2	0.5
C.V. (%)	15.4	21.4	22.3	7.8	23.9	10.2	11.9	28.7	12.8	19.6	8.4

x = Poza Rica 7843

xx = Local Unimproved Check from the Location.

188

COMPARISON OF HIGHLAND MAIZE VARIETIES IN 1982

VARIETIES	LOCATION					Mean Across Locations	Rank
	Babungo (1776m)	Bambui Plain (1330m)	Bangangte (1450m)	Dschang (1500m)	Bambui Station (1600m)		
BACOA	4.4	3.6	6.6	5.1	3.7	4.7	9
BACOB	4.9	3.3	7.4	4.3	2.9	4.6	10
OPACO	5.0	3.5	7.5	3.9	4.3	4.8	8
COCA	5.9	4.6	6.6	3.8	4.9	5.2	6
COCAB	4.6	5.4	5.9	5.4	4.3	5.1	7
S A W	5.9	4.3	8.4	4.9	4.7	5.6	4
M L C	6.1	4.9	8.3	5.2	4.1	5.7	3
POLY BYBRID 290	4.7	4.7	9.3	6.2	4.8	5.9	2
BULK PRODUCTION	5.3	4.4	8.2	4.7	4.7	5.5	5
BULK PROLIFICITE	5.6	4.3	8.0	5.2	4.5	5.5	5
G R II	5.5	4.8	9.0	5.4	4.8	5.9	2
E S 1	5.2	4.7	7.1	4.8	4.1	5.2	6
B S 2	4.4	3.3	6.9	4.0	5.0	4.7	9
H 632	6.1	6.6	7.0	4.9	5.5	6.0	1
SR 52	5.9	4.4	6.6	4.4	4.8	5.2	6
LOCAL CHECK	4.2	3.9	4.2	3.2	3.3	3.8	11
Location mean	5.2	4.4	7.3	4.7	4.4	5.2	-
LSO (S)	0.4	0.6	1.0	0.6	0.5	0.4	-
C.V. (%)	10.2	19.0	17.2	15.9	15.1	11.3	-

A prosperous and progressive agriculture in any country is dependent upon all of the following:

(1) A stable government that is sympathetic in its policies and support towards agriculture.

(2) The necessary infrastructure in place.

(3) The know-how of farmers to produce.

This requires research and delivery of its findings to users (farmers). Relevant research is also dependent upon this flow of information being a two-way street, i.e., information flowing back from producers to researchers.

Also important is that farmers are dependent upon continuous flow of new research information.

(4) Availability of necessary "inputs" i.e., seeds, fertilizers, chemicals, credit, etc.

(5) A marketing system, along with appropriate government policies to match the production system.

While all of these five factors are important and necessary for a prosperous agriculture, the "Terms of Reference" for this Evaluation were limited to No(3) above and only for rice, maize, sorghum and millet. However, very limited attention are given to numbers (4) and (5).

## X. ADDENDUM

### 1. Variety release and/or Recommendation

There shall be established in Cameroon at the national level a Board (committee) which will have the function of approving for production in Cameroon or some portion thereof all cereal crop varieties released and/or recommended by the IRA or by any other agency or individual. The plant breeder, Station, or any other individual or agency having a new variety for release and/or recommendation will submit all pertinent data on said variety to the Board. Based on available information, the Board will then make a decision on whether or not the variety should be released and/or recommended.

Suggested for membership on the Board will be persons from the following disciplines: IRA-plant breeding, agronomy entomology, plant pathology, Extension, the Seed Multiplication Unit; seed certification agency (if any); national seed testing laboratory (if any); parastatals and authorities; farmers; and any other appropriate agencies and individuals.

The Director of the IRA shall chair the Board.

The decision of the Board will be final.

### 2. Justification for additional positions

#### (a) Cereal agronomists

##### (1) Present staff

i. Dr. Henri Talleyrand with Counterpart Nga Ngoumou Titus at Garoua.

ii. Dr. Joseph Kikafunda-Twine at the Bambui Station with Ms. Pauline Zekeng as Counterpart (assuming that the shift for these persons from the TLU to cereal agronomy research is approved).

