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91900

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO MALAWI

P.O. Box 30455
Lilongwe 3
Malawi



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September 17, 1993

Dr. Lukas Brader
Director General
International Institute of Tropical Agriculture
P.M.B. 5320
Ibadan, Nigeria

Subject: Grant No. 690-0268-G-00-3006-00

Dear Dr. Brader:

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, and the Federal Grant and Cooperative Agreement Act of 1977, the Agency for International Development (referred to hereinafter as "A.I.D." or "USAID") hereby grants to the International Institute of Tropical Agriculture (referred to hereinafter as "Grantee" or "IITA") the sum of \$7,000,000 to support the establishment of a Southern Africa Root Crops Research Network as described in Attachment 1 (Schedule) and Attachment 2 (Program Description/Financial Plan) to the Grant.

This Grant is effective and obligation of \$3,000,000 is made as of the date of this letter, and shall apply to expenditures made by the Grantee in furtherance of program objectives during the period beginning with the effective date and ending September 30, 1998. Funds disbursed by A.I.D. but uncommitted by the Grantee at the expiration of this period shall be refunded to A.I.D.

The total estimated amount of the program is \$7,000,000, of which A.I.D. hereby obligates \$3,000,000 (hereinafter referred to as "Obligated Amount"). The remaining \$4,000,000 will be provided as incremental funding through amendments to this Grant. A.I.D. shall not be liable for reimbursing the Grantee for any costs in excess of the obligated amount.

This Grant is entered into with the Grantee on condition that the funds will be administered in accordance with the terms, conditions and provisions, as set forth in the Schedule (Attachment 1), Program Description/Financial Plan (Attachment 2), and Standard Provisions for Grants to Public International Organizations (Attachment 3), which have been agreed to by both organizations.

U.S. Postal Address: USAID/Lilongwe (ID)
Washington, D.C. 20521 - 2280

/

Please sign the original and three (3) copies of this letter to acknowledge your acceptance of the Grant and your concurrence in its provisions. Please return the original and two copies to USAID/Malawi, and retain one copy for your records.

Sincerely,

Cynthia F. Rozell
Cynthia F. Rozell
Mission Director

Accepted and Agreed:

International Institute for Tropical Agriculture

By: *[Signature]*

Title: *Project Director General IITA*

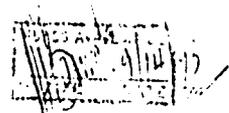
Date: *September 27, 1993*

Attachments:

1. Schedule
2. Program Description/Financial Plan
3. Standard Provisions

Fiscal Data:

Project Number: 690-0268
Appropriation: 72-113/41014
Budget Plan Code: GSS3-93-21612-IG12
ECN: M530013
RCN: M230049
Obl/Ear/Com Doc No: OPG-690-0268-G-00-3006-00
Obligation: \$3,000,000



SCHEDULE

Grant No. 690-0268-G-00-3006-00

A. Purpose of the Grant

The purpose of this Grant is to increase small farmer cassava and sweet potato productivity in the resource areas of Southern Africa through the adoption of improved varieties and practices, and the strengthening of national root crops research capabilities. The program is described more fully in Attachment 2 of this Grant entitled "Program Description/Financial Plan".

B. Period of the Grant

The effective date of this Grant is indicated in the cover letter. The expiration date of the Grant is September 30, 1998.

C. Amount of the Grant and Payment

1. The total amount of this Grant for the period through September 30, 1998 is \$7,000,000.
2. A.I.D. hereby obligates the amount of \$3,000,000 for program expenditures through September 30, 1998 in accordance with the Financial Plan contained in Attachment 2, Table 4.
3. The paying office shall be:

Controller
USAID/Malawi
P.O. Box 30455
Lilongwe 3, Malawi

4. Payment shall be made to the Grantee in accordance with the periodic advance and/or cost reimbursement procedures set forth in Attachment 3 - Standard Provision No. 11. When using periodic advance procedures, the first advance shall be contingent upon an acceptable evaluation of the Grantee's accounting procedures by the USAID Controller, with particular attention to funds control and accountability. Once the Grantee's accounting procedures are

approved for the receipt of advances, these procedures will be subject to periodic evaluation by the USAID Controller to ensure continued accountability.

D. Financial Plan

The Financial Plan for implementation of the project is contained in Attachment 2, Table 4. Revisions to the Financial Plan will be made in accordance with Mandatory Standard Provision No. 4 entitled "Revision of the Grant Budget."

E. Reporting and Evaluation

1. The following reports are required:
 - a. brief quarterly reports covering program activities and accomplishments during the period;
 - b. comprehensive annual reports covering program activities, accomplishments, impact and expenditures;
 - c. audits shall be conducted, and audit reports submitted, in accordance with Standard Provision No. 10;
 - d. financial reports shall be submitted in accordance with Standard Provision No. 11; and
 - e. a final report detailing program accomplishments, analyzing program impact, and stating lessons learned.
2. One copy of all reports by the Grantee shall be submitted to the Project Officer, USAID/Malawi and to the Director, Southern African Centre for Cooperation in Agricultural Research (SACCAR).
3. Copies of all financial reports shall be submitted to the Controller's Office, USAID/Malawi.

F. Special Provisions

As this grant is to a Public International Organization, the Standard Provisions which shall apply to the grant are contained in Attachment 3 entitled "Standard Provisions For Grants To Public International Organizations."

Attachment 2: Program Description/Financial Plan

**THE SOUTHERN AFRICA ROOT CROPS RESEARCH NETWORK
(SARRNET)**

PROJECT PROPOSAL

submitted to

**THE UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
(USAID)**

by

**THE SOUTHERN AFRICA DEVELOPMENT COMMUNITY
(SADC)**

and

**THE INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE
(IITA)**

SEPTEMBER 1993



International Institute of Tropical Agriculture

Oyo Road, PMB 5320, Ibadan, Nigeria * Telephone: 400300 (15 lines) Cable: TROPFOUND IKEJA
Telex: TDS IBA NG 20311 (Box 015) or TROPID NG 31417

EAST AND SOUTHERN AFRICA ROOT CROPS RESEARCH NETWORK (ESARRN)
Plaza House, P.O. Box 30258, Lilongwe, Malawi

Telephone: 783 082
Telex : 44466 UNDP MI or 43055 ROCKFND MI
Fax : 265-782835

14 September 1993

Mr K Rockeman
USAID
P O Box 30455
Lilongwe 3

Dear Mr Rockeman,

Attached is the revised SARNET project proposal for increasing cassava and sweet potato productivity through the adoption of improved varieties and practices, and the strengthening of national root crops research program capability. IITA through the network is seeking the sum of US\$7 million for 5 years to finance these activities.

Thanks very much for your kind consideration. We look forward to your continued guidance and support.

Wishing you the very best.

Sincerely yours,

J E IKEORGU
IITA/ESARRN AGRONOMIST
for Coordinator

cc: Dr J P Ekebil
Dr R Asiedu
Dr P Ewell

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List of Acronyms and Abbreviations

CGIAR Research	Consultative Group in International Agricultural
CIDA	Canadian International Development Agency
CIP	International Potato Center
COSCA	Collaborative Study of Cassava in Africa
EARRNET	East Africa Root Crops Research Network
ESARRN	East and Southern Africa Root Crops Research Network
FAO	Food and Agriculture Organization (UN)
IARC	International Agricultural Research Centers
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IITA	International Institute of Tropical Agriculture
NARS	National Agricultural Research Systems
PHMD	Plant Health Management Division (IITA)
SACCAR	Southern Africa Centre for Cooperation in Agricultural Research
SADC	Southern Africa Development Community
SARRNET	Southern Africa Root Crops Research Network
TRIP	Root and Tuber Improvement Program (IITA)
CGM	Cassava green mite
CM	Cassava mealybug
ESPP	Ecologically sustainable plant protection
HCN	Hydrogen cyanide

Executive Summary

The Southern Africa Development Community (SADC) comprises ten countries (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zambia and Zimbabwe) and over 84 million people. The region's projected population growth, about two million annually, demands that food supplies grow at four to five percent per year. Yet production per worker has stagnated or declined in the smallholder agricultural sectors, the countries have slipped from self-sufficiency in production of food staples into dependence on imported food, and the number of food deficit households is unacceptably high.

To achieve food security by increasing agricultural production is one of SADC's major goals. Food security exists when people have both physical and economic access to adequate supplies of nutritional food. If each country became as self-sufficient as possible in the production of staple food, food security would be well within reach of every country and of the region as a whole. Increased domestic food production would also eliminate costly dependence on external food sources and would prevent or substantially lessen the region's recurrent food crises.

Self-sufficiency in staple food production existed in most African countries before independence. This position can be regained and food security attained with an increase in the production of two crops that are already staple foods in Southern Africa: cassava and sweet potato. The two crops share several desirable characteristics: they are tolerant of marginal soil conditions and drought, require little or no fertilizer, provide a defense against soil erosion, are relatively high yielding, are an excellent source of carbohydrates, and they remain well preserved for long periods underground so that they can be harvested when needed.

However, as a food source largely utilized by the rural and urban poor, root crops have traditionally suffered from an image problem (cassava has been "the poor man's crop"), and they have not received adequate attention from policy-makers. Consequently, only limited amounts of resources have been made available for root crops research in comparison with the potential gains from such efforts relative to other crop investments. At the same time, there is a need for improved germplasm adapted to the mid-altitude ecologies of Southern Africa, for trained manpower, and for improved post-harvest and processing technologies for root and tuber crops.

In response, the Southern Africa Centre for Cooperation in Agricultural Research (SACCAR), in collaboration with the International Institute of Tropical Agriculture (IITA), proposes the establishment of the Southern Africa Root Crops Research Network (SARRNET) with funding from the Southern Africa Regional Program (SARP). SARRNET is designed to develop a system of collaboration among Southern Africa National Agricultural Research Services (NARS) to facilitate the exchange and adoption of improved germplasm and technologies for cassava and sweet potato production and utilization within the region.

Project Description: The goal of SARRNET is to increase income and improve household food security for resource-poor farmers in Southern Africa.

