

15W-28353

PD-AAM-668
6600077/15

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE Cassava Outreach	2. PROJECT NUMBER 660-0077	3. MISSION/AID/W OFFICE USAID/Zaire
	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 83-2	
<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION		

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING A. Total \$ 7,858,000 B. U.S. \$ 4,500,000	7. PERIOD COVERED BY EVALUATION	
A. First PRO-AG or Equivalent FY 78	B. Final Obligation Expected FY 82	C. Final Input Delivery FY 85		From (month/yr.) Sept. 1978	To (month/yr.) Jan. 1983

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., airgram, SPAR, PIO, which will present detailed request.)

B. NAME OF OFFICER RESPONSIBLE FOR ACTION

C. DATE ACTION TO BE COMPLETED

See conclusions and recommendations.

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify) _____
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A. Continue Project Without Change

B. Change Project Design and/or Change Implementation Plan

C. Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

I. Hatchimonji, Project Officer
 Cit. Kungula Biantanga, GOZ, Dept. of Plan
 Cit. Tonyemba Ossamba, GOZ, Dept. of Agriculture
 F. LeBeau, Evaluator
 C. Schoepf, Evaluator

12. Mission/AID/W Office Director Approval

Signature: *[Signature]*

Typed Name: Richard L. Podol

Date: 26 FEB 83

XB-AM-607-14
66600-077/17
1400-2930.1

E V A L U A T I O N

CASSAVA OUTREACH

PROJECT 660-077

PROGRAMME NATIONAL MANIOC

PRONAM

ZAIRE

February 1983

TABLE OF CONTENTS

	Page No.
PRINCIPAL FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	i
I. INTRODUCTION	1
II. BACKGROUND	1
III. PRINCIPAL ELEMENTS OF THE PROJECT	2
A. Purpose	2
B. Inputs	2
C. Outputs	4
IV. STATUS OF INPUTS AND OUTPUTS	5
A. General	5
B. Technical Assistance	5
C. Training	5
D. Vehicle, Equipment and Supplies	8
E. Outputs	9
V. APPRAISAL OF INPUTS AND OUTPUTS - PROJECT PERFORMANCE	10
A. The Research Program	10
B. The Outreach/Extension Program	12
C. Training	15
D. Career and Professional Development	17
E. Administration and Management	18
F. General Comments	21
G. Responsiveness to Project Purpose	24
H. Sustainability	26
VI. SUGGESTIONS FOR CONTINUING THE PROJECT AFTER 1985	27
ANNEX 1	
ANNEX 2	
ANNEX 3	
ANNEX 4	
ANNEX 5	
MAP SHOWING OUTREACH ACTIVITIES IN BANDUNDU	

PRINCIPAL FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings

1. The Research Program begun in 1974 has made good progress in identifying disease and insect resistance among clones of cassava selected from seedlings. Several clones with potential high yielding and good quality characteristics are being tested. Two clones were released as named varieties in early 1983.

2. The Outreach/Extension Program projected in the PP was found to be overly optimistic. Adaptability testing and on-farm demonstration, begun in 1980, have been made with the more promising clones. A number of clones have been distributed in small quantities to cooperating entities and to farmers. The outcome of this preliminary distribution is yet to be evaluated. By February 1983, some 100 ha were planted for planting stock multiplication of a number of clones, including newly released varieties. The assignment of a farm manager in lieu of the IITA plant breeder position which will be vacated in March 1983 would relieve the senior extension agronomist of farm management responsibilities, permitting him to devote full time to the outreach program.

3. Training at the M.Sc. level has progressed satisfactorily with seven trained M.Sc. level personnel making up the current research staff, while others are continuing their training programs. One of the Ph.D. trainees has completed his training and will return to PRONAM in March 1983 and will replace the expatriate plant breeder at M'Vuazi. A second candidate is pursuing his thesis research in Zaire. English language training for trainees at the University of Ibadan has not been adequate. Some diversification of university training in other institutions would be desirable. The target for paraprofessional training has been mostly met; however, there has been a substantial shortfall in the last two years. Formal local training has not begun due to delays in construction and installation of facilities.

4. Project management by the three entities - USAID, IITA and GOZ - has generally been satisfactory. The most serious deficiencies were failure of GOZ to follow through on rehabilitation of facilities at M'Vuazi and failure of IITA to promptly assign a Project Director.

5. From the institution-building point of view, one of the two sub-purposes of the project, a nucleus of trained and apparently dedicated personnel has been assembled; there are, nevertheless, several serious obstacles: the lack of a career status for the personnel, levels of compensation which are inconsistent with levels of training, responsibilities and expected work output, and less than satisfactory living conditions and social services available at the stations.

6. In many localities the socio-economic setting, the state of transportation and marketing facilities and the strained relations existing between the peasant population and the DOA agents makes it unlikely that efforts to extend improved technology will be rewarding, suggesting a need for selectivity in choice of areas for major extension programs.

7. The USAID proposal to incorporate PRONAM into a broader research program encompassing the major food crops is an appropriate approach for continuing the project. The multiple crop approach is more appropriate to the farming conditions of the small farmer than the single crop approach. Such an approach should benefit PRONAM as well as the other commodity-oriented National Programs.

8. The PRONAM project, or for that matter, any similar institutional building project in Zaire, has no possibility of achieving a reasonable level of sustainability within the usual time frame in which projects are cast (5 to 10 years). Sustainability will be achieved only over a longer time frame and only if accompanied by substantial reforms in GOZ policies and practices (leading inter alia, to a more stable organizational and financial posture).

Recommendations

1. The project should be continued beyond the extended PACD, preferably as an element of a broader multi-crop and multidisciplinary project.
2. During the two years remaining, greater attention should be given to surveying and evaluating local varieties. Greater use might be made of local varieties as sources of desirable processing and culinary qualities. A greater effort should be made to integrate more fully the research programs at the three stations.
3. Socio-economic studies beyond the ad hoc studies made to date should be made to serve as a basis for selecting areas in which introduction of new varieties and technology are most likely to succeed.
4. The PRONAM should develop a strategy for extension which rationalizes the divergent approaches being used.
5. The Initial Farming Systems Research undertaking should be extended, with the development of a strategy and methodology as an important first step.
6. The extension of the project and/or its integration into a broader project should be predicated on policy and practices reforms in the DOA - establishment of a career status for National Program personnel, more adequate levels of compensation and provision for better living conditions and social services at research stations.
7. In the development of a successor project, special attention should be given to investigations into means of maintaining and improving soil fertility, especially as applied to the savannah areas.

I. INTRODUCTION

This, the mid-term evaluation originally scheduled for mid-1982, was done in January-February 1983 by a team consisting of two external evaluators, two GOZ individuals external to the project and one home-based representative from IITA with the participation of IITA, GOZ and USAID project personnel. Approximately three weeks were spent in the field visiting three research stations and off-station work at seven locations. One week was devoted to preparing a draft report, consulting with USAID, IITA and GOZ staffs on findings and recommendations and finalizing the evaluation report. The individuals involved in the evaluation, the principal contacts made, as well as the work schedule are given in annexes.

The findings, observations, and recommendations made were reviewed and discussed with USAID, GOZ and the IITA resident personnel. The final report, however, reflects the view of the two external evaluators for which they alone are responsible.

II. BACKGROUND

In the early 1970s serious outbreaks of diseases of cassava caused grave concern to the GOZ because of the predominant place of cassava as a primary food in much of the country, and the apparent decline in per capita production. At the request of the GOZ, the IITA made a survey of the principal cassava growing areas in 1973. This survey identified the bacterial blight as a serious disease causing substantial damage to cassava in the major production areas. Subsequent observations determined that other diseases and insect pests were present and responsible for important reductions in production.