##### (2) Proposed additions

i. Cereal agronomist at Fombot with Cameroonian Counterpart.

ii. Cereal agronomist at Mkolbisson with Cameroonian Counterpart.

iii. Cereal agronomist at Maroua with Cameroonian Counterpart.

It will be noted that if the recommendations of the Evaluation Team are

carried out there will be in the NCRE five expatriate cereal agronomists with their respective Cameroonian Counterparts at five different and strategic locations.

The agronomists stationed at Maroua will work principally on sorghum and millet because these cereals (outside of rice) predominate in the areas. Going southward and as the annual rainfall increases, first millet and then sorghum gradually give way to maize. Talleyrand and Titus will work chiefly on maize in the principal maize producing areas of the North and Adamaoua Provinces.

The cereal agronomists at Nkolbisson (IITA and Cameroonian) will work principally on maize in the East, Central and South Provinces. The responsibilities for research of Dr. Kikafunda-Twine/Ms. Pauline Zekeng at Bambui, and the cereal agronomists IITA/Cameroonian Counterpart at Fombot will be divided either geographically or on the basis of lowlands/highlands. Together the two teams will be responsible principally for maize research in the North West, West, South West and Littoral Provinces.

The agronomic problems in cereal production in Cameroon are many and complex due to the following:

- (1) Variation in altitude, annual rainfall amount and pattern, latitude, and soils.
- (2) The variety of cropping practices such as mixed cropping, double cropping, double or even multiple cropping relay planting, and growing muskwari crops. The usage of crops for special purposes such as sorghum stalks for construction and maize to be eaten green must be considered. Superimposed on the above are production practices such as land preparation; planting methods; density of stand -- both degree and pattern; weed, disease and pest control, including use of chemicals; fertilization; method of harvesting; drying; and storage. Finally, the taste preferences and nutritional qualities must not be overlooked.

It would be impossible in advance to delineate the areas of research for the cereal agronomists. As indicated above the problems are many and complex -- for more than can be worked on at one time. The best way to proceed is to have as many cereal agronomists as possible (five are proposed)

196

## Appendix ii

## I.R.A. CENTERS, STATIONS AND SUB-STATIONS

PROVINCE	CENTER	CROP / SECTION	STATION	SUB-STATION ANTHROP
CENTRAL	NKOLBISSON	PERENNIAL AND FOOD CROPS	- NKOLBISSON (C) 750m (2) 1587mm(3) - NKORIVONE (S) - JARUMBI-KANG (SW) 2360mm - FOUNBOT (W) 1000m 1750mm	- ABONG-MBANG (E) - BERTOUA (E) 620m 1524mm - SANTA (NW)
	NKOLBISSON	FORESTRY	- NKOLBISSON (C)	- BELABO (E) - KUALIMAYO (E) - HAROUA
	NKOLBISSON	SOILS		
LITTORAL	NYOMBE	FOOD AND FRUIT CROPS	- NYOMBE (LT) 40m, 2634mm - DSCHANG (W) 1375m 2300mm - BANBUI (NW) 1420m 2630mm	- EKONA (SW) - FOUNBOT (W) 1000m, 1719 - BAGANGTE (W) - SANTCHOU (W) 720m, 1800 - BABUNGO 1170m - UPPER FANG 1982m
EXTREME NORTH	HAROUA	FOOD AND TEXTILE CROPS	- HAROUA - DJARENGOL  - HAROUA - GUIRING	- MAKETI, MACA - COLOMPOUI, BERE - SOUCOUNDOU, SANGUERE - TCHATIDALI, TOUBORO - FIGNOLE, GULLALE - HDUCK
SOUTH WEST	EKONA	- SOILS  - FOOD, PERENNIAL AND TEXTILE CROPS	- EKONA 460m 2130mm  - DIAMBA 5767mm	- LYSUKA 2065mm - NIETE - HONDI

(2) Capital letters in parenthesis refer to Provinces

and let each one, after studying the situation with counsel from others, establish the research program that is indicated.