The purpose of SARRNET is to increase cassava and sweet potato productivity through the adoption of improved varieties and practices, and the strengthening of national root crops research program capability.

SARRNET will provide a forum for the rapid exchange of technology derived from the national programs and other institutions; foster collaborative approaches to setting regional priorities of cassava research and training; minimize duplication of efforts and share complementary research responsibilities among member NARS based on their respective comparative advantage; and provide technical and some financial support that will enable NARS with lead roles to effectively discharge their responsibilities.

Its main thrusts will be research, training, information and technology exchange, and institutional capacity building.

Five specific network activities have been agreed upon by national collaborators and approved by the Steering Committee and Board of SACCAR: (1) ecologically sustainable plant protection with respect to cassava green mite and cassava mealybug; (2) development of improved post-harvest technologies for cassava; (3) germplasm development and distribution; (4) technology transfer and impact assessment; and (5) rapid multiplication and distribution of improved planting material. In addition to these regional activities of specific programs, NARS country research activities are planned in Angola, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe.

To fulfill its training objective, SARRNET will develop manpower necessary to provide continuity and improved management of research projects in the various national root crops programs. Information and technology exchange will be effected through a newsletter, the sponsorship of collaborators to symposia, meetings and study visits, and through making relevant literature accessible to NARS. To effect institutional capacity building, SARRNET will support training and technological assistance for the human resource development of NARS by developing the capacities of its collaborating scientists and creating opportunities for them to contribute to a regional process.

Support for SARRNET project activities will come from national root crops research programs and SADC regional projects; USAID support for regional networking and training activities, supplemented by IDRC (International Development Research Centre) and other donors; continuing bilateral support and projected new support; and from IITA and CIP (International Potato Center).

Expected outputs include creating a closer linkage among four of the biggest cassava producing countries of the region (Mozambique, Zambia, Tanzania and Malawi); enhancing the ability of NARS to play a larger role in the efficient implementation and management of network objectives and the ability of root crops scientists themselves to research their specific constraints; facilitating the exchange of information on improved technologies; and establishing an effective multiplication and distribution system of improved germplasm in each national agricultural research system.

Expected benefits to the national programs in the region include:

- ... consolidating the regional network already started by ESARRN (East and Southern Africa Root Crops Research Network)
- ... providing overall guidance and direction in root crops and biological control research throughout the region
- ... creating a mechanism for attracting additional bilateral donor support for national root crops research
- ... building up a continuous flow of useful information and genetic material between international centers and national programs
- ... stimulating government and potential industrial interest in cassava-based agribusiness, as well as cottage industries for income generation of rural women
- ... building up a momentum of scientific root crops research that will enable the region to deal with various problems of root crops and thus strengthen food security
- ... raising the level of expertise of national root crops scientists through in-service and academic training as well as through direct interaction with the regional coordinator and international agricultural research scientists.

Under the aegis of SACCAR, SARRNET will work on the common root crops problems in the similar ecosystems of member countries, most of which lack the financial resources and trained manpower for root crops research. The first phase of this new network will place significantly more emphasis on cassava than on sweet potato. Then, because the two crops play analogous roles in cropping systems and in the diets of many people, studies on the two will subsequently be integrated. SACCAR and IITA will be responsible for the network's overall coordination, with IITA responsible for backstopping research and training in cassava, and CIP will provide backstopping for sweet potato research.

The project will be managed through continuous dialogue among the partners involved: SACCAR, IITA, CIP, participating national cassava and sweet potato programs, and the network coordinator and staff, in consultation with USAID.

The project requests from USAID US\$ 7 million for a period of five years, of which amount \$6,450,000 is requested for cassava and \$550,000 for sweet potato.

I. BACKGROUND

A. INTRODUCTION

1. The Southern Africa Development Community (SADC) Region

The Food, Agriculture and Natural Resources sector occupies a central position in the overall economy of the SADC region, which comprises the ten countries of Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zambia and Zimbabwe. Approximately 23% of SADC's GDP is derived from the agricultural sector. In the member states that are not dominated by mining, agriculture contributes about 60% of foreign exchange earnings and up to 80% of the population is dependent on agriculture for employment and income.

The population of the region, currently estimated at over 84 million, is increasing annually by about two million and is likely to exceed 100 million by the year 2000, then double to 200 million by the year 2020. Presently about 74% of the population lives in rural areas. The share of the urban population is expected to increase from 30% in 1990 to 43% in 2010.

To assure food security, promote development, and raise the standard of living of the people in the region, an increase in the productivity of agriculture is essential. Achieving a significant improvement in productivity will require the establishment of strong and sustainable national agricultural research systems (NARS). This is all the more necessary since regional strategy involves shifting away from heavy dependence on South Africa.

In terms of its natural resources, economic structures, population, and agroecologies, the diversity of the SADC region is considerable. It is probably the richest region in Africa in traded minerals (uranium, diamonds, iron ore, copper, chromium, coal, zinc and many minor minerals). Mining contributes over 60% of the region's export earnings. The region is also rich in renewable natural resources of land, water, livestock, forests, wildlife and fish. It is a major producer of beef, cereals and commercial crops. During 1988-1990, the region as a whole was self-sufficient in maize, its principal cereal staple, although problems with intra-regional trade have hampered distribution. The region is also self-sufficient in sugar cane. Coffee, tea, groundnuts and tobacco contribute, on average, about 20% of the region's export earnings. Wildlife, forest and fish products also contribute to foreign exchange.

The total land area of the SADC countries is nearly 572 million hectares, equivalent to 17% of the African continent. About 30% of the total land area has potential for crop production, the remaining 70% being forests, range land and deserts. But the potential productivity of large areas of the 172 million hectares suitable for crop production is constrained by soils that are old, fragile and acidic. In 1986 it was estimated that only about 15% of the potential agricultural land was cultivated, of which nearly 90% was planted to food crops and only 2% cropped under irrigation.

In most of the SADC countries, the growth in population will demand that food supplies grow at four to five percent per year. On average, seven out of ten people live in rural areas in the region, and the number of food deficit households is unacceptably high. The majority of the people will still be living in rural areas by the year 2000 because of the inability of the industrial and service sectors to generate sufficient jobs. While the modern sectors of

most SADC member states have witnessed rapid growth, production per worker has stagnated or declined in the smallholder agricultural sectors, which still sustain over half the population of the region.

2. SADC strategy for food security

Food security is achieved when a country can assure that all its citizens have both physical and economic access to food of an appropriate nutritional quality.

The overall objective of the regional food security program is to increase agricultural production so that the region can become self-sufficient in its basic food needs. Within this broad aim, there are three stated objectives:

- ... To satisfy the basic need for food of the whole population of the region and to progressively improve food supplies to all the people irrespective of their economic situation or their position in society
- ... To achieve both national and regional self-sufficiency in food supply to the maximum extent possible in order to reduce the region's dependence on external sources of supply
- ... To eliminate or substantially lessen the periodic food crises which affect areas or countries in the region.

3. Cassava and sweet potato in the SADC region

Prior to independence, African countries were essentially self-sufficient in producing food staples. In the succeeding decades, however, this position has declined into food import dependence, in which cereal imports are filling the gap created by lagging growth in production of domestic staples and the ever growing population's demand for food.

But if production of two crops that are already staple foods -- cassava and sweet potato -- can be substantially increased, the countries of the region will be well on the way toward regaining self-sufficiency and establishing permanent food security.

4. Attributes of cassava and sweet potato as food security crops

- ... Both crops, especially cassava, are tolerant of marginal soil conditions such as low fertility and high acidity and can grow adequately on soils that cannot support other crops.
- ... They tolerate environmental stress, particularly drought, and recover rapidly when moisture is available.
- ... They require little or no fertilizer.
- ... Both provide defense against soil erosion, especially sweet potato with its rapidly growing vines.

- ... They are relatively high yielding compared to other staple crops and are an excellent source of carbohydrates.
- ... After planting, cassava can be harvested anywhere from 6 to 36 months and sweet potato anywhere from 3.5 to 10 months. Both crops remain well preserved underground within these time periods and can be harvested as needed.

B. CASSAVA

Since its introduction from Central America into Africa in the 16th century, cassava has become one of the dominant starchy staples in the diet of sub-Saharan Africa.

Over 84 million people of the SADC region depend to a large extent on cassava for their daily energy and nutritional requirements. Second to maize as a source of carbohydrates for human beings, cassava also has great potential for livestock feed and for industrial use, yet as Table 1 indicates, cassava production rose only marginally during the last decade, and in some countries production is either stagnant, as in Mozambique, or declining, as in Malawi.

Table 1. Cassava Production Trends in the SADC Countries¹

	Area planted (in 000ha)		Production (in 000s of m/t)	
	1979-81	1991	1979-81	1991
Angola	487	500	1600	1850
Malawi	50	92	292	168
Mozambique	870	972	3600	3690
Tanzania	450	604	5432	6266
Zambia	56	74	183	270
Zimbabwe	18	23	55	90

¹/ FAO Production Yearbook 1991 FAO Rome, Italy.

Cassava remains the leading root crop in the region, except in Botswana, Lesotho, Swaziland and Zimbabwe, where sweet potato is a more important food. During the severe drought of 1991/92 the competitive position of cassava as a food security and cash crop was greatly enhanced in Tanzania, Malawi, Mozambique, Zimbabwe and Zambia. In Malawi, cassava was mixed with maize flour, thus improving its nutritional value. In Mozambique and Zambia, cassava is also an important food source, but local demand cannot be met since yields are by far the lowest in the region. In the dry, high altitude areas of Tanzania and Malawi more farmers are attempting to grow cassava although available planting materials are poorly adapted to these high altitude ecosystems and there is no multiplication and distribution system in place.

Despite its potential, cassava languished for decades as a low research priority, disdained as "the poor man's crop". However, scientific developments within the past 20 years have increased interest in cassava, and priority has been given to research on improving production and utilization. Major research is also being conducted on developing higher yielding varieties with greater resistance to diseases and pests.