In 1974 at the request of the GOZ, the IITA initiated a research program on cassava which focused on developing measures for increasing production - development of disease and insect resistant high-yielding varieties of acceptable quality, and development of appropriate cultural practices. Training of local personnel was included as an

important element of the IITA assistance. The project was launched as a national program - Programme National Manioc (PRONAM).

Under the cooperative arrangement between the IITA and the GOZ, the GOZ financed the foreign exchange costs for expatriate personnel, equipment, supplies and training to be provided by the IITA. Local facilities, personnel and operating costs were also provided by the GOZ.

Because of serious economic problems, the GOZ in 1977 requested USAID assistance in support of the program. In June 1978, a project paper was approved providing funds (\$4.5 million) for the foreign exchange cost of continuing the program through 1982. A GOZ contribution of approximately \$20 million was projected, of which \$19 million was to come from counterpart funds.

Although a project grant agreement was signed with the GOZ in 1978, actual implementation did not begin before May 1980 with conclusion of a contract between USAID and IITA. Effective implementation under the USAID agreement commenced in early 1980, reflecting almost a two year gap from that proposed in the project paper.

III. PRINCIPAL ELEMENTS OF THE PROJECT

A. Purpose:

The purpose of the project is "to develop the institutional capability of PRONAM to (1) conduct adaptive and applied research on cassava and (2) to make new cassava technology available for distribution to subsistence farmers in Zaïre". This purpose is cast within a broader goal of increasing the "availability and nutritional quality of food production for the low income majority in Zaïre".

B. Inputs:

1. USAID

a) Technical assistance: according to the PP, contractual arrangements with the IITA to provide: extension agronomist (5) 128 PM;

training officer (1) 36 PM; physical plant service personnel (1) 48 PM; a project coordinator (48 PM); and short-term consultants for a total of 20 PM. Costs for support of contract personnel were also included. It should be noted, however, that the contract with IITA provided for eight positions with changes in orientation and staffing from that proposed in the PP.

b) Training: academic training for 22 individuals; 16 at the M.Sc. level and 6 at the Ph.D. level; paraprofessional training at IITA for 32 technician level personnel

c) Supplies and equipment for establishing a training center at M'Vuazi

d) Research equipment and supplies for M'Vuazi and five regional stations

e) Equipment and supplies for M'Vuazi and five regional stations, including vehicle and equipment maintenance tools and materials and radio communication equipment

f) Vehicles in support of research, training and extension at M'Vuazi and five regional stations

g) Various inputs for agricultural economics surveys and studies particularly focusing on production technologies and farming systems, processing systems, marketing systems as well as policy issues. These inputs were to be provided by economists from IITA (although no provision was made in the staffing pattern) and DOA through its statistics division with assistance from USAID Project 052 - Agricultural Economics.

2. GOZ Inputs

a) PRONAM staff salaries

b) Research station facilities including rehabilitation of existing physical plants and services

c) Construction and equipping of a Training Center at M'Vuazi

d) Support for trainees participating in degree, para-professional and local in-residence training

e) Contribution to PRONAM operating costs, including materials and supplies, maintenance of physical plant and equipment, POL and local travel

f) Support for Agricultural Economics Studies

3. IITA Contribution

a) Technical assistance: an entomologist specializing in biological control. This was in addition to technical assistance provided under USAID financing.

C. Outputs:

1. Establishment of M'Vuazi as the national headquarters for PRONAM with adequate facilities for carrying out a well-rounded research program

2. Training facilities at M'Vuazi

3. PRONAM programs at five sub-stations with outreach programs including demonstrations, farmers-field tests and multiplication of plant materials in cooperation with extension agents

4. Improved physical facilities and maintenance capabilities at research stations

5. A staff of trained Zairians at the Ph.D. level (6) and M.Sc. level (16) capable of assuming responsibilities of the research program, adequately supported by technicians

6. Improved information on the economics of cassava production, processing and marketing systems

7. A radio communications network linking the six PRONAM stations and integrated with the DOA radio network.

IV. STATUS OF INPUTS AND OUTPUTS

A. General

There has been a substantial lag in providing the programmed inputs. Although the PP was approved in mid-1978, it was not until 1980 that implementation effectively began. Much of the delay was due to the problem of the GOZ settling arrears in payments to IITA under the contract between the two under which PRONAM was initiated. During this interim IITA continued to carry out research activities, however, at a reduced level from that during the earlier years, and from that projected under USAID assistance. The IITA-USAID contract for service was signed in May 1980.

B. Technical Assistance

There were significant lags in fielding the projected personnel by IITA. Personnel already on board - 1 plant breeder and 1 physical plant services officer remained and were still present in February 1983. Table 1 provides data on IITA staffing during the period 1978 - February 1983. In February 1983, seven of the 13 positions originally programmed were staffed. It should be noted, however, that the contract with IITA included provisions for only eight personnel. Thus, in February 1983, all contract positions were filled with the exception of the training officer position.

C. Training

Table 2 provides a record of the participant training implemented. All of this training was provided at the University of Ibadan and IITA. In addition to the degree training program, 27 individuals completed the IITA "Roots and Tubers" training program. Of these, however, 10 had completed the program prior to 1978.

One former PRONAM staff is being processed for enrollment for the M.Sc. program in Agricultural Economics for the spring quarter at the University of Georgia and is expected to return to PRONAM after

TABLE 1

INTERNATIONAL PERSONNEL STAFFING BY POSITIONS
AND BY TIMING AND DURATION OF SERVICE

Order Number	Position	1978	1979	1980	1981	1982	1983	Programmed	Contracted
1	Admin. Officer	.				From April	xx	1	1
2	Director/Agronomist	To May							
3	Director/Agronomist	From May	xx	To August					
4	Director/Agronomist					From April	xx	1	1
5	Plant Breeder	To May							
6	Plant Breeder	From May	xx	xx	xx	xx	xx	1	1
7	Entomologist	xx							
8	Entomologist				From March§	xx	xx	1	1
9	Entomologist (IITA-financed)							1	
10	Plant Pathologist	xx							
11	Plant Pathologist								
12	Agro-Ext.	xx						1	
13	Agro-Ext. (M'Vuazi)			From November	xx	xx	xx	5	2
14	Agro-Ext. (Kiyaka)				From December	xx	xx		
15	Training Officer							1	1
16	Phys. Pl. Maint.		xx	xx	xx	xx	xx	1	1
TOTALS		5	3	4	5	7	7	13	8

xx - On Board

Blanks - Vacant

§ - Those to four-month language training before beginning work in Zaire.

T A B L E 2

PARTICIPANT TRAINING FOR ADVANCED DEGREES

Field of Study	Studies Completed thru 1982		Studies in Process in 1983		Studies Programmed in 1983		Total Programmed from 77	
	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.
Plant Breeding	2 ¹	0	1	1	1	0	3	2
Agronomy	5	0	1	1	1	0	6	2
Entomology	2	0	1	0	1	0	2	1
Plant Pathology	1	0	1	0	0	0	2	1
Agr. Economics	0	0	0	0	1	0	1	0
Food Technology	0	0	0	0	0	0	1	0
Agr. Education	0	0	0	0	0	0	1	0
TOTALS	10	0	4	2	4	0	16	6

1.- One graduate left the project

completion of his studies. Three other candidates for M.Sc. are programmed for the fall of 1983.

Local training has been limited. Three one-week programs were organized altogether at M'Vuazi. One in 1982 was attended by nine individuals from cooperating entities, i.e., private or development-project organizations. The formal local training program projected in the PP had not been organized because of failure to date to construct and equip the needed facilities.

A one week course for cooperating DCA extension personnel (13) was provided at Kiyaka in 1982.

D. Vehicles, Equipment and Supplies

A fleet of 11 pick-ups, 2 jeeps, and 2 trucks has been provided. This supplements the only two vehicles remaining of those provided to the project by the GOZ prior to USAID support.