### 3. The Concept Paper of TLU

Perhaps not specifically stated in the report it is the recommendation that some revision in the concept of the TLU take place. As noted the recommendation is for one person in each TLU rather than two. The second TLU person currently involved in "Operational Research" or field trials is essentially a researcher and should be so called. The one person making up the TLU would be the liaison person between Research and Extension -- a sort of broker bringing two persons (researcher and farmer user) together but not being a principal. The Extension staff being trained is and should be selected by the Ministry of Agriculture and the liaison person being familiar with all the research resources in NCRE and the IRA would arrange the training schools and activities. Activities would include not only the training schools and field activities in conjunction with the research and Extension people but also inducing researchers to prepare information material for farmers.

Recommendations in the report are for two more TLU's.

The extension agronomists are recommended in order to accelerate the research work of the cereal breeders. Variety breeding and subsequent recommendation requires extension agronomic research to be meaningful and appropriate for the wide range of site factors and agronomic practices existing in Cameroon. Not only will the agronomists greatly enhance the production of the cereal breeders but they will also be able to contribute importantly to the extension effort of the TLU via more demonstrations and field trials but also prepare extension type material for the TLU and the Extension Service.

A wider and greater use of the research results could be made by the addition of two more TLU personnel. The concept of the TLU is revised somewhat in the report and in this addenda to result in the liaison person at each of three locations. No TLU is recommended for northern part of Cameroon but the seven southern countries representing the balance of Cameroon we feel could be covered by positioning one person at Bamui, one at Ekona and one at Nkolbisson.

194

A N N E X I

I E E S U P P L E M E N T T O  
O R I G I N A L I E E S U B M I T T E D W I T H  
P H A S E I

IEE Supplement to the previous IEE submitted November, 1981 with the Project Paper for Phase II of the NCRE Project (631-0013):

- A. Project Location: Cameroon
- B. Project Title: National Cereals Research and Extension,  
Phase II, Project No. 631-0052
- C. IEE Supplement Prepared by: Winfield S. Collins, P. E.,  
USAID/Cameroon
- D. Action Recommended: Negative Determination
- E. Project Description: For this second phase project the objectives remain the same as the Phase I project. However, construction is planned for twelve houses, seven laboratory warehouses and five offices, all of which will be on IRA (Institute de Recherches Agronomiques) property. Construction will be distributed among several locations, namely: Yaounde, Garoua, Maroua, Bamenda, Ekona, Foubot and Dschang. It will satisfy requirement for staff housing, office space and laboratory warehouse space associated with the overall needs and objectives of the project. Environmental impacts are described below.
- F. Identification and Evaluation of Environmental Impacts:
  - 1. Land Use: There will be no change in land use. Only relatively small areas are required for construction and in each case, large existing parcels of land owned by IRA have been identified to accommodate the proposed buildings and facilities. Also, in each case there are access roads and existing networks for water, sewerage and electricity. Therefore, no negative impacts will result from crowding nor will there be disruption from construction of infrastructural systems for roads, water, electricity, etc. Hookups to existing water, sewage and electrical systems can be accomplished without interruption of existing services.
  - 2. Other Possible Impacts: There will be temporary negative impacts due to noise and dust/mud during construction as well as general inconvenience to existing users of IRA property. However, construction is not expected to last more than about six months for any particular building site, hence the inconvenience could be considered tolerable. Because construction will take place on sites that are already developed, and there is no need for displacement of persons or interruption or dislocation of economic opportunities of residents in the area, there will be no resulting cultural and socio-economic impact.

1976

INITIAL ENVIRONMENTAL EXAMINATION

OR

CATEGORICAL EXCLUSION

Project Country: Cameroon

Project Title: National Cereals Research and Extension  
Phase II (63]-0052)

Funding: FY (s) 85-95 \$ 35,422,000 Grant  
\$ 3,605,000 Loan

IEE Prepared by: Abbe Fessenden Mission Environmental Officer

Environmental Action Recommended:

Positive Determination \_\_\_\_\_  
Negative Determination XX

Categorical Exclusion:

This activity meets the criteria for Categorical Exclusion in accordance with Section 216.2 (C) and is excluded from further review because:

(1)

Negative Determination (Continued):

A negligible amount of commercially available pesticides will be used for experimental purposes under the close supervision of the highly skilled members of the Technical Assistance Team. This project therefore comes under, "Exceptions to Pesticide Procedures" 22 CFR, Part 216.3(b)(2).