In the early 1970s two new insect pests, the cassava mealybug (CM) and the cassava green mite (CGM), caused serious damage to

cassava crops before scientists at the International Institute of Tropical Agriculture (IITA) identified and introduced a natural enemy for the mealybug, E. lopezi. This is a host-specific parasite which has no adverse impact on the environment and which has held the pest population to levels that avoid significant economic losses of the crop. For over two decades IITA has been working on the development of cultivars with genetic resistance to cassava mosaic disease and to cassava bacterial blight disease, as well as on the development of improved cultural practices for cassava production.

1. International Institute of Tropical Agriculture (IITA)

IITA conducts research, training and germplasm and information exchange activities in partnership with regional and national programs in many parts of sub-Saharan Africa. Research is organized into three divisions: crop improvement, plant health management, and resource and crop management. A division for international cooperation conducts the training program and manages collaborative projects with national research programs. A division for management includes support services for finance, information and general administration.

The Institute's Root and Tuber Improvement Program encouraged the development of national root crops improvement programs in order to develop collaboration so that scientists in the region could benefit from and contribute to a cooperative regional research network. Such a network was needed because of the critical role root crops have played as food security crops in severe droughts and other disasters. The scientists also wanted to eliminate or reduce the many production constraints.

Under a continental mandate from the Consultative Group for International Agricultural Research (CGIAR) for cassava improvement in Africa, IITA contributes to increasing sustainable food production in developing countries of the humid and sub-humid tropics of sub-Saharan Africa, thereby improving the wellbeing and nutritional levels of the people in these areas.

2. Cassava and IITA

The Medium-Term Plan 1989-1993, which is the implementation phase of IITA's Long-Term Strategic Plan, gives the following objectives for cassava improvement:

- ... Selection of plant types with a range of plant architectures and maturities to fit diverse cropping systems and the varying requirements of farmers in all African environments where the crop is grown. Especially important is the need for more types that, like traditional cassava varieties, permit flexibility in planting and harvesting times.
- ... Routine incorporation into all IITA's improved clones of resistance to mosaic virus and bacterial blight. Greater resources will also be placed on the search for host-plant resistances to the mealybug and the green spider mite.
- ... Selection and enhancement of tuber qualities suitable for the major types of utilization.

C. SWEET POTATO

Sweet potato is a major food security crop in many areas of Southern Africa. It is a rustic, low-input crop which can reliably produce food under relatively marginal conditions. Its planting and harvest periods are more flexible than those of maize and other grains, so in the "hungry months" before the main harvest and in years of drought when other staple crops fail, sweet potato becomes a primary source of food. In good years it falls back to a secondary position, and national production figures have tended to reflect those lower numbers.

Sweet potato is a short-season crop which matures between three and ten months, depending on the variety and the altitude. It is propagated by planting vines and often grown in small, monocropped patches in complex cropping patterns. Many intercropping and relay cropping patterns are also found. Sweet potato is less affected by seasonal labor shortages than other crops so planting can be delayed until work on other crops is completed. It is commonly stored in the ground and harvested piecemeal as needed for home consumption or for sale in local markets. Although not normally considered a cash crop, it is widely sold on a small scale in rural areas, providing a flexible source of cash income to resource-poor households.

Constraints vary but the most frequently cited problems are the lack of early, high-yielding varieties with good culinary and other characteristics, shortage of planting material when the rains begin, virus diseases, sweet potato weevils, and moles and other rodents. Other pests, diseases and abiotic stresses, particularly very severe drought, can be devastating.

Sweet potato is most often consumed in the form of fresh roots, usually just boiled. The leaves and vines are high in protein and are eaten as a nutritious vegetable, or fed to livestock. Roots are stored in pits in the ground or chipped and dried for later consumption. There is a significant potential over the longer term for utilization of sweet potato in processed foods, feeds and industrial products. Developments in these areas would provide incentives to farmers, which would lead to increased production. Recent area, production and mean yields of sweet potato in SADC countries are shown in Table 2.

Table 2. Sweet potato area, production and mean yield in SADC countries (mean 1989 - 91)

Country	Area (000 h) (T/ha)	Production (000 T)	Mean Yield
Angola	19	170	8.9
Malawi	9	55	6.5
Mozambique	1	5	4.0
Tanzania	257	451	7.4
Zambia	4	27	2.1
Zimbabwe	<u>1</u>	<u>2</u>	2.1
	291	710	2.4

1. The International Potato Center (CIP)

Having been given the global mandate for sweet potato by the Consultative Group for International Agricultural Research (CGIAR), over the past five years the International Potato Center (CIP) has been building upon previous sweet potato research carried out in national programs throughout the world. CIP is organized in a decentralized structure that facilitates its working in close partnership with national agricultural research systems. With numerous cultivated and wild species and a large global germplasm collection, it has conducted extensive research activities in such areas as breeding, virus identification and elimination, pest and disease control, and processing and marketing.

D. THE EAST AND SOUTHERN AFRICA ROOT CROPS RESEARCH NETWORK (ESARRN)

The East and Southern Africa Root Crops Research Network (ESARRN) was established by International Institute of Tropical Agriculture (IITA) and national researchers when IITA had the Consultative Group in International Agricultural Research (CGIAR) mandate for both cassava and sweet potato research. When the mandate for sweet potato was passed to International Potato Center (CIP), a CIP representative was named to the ESARRN steering committee. This provided a mechanism for the coordination and backstopping of ongoing sweet potato research projects and for planning and implementing joint training activities. The two international centers have for many years collaborated in courses, workshops, scientific conferences and other activities.

The signing of International Development Research Centre (IDRC) and United States Agency for International Development (USAID) grant agreements with IITA marked the official birth of ESARRN in 1987. ESARRN subsequently worked with the national root crops scientists of all participating countries and with national, regional and international agencies and organizations, serving as a link in germplasm exchange and the organization of regional forums. Upon request from national programs, ESARRN helped prepare root crops projects and the introduction of new technologies. It has been a network of national root crops improvement programs from Uganda, Kenya, Tanzania, Burundi, Rwanda, Ethiopia, Sudan, Zambia, Mozambique and Madagascar, with headquarters at Chitedze Research Station in Malawi.

ESARRN supported Collaborative Study Of Cassava in Africa (COSCA) baseline data surveys on cassava in Malawi, Tanzania and Zambia. The data is being analyzed and will be ready for review before the end of 1993. Since the survey was conducted largely by the national root crops program personnel, the results and implications are already partially available to many of the relevant people. It is the most detailed survey on cassava carried out so far in any of the participating countries.

1. Beneficiaries from ESARRN

An effective collaborative research system has been established and collaborators have made contributions to the network at workshops, meetings and training courses and have shared improved

germplasm. This increased contact and participation has facilitated the easy transfer of technology developed by one program to other collaborating countries. For example, improved cassava and sweet potato populations developed in Rwanda have been extensively tested in Malawi and Tanzania.

The national agricultural research systems' participation in decision-making on technical matters has resulted in complementary research programs and self-evaluation procedures within the ESARRN framework. Professional training from IITA has also allowed NARS scientists to develop their knowledge base and to improve their performance and productivity. This has been demonstrated by the increasing number of collaborators moving up to leadership positions and their growing influence on policy-makers in favor of root and tuber crops.

2. Achievements of NARS resulting from ESARRN

ANGOLA

Genotype evaluations which started in 1986 have resulted in selection of three new cassava clones which were originally introduced from IITA. The clones are TMS 91934, TMS 60142 and TMS 30395. These were selected based on resistance to cassava mosaic virus, tolerance to cassava mealybug and good yield performance. Their recorded yield varied from 15 to 29 tons per hectare as compared to four-five tons per hectare from local clones.

Four sweet potato clones have been selected, namely TIS 8250, TIS 9265, TIS 8401 and TIS 8441, also introduced from IITA and facilitated by support from ESARRN. These were selected based on yield and acceptability. Their yield varied from 15 to 22 tons per hectare compared to yields of three local clones of two-five tons per hectare.

The selected cassava and sweet potato clones are now being rapidly multiplied to be made available to farmers. A pilot project for cassava processing has been established to help farmers process their cassava into a dry meal called gari. This equipment is expected to minimize loss of produce, processing time and labor costs, while retaining good product quality.

MALAWI

With assistance from the network, the root crops program in Malawi was able to secure bilateral assistance from IDRC. In collaboration with the United Nations Food and Agriculture Organization (FAO) and ESARRN, the program now has the capacity to evaluate populations in three major agroecologies. It is also establishing a multiplication and distribution system for cassava and sweet potato with inputs from FAO. Because of this activity, the Ministry of Agriculture has designated five additional sites for the multiplication of selected cassava and sweet potato varieties and has pledged sufficient resources for this activity.

The program has developed the capacity to generate improved populations of both crops, and such populations are being shared with collaborators. Selected clones have also been shared with food production projects in Zambia and Malawi. A post-harvest unit has

been constructed and is being used to demonstrate improved processing techniques.

MOZAMBIQUE

During the life of ESARRN several cassava populations were introduced from IITA and were evaluated in three different zones of the country. Thirty-five clones have been selected. Three cassava varieties introduced in tissue culture, TMS 30001, TMS 30395 and TMS 42025, have been selected, and because of their high yield and pest and disease resistance, they have been multiplied and distributed to many farmers.

Agronomic trials were conducted on-station and on-farm in the south, taking into consideration the preferences of the farmers. A biocontrol program was initiated to deal with the cassava mealybug.

Sweet potato clones were introduced from IITA and on-farm trials were conducted. The following selections are being multiplied and distributed to farmers in the north: TIB 9, TIS 2498, IMA 39 Malawiana, Campalendo, and in the south: TIS 2498, TIS 2532, TIS 2534, TIS 9265, TIB 9, TIB 10, TIB 11, Clones 7, 12 and 18.

In an effort to rapidly increase these selected lines, a tissue culture laboratory was installed with FAO support. This will be used for the micropropagation of preferred cassava and sweet potato clones.