Most of the laboratory equipment has been ordered and much of this has been received. Most of this equipment, however, has not been installed pending the needed improvements in laboratory rooms, water supply and power supply.

Most of the farm equipment for M'Vuazi has been received. A tractor and farm equipment has been received at the Kiyaka station. That for Gandajika arrived in February 1983.

Tools, equipment and materials for machinery and physical plant maintenance had recently been received. However, pending settling arrangements for space in the INERA garage and maintenance unit, most of these items had not been installed. Tools have not been distributed to the two sub-stations.

Although the PP made a special point of providing adequate funds during the first year of the project for procurement, there was a long lag time. Requests were placed from the field team in early 1980, yet, except for nine pick-up trucks which were procured locally, it was not before December 1982 that the first shipments were received.

E. Outputs

1. M'Vuazi has been established as the national headquarters for PRONAM with a GOZ coordinator and a staff of 12 professionals and 15 technicians supported by adequate service and labor personnel. The lack of basic social infrastructure and limits on availability of land will limit the role of the station as the major facility for PRONAM.

2. The physical plant improvements have been minimal. Failure to provide adequate water and power supplies has seriously impaired the quality of life for personnel and the pursuit of laboratory studies. Plans for major improvements to the water system and for providing power from the power line which supplies Kinshasa have been completed. Installations are expected to be completed by the end of July 1983.

3. Significant improvements have been made in the farm facilities, farm roads, drainage and flood control structures, and experimental field layout. Negotiations with INERA have resulted in obtaining reasonably adequate land for research and early stages of plant material multiplication. Much of the land on the station is, however, of better quality than that generally found in the Bas-Zaire area. Land, more nearly typical of the quality of land of the area, has been obtained for the research program from an adjacent village.

4. Facilities for carrying out training programs have not been established. Plans, however, have recently been developed for this facility. It is expected that construction can be completed by the end of July 1984.

5. Research programs have been established at three (M'Vuazi, Gandajika and Kiyaka) of the six stations originally programmed. Limited outreach programs have begun at these locations. Research into production systems (cropping systems) has been initiated from M'Vuazi at Kisantu some 1 1/2 hours away. Two new varieties have been released for distribution.

6. Plant material multiplication and distribution to cooperators and farmers have been made of selected local varieties and of some advanced clones produced by the breeding program.

7. An effective radio communication network has been set up linking the three stations and the administrative office in Kinshasa. This remains independent of the INERA network.

8. Only very limited agro-economic study has been undertaken.

V. APPRAISAL OF INPUTS AND OUTPUTS - PROJECT PERFORMANCE

The appraisal of inputs and outputs or project performance are discussed under six general headings:

- A. The Research Program
- B. The Outreach/Extension Program
- C. Training
- D. Project Administration and Management
- E. Some General Comments
- F. Responsiveness to the Project Purpose

A. The Research Program

A well-rounded and comprehensive program of research has been established at the project headquarters at M'Vuazi.

1. The Variety Improvement Program

This program includes a major breeding and selection program which has included screening of progenies derived from approximately 300,000 seeds representing numerous families introduced from IITA/Ibadan, and from Latin America through IITA. (The program chose not to introduce vegetative materials because of the hazard of introducing diseases and insect pests with vegetative propagating material.) Comparative performance of clones, derived from seed, has been made with local varieties through several cycles including insect disease and vegetative vigor observations in nurseries followed by single line observations,

replicated field trials, preliminary yield trials, advanced yield, final yield and quality trials and multilocational trials. In all trials records of insect and disease damage are recorded. Each of these steps required one year. Field trials are carried out on fertile valley soils and on poorer savannah soils which had been previously heavily cropped. Thus the process beginning with seeds through the first off-station trials required six years. At each stage the number of clones is severely reduced. By 1981, 28 clones were in advanced yield tests, 11 clones were in final on-station yield tests and 9 were in multilocational - 6 sites - tests. Significant levels of resistance to the principal diseases and insects have been isolated among the breeding material. Some crossing between selected clones and local varieties has been undertaken. More recently clonal materials have been introduced from IITA/Ibadan utilizing tissue culture material to avoid introducing diseases and insects.

Similar but less extensive programs based on selections from seedlings for insect and disease resistance, vigor, yield and quality under good and poor soil fertility conditions are being carried out at two sub-stations - Kiyaka and Gandajika.

Two varieties, one adapted to fertile bottom soils and one for poorer savannah soils, have been identified for release for wide scale dissemination to farmers in the Bas-Zaïre region.

2. The Entomology Program

This program consists of study of the biology of the principal insects (the mealy bug and the green spider mite) attacking *cassava*, developing methods for testing clones for resistance, rating breeding materials for resistance, study of biological control through natural enemies and surveys of damage in producing areas. These activities are carried out at the three stations and surrounding areas.

3. The Plant Pathology Program

The plant pathology program is similar to the entomology program but dealing with the principal diseases - mosaic, anthracnose,

bacterial blight and an as yet undetermined disease or disease complex which results in terminal die back.

4. The Agronomy Program

A wide range of production and cultural practices is being studied at M'Vuazi: soil preparation, plant spacing, planting dates, types of cuttings, planting methods, viability and conservation of cuttings, effect of leaf harvests, soil fertility and fertility maintenance, weed control, cultural methods for disease and insect control and cropping systems and crop associations including associations with tree/shrub legume species.

A beginning has been made in study of cropping systems in farmers' fields.

Similar though less extensive programs are being carried out at the two sub-stations.

5. Comments on the Research Program: the foregoing research program is being carried out with a high level of professional excellence. The evaluation team has few suggestions on this program. It is suggested, however, that more comprehensive survey and collection of local varieties be made and perhaps greater use be made of selected local clones in the breeding program. The generally good processing and eating qualities and acceptability of local varieties should be of particular value in the breeding program. As an element of Farming Systems Research is being introduced, it would be desirable to define a strategy and methodology for this program at an early stage.

B. The Outreach/Extension Program

1. The Program: this program was in the early stages of development. The extension agronomists -- one on board for about two years and the other slightly over one year -- have concentrated on adaptability and multilocational trials in cooperation with the plant breeder, limited on-farm trials, on planting material multiplication on and off the station, and on limited distribution of planting material a

to cooperating agencies and farmers.

In the Bas-Zairq area these trials have been carried out at approximately six locations since 1981 and have included nine clones. Limited farmer-fields trials and demonstrations have also been initiated. These tests are carried out in cooperation with various organizations involved in agricultural development programs in the area - The FAO/ National Fertilizer Program, a French vegetable crops program, a Zaire/ Rumania commercial agricultural enterprise, a Salvation Army Center, Peace Corps, etc.

Distribution of improved clones have been made to farmers since 1979. To date over 250,000 meters of planting material have been so distributed. Most of the planting material, however, has been used for multiplication purposes. Approximately 60 ha are currently planted to clones in multiplication. There is apparently a strong demand from farmers for planting material of improved clones.

In the Gandajika area extension activities have been limited to trials and demonstration at seven locations in cooperation with local organizations and projects. The selected materials consist of local varieties and selected clones from the breeding program which have been selected for resistance to diseases and insects and for yield. Recently (1983) demonstration trials (five varieties) have been established in farmers' fields near the station and in cooperation with a church mission center near Mbuji Mayi. The limited availability of planting materials has limited distribution of planting stock to farmers as well as to cooperators. Lack of adequate fuel supplies has interfered with off-station work.

An extension agronomist was assigned to the Kiyaka station - Kikwit area of Bandundu - in December 1981. The principal activities have been planting of adaptation trials off-station (9 varieties at nine locations in 1982-83), multiplication of four varieties (approximately 22 ha off-station and 15 ha on-station) and distribution of planting stock to farmers. It is estimated that about 100,000 meters of planting stock has been distributed since 1981.