Concurrence:  
Bureau Environmental Officer

Thomas H. Pierce, Acting

*Thomas H. Pierce*

APPROVED \_\_\_\_\_

DISAPPROVED \_\_\_\_\_

DATE 10/11/84

Clearance: GC/AFR 11/1/84 Date Oct 19, 1984  
Subject to 22 CFR

1984

UNCLASSIFIED  
Department of State

INCOMING  
TELEGRAM

PAGE 01 YAOUND 08359 181505Z 1807 094502 AID0880  
ACTION AID-00

ACTION OFFICE AFOR-06  
INFO AAFA-02 AFCA-03 STAG-02 SAST-01 AFDA-01 AGRI-01 STFA-01  
RELO-01 TELE-01 MAST-01 /020 A4 818

INFO OCT-00 AF-00 CIAE-00 EB-08 DODE-00 /009 W  
-----215476 181506Z /38

O 181130Z OCT 84  
FM AMEMBASSY YAOUNDE  
TO SECSTATE WASHDC IMMEDIATE 8067

UNCLAS YAOUNDE 8359

AIDAC

FOR: AFR/PD/CCWAP, W. ELLIOT

E. O. 12356: N/A

TAGS:

SUBJECT: NATIONAL CEREALS RESEARCH AND EXTENSION PROJECT  
NCRE, PHASE II. 631-0052.

REF: (A) STATE 305568; (B) TELCON MOUSTAF/A/ELLIOT, OCT 16, 84.

THE PESTICIDE REQUIREMENT HAS NOT BEEN INCLUDED IN THE PP OF THE SUBJECT PROJECT BECAUSE OF THE FOLLOWING: UNDER NCRE PHASE II: A NEGILGIBLE AMOUNT OF COMMERCIAL- LY AVAILABLE PESTICIDES WILL BE USE SPORADICALLY FOR EXPERIMENTAL PURPOSES UNDER THE CLOSE SUPERVISION OF THE HIGHLY SKILLED MEMBERS OF THE TECHNICAL ASSISTANCE TEAM. ONE OF THE MAIN OBJECTIVES OF THE TECHNICAL ASSISTANCE EFFORTS IS TO IDENTIFY AND PRODUCE VARIETIES OF MAIZE, RICE, SORGHUM AND MILLET, THRU SELECTION, BREEDING AND DEVELOPMENT OF CULTURAL PRACTICES, THAT ARE RESISTANT TO HEAVY PRESSURE OF DISEASE AND INSECT INFESTATIONS WITHOUT USE OF PESTICIDES. THEREFORE, NCRE PHASE II SHOULD BE EXEMPTED FORM PESTICIDES PROCEDURE BECAUSE IF FALLS UNDER CFR 22 PART 215.3 (B) (1) PAGE 6 AND 9.  
FRECHETTE

UNCLASSIFIED

196

A N N E X J

R E Q U E S T F O R  
A S S I S T A N C E

Ministère du Plan  
et de l'Aménagement  
du Territoire

ACTION	
NO 222	7/9
TRANS RJE	
YAKOU	
DATE	

631-0112  
- 0052

UNIFORME FILE COP.  
00 NUI REMOVL

Yaoundé, le -4 JUIN 1984

1553 / MINPAT / CAB / VM

Le Ministre d'Etat

Action RJE

INFO

A/D/DIC  
PDEARD

124/84 PRIM  
CONT  
CHEON  
R.F

Objet : Extension du projet  
national de Recherche et  
de vulgarisation des  
Céréales (NCRE).-

Monsieur le Directeur,

Suite à la mission d'évaluation du projet National de  
Recherche et de Vulgarisation des Céréales (maïs, riz, sorgho,  
mil), et en vue de consolider les résultats acquis et d'étendre  
les activités de ce projet,

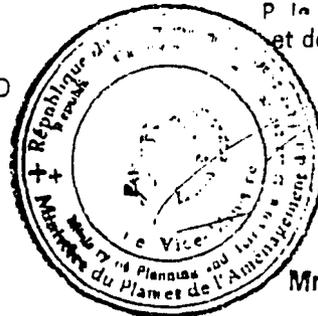
J'ai l'honneur de vous demander de bien vouloir examiner  
la possibilité de financer son extension par :

- la création de trois nouvelles unités de test et de liaison,
- le renforcement de l'équipement scientifique ;
- la formation de quinze chercheurs nationaux ;
- la construction de logements, de magasins-laboratoires et de bureaux.