TANZANIA

Tanzania has completed the Phase I study of the Collaborative Study of Cassava in Africa (COSCA) and is preparing for a Phase II. This program, in collaboration with the IITA Biological Control Program, has also established a rearing facility for plant predators and parasites.

The productive root crops-based, mixed cropping systems which have been developed are now going to be tested on-farm. The Tanzania root crops program also generates seed populations each year for evaluation under field conditions for resistance to disease and pests, high yield, and consumer preference. From the 14 intercropping systems that have been evaluated for economic yield, biological productivity (land equivalent ratio) and gross returns, five promising systems were selected for on-farm evaluation from 1989-1991. Of these, farmers selected cassava + maize + sweet potato, and cassava + maize as the two most desirable.

ZAMBIA

Cassava production in Zambia in 1987 was 230,000 tons while sweet potato was 23,000 tons. About two million Zambians rely on cassava as their staple food. Cassava yields have, however, been reduced by cassava mealybug attack which was first reported in 1986 and has now spread to other parts of the country. The cassava green mite is also widespread. The attention to research and development of cassava by the government was given impetus by farmers' demands following the damage caused by the mealybug in 1986, though the Zambian root crops program became fully functional during the 1978/79 season.

Research has centered on cassava and sweet potato improvement. The main areas of collaborative activities between Zambia and ESARRN revolved around developmental research infrastructures, the COSCA root crops baseline data survey, training of scientists and technicians, germplasm exchange, testing of post-harvest equipment, and participation in meetings and workshops. The program has established an extensive collection of local cassava varieties which have been evaluated for selection of elite genotypes.

Zambia is multiplying three improved cassava varieties and five sweet potato varieties for farmers' cooperative societies. The sweet potato varieties are IITA clones imported for evaluation under Zambian conditions.

Hybrid seed of breeding clones of cassava and sweet potato generated by Zambia has been sent to other root crops programs with the assistance of ESARRN. In 1991 about 3000 seeds of four elite cassava lines and 1500 seed of two superior lines of sweet potato were sent to ESARRN collaborators.

Additional information on the status of cassava and sweet potato in major producers of the SADC region is included in Annex II.

II. THE SOUTHERN AFRICA ROOT CROPS RESEARCH NETWORK PROJECT (SARRNET)

At the end of ESARRN evaluation in January 1992, the evaluation team recommended splitting ESARRN into two functional networks: the Southern Africa Root Crops Research Network (SARRNET) and the East Africa Root Crops Research Network (EARRNET).

The SARRNET cassava research and training activities described in this project proposal were elaborated jointly by the root crops leaders of the collaborating countries and representatives of CIP and IITA at a steering committee meeting held at Lilongwe in March 1992. The proposal was submitted to the board of Southern Africa Centre for Cooperation in Agricultural Research (SACCAR) in November 1992 and has been submitted to USAID. USAID will sign a grant agreement with IITA. IITA will then sign an agreement with CIP which will spell out the schedule for release of funds and reporting procedures.

Goal

The goal of SARRNET is to increase income and improve household food security for resource-poor farmers in Southern Africa.

Purpose

The purpose of SARRNET is to increase cassava and sweet potato productivity through the adoption of improved varieties and practices, and the strengthening of national root crops research program capability.

SARRNET will build upon the root crops networking activities undertaken by ESARRN to

- ... provide a forum for the rapid exchange of technology such as improved varieties, biocontrol, agronomic practices and post-harvest processing technologies derived from the participating national programs or other institutions
- ... foster collaborative approaches to setting regional priorities of cassava research and training needs
- ... minimize duplication of efforts and share complementary research responsibilities among member NARS based on their respective comparative advantage
- ... provide technical and some financial support that will enable NARS with lead roles to effectively discharge their responsibilities.

The network will collaborate with all interested institutions and organizations that will contribute to strengthen the national programs' capacities to address their cassava objectives. It will collaborate with relevant NGOs in distribution of improved technologies and in obtaining feedback from farmers.

The main thrusts of SARRNET will be

- Research
- Training
- Information and technology exchange
- Institutional capacity building

These are more fully described in the SARRNET logical framework in Annex I.

A. REGIONAL RESEARCH OBJECTIVES

- ... Develop and/or introduce improved cassava and sweet potato germplasm, both advanced clones and improved populations, with high frequency of desirable genes adapted to the mid-altitude ecologies and other major cassava areas of Southern Africa.
- ... Establish effective national plant health activities within existing plant protection units of root crops programs and encourage an ecologically sustainable approach to managing pest and disease problems.
- ... Conduct coordinated surveys on cassava and sweet potato-based cropping systems in five member countries in order to establish production constraints, adoption rate and impact of released varieties and of a range of production and post-harvest technologies.
- ... Develop post-harvest technologies which aim to increase labor use efficiency, minimize food losses and improve the quality of food products and food security. This will be done through

- identification, development and adaptation of post-harvest technologies at the household, market and village levels
 - conducting training programs for users and extension workers.
- ... Establish multiplication, distribution, and monitoring systems in all collaborating countries in order to increase the distribution and adoption of improved technology by farmers.

Specific network activities which have been agreed upon by the national collaborators and approved by the steering committee and the Board of SACCAR are described below. The "lead" countries listed for each activity were chosen on the basis of capacity and comparative advantage of the root crops programs for executing the assignment.

Activity 1: Ecologically sustainable plant protection (ESPP) with respect to cassava green mite (CGM) and cassava mealybug (CM)

Lead countries : Tanzania and Zambia.

Overall objective

Evaluate, develop and integrate relevant interventions such as biological control, tolerant varieties and cultural practices that will reduce CGM and CM damage to the cassava crop.

Background

Since their arrival in Africa, probably in the early 1970s, CM and CGM have spread to all of the cassava growing areas in Southern Africa. Yield losses of 80-90% have been reported. SARRNET has therefore determined that ecologically sustainable plant protection (ESPP) must be resolutely pursued and implemented. The Plant Health Management Division (PHMD) of IITA will continue to backstop this activity.

In collaboration with IITA's Biological Control Program, the national agricultural research systems (NARS) in the Africa cassava belt have introduced a number of exotic insects in an attempt to control these pests.

Current results indicate that one of the released natural enemies against the mealybug, E. lopezi, is well established in all the infested areas with good control in about 90% of the areas. In addition to studies on distribution, host range, crop damage and population dynamics of the cassava green mite, several species of phytoseiid mites were introduced and released. Successful establishment of newly introduced phytoseiid species has been reported from Burundi and Kenya.

These biological control attempts need to be quantitatively evaluated and developed into an integrated approach. Other efforts such as use of tolerant and high yielding planting material, dates of planting, intercropping and improving soil fertility that have shown potential for control of cassava pests will also be analyzed.

Methodology

In addition to pre- and post-release surveys of the pests and their natural enemies, the following activities are proposed:

- ... Entomologists in collaboration with cassava breeders will evaluate cultivars, advanced breeder's lines and improved populations in infested areas to identify or confirm genetic resistance or tolerance.
- ... Based on the understanding of the local farming systems in various agroecological zones, appropriate cultural practices, which will contribute to reduced pest populations, will be identified and evaluated. These practices may include planting dates, crop rotation and soil fertility.
- ... The most relevant components of beneficial insect populations, better crop varieties and cropping systems will be integrated and evaluated for their effectiveness as a pest management package for CGM and CM control.

Expected output

- ... Appropriate pest management strategies will be available for testing and adaptation to other countries within the region. This will promote ecologically sustainable plant protection techniques, establishment of monitoring strategies and alternative crop management practices.
- ... Use of the ESPP package, which is an environment friendly technology, will contribute to the reduction in pest populations and consequently, increases in yields.
- ... Information on the rearing and manipulation of beneficial insect populations will be disseminated to collaborators, and predators and parasites for CGM and CM will be multiplied and spread within the region. This will decrease reliance on pesticides and promote greater environmental awareness.

Indicators for monitoring impact

- ... Total area where beneficial phytoseids and parasitoids have been established
- ... Number of NARS scientists and technicians trained in ESPP
- ... Extent of reduction in pest incidence and damage levels
- ... Number of ESPP packages tested
- ... Number of promising cassava genotypes identified that are tolerant of or resistant to CGM and CM.

Activity 2: Development of improved post-harvest technologies for cassava

Lead countries: Tanzania, Malawi and Zambia

Overall objective

Identify and develop appropriate technologies for cassava processing, storage, equipment testing and product development.

Specific objectives

- ... Collect baseline data on available preservation and utilization technologies and the attendant constraints
- ... Test the shelf life and quality of the available products
- ... Introduce and evaluate the performance of different processing equipment
- ... Develop, introduce and promote new food products.

Background

Because cassava consists of 60-70% water, it deteriorates very rapidly. Processing into a dry form converts it into a more durable and stable product with less volume, which makes it easier to store and transport. This is especially important for its use as a raw material in such small- and medium-scale industries as industrial starch and alcohol, and as livestock feed.

The tuberous roots and leaves of cassava have the potential to generate cyanide, which can be poisonous, depending on the level in a particular variety. Thus, to ensure safety for human consumption, the cyanide must be removed or considerably reduced. The percentage of cyanide reduction varies from 20-100%.

The tuberous roots are detoxified by hydrolysis of the cyanogenic glucosides (linamarin and lotaustralin) into HCN (hydrogen cyanide), which is volatile and evaporates rapidly. This process is usually initiated by mechanical disintegration of plant tissues through pounding, grating or chipping of the roots. Traditional methods of processing cassava roots are

- simple boiling
- production of cassava chips and flour (unfermented or fermented)
- production of roasted or steamed granules
- fermentation of cassava dough.

But the traditional methods of preparing fermented and unfermented cassava flour have the following deficiencies:

- ... Inadequate drying often results from the large size of cassava chunks being dried.
- ... Spreading the product on the ground makes it vulnerable to contamination.

- ... Limited insolation and high relative humidity during the rainy season lead to extended drying times, microbial contamination and loss of quality.