2. Comments on the Outreach/Extension Program: The extension program proposed in the PP was premature and overly ambitious. Major extension activity is believed to still be somewhat premature. This is especially so in the Gandajika and Kikwit areas for which clear superiority of improved varieties has yet to be demonstrated.

At present, the most appropriate activities are limited to multilocational testing and on-farm trials. When improved material for diffusion is available, the extent of the extension effort must be decided. It seems reasonable to limit the distribution effort to areas where the impact of extension can be significant. In other words, areas where extension work is to take place should be studied in order to assess 1) the need for production increase to alleviate local food shortages, or 2) the feasibility for the evacuation of a potential surplus to a reliable market. If neither of these two conditions exists, the chances are that the socio-economic conditions prevailing in the area are not conducive to an increase in production and extension efforts would be wasted. The selection of areas for concentrated extension activities can be decided according to minimum transportation and communication criteria as well as the needs of the intended "target" population.

Inadequate infrastructure, marketing constraints with unfavorable terms of trade for the small farmer, and compulsory crop cultivation are some of the key elements limiting the increase in agricultural production, the effectiveness of an extension service, and the general development of an area.

If these factors cannot be improved upon, no level of extension effort can be successful. A superficial survey can easily identify the areas where low responses can be expected.

Although the extension components of PRONAM have already performed many tasks, the actual extension work of providing farmers, directly or through intermediaries, with improved PRONAM varieties has only just begun. The rate of adoption of the new varieties over

the local varieties will have to be evaluated over time. Stability of production under varying conditions and especially during outbreaks of pests and diseases against which the new material should prove superior will probably influence the adoption rate more than higher yields.

The approaches to extension work differ markedly between the three stations. At M'Vuazi, the main emphasis is on the use of existing institutions such as religious missions, agricultural development projects or private enterprises, including work with some farming families. At Kiyaka, it seems that attempts with missions and other projects were not successful and the decision to work through the Department of Agriculture (DOA) structure was made despite the known authoritarian behavior of state agronomes. At Gandajika, direct contact with village heads and farmers is favored although work with missions is also undertaken.

While different tactics may be used in different areas, it seems that a well defined extension strategy should be proposed and this strategy at the farm level should be compatible with the FSR approach.

C. Training

The training at the M.Sc. level is roughly on schedule and will be completed by the PACD. This is so largely because some ten individuals were already in training before project implementation began (May 1980). All of the M.Sc. level training was done at the University of Ibadan. While this course of study for the M.Sc. was considered to be satisfactory by the trainees and ILTA, the English language training which preceded was believed to be far too short - as little as six weeks for one individual - to provide adequate preparation for pursuing graduate level courses.

Some students, apparently at the urging of the University, enrolled in a Master of Philosophy (M. Phil.) program. This program

has not been satisfactory - students are left too much on their own, assignment of thesis subjects were delayed and the study program was stretched out apparently to an unreasonable degree. The evaluators suggest that training at this level be discontinued. Where further training beyond the M.Sc. level for given individuals is indicated, they should, after some work experience, be given the opportunity to study for the Ph.D. degree.

Training at the Ph.D. level is considerably behind schedule. Targets established in the PP were unrealistic, given the time required for M.Sc. training and the desirability of work experience before continuing for the Ph.D. degree.

The evaluation team believes that continued exclusive use of Ibadan University M.Sc. training, in spite of its obvious advantages - close proximity to IITA permitting close IITA guidance in thesis research, the tropical setting permitting choice of thesis subjects with direct relevance to Zaire, etc. - is not desirable. Some institutional diversification would be preferable in order to introduce different perspectives, orientation and philosophy. Certain other African universities, notably University of Nairobi or Morogoro College, the University of Tanzania, should be given consideration. M.Sc. training in the U.S. should also be considered in special technical fields in spite of the disadvantages this presents from the standpoint of doing thesis research in an African setting. Study for the Ph.D. should be done chiefly in U.S. universities.

Paraprofessional Training: the IITA Roots and Tuber Crops short-course was provided to 27 individuals. This was slightly under the target established in the PP. However, over half of these individuals had completed their training before USAID involvement in the project. Recently few individuals have participated in this program (1979 - 4, 1980 - 0, 1981 - 1, and 1982 - 2). The reason given for this low participation was the limited number of openings available. This program is offered by IITA to all African countries on a once

a year basis and can accommodate only a given number of participants. A high demand from other countries has reduced the number which can be accepted from Zaire. More of this kind of training is needed for the technician level personnel. A serious effort should be made to increase the number of openings for Zaire participants.

Two types of local training had been projected. A formal in-residence training program to be developed by an IITA training officer and carried out over approximately a 6-8 week period; the less formal timely programs to provide training of approximately one week duration to participants in the outreach/extension program of PRONAM. There has been no training of the first type because the facilities to be used have not been constructed or rehabilitated. Since arrangements have now been made to do this, IITA should recruit as soon as possible a training officer to begin course preparation.

Four courses of the less formal type have been given - one at Kiyaka and 3 at M'Vuazi - to participants in the extension program. This program should be expanded as the extension program is widened.

D. Career and Professional Development

An important part in the development of an institution is the professional development of its staff. Professional development of individuals is a continuous process which involves interactions with colleagues as well as with individuals in other institutions. Providing opportunities to the scientist to attend and participate in meetings, seminars and workshops at other institutions is an excellent method to enhance such interactions and should be encouraged. The workshop sponsored by PRONAM in Zaire in 1980 and workshops held at IITA/Ibadan in 1978 and in 1982 provided an opportunity for PRONAM personnel to participate and to interact with individuals from other African countries, as well as other institutions. The proposed participation of a PRONAM scientist in a workshop on Roots and Tuber Crops to be held in Lima, Peru, in 1983 should be supported.

Another aspect of professional development is publication of papers and presentation of papers at meetings and workshops. PRONAM staff has been encouraged to do both and, of the several papers published and unpublished on PRONAM work, there are numerous cases in which local nationals have appeared as author or co-author.

PRONAM personnel should be encouraged to become acquainted with the AAASA and to seek means to participate in its activities.

E. Administration and Management

1. USAID Management

The major implementation actions for the project have been contracted to IITA, therefore the chief responsibility of USAID project management is that of providing support and backstopping to the contractor.

There was a time lag of almost two years between PP approval and signing of a contract with IITA. The principal reason for this lag was the settling of arrears in payments by GOZ to IITA under a contract between the two. As a consequence there is approximately a two year slippage in project implementation, hence the two year extension of the PACD which was recently made. Aside from mere slippage, this lag resulted in a slowdown of IITA activities during 1978-1979 and, as a consequence, the need for a new build-up of staff once the problem of arrears was settled and a contract with USAID was signed (see IITA Staffing Pattern - Table 1).

Processing of implementation documents was made promptly and expeditiously. PIO/Ps were promptly issued to assure continuity of the training under way. Procurement of locally assembled vehicles greatly facilitated continuity and expansion of field work. Procurement by AAPC, in addition to being slow, was not entirely satisfactory. Some of the farm equipment was of inferior quality. In other cases, units were not compatible one with the other. It is suggested that this type of procurement could be better handled by IITA. The slight

additional cost (difference in IITA overhead and AAPC service charge) would be more than compensated by the quality of the procurement.

It was not possible to get a clear picture of financial management. USAID could provide data on foreign exchange and counter-part expenditures. The overall project had data on total annual expenditures by some 15 categories of expenditures but not segregated as to source of funds nor as to stations involved. This suggested a need for a more systematic approach to financial reporting. It was understood that the USAID controller was in the process of developing an appropriate system.

Observations by the evaluators suggested that relations between the USAID manager, the IITA team and the GOZ team were quite good, and each have been responsive to the needs of the other in day-to-day operations. The appointment of an administrative officer stationed in Kinshasa by IITA has greatly facilitated communications and interactions between USAID project management and PRONAM management.