Je vous saurais gré de la diligence avec laquelle vous examinerez cette requête.

Veuillez croire, Monsieur le Directeur, à l'assurance  
de ma considération distinguée./-

A MONSIEUR LE DIRECTEUR DE L'U S A I D  
B.P 817  
YAOUNDE



P. le Ministre d'Etat  
et de l'Aménagement du Territoire  
LE VICE-MINISTRE

Mme TANKEU Elisabeth

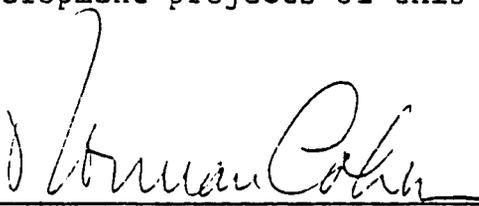
200

Annex K

CERTIFICATION PURSUANT TO SECTION 611(e) OF THE FOREIGN  
ASSISTANCE ACT OF 1961, AS AMENDED

I hereby certify to the Administrator of the Agency for International Development that the Government of the Republic of Cameroon (GRC) possesses both the financial and human resources to effectively maintain and utilize the National Cereals Research and Extension Project/Phase II (631-0052) to be undertaken pursuant to the terms of the A.I.D. grant between the Government of the Republic of Cameroon and the United States of America for the purpose of assisting the development of Cameroonian institutional capacity to provide high quality research on maize, rice, sorghum, and millet and to facilitate utilization of research results by farmers. In so certifying I have taken into account the maintenance and utilization of projects in Cameroon previously financed and assisted by the United States of America, and I have more particularly taken into account the demonstrated capability of the GRC to effectively utilize development projects of this nature.

Date: 10/10/84

  
\_\_\_\_\_  
Norman Cohen  
Director, AFR/PD

NOTE: Ronald D. Levin, Mission Director, USAID/Cameroon, delegated authority to Norman Cohen, Director, AFR/PD, to sign 611(e) certification. See attached copy of Yaounde 06010.

21- PAGE 21 " " YAOUNDE 06217 241333Z 6663 232467 AID838  
22 ACTION AID-30  
23 -----  
24 ACTION OFFICE AFDR-06  
25 INFO AFDP-36 AFCA-23 AFDA-21 APRI-01 RELO-21 TELE-21 MAST-21  
26 /020 A1 1124  
27 -----  
28 INFO OCT-00 AF-20 CIAE-00 EB-08 DODE-00 /028 #  
29 -----134351 241620Z /36  
30 O 241100Z JUL 84  
31 FM AMEMBASSY YAOUNDE  
32 TO SECSTATE WASEDC IMMEDIATE 6799  
33  
34 UNCLAS YAOUNDE 6010  
35  
36 AIDAC  
37  
38 FOR AFR/PD, COHEN  
39  
40 E.O. 12356: N/A  
41 TAGS:  
42 SUBJECT: CAMEROON NATIONAL CEREALS RESEARCH AND EXTENSION PROJECT  
43 PHASE II (631-2252)  
44  
45 REF: STATE 213217  
46  
47 RONALD D. LEVIN, MISSION DIRECTOR, USAID/CAMEROON,  
48 HEREBY DELEGATES AUTHORITY TO NORMAN COHEN, AFR/PD,  
49 TO SIGN THE PROJECT PAPER FACT SHEET AND THE 611 E  
50 CERTIFICATION FOR THE NATIONAL CEREALS RESEARCH AND  
51 EXTENSION, PHASE II, PROJECT 631-2252  
52 FRECHETTE  
53  
54  
55

202