Methodology

- ... Where available, data from the COSCA survey will be used to understand existing modes of utilization and current demand for cassava products, and to identify constraints.
- ... Preservation technologies will be evaluated for their ability to keep cassava products over an extended period of time. Quality of the products will be monitored at regular intervals.
- ... Processing equipment and other technology from countries in West Africa and Brazil will be introduced and tested on a pilot basis, and socio-economic factors affecting adoption will be studied.
- ... Awareness of utilization potential will be created through group training and demonstration. Particular emphasis will be given to the transfer of available preservation and processing technologies.
- ... Collaborative activities with institutions of participating network countries with interest in cassava preservation, processing and product development will be initiated.

Expected output

- ... Baseline survey data describing the techniques and processes currently employed at farm and village levels and constraints to post-harvest handling and marketing of cassava
- ... Introduction and development of improved post-harvest technologies
- ... Awareness of new modes of utilization and of income generating capacity of cassava
- ... Dissemination of new food products developed from cassava.

Indicators for monitoring impact

- ... Number of new food products developed and popularized (at least two per country)
- ... Number of simple processing equipment locally produced and adapted (at least two per country)
- ... Number of technical courses or workshops conducted and NARS technicians trained on cassava utilization (at least one training course and ten technicians per country)

... Increased shelf life of fresh cassava roots.

Activity 3: Germplasm development and distribution

Lead countries: Malawi and Zambia

Objectives

- ... Select and generate improved clones and populations of cassava and sweet potato from selection and recombination of clones with specific desired characteristics such as high yield, resistance to diseases and pests, acceptable quality and ecological adaptation.
- ... Distribute clones and seed populations to network member countries.

Background

The National Root Crops Improvement Programs of Malawi and Zambia have for the past few years generated seeds from open pollination and controlled crosses of cassava. The populations, along with introductions from IITA, have produced lines with good yield potential and resistance to diseases and pests.

Crossing blocks for efficient recombination have been established in the lead countries. During the first phase, crosses were made and some populations were distributed to other network member countries. These populations are now being evaluated to determine their performance in various environments. However, the demand for populations with desirable combinations of genes remains a high priority among network member countries.

Methodology

- ... Selection from local populations and elite breeder's clones will be made.
- ... Introduction of improved germplasm will be made as:
 - true seeds from IITA and other organizations through IITA, and from network member countries
 - tissue culture from IITA and member countries.
- ... Evaluation of the materials at at least two sites in each country for the following characteristics:
 - ecological adaptation (e.g., to altitude and low rainfall)
 - high root yield and quality per unit areas/per unit time
 - pest and disease resistance.
- ... Materials with good attributes will be subjected to multilocational testing. Those with adequate to superior performance records accumulated over the years will be

passed to the extension services for multiplication and distribution.

- ... Materials that are excellent for some desired characteristics but not acceptable as potential varieties will be used as parents in hybridization to increase their useful potential.
- ... Crossing blocks will be established and/or existing ones will be improved. Specific crosses and some open pollination will generate seed populations.
- ... Seeds will be cleaned, treated and packaged for distribution among network countries.
- ... The network will improve and take advantage of the available tissue culture facilities in Malawi to disseminate germplasm in vegetative form as in vitro plantlets. This will involve
 - in vitro meristem culture
 - indexing for viruses
 - micropropagation
 - distribution.
- ... Breeder's seed will be multiplied for transfer to the national extension system in-country.

Exchange of germplasm among countries is proposed but this is limited to true seeds by quarantine protocol agreements of the countries concerned. Meanwhile, true seeds of adaptable clones and tissue culture materials are sent to NARS from IITA for evaluation, selection and multiplication. Tissue culture capability is being developed in Malawi, Mozambique and Zimbabwe.

Expected output

- ... Populations and genotypes adapted to major ecosystems will be identified and made available to network countries for further testing and/or transfer to the extension services.
- ... Clones with specific desirable traits such as ecological adaptation, high yield, disease and pest resistance and good quality will be made available to member countries for on-farm adaptive trials or for use as parental genotypes for further improvement.
- ... A germplasm collection for future utilization in breeding will be developed and maintained.

Indicators for monitoring impact

The number of

- ... parental lines identified and used
- ... seeds produced and distributed

- ... exotic clones and new populations introduced and evaluated
- ... superior local or introduced clones identified
- ... clones multiplied, released or recommended for release by NARS.

Activity 4: Technology transfer and impact assessment

All collaborating programs

Overall Objective

Conduct on-farm trials and socio-economic surveys, and establish monitoring systems on cassava and sweet potato-based production systems in member countries in order to evaluate adoption rate and impact of accepted varieties.

Specific Objectives

- ... Assess the performance of cassava and sweet potato-based technologies within the resource base of the farmer
- ... Monitor technology acceptability by the target farmers
- ... Ensure widest dissemination of technologies to farmers
- ... Evaluate technology adoption and assess impact achieved by technologies on production, food culture, income and wellbeing of the resource-poor farmers.

Background

Improved varieties of cassava are already being adopted in most national agricultural research systems, but further detailed analysis could be made with case studies of improved variety adoption rate and economic cost-benefit returns calculated from farmer-managed and on-farm trial comparisons. Such studies will provide data for socio-economic analysis, establish economic impact potentials, and identify constraints to adoption.

Improved cassava production and processing technologies will be transferred through national extension and rural development agencies and through NGOs who work with farmers to increase yields, food output and household incomes. Monitoring of adoption impact can only take place after one or two years of successful introduction of the new technologies.

Methodology

- ... The root crops research agronomist and socio-economist in each program will work with the adaptive research teams to collect data on the rate of spread and adoption of cassava varieties.
- ... Yield data on improved varieties in comparison with local clones will be collected from the main production systems practiced.
- ... Feedback from farmers on released varieties will be reported. This will clarify the performance of the technology from the farmers' perspective and considered in the evaluation and selection scheme.

Expected output

- ... Data on the available varieties of cassava and their performance on farmers' fields
- ... Detailed information on socio-economic factors affecting cassava and other root crops production and utilization
- ... Increased utilization of socio-economic analyses and improved capacity of NARS to undertake such analyses
- ... Information on farmers' preference for specific cassava cultivars.

Indicators for monitoring impact

- ... Appropriate questionnaires filled out by enumerators
- ... Baseline data on status of cassava with respect to numbers of varieties, distribution and performance,

Activity 5: Rapid multiplication and distribution of improved planting material

All collaborating programs

Objective

- ... Establish and/or improve a rapid and efficient system for cassava and sweet potato multiplication
- ... Develop effective national systems for delivery of improved cassava and sweet potato varieties to farmers.

Background

Many programs have identified improved cassava lines, but the capacity for multiplying and distributing planting material for which there is a high demand is limited. This is

partly due to the bulkiness, slow multiplication rate and perishability of cassava planting materials.

The ability of a program to perform routine multiplication and distribution of root crops is fundamental to accelerating impact at farm level. Until this is achieved, the best and most productive varieties will continue to remain mostly on stations.

Collaborating NARS are encouraged to set up national multiplication and distribution systems, as Malawi and Mozambique have already started to do for cassava and sweet potato, with support from donor agencies including FAO and USAID and various NGOs.

Methodology

Primary multiplication centers will be established at three to four sites in each national program. These sites will be located in areas with highest concentration of farmers but must be reasonably accessible and have enough resources to meet the needs for cost-effective rapid multiplication to feed several secondary or satellite multiplication centers. Strong linkages will be made with various extension and development agencies as well as NGOs for distribution and further establishment of satellite multiplication centers.

Expected output

- ... Increased and timely availability of improved and healthy cassava and sweet potato planting material to farmers, GOs and NGOs
- ... A cost-effective distribution system
- ... Increase in cassava and sweet potato production resulting from the adoption of improved planting materials.

Indicators for monitoring impact

- ... Number of multiplication sites established
- ... Number of recipient farmers
- ... Increased hectarage and/or yield from farmers' plots.

B. COUNTRY RESEARCH ACTIVITIES FOR CASSAVA AND SWEET POTATO

In addition to the regional activities assigned to specific programs, planned activities of the national agricultural research systems (NARS) in the collaborating countries are described below.

1. ANGOLA

Background

During the past four years the Roots Crops Improvement Program in Angola has collected local clones and introduced seed populations and tissue culture materials from IITA. These lines have been evaluated in the acid soils and climatic conditions prevailing along the Luanda/Bengo area.

Objectives

- ... Collect, characterize and conserve local germplasm
- ... Introduce and evaluate exotic germplasm
- ... Improve rapid multiplication techniques
- ... Evaluate improved processing and storage techniques
- ... Train root crops researchers at all levels.

Expected output

- ... Identification of high yielding local and exotic germplasm
- ... Extension workers and farmers trained in rapid multiplication of planting materials
- ... Improved processing and storage techniques
- ... Trained root crops research workers at all levels.

Indicators for monitoring impact

- ... Number of local and exotic germplasm identified through on-farm trials and accepted by farmers
- ... Number of cuttings distributed to farmers
- ... Increase in yield due to use of improved varieties
- ... Number of research workers
- ... Number of improved processing and storage techniques used by the farmers.

2. MALAWI

Background

Currently there are improved varieties of cassava and sweet potato available on the shelf which have not yet reached the farmers because of a serious absence or shortage of planting materials. Vegetatively propagated materials do not attract the participation of established seed companies

because of their perishability, bulkiness and low economic value.

Database: Although cassava is being produced both for food and for cash, there are no records of how much of each is being grown as a cash crop. Extension staff quote extremely low fresh yields, but these estimates underrate the contribution of the crops to the food chain, especially to food security. Accurate data therefore needs to be obtained.

Local processing: Cassava is processed in several traditional ways, the constraints of which are not inadequately researched. Just why farmers utilize particular methods must be understood in order to determine their constraints at the household level and thus to improve them.

New recipes: Increased production will require methods of effective utilization. This can be achieved by developing alternative recipes to supplement the ones traditionally used.

Varietal improvement: Because most local varieties are low yielding, susceptible to diseases and pests, and late maturing, they tend to be grown as intercrops. Development of varieties that are early maturing and resistant to or tolerant of diseases and pests will enhance the production of cassava in Malawi.