2. IITA Management

The project was promptly staffed except for two positions - the administrative officer in Kinshasa and the project director/agronomist. The delay in assigning a full-time director/agronomist to relieve the acting project director appears to have adversely affected project implementation, particularly with respect to physical facilities rehabilitation and construction and installation of the training facilities at M'Vuazi. Although the acting director in conjunction with the co-director made numerous efforts to obtain cooperation from GOZ entities (the Electric Company - SNEL and the Water Service - REGIDESO) in planning, design and installation of electric and water services, the results were essentially nil. Progress has recently been made under the leadership of the new director by going to a private engineering firm for design, preparation of bid documents, appraisal of bids and supervision of construction. Plans are now completed for both facilities as well as for the construction

and rehabilitation for the training center. The consultant engineering firm estimates that construction and installation of the three facilities can be completed by mid-year 1983. In view of the planned completion of training facilities by July 1983, IITA should proceed with early recruitment for the training officer position.

Most of the specialized equipment for laboratories for which IITA was the authorized agent have been received. This equipment remains unutilized, however, because of the delays in installation of water and power services.

Comprehensive planning of project activities for each discipline and for the three stations with participation of all professional personnel has been instituted with the planning for the 1982-83 crop cycle. This represents an important improvement in the planning and management process.

As part of the planning process, provisions are made for greater participation of headquarters specialists in support of work at the two sub-stations.

IITA support of the field staff with short-term consultants has been very satisfactory.

Relations between and among project personnel appear to be good. There appears to be ample joint participation of nationals and expatriates in work planning and execution. Some improvements are needed, however, in defining relationships between the extension agronomists.

3. GOZ Management

Except for inaction with respect to making needed rehabilitation of station facilities, management by the GOZ has been reasonably satisfactory. In the first 18 months there were serious delays by the GOZ in making its contribution to the project. Most recently the GOZ contributions to the project, though small, have been promptly made; budgetary allocations for investment have been substantially

be on agreed amounts; personnel have been released for training; housing has been made available; and adequate land facilities have been made available to the project at the three stations. As the plant multiplication is expanded in coming years, more land will be required, especially at M'Vuazi.

Assuring an adequate and timely supply of fuel has been a problem at Kiyaka and especially at Gandajika. Provisions should be made to provide adequate quotas to these stations so as to avoid the need for procurement on the parallel market.

There are a number of important issues with respect to GOZ personnel policies and practices which need resolution. These have been discussed elsewhere in the report. These are broader than the PRONAM project, however, they have important implications in terms of institutional development and assuring continuity.

F. Some General Comments

1. Career and Professional Development of Personnel

One of the chief concerns of the professional staff of PRONAM is the low level of compensation and allowances and the lack of career status with either INERA or the DOA. Both of these concerns are real and deserving of serious attention. A special personnel compensation schedule has been established for IFA. Since the PRONAM staff has a research responsibility commensurate with that of the IFA staff, PRONAM personnel feel that they should be given equal status. It should be noted here that compensation of PRONAM staff is no worse than that of most GOZ personnel. An important difference, however, is the relative inaccessibility of secondary or tertiary employment or sources of income because of the conditions of employment of PRONAM personnel. PRONAM personnel are expected to spend full time at their job. Many other GOZ personnel spend only a few hours at their job and pursue other employment to supplement their income. Many externally financed projects which demand full time work of Zairians have found it necessary to supplement GOZ salaries with "PRIMES". Unless something

is done to improve salary levels, it may be necessary to consider such alternatives in order to hold personnel.

Some mechanism should be found to provide career status to PRONAM personnel. At present, neither the DOA nor INERA provides a career status to PRONAM personnel. Appointment to DOA and secondment or detail to PRONAM would appear to be a possible solution. The treatment of personnel in other projects and national programs should be investigated to determine if the same situation as exists in PRONAM is also present in others and to seek some generalized solution.

Satisfactory living, recreation, health and related social conditions at work stations is essential for most effective work and retention of personnel. While housing and offices at the research stations are satisfactory at present, other facilities and services are seriously lacking. Investment in upgrading these merits as serious attention as investment in work facilities.

2. Single Commodity Orientation of PRONAM

While many arguments can be put forth to justify why this as well as other national programs have been oriented to single or groups of closely related commodities or crops, the fact remains that from a research and particularly from the extension point of view this narrow orientation is not responsive to farmer problems and needs except perhaps with respect to perennial tree crops. Few of the annual food or even cash crops are produced in pure stands or in monoculture farm situations. Crops research must inevitably deal with the entire cropping system, while extension must deal with farmers perceived problems irrespective of crop. Similarly, feedback from farmers will deal with problems which go beyond single crops.

In the short-run, it is probably not feasible to think in terms of integrated national programs. However, some important benefits could surely accrue to purposeful interaction between and among the personnel concerned with the several national programs. It is apparent that at present there is very little interaction among professional personnel in these programs.

In the longer run, every opportunity should be pursued to integrate the national programs. The initiation of a Farming Systems or rather Cropping Systems element in the PRONAM research program provides such an opportunity.

3. Peasant Farmer - DOA Agent Relations

The status of the peasant population vis-a-vis the GOZ in general and more specifically the DOA structure at the region, sub-region, zone and collectivity levels has an important influence on the effectiveness of programs designed to improve production and the well-being of the rural population. Historically, for many reasons, the activities of government did not engender a high degree of respect or confidence in government on the part of the peasant population. This has not changed. On the contrary as life in the rural areas appears to have become more difficult, there has probably been a worsening of this situation. One of the policies of government which seriously compromises the utility of efforts to assist the peasant population is that of forced production of stated areas of given crops - "Cultures Imposées" or "Cultures Obligatoires" - a practice which was current in the pre-independence period - which was officially reinstated in 1976, although many claim that it never stopped. While the principle of compulsory cropping is itself repugnant, the apparent arbitrariness with which the policy is implemented by the local agents of the DOA is even more so. Although compulsory plantings are assigned to the family, this weighs especially heavily on the peasant women who contribute as much as 80% or more of the labor for food crop production.

The implementation of this policy in different regions is very uneven. It seems that when ready and reasonably equitable markets exist, the policy is ignored because generally the farmers are responding to market forces and are exceeding the imposed limits; the case of Bas-Zaïre. On the other hand, in regions which are less favorably situated, there appears to be more serious efforts to

enforce the policy - the case of the Kiyaka-Gungu area.

Where relations and confidence between the peasant population and the government change agent are so badly strained, extension efforts will not likely succeed. Means to alleviate this situation are urgently needed. However, few results are likely to accrue in the short-term because the lack of confidence is so deeply implanted in the population.

G. Responsiveness to Project Purpose

A dual purpose was defined for the project - (a) to develop the institutional capacity to "conduct adaptive and applied research on cassava" and (b) "to make new cassava technology available for distribution to subsistence farmers in Zaire."

The building of the institutional capacity, sub-purpose (a), has progressed at a reasonable pace: training objectives have been met to an important degree, equipment and vehicles have been put in place and a nucleus of trained staff is in place. The expatriate plant breeder is expected to be replaced by a trained Zairian in March 1983. There is a need, however, for additions of other disciplines to the project staff in order to have a well rounded multi-disciplinary team. A farm manager will become indispensable, as the program expands, for managing the research and multiplication operations on the farm and for training nationals in farm and farm machinery operations. A social scientist, agricultural economist, and an anthropologist will be needed to complement the agronomist in the farming systems work. Given the serious constraints in production and productivity due to low soil fertility, especially in the savannah soils, an agronomist/soil scientist to deal with this problem will be needed. Some attention should also be given to improving processing technology, requiring a different specialist on a full-time basis supported by consultants.

Certain striking deficiencies, however, are apparent:

1) Vacillation on the part of the GOZ with respect to defining the future of INERA as a research institution for agriculture, its relation to the DOA, and the role of the DOA in agricultural research.

2) The ambiguous status of PRONAM personnel in terms of career opportunities.

3) The relatively unsatisfactory state of living conditions (inadequate provisions for health, education and recreation) on the research stations and the unsatisfactory levels of compensation.

4) The extremely limited budgetary support by the GOZ.

5) The single commodity focus of the program which fails to be fully responsive to the needs of the majority of the farmers.

Before it can be said that the project has laid a good foundation towards building a self-sustaining institution, the foregoing issues must be addressed and solutions developed.

In addition, a continuing staff-building effort will be necessary. As the national staff become more responsible for project management and operations, training in management will become essential.

While the project will have made a significant contribution to building the institutional capacity, placing this capacity on a self-sustaining basis will require a much longer technical and material support effort.

The making of new cassava technology available for distribution to subsistence farmers (sub-purpose (b)), is less advanced. In fact it is just beginning. With the notion that improved varieties should be the lead element in the extension program as point of departure, it is clear that progress cannot be faster than improved varieties can become available and adequate supplies of planting stock can be provided. Recognizing that some six years are required for selection and minimal testing of a new variety, and recognizing that the rate

at which a new variety can be multiplied is on the order of 1-7 to 1-10, it is clear that the rate at which the extension program can develop is independent of the extension program itself. As a consequence, the extension agronomy effort is concentrating on planting material multiplication while carrying out some farmers fields trials and demonstrations.

Other factors also have an important bearing on the effectiveness of an extension effort. Simply making new varieties and new technology available is not enough. Attention must be given to transport and marketing facilities in the areas proposed for extension, the existing state of production - surplus or deficit - in any given area, the existence of potential change agents and the relationships between change agents and the farmer population.

H. Sustainability:

Among other things, the evaluation team was charged by the USAID evaluation office with assessing the project's sustainability. If this is meant to mean whether the institution built by the project and the activities of the project will be sustainable without further external assistance or support after March 1985 - the PACD date - the answer is definitely NO.

At the technical level - The trained personnel will be able to maintain an acceptable level of professional work. However, these personnel will still be young and with limited experience. To be most effective, continuing assistance will be required in planning and management of research and outreach programs. Moreover, some expansion of personnel will be required in existing fields and especially in other disciplines (see Page 24) in order to provide the institution with well-rounded technical and managerial capability.

At the material level - Most of the projected improvements and additions to physical facilities and equipment will have been met by the end of the project. This will provide only the minimal requirements. Continuing improvements and additions will be needed to

provide an adequate material foundation for developing an effective institution capable of growth in order to be able to respond to increasing demands which are inevitably made on a successful institution. Clarification of relations with INERA and the endowment of PRONAM with facilities which it alone controls are prerequisite for establishing a solid foundation on which to develop.

At the financial level - To date the GOZ provides only a minimum of financial support to the project. This consists principally of salaries to the professional staff and regular employees. The history of support for the project since its inception in 1974 has been one of ever reducing support by the GOZ. On the positive side is the regularity with which the GOZ has provided the agreed upon support during the last nine months. This is not universally the case for other government activities. This would suggest a willingness on the part of the GOZ. The problem is, nevertheless, that although the government has declared the agricultural sector to be the "priority of priorities", this sector has never received budgetary allocations reflecting such a high priority. The recently announced 50% cut in the Agriculture Department budget does not suggest that a reversal of this trend is imminent. One must conclude that from a financial point of view the project would collapse as soon as external support is cut off.

VI. SUGGESTIONS FOR CONTINUING THE PROJECT AFTER 1985

As pointed out in the section on sustainability, it is judged that the project will not be sustainable by its termination date. The progress made to date, the existence of a solid and dedicated corps of Zairians and the good working relations which have been established between IITA and the PRONAM staff argues for continuation of external assistance. Both technical and material assistance will be required for an extended period after the terminal date of the project.

It is recognized that the effectiveness of the project towards meeting its goal of increasing the "level, availability and nutritional quality of food production for the low income majority in Zaire" rests to a large extent on GOZ policies and practices with respects to the agricultural sector and the rural population. The direct contributions of the project could be compromised or could be facilitated by such policies and practices. Nevertheless, the development of a well-trained group of individuals, the acquisition of useful information and the development of improved varieties and production systems will represent a net addition to the human knowledge and technical capital of the country which can be mobilized when and where needed and when and where favorable conditions exist.

It is understood that USAID has proposed a broader involvement in agriculture research. This broader involvement would encompass the cassava project. The evaluators would strongly urge this broader approach to involve the more important annual crops which are produced in rotations and/or associations rather than continuation of the single commodity approach.

It is understood that the GOZ has proposed a substantial reorganization and reorientation of the DOA, especially as concerns research, agricultural education and extension. A key element in the proposals is the insistence on a "sectorial" or commodity approach with "National Programs" as the basic structural and operational elements of the overall applied research program. This may be a convenient approach for organizing research from a managerial point of view. This approach, however, ignores the fact that the peasant agriculture is a complex of production practices and crops and that improving production and productivity will require more broadly based programs of research and extension than that which single commodity programs can provide. Consequently, should the choice remain with the single commodity approach, a serious effort will be needed to establish mechanisms for interaction, coordination among the several commodity programs, and their eventual integration.

One instrument suggests itself as useful for assuring interaction, coordination and eventual integration of commodity oriented "National Programs": the establishment of a multi-disciplinary farming systems unit independent of the national programs to serve an integrating function in terms of application of results from commodity research as well as in terms of feedback to the researchers. The establishment of a soils fertility program to concentrate on developing methods for maintaining and eventually improving fertility, particularly that of the vast areas of savannah lands should be an important component of the farming systems research. The problem of soil fertility maintenance and improvement cuts across the commodity programs.

In defining the structure for a follow-up project it will be desirable to have a clear understanding of the roles of INERA and the DOA. The DOA proposal suggests complete separation, with DOA National Programs assuming complete control of certain facilities now managed by INERA. Such a course would be desirable and would avoid competition between the two groups for limited GOZ resources. This would particularly avoid relationship problems which disparate facilities and resources are likely to create.

The DOA proposal provides for continuation of the National Programs - PRONAM, PNM, PNL and PNR - essentially as now structured with each having a headquarters station and sub-stations (i.e., former INERA stations). At many stations two or more programs would be operational. This approach raises two problems (a) most of the proposed stations are poorly accessible by either ground or air transport and (b) the far flung separation of the decision-making and management centers for the National Programs will be a serious handicap from the standpoint of coordination and integration of programs. Some mechanism will need to be developed to resolve these problems. A combined Farming Systems and Soil Fertility unit established near Kinshasa is one approach which could be considered.

We have made reference to GOZ personnel policies and practices which serve as deterrents to building viable institutions. It appears to us to be imperative that (a) a career status be accorded to National Program personnel; (b) an appropriate salary schedule be developed for research personnel on a par with IFA; (c) a policy of better treatment of families of individuals while in training abroad be established and implemented; and (d) a policy for improving social services (education, health, recreational) at the isolated stations.