Training: Research and extension staff training will facilitate the linkages between teams in different organizations. This will have a multiplier effect as the trained extension staff participates in farmer training programs in various areas. The trained researchers will be able to conduct high-quality research with cost-effective results. The training will be at both support staff and higher degree related levels.

Ecologically sustainable plant protection: Pure biological control without consideration of cultural practices, crop varieties, and environmental factors may not be able to sustain the system. It is therefore important to support classical biological control activities with technologies that are complementary to them; individually, they might not lead to successful control of the pests.

Expected output

- ... Substantial increase in number of farmers planting improved cassava and sweet potato materials due to the availability of cuttings through rapid multiplication
- ... Quantification of the contribution of cassava and sweet potato to the cash economy
- ... Improvement of processing techniques
- ... Development of new food products
- ... Development of high yielding varieties

- ... Training at all levels
- ... Ecologically sustainable plant protection techniques developed.

Indicators for monitoring impact

The number of

- ... improved cuttings distributed to farmers
- ... improved processing methods used by farmers
- ... new food products developed
- ... research workers trained at all levels
- ... ecologically sustainable plant protection components developed and practiced by farmers.

3. MOZAMBIQUE

The major constraints to cassava production in Mozambique include the lack of trained manpower, proper research infrastructure, especially in Nampula and Zambezia provinces, and the lack of improved germplasm resistant to various biotic and abiotic stresses.

Objectives

- ... Collect, characterize and conserve local germplasm
- ... Strengthen the existing regional and local multiplication and distribution centers
- ... Produce pest and disease free planting material using tissue culture laboratory facilities
- ... Establish on-farm trials with selected varieties in areas where cassava is of major importance
- ... Test and evaluate introduced varieties and clones in major growing areas in terms of yields, quality of roots and leaves, and pest and disease resistance
- ... Train staff in post-harvest utilization techniques
- ... Start post-harvest utilization studies of roots and/or leaves
- ... Initiate intercropping trials
- ... Develop management practices to reduce the effects of the mealybug

- ... Select and test varieties which are adapted to drought prone areas and suitable for the taste preferences of the local farmers.

Expected Output

- ... Local germplasm collected, characterized and conserved
- ... Expanded local and regional multiplication centers
- ... Trained manpower
- ... Improved cassava germplasm developed for the various agroecological zones identified through on-farm trials
- ... Control of the mealybug.

Indicators for monitoring impact

- ... Amount of local germplasm collected, characterized and conserved
- ... Number of improved clones identified through on-farm trials and accepted by farmers
- ... Number of scientists trained
- ... Increased cassava production as a result of the control of the mealybug.

4. NAMIBIA

Objective

Collaborate with Namibia in manpower development, germplasm evaluation, and rapid multiplication of planting materials.

Background

Through the FAO Representation in Namibia, ESARRN introduced some promising IITA lines in tissue culture form in 1990. More cassava germplasm in form of true seeds has been sent to Namibia by ESARRN to be established in stations in seedling nurseries for evaluation of its adaptability to local conditions. An ESARRN team provided training to agricultural officers at the stations on the establishment, maintenance and evaluation of the materials.

Expected output

- ... Extension personnel and farmers trained in rapid multiplication of cassava
- ... Trained manpower at several levels
- ... Local and exotic germplasm identified through on-farm testing and accepted by farmers for various agroecologies
- ... Cuttings of improved clones distributed to farmers.

Indicators for monitoring impact

- ... Amount of local and exotic germplasm identified through on-farm adaptive research and used by farmers
- ... Number of cuttings distributed
- ... Number of staff trained.

5. TANZANIA

Objectives

- ... Develop high yielding varieties resistant to major pests and diseases
- ... Develop improved crop husbandry practices
- ... Improve traditional processing methods for cassava
- ... Establish multiplication and distribution centers
- ... Develop integrated pest management of cassava mosaic virus disease, cassava mealybug and the cassava green spider mite
- ... Evaluate promising cassava-based intercropping systems on farmers' fields
- ... Quantify cyanogenic potential in promising cassava clones
- ... Provide training for higher degrees and in-service training.

Background

In Tanzania's agriculture and livestock research master plan, cassava is the second priority.

Expected output

- ... High yielding varieties with resistance to the major diseases and pests developed
- ... Multiplication and distribution centers established
- ... Ecologically sustainable plant protection techniques disseminated
- ... Improved methods of processing cassava demonstrated
- ... Staff trained.

Indicators for monitoring impact

The number of

- ... high yielding varieties used by farmers that are resistant to diseases and pests
- ... cuttings distributed
- ... farmers using improved processing methods
- ... staff trained at all levels
- ... promising cassava-based intercropping systems identified.

6. ZAMBIA

Objectives

- ... Introduce germplasm from IITA and other SARRNET members
- ... Evaluate local and exotic germplasm with emphasis on ecological adaptation such as to mid-altitude conditions, resistance to disease and pests, the high yield of dry matter per unit area and per unit time, and desirable attributes for preparation of traditional dishes
- ... Enhance germplasm and varietal development
- ... Conduct on-farm trials in collaboration with the Adaptive Research Team
- ... Investigate appropriate cropping systems and testing of relevant storage technologies, simple processing methods and recipes development
- ... Train root crops researchers.

Background

Previous neglect of research and development of cassava by the government was reversed by farmers following the ravage of the crop by the cassava mealybug in 1986. Their demands proved to the government the important role played by cassava in the nutrition of the people, particularly in the northern half of the country that has predominantly acid soils.

Expected output

- ... High yielding, local and exotic germplasm available for different ecologies
- ... Processing and storage methods improved
- ... Root crops workers trained.

Indicators for monitoring impact

- ... Amount of local and exotic germplasm selected through on-farm trials and accepted by farmers
- ... Number of improved processing and storage methods accepted by farmers
- ... Number of root crops workers trained.

7. ZIMBABWE

Objectives

- ... Establish cassava as a
 - food security crop
 - fodder crop
 - crop for industrial purposes in beer brewing, motor fuel processing, and in the chemical industry
- ... Collect, characterize and conserve local germplasm
- ... Investigate the importance of the African cassava mosaic virus to the local germplasm
- ... Introduce new high yielding, disease resistant materials
- ... Assess the cyanogenic potential of all cassava varieties in Zimbabwe
- ... Establish nurseries that use rapid multiplication techniques
- ... Train farmers and extension workers in planting methods and production and processing techniques

- ... Evaluate varietal performance on farmers' fields
- ... Conduct market feasibility studies for cassava
- ... Establish processing units at targeted points.

Background

A nongovernmental organization, the Biomass Users Network, has been given the mandate by the Zimbabwean government to coordinate the ongoing National Cassava Development Program.

Expected output

- ... Recognition of cassava as an important food security crop in Zimbabwe
- ... Improved varieties distributed to farmers
- ... Cassava germplasm bank established.

Indicators for monitoring impact

- ... Area under cassava cultivation
- ... Availability of benchmark data
- ... Establishment of a pilot processing unit
- ... Availability of ration formulation in livestock feed with cassava as a component.

C. TRAINING

A major objective of the SARNET network is to develop manpower resources to provide continuity and improved management of research projects in the various national root crops programs. The training activities of this project will capitalize on existing training facilities and activities of SADC member countries in order to facilitate the following:

- ... Non-degree, in-service training for root crops researchers in integrated pest management, data collection and analysis designed to increase capabilities in field plot design techniques, propagation and other appropriate study areas. (Such courses could be done in collaboration with regional resource personnel from IITA and/or national programs.)
- ... Masters and Ph.D. level degree training in areas consistent with the needs of the national programs and the region. (Degree training will be conducted at various institutions of higher learning, including national universities, in association with IITA.)

- ... Visiting scientists to work with IITA, national programs and other research organizations to improve their capabilities in dealing with specialized areas of research in root crops.

Although great strides have been made by international agricultural research centers (IARCs) in improving the productivity of root crops, a large production gap still remains at the national agricultural research systems (NARS). Constraints which have been identified by researchers are:

- insufficient training
- poorly equipped research facilities and lack of basic research
- weak support staff.

The importance of education and training for sustainable growth and for acceptability of these crops as contributors to improving the quality of life is already recognized. As stated by SADC: "The great shortage of professional manpower in national research, extension and training structures in the region, and especially the lack of personnel with higher degrees able to assume leadership roles, are a major bottleneck in better exploiting the agricultural potential of the SADC countries".

Both formal and informal training activities are proposed to develop the manpower necessary for strong national root crops research programs and for building an effective network within the region. Several levels of training are planned as seen in Table 3. Such training levels make increased use of regional resource people and institutions and also increase the training skills of the national organizers.

TABLE 3. PROPOSED NETWORK TRAINING SCHEDULE
(Numbers of people to be trained)

3 MSc candidates for 2 yrs. each, 2 PhD candidates for 4 yrs.

CATEGORY	YEAR				
	1	2	3	4	5
In-service training at IITA and/or regional institutes	10	10	10	10	10
In-country training	50	50	50	50	50
M.Sc. degrees	3	0	3	0	0
Ph.D. degrees	2	0	0	0	0

Given the five-year initial life of the project, training beyond the master's level will be undertaken in consultation with the existing manpower development projects of SACCAR. In addition to the five persons who will receive degree training, another 300 persons will receive short-term training at IITA or regional centers. They will participate in appropriate activities to enhance the technical competence of regional root crops scientists.

IITA, in collaboration with SACCAR, will coordinate degree training to be pursued at regional centers of specialization or other institutions. IITA and SACCAR will also be responsible for the coordination and provision of short-term, in-service and technical training for the research staff and for on-the-job training for visiting scientists.

D. INFORMATION AND TECHNOLOGY EXCHANGE

One of the main achievements of ESARRN was to provide a forum for free exchange of information among collaborating NARS, IARCs and other relevant organizations. This led to more efficient priority setting, less duplication of effort, and reduction in time required for execution of projects. It also helped to lift the standard of performance of several scientists who had previously worked without access to current information.