ANNEX 1

ITINERARY

January 17-18	Kinshasa
January 19-23	M'Vuazi and Bas-Zaire
January 24	Kinshasa
January 25-27	Gandajika and Vicinity
January 28-31	Kinshasa
February 1-5	Kiyaka and Bandundu
February 6-15	Kinshasa

EVALUATION TEAM

Dr. Francis Le Beau	Chief Evaluator, RONCO
Mr. Claude Schoepf	Evaluator, PRAGMA
Cit. Kungula Biantanga	Evaluator, GOZ Dept. du Plan
Cit. Tonyemba Ossamba	Evaluator, GOZ Dept. of Agriculture

PRONAM, IITA and USAID Personnel who Participated with the Evaluation Team

- Dr. F. E. Brockman	PRONAM Director
- Cit. Lutaladio	PRONAM Co-Director
Cit. Muimba	PRONAM
Dr. S. K. Hahn	IITA, Evaluator
Mr. Ike Hatchimonji	USAID, ARD Project Officer
Mr. Norman Sheldon	USAID, Deputy ARD Officer

A N N E X 2

LIST OF CONTACTS

GOZ

Cit. Muamba Nduba, Secrétaire d'Etat à l'Agriculture

PRONAM - M'Vuazi

Dr. F. E. Brockman, Agronomist/Director
Dr. T. P. Singh, Plant Breeder
Dr. S. J. Pandey, Extension Agronomist
Dr. R. Hennessey, Entomology
Mr. M. Veloso, Physical Plant and Services
Cit. Lutaladio, Agronomist/Co-Director (M.Sc.)
Cit. Muimba, Pathologist (M.Sc.)
Cit. Mbulu, Agronomist (M.Sc.)
Cit. Anota, Entomology (M.Sc.)
Cit. Mbulu, Agronomist (M.Sc.)
Cit. Landu, Agronomist (M.Sc.)
Cit. Ndombo, Plant Breeding
Cit. Kasu, Entomology
Cit. Phuti, Pathology
Cit. Kwanza, Extension
Cit. Tambu, Building Maintenance
Cit. Karungu, Agronomist

Bas-Zaire

ZAIROM (Zaire-Rumania)
Commissaire de la Sous-Région de Lukaya
Agronome de la Sous-Région de Lukaya
Mr. Jeffries, PCV
Salvation Army

ANNEX 2

Page 2

Bas-Zaire (Continued)

Mr. Delaporte, Director, Projet Maraicher
Mr. Ernaux, Extension, Projet Maraicher
Mr. Losso, FAO, Programme National Engrais
Mr. Moszkowicz, Consulting Engineer
Village Farmers, Mboma
Village Farmers, Mbanza Nzundu

PRONAM - Gandajika

Cit. Kilumba, Agronomist (M.Sc.)
Cit. Mutembo, Agronomist
Cit. Mbenga, Agronomist
INERA and PNM Personnel
Village Head

PRONAM - Kiyaka

Mr. W. Flebig, Extension Agronomist
Cit. Mwaka-Toko, Entomology (M.Sc.)
Cit. Kakala, Agronomist
INERA Personnel

Bandundu

Agronome de la Zone de Cungu
Agronome de Collectivité

Kikwit

Mr. Louisa Frasco, FAO Agronomist

PRONAM - Kinshasa

Mr. G. Servant, Administrative Officer

2,3

A N N E X 2

Page 3

Kinshasa

Dr. Chan Nguyen, Ag. Economist, Service d'Etudes et Planification, DOA

USAID

Mr. Richard L. Podol, Mission Director
Mr. Walter Boehm, Deputy Mission Director
Mr. Lee Braddock, Design and Evaluation Officer
Ms. Jenny Cox, DEO Officer
Mr. Richard J. Peters, ARD Officer
Mr. Norman Sheldon, Deputy ARD Officer
Mr. Ike Hatchimonji, ARD Project Officer
Mr. Ray King, Controller

A N N E X 3

LIST OF ACRONYMS

AAASA	Association of Agricultural Scientists in Africa
AAPC	African-American Procurement Center
DOA	Department of Agriculture
FAO	Food and Agriculture Organization of the United Nations
GOZ	Government of Zaire
IFA	Institut Facultaire Agricole
IITA	International Institute of Tropical Agriculture
INERA	Institut National d'Etude et Recherche Agronomiques
PACD	Project Activity Completion Date
PP	Project Paper
PNE	Projet National Engrais
PNL	Projet National Legumineuses
PNM	Projet National Maïs
PNR	Projet National Riz
PRONAM	Projet National Manioc

A N N E X 4

REFERENCES CONSULTED

- Couper, D. C. - Trip Report to PRONAM Project, Republic of Zaire, (unpublished) July 1982.
- Craig, J.G.H. - Report on M'Vuazi Station, June 28 - July 2, 1982.
- Ezumah, H.C. - Rapport de Progrés Sur le Programme de la Sélection du PRONAM, 1974-1978.
- _____ - Soil and Environmental Constraints for Production of Cassava in West Africa, IITA, Ibadan, Nigeria, (unpublished) October 1979.
- _____ - Cassava Improvement in the Programme National Manioc in Zaire -- Objectives and Achievements up to 1978. In Tropical Root Crops: Research Strategies for the 1980's, Eds. E. R. Terry, K. A. Oduro and F. Caveness - International Development Research Center, Ottawa, 1981.
- _____ - Quelques Recommandations sur les Pratiques Culturelles du Manioc au Zaire, PRONAM, Série IV, No. 1.
- _____ - IITA-FSP Mission to PRONAM: Preliminary Report, 1982.
- _____, Lal, R. and Okigbo, B.N. - Soil and Water Conservation and Management for Cassava Production in Africa. In Cassava Cultural Practices. Eds. E. J. Weber, J. C. Toro and M. Graham, International Development Research Center, Ottawa, 1980.
- _____ and Okigbo, B. N. - Cassava Planting Systems in Africa. In Cassava Cultural Practices, 1980.
- _____ and Knight, K. - Some Notes on the Mealybug (*Phenacoccus manihoti*, Mat - Ferr.) Incidence on Manioc in Bas-Zaire, PRONAM, (unpublished paper).
- Fresco, Louise - Women in Cassava Production, Report from UNDP, FAO Project ZAI/78/001, November 1982.
- _____ - Des Cultures Imposées aux Cultures Encadrées, Zaire-Afrique, January 1982.
- Gasser, Heinz - On the State of Agricultural Research in Zaire with Recommendations for its Reorganization within an Education and Extension Framework, Final Report - INERA-Support Project 660-0064, 1981.

A N N E X 4

Page 2

Gasser, Heinz - Proposition d'un Schéma pour une Restructuration de la Recherche et de la Formation Agronomique Liées à la Vulgarisation Agricole, 1982.

Hahn, S. K., Terry, E. R., Leuschner, K. and Singh, T. P. - Cassava Improvement Strategies for Resistance to Major Economic Diseases and Pests in Africa, IITA, Ibadan, Nigeria.

_____ and Williams, R. J. - Investigations on Cassava in the Republic of Zaire, IITA, March 12-20, 1973.

Kabeya-Hanu - Le Manioc tel qu'on le Connait Actuellement au Zaire, Bureau d'Etude Département de l'Agriculture, (unpublished) March 1976.

Kandu-Lossa - Bref Aperçu de la Maladie de Mosaïque (of cassava) en République du Zaire, Département de l'Agriculture, (unpublished) March 1982. ←

Lutaladio, N. Bambi, Ezumah, H. C. and Singh, T. P. - Evaluation de Plants de Manioc pour la Teneur en Glucoside Cyanogénétique, M'Vuazi, République du Zaire, 1980.

_____, Ezumah H. C. and Kososuanga, N. - Effects of Cultural and Soil Management Practices on Mealybug Incidence and Cassava Root Yield in Zaire, PRONAM, (unpublished).

Mayeza, Yabanzavo - Cassava Production and Marketing in Cataractes District of Zaire (unpublished M.S. thesis), 1981.

_____ - Production et Commercialisation du Manioc dans les Environs de Kiyaka, (unpublished) 1982.

Mivanze, K. E. - Biology of the Cassava Mealybug *Phenacoccus manhoti* Mat. - Ferr. in the Republic of Zaire, PRONAM (unpublished paper).

Nkiere Mbo Wassa - Rapport de Mission au PRONAM, M'Vuazi, Enquete Agro-Economique au Bas-Zaire, (unpublished) September 1982.

Nsiama She, H. D. - Burial of the Cassava Planting Materials as a Possible Preventive Control Measure Against the Cassava Mealybug, PRONAM, M'Vuazi, Zaire (unpublished paper).