Newsletter

Because the exchange of information is a valuable facet of SARRNET, a newsletter will be produced and distributed regularly to all collaborators, under the control of the documentation specialist.

Sponsorship of Collaborators

During the life of the project, SARRNET will continue to sponsor collaborators for symposia of the International Society of Tropical Root Crops, meetings of Collaborators in Root and Tuber Crops Improvement and Systems Research organized by IITA, study visits to collaborating root crops programs, and other special meetings. The triennial regional root crops workshop of the network is being held in 1993.

Access to Relevant Literature

The coordination office will serve as a conduit for linking the region with databases on root crops literature in libraries of universities and research institutes outside the region. SARRNET will also circulate to all NARS the tables of content of recent journals relevant to root crops workers so that the NARS scientists are aware of recent publications and can request photocopies of specific articles. At present NARS are unable to acquire journals because of a shortage of foreign exchange.

Regional Workshops

SARRNET will organize two regional workshops during the life of the network to review past research and plan future research activities.

Exchange Visits

SARRNET will also sponsor exchange visits among scientists of the collaborating NARS.

E. INSTITUTIONAL CAPACITY BUILDING

In many instances research and extension are not adequately linked to allow diagnostic activities, adaptive research, review of research results or impact evaluation. The network's operations use a team approach among donors, national collaborating scientists, extension staff, center scientists and nongovernmental organizations.

For institution capacity building, the network will also help play a role in supporting training and technical assistance for the human resource development of NARS. The operational strategy of SARRNET will develop the capacities of its collaborating scientists and create opportunities for them to contribute to a regional process. This will enable the collaborators to assume greater responsibility in defining, planning, executing and controlling their regional root crops research agenda.

By tapping the comparative advantage of each collaborating program, the network will be able to facilitate involvement of other interested parties among NGOs and the private sector. This will strengthen participating NARS and enhance their ability to respond to the growing concern of the governments for increased use of root crops for food security, especially in drought prone areas.

III. RATIONALE FOR THE NETWORK

Under the aegis of SACCAR (the Southern Africa Centre for Cooperation in Agricultural Research), SARRNET will serve all the SADC member countries, most of which have common root crops problems, similar ecosystems, and in general a lack of financial resources and trained manpower for root crops research. At the initial stage of the project not all the national programs participating in the network will have equal capabilities. The network will therefore differentiate among national programs and identify the ability of each to address problems of common interest.

The network's coordination office is within the SADC/ICRISAT (International Crops Research Institute for the Semi-Arid Tropics) groundnut facility, occupying office space and using ICRISAT's communication services and other facilities. As a result of this arrangement, Malawi, a SADC member country, is benefiting directly from the existing regional network. It would be most cost effective for SACCAR to continue working from this base, with expanded space and facilities for the increased staff proposed in the project.

Support for SARRNET project activities will come from

- ... national root crops research programs and SADC regional projects
- ... USAID's support for regional networking and training activities, supplemented by IDRC and other donors

- ... continuing bilateral support for national root crops research programs, as well as projected new support for selected components of the regional networking activities. (Bilateral support already exists for Malawi (IDRC), Zambia (SIDA) and Angola (CIDA).)
- ... IITA, whose expertise, improved technology, and training facilities will be available to SARRNET
- ... The International Potato Center, whose expertise, collection of advanced germplasm, and training capacity will support sweet potato activities within SARRNET.

A. EXPECTED OUTPUT

Establishing SARRNET to strengthen and support national root crops research programs, identify research results for dissemination, and promote their utilization will

- ... Create a closer linkage among four of the biggest cassava producing countries of the region (Mozambique, Zambia, Tanzania and Malawi)
- ... Enhance the ability of NARS to play a larger role in the efficient implementation and management of network objectives
- ... Enhance the ability of root crops scientists themselves to research their specific constraints
- ... Facilitate exchange of information on improved technologies developed, introduced and tested by NARS and acceptable to farmers and consumers
- ... Establish an effective multiplication and distribution system of improved germplasm in each NARS.

B. INPUTS

1. Inputs from SADC Donors

- ... Rehabilitation of office and laboratory structures at leading host programs for the project scientists
- ... Research equipment and operation costs for projects assigned to individual national programs on behalf of the network and for the operation of their programs
- ... Both long- and short-term technical assistance in areas relevant to the SARRNET project
- ... Educational and instructional materials and supplies

- ... Travel costs for the coordinator, scientists, researchers on exchange missions and participants in short courses and workshops, and evaluation missions
- ... Staff benefits and other project associated costs required by international agreements or local laws.

2. Inputs from IITA

- ... General administrative support for SARRNET activities as well as technical backstopping of the coordinator and scientists in the region, including
 - backstopping for biocontrol activities and release of predators and parasites
 - provision of genetic materials
- ... Short-term consultant missions of IITA scientists in areas not covered by regional expertise
- ... Training of SARRNET scientists in specialized courses at IITA and collaboration at the annual workshops

3. Inputs from CIP

- ... Technical backstopping of sweet potato research by scientists based in Africa, at the center's headquarters in Lima, and elsewhere in the world
- ... Distribution of sweet potato germplasm, coordinated by the regional breeder based in Nairobi
- ... Organization of training in various forms: individual or small group, regional group training, and supervision of thesis research carried out in students' home countries as part of advanced degree programs
- ... Distribution of information and provision of literature searches
- ... Liaison with the coordinator of SARRNET, providing information and arranging backstopping as needed by the national programs
- ... Membership in the SARRNET Steering Committee
- ... Cooperation in the development of plans, project proposals, and other means of strengthening national sweet potato research programs

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4. Inputs from Member Countries

- ... Lead countries will allocate land, office space, experimental fields, personnel, and other resources to establish and/or maintain national root crops research programs intended to fulfill their national research responsibilities and those of the network
- ... SADC root crops researchers will participate fully in SARRNET activities.

C. BENEFITS TO THE NATIONAL PROGRAMS OF THE REGION

SARRNET will have an impact on national root crops research programs by providing them with a well consolidated regional research network. This will bring about a more effective cooperating regional community of dedicated root crops scientists who no longer work in isolation from one another but will share experiences and material. Direct benefits from the creation of SARRNET include

- ... Consolidation of the network already started in the region by ESARRN
- ... Overall guidance and direction in root crops and biological control research throughout the region
- ... Development of a mechanism for attracting additional bilateral donor support for national root crops research
- ... Building up a continuous flow of useful information and genetic material between international centers and national programs
- ... Stimulation of government and potential industrial interest in cassava-based agribusiness, as well as cottage industries for income generation of rural women
- ... Building up a momentum of scientific root crops research that will enable the region to deal with various problems of root crops and thus strengthen the food security situation
- ... Raising the level of expertise of national root crops scientists through in-service and academic training, as well as direct interaction with the regional coordinator and IARC scientists.

In addition to these overall benefits to participating countries, the farmers will benefit directly from the improved technologies and varieties generated within the region as a result of network activities.

IV. PROJECT MANAGEMENT

The SARRNET (Southern Africa Root Crops Research Network) project will be managed through continuous dialogue among the partners involved: SACCAR (Southern Africa Centre for Cooperation in Agricultural Research), IITA (International Institute of Tropical Agriculture), CIP (International Potato Center), participating national cassava and sweet potato programs, and the network coordinator and staff, in consultation with USAID (United States Agency for International Development).

In these discussions compliance with the SACCAR agenda of priorities for action in agriculture research and technology delivery will be followed. The organization and structure of the network will comply with the recommendations made by SACCAR for network structure and management. This entails the formation of a board of governors and a steering committee, and the appointment of a coordinator and assistant coordinator as well as technical and support staff, all of whose responsibilities, along with those of SACCAR, IITA and CIP, are detailed in Annex III. The IITA/SARRNET Workplan, October 1, 1993 - September 30, 1994, is included as Annex IV.

The first phase of this new network will place significantly more emphasis on cassava than on sweet potato. Then, because sweet potato and cassava play analogous roles in cropping systems and in the diets of many people, it will subsequently be efficient to coordinate studies on the two crops, sharing methods, expertise, and certain costs.

SACCAR and IITA will be responsible for the network's overall coordination. IITA will be responsible for backstopping research and training in cassava. In coordination with the SARRNET coordinator and national sweet potato program leaders, CIP will provide backstopping on matters related to sweet potato. The directors of national agricultural research systems (NARS) and SACCAR will be responsible for the policies and priorities. IITA will be responsible for the coordination and day-to-day management of the network. CIP and IITA will work together to develop smooth and auditable procedures for the disbursement of the funds allocated for sweet potato activities.

A. CONTRIBUTIONS FROM THE INTERNATIONAL POTATO CENTER (CIP)

CIP proposes a phased approach to sweet potato activities within SARRNET. Research will initially be focused in four of the member countries--Tanzania, Malawi, Zambia and Mozambique --and in two major research areas: germplasm introduction and evaluation, and baseline studies and impact assessment; and on training.

Germplasm Introduction and Testing

The four priority countries in SARRNET have received material from IITA and other sources in the past, and systems for evaluation have been established. Starting from this point, the testing and introduction from CIP of new sources of germplasm with a broader genetic base are expected to have a

significant impact. At the same time, the local farmers' landraces will continue to be collected and evaluated. Though well adapted to local conditions and tastes, these varieties are often low-yielding because many of them have become infested with viruses.

Each of the participating national programs will receive operating funds to conduct experiments and evaluate results. Germplasm distribution from CIP's global sweet potato breeding program will be coordinated by the CIP breeder, who will visit at regular intervals to review procedures and results. Key collaborators will receive training in the methodology of evaluation. These training exercises will be carried out in collaboration with the national sweet potato breeding programs in SARRNET and elsewhere in Africa.

The next step will be to organize systems for the multiplication of planting material of improved varieties and its distribution to farmers. CIP will work together with national leaders and SARRNET to identify development funds to support such programs, one of which is currently under way in Malawi. Other joint projects covering cassava and sweet potato may be developed on the initiative of NARS and other institutions.