_____, Odebjui, J. A. and Herren, H. R. - Bionomics of *Hyperaspis* sp. (Coleoptera: Coccinellidae) an Exotic Predator of the Cassava Mealybug (*Phenacoccus manhoti*), (unpublished M.Sc. thesis) University of Ibadan, 1981.

37

A N N E X 4

Page 3

Pacumbaba, R. P., Ezumah, H. C. and Lukelo, Tekofimpa - L'Etat Actuel de la Bactériose du Manioc au Zaïre, IITA/Zaïre PRONAM.

Singh, T. P. - Advances in Breeding Cassava Resistant to Mealybug in Zaïre, PRONAM, M'Vuazi, Zaïre (unpublished paper).

_____ - Sélection du Manioc pour la Résistance aux Pestes et Maladies en République du Zaïre, Publication PRONAM, Série III, République du Zaïre.

_____ - Breeding Cassava Resistant to Pests and Diseases in Zaïre, IITA, Ibadan, Nigeria/PRONAM.

_____ - Mealybug Problems and its Control, paper presented at East Africa Workshop, Kigali, Rwanda, November 1980.

_____ and Hahn, S. K. - Procédé de Sélection du Manioc, Publication PRONAM, Série VI, République du Zaïre, 1982.

_____ and Lutaladio, N. B. - Recherche et Développement du Manioc au Zaïre (unpublished paper).

_____, Mahungu, N. M. and Muimba, Kankolongo - Role of Cassava Germplasm Introduction and Quarantine in Zaïre. PRONAM paper presented at workshop on Tropical Root and Tuber Crops, IITA, Ibadan, April 1982.

Cassava Bacterial Blight in Africa. Report of an Interdisciplinary Workshop at IITA, Ibadan, Nigeria, 1978.

Evaluation - North Shaba Rural Development, 660-0059, Zaïre, May 1982.

Evaluation - INERA Support, Project 660-0064, USAID, 1982.

Le Milieu Rural et Son Développement au Kwilu - Résumé d'une Etude, UNDP/FAO ZAI/78/001, 1981.

Le Plan de Relance Agricole 1982-1984, Dept. de l'Agriculture et du Développement Rural, April 1982.

Mission d'Experts Belges. Réactivation de la Recherche Agronomique Appliquée au Zaïre, Kinshasa, October-November 1981.

PID -- Applied Agricultural Research, Project 660-0091, USAID/Zaïre, 1982.

A N N E X 4

Page 4

Program National Manioc (PRONAM)

1974-1975 Annual Report
1976 Annual Report
1977 Annual Report
1978 Annual Report
1979 Annual Report
1980 Annual Report
1981 Annual Report in draft
1982 Quarterly Report - 1st Quarter
1982 Quarterly Report - 2nd Quarter

PRONAM, Proposition pour la Diffusion des Variétés de Manioc Améliorées.

PRONAM Staff - Work in Progress 1982-83, PRONAM, M'Vuazi, République du Zaïre, 1982.

PRONAM, Activités Principales du Programme National Manioc, Publication PRONAM, Série I, République du Zaïre.

PRONAM, La Cochenille du Manioc, Programme National Manioc, République du Zaïre, 1979

USAID - Critiques formulées relativement aux termes de référence soumis par la mission d'experts belges en vue de réactiver la recherche agronomique appliquée au Zaïre.

USAID - Termes de référence d'une approche intégrant la recherche et l'enseignement agronomiques et la vulgarisation agricole dans le cadre d'une aide multilatérale à la République du Zaïre.

Situation Actuelle de l'Agriculture Zaïroise, publication de la Division d'Etude et de Programmation, Dept. de l'Agriculture, Développement Rural, Environnement, Conservation de la Nature et Tourisme; Septembre 1982.

Executive Summary
Technology Transfer
CASSAVA OUTREACH PROJECT
660-0077

1. What constraints does this project attempt to overcome and who do they constrain?

The project is designed to reduce a constraint to cassava production represented by the susceptibility of the traditional varieties of cassava to disease and insects. This constraint has affected the small farmers cultivating cassava, the principal staple food of Zaire.

2. What technology does the project promote to relieve this constraint?

The project promotes a transfer of skills and technology in research and extension through technical assistance and training opportunities for the national cassava research program. The goal of the project is to use these skills/technology to develop and distribute improved varieties of cassava resistant to disease and insects and to introduce improved agronomic practices.

3. What technology does the project attempt to replace?

The project's objective is to replace the traditional varieties, particularly those susceptible to disease and insects, with improved varieties and to promote agronomic practices which tend to reduce risk of disease and insect losses and hence to increase production.

4. Why do project planners believe that intended beneficiaries will adopt the proposed technology?

The incentive for the farmers to adopt the improved varieties is that their production of cassava will increase. This will mean more household foodstuffs and/or increased family incomes. The effects of economic incentives are not yet known as the extension program is still at an early stage of development. Generally Zairian farmers have readily adopted technological innovations when production and marketing benefits were clear.

5. What characteristics do intended beneficiaries exhibit that have relevance to their adopting the proposed technology?

Although the extension program is still in the beginning stages, improved varieties are being distributed selectively, usually to be grown in farmers' fields next to traditional varieties. So far, farmers have seemed willing to test the improved varieties in their fields and have shown interest in acquiring planting stock of the improved varieties.

6. What adoption rate has this project or previous projects achieved in transferring the proposed technology?

The project extension agronomist has concentrated on adaptability and multi-

locational trials and on planting multiplication material on and off station. The extension activity has been carried out both with intermediaries (development projects and community missions) and with farmers directly. Approximately 250,000 meters of planting material have been distributed for these purposes. However, providing farmers with improved cassava varieties together with recommendations for improved production practices has just begun. The improved varieties are to be used as the lead element of an improved production package.

7. Will the project set in motion forces that will induce further exploration of the constraint and improvements to the technological package proposed to overcome it?

The two-fold project purpose was to develop the institutional capability to:

- 1) Conduct adaptive and applied research on cassava and;
- 2) To make new cassava technology available for distribution to subsistence farmers in Zaire.

The February 1983 evaluation of the project concluded that a well-rounded and comprehensive program of research has been established at the project headquarters. The formal training of project staff has not yet been completed and technical assistance will be necessary for some years to come. However, a core of qualified, productive Zairian scientists has been established as a result of this project.

The evaluators also concluded that the objectives for extension had been too ambitious for a five-year program. However, a good deal of preparatory work has been done including multi-location testing and multiplication of planting material. More selection and multiplication of the most adaptable varieties is needed before commercial distribution to farmers can move forward with confidence. However, the forces have been set in motion for further exploration of the constraints and for improvements to the technological packages needed to overcome them.

8. Do private input suppliers have an incentive to examine the constraint addressed by the project and come up with solutions?

Agricultural research is a field where there is relatively little incentive for private investment due to the high initial capital investment requirements and the long pay-back period. However, some private entities are engaged in the multiplication and distribution of planting material. The project is exploring the possibilities for private commercial agents for seed multiplication and distribution.

9. What delivery system does the project employ to transfer the new technology to intended beneficiaries?

The project uses different strategies for different areas of the country. At M'Vuazi, the project center, the main emphasis is on the use of existing

11

institutions such as religious missions, agricultural development projects, and private commercial enterprises. At Kiyaka, a research sub-station, the project works through the Department of Agriculture's extension structure. At Gandajika, another sub-station, direct contact with village leaders and farmers is favored.

10. What training techniques does the project use to develop the delivery system?

For the most part, the delivery system makes use of individuals and organizations with previous experience and training in extension. A training center to train personnel of participating organizations is expected to become operational in late 1983.

OUTREACH ACTIVITIES IN BANDUNDU

Bulungu

Masi-Manimba

KIKWIT

Gungu

Feshi