Initially, germplasm evaluation and variety selection will be based on earliness, high dry matter content, and adaptation to environmental stresses, particularly drought and low soil fertility. As the program develops, the selection process will be increasingly focused on constraints and needs determined in baseline studies.

Baseline studies/impact assessment

Baseline studies are critical for identifying potential markets for processed foods and various kinds of feeds. In Africa, sweet potato is primarily consumed in fresh form. In other parts of the world, particularly in Asia, the crop is used as a low-cost raw material for a great variety of products. Many of the processes for making these products can be adapted to conditions in Southern Africa if potential demand is identified and appropriate technology is developed.

Fund for scientists in other research areas

SARRNET and CIP will encourage scientists interested in agronomy, pest management, and other areas of research on sweet potato. A fund has been set aside to provide small grants to individual scientists for particular research projects. Backstopping and information, including literature searches, are freely available to anyone from CIP's regional office in Nairobi.

Training

Progress in sweet potato research is limited by a shortage of scientists with specialized training focused on the crop. The following activities have been identified as priorities in various meetings with NARS representatives:

- ... Participation of four NARS sweet potato scientists per year in one annual joint cassava/sweet potato course. These courses will be organized on themes where technologies for the two crops are closely related such as tissue culture, rapid multiplication, and systems for breeding and selection.
- ... Individual and/or small group training for NARS scientists participating in the sweet potato germplasm research.
- ... Degree training, with thesis research on sweet potato carried out in the candidates' home country.

B. CONTRIBUTIONS FROM THE NATIONAL AGRICULTURAL RESEARCH SYSTEMS (NARS)

The national root crops programs are the key players in the implementation of SARRNET's activities. The network will operate according to the organizational structure of the root crops programs already established within NARS. Each country with a leadership role in the network will appoint a national coordinator who will continue to function within his/her national program but in addition will take on regional responsibilities on behalf of the network. SARRNET will provide support services so that the leader can effectively carry out the regional and national tasks. The NARS to which a lead role has been designated will be backed up by a specialist in that particular area. It is expected that such "focal-point NARS" will:

- ... provide leadership in their respective collaborative research area
- ... collaborate with other NARS scientists in carrying out the network activities
- ... advise the coordinator on matters related to the research activities undertaken on behalf of SARRNET
- ... report on the results obtained as part of their regional activities.

V. BUDGET

The Southern Africa Root Crops Research Network (SARRNET) seeks US\$ 7 million over a period of five years from the United States Agency for International Development (USAID). Tables 5 - 9 present details and breakdown by line items of the funds requested. IITA will work with participating NARS to accomplish the network and country objectives with respect to cassava. CIP will work with NARS to accomplish both network and project objectives with respect to sweet potato.

Table 4. Summary Budget for the Southern Africa Root Crops Research Network (SARRNET)
(USAID funding in US\$ 000)

LINE ITEMS	YEARS					TOTAL
	1	2	3	4	5	
1. SARRNET Coordination Office	365	255	265	248	261	1,394
2. NARS Networking Activities	610	389	416	428	447	2,290
3. Training and Consultancies	140	170	116	142	112	680
4. Collaborating Research Programs	265	200	200	200	200	1,065
5. Sweet Potato Activities (CIP)	91	145	110	112	92	550
6. Central Services Cost (Rows 1-4 x 18.8%)	260	191	187	191	192	1,021
GRAND TOTAL	1731	1350	1294	1321	1304	7,000

Table 5. Budget for the Coordination Office
(IN US\$ 000)

ITEMS	YEARS					TOTAL
	1	2	3	4	5	
A. Coordination Office						
1. Personnel						
(i) Coordinator	95	89	93	98	102	477
(ii) Support Staff	53	58	58	58	62	289
Subtotal	148	147	151	156	164	766
2. Equipment						
(i) Vehicles	45	0	0	0	0	45
(ii) Laboratory Equipment	10	0	0	0	0	10
(iii) Field Equipment	10	0	0	0	0	10
(iv) Office Equipment	15	0	0	0	0	15
(v) Furniture and Appliances	20	0	0	0	0	20
Subtotal	100	0	0	0	0	100
3. Operational Expenses and Management						
(i) Vehicle Insurance, Operation and Management	4	5	5	8	8	30
(ii) Laboratory Supplies	2	2	2	2	2	10
(iii) Data Base Collection and Documentation	40	40	10	0	0	90
(iv) Office Utility and Supplies	4	4	4	4	4	20
(v) House and Office Rent	25	25	30	30	30	140
(vi) Communications	10	10	10	10	10	50
(vii) External Audit	10	0	10	10	0	30
(viii) Evaluation	0	0	15	0	15	30
Subtotal	95	86	86	64	69	400
4. Travel						
(i) International	10	10	15	15	15	65
(ii) Local	5	5	5	5	5	25
Subtotal	15	15	20	20	20	90
5. Information Exchange/Coordination						
(i) Publication and Reports	7	7	8	8	8	38
Subtotal for Coordination Office	365	255	265	248	261	1394
Central Services Cost (18.8%)	69	48	50	47	49	262
TOTAL	434	303	315	295	310	1656

Table 6. Budget for NARS Networking Activities
(IN US\$ 000)

ITEMS	YEARS					TOTAL
	1	2	3	4	5	
B. NARS Networking Activities						
1. Support Staff to strengthen NARS						
(i) Senior Staff (Mozambique)	95	89	93	98	102	477
(ii) Regional Scientists (2) Zambia and Tanzania	100	100	110	110	120	540
(iii) Support Staff	50	55	58	60	65	288
Subtotal	245	189	203	208	222	1305
2. Equipment						
(i) Vehicles	90	0	0	0	0	90
(ii) Rehabilitation of Facilities	80	0	0	0	0	80
(iii) Lab, Field and Office Equipment	50	0	0	0	0	50
(iv) House Rentals and Office Equipment	65	65	75	75	75	355
Subtotal	285	65	75	75	75	575
3. Operational Expenses and Management						
(i) Vehicle Insurance, Operation and Management	15	15	15	20	20	85
(ii) Lab, Field and Office Supplies	10	10	10	10	10	50
(iv) Research Operations	25	25	25	25	25	125
(v) International and Local Travel	30	30	30	30	30	150
Subtotal	80	80	80	85	85	410
TOTAL	610	389	416	428	447	2290
Central Services Cost (18.8%)	115	73	78	80	84	431
TOTAL	725	462	494	508	531	2721

**Table 7. Budget for Network Training and Consultancies for NARS
(IN US\$ 000)**

ITEMS	YEARS					TOTAL
	1	2	3	4	5	
1. Training and Workshop						
1.1 Inservice training within region	10.00	10.00	10.00	10.00	10.00	50.00
1.2 In-country training	10.00	10.00	10.00	10.00	10.00	50.00
1.3 Collaborators meeting	10.00	10.00	10.00	12.00	12.00	54.00
1.4 Degree training	60.00	60.00	36.00	24.00	24.00	204.00
1.5 Visiting scientists	6.00	6.00	6.00	6.00	6.00	30.00
1.6 Regional workshops	0.00	30.00	0.00	30.00	0.00	60.00
1.7 Farmers' training and field days	10.00	10.00	10.00	15.00	15.00	60.00
1.8 Specialized short courses and demonstrations	5.00	5.00	5.00	5.00	5.00	25.00
1. Subtotal	111.00	141.00	87.00	112.00	82.00	533.00
2. Consultancies and Planning						
2.1 Steering Committee meetings	12.00	12.00	12.00	12.00	12.00	60.00
2.2 Board of Governors	7.00	7.00	7.00	8.00	8.00	37.00
2.3 Consulting services with regional experts and universities	10.00	10.00	10.00	10.00	10.00	50.00
2. Subtotal	29.00	29.00	29.00	30.00	30.00	147.00
3. TOTAL	140.00	170.00	116.00	142.00	112.00	680.00
4. Central Services Cost (18.8%)	26.32	31.96	21.81	26.70	21.06	127.84
5. GRAND TOTAL	166.32	201.96	137.81	168.70	133.06	807.84

**Table 8. Budget for Regional Collaborating Research Programs
(IN US\$ 000)**

ITEMS	YEARS					
	1	2	3	4	5	TOTAL
1. Collaborating national research expenses possibly from bilateral support						
1.1 Angola	45	25	25	25	25	145
1.2 Botswana	15	15	15	15	15	75
1.3 Lesotho	10	10	10	10	10	50
1.4 Malawi	30	25	25	25	25	130
1.5 Mozambique	45	25	25	25	25	145
1.6 Namibia	20	20	20	20	20	100
1.7 Swaziland	10	10	10	10	10	50
1.8 Tanzania	50	30	30	30	30	170
1.9 Zambia	20	20	20	20	20	100
1.10 Zimbabwe	20	20	20	20	20	100
1. Subtotal	265	200	200	200	200	1065
2. Central Services cost (18.8%)	50	38	38	38	38	200
3. Total	315	238	238	238	238	1265
4. Grand Total	1640	1205	1184	1209	1212	6450
5. Plus Budget for CIP component	91	145	110	112	92	550
6. Overall Grand Total	1731	1350	1294	1321	1304	7000

**Table 9. Budget for Sweetpotato Activities
(IN US\$ 000)**

DESCRIPTION	YEARS					TOTAL
	1	2	3	4	5	
1. Sweetpotato germplasm introduction and testing						
Operating funds for collaborative research						
Tanzania	4.00	4.00	4.00	4.00	4.00	20.00
Malawi	4.00	4.00	4.00	4.00	4.00	20.00
Zambia	4.00	4.00	4.00	4.00	4.00	20.00
Mozambique	4.00	4.00	4.00	4.00	4.00	20.00
Fund for scientists from other countries	4.00	4.00	4.00	4.00	4.00	20.00
Travel costs for CIP backstopping	3.00	3.00	3.00	3.00	3.00	15.00
Subtotal	23.00	23.00	23.00	23.00	23.00	115.00
2. Baseline studies/impact assessment						
Operating funds for baseline studies in four countries @ 15,000/study	15.0	30.0	15.0	0.0	0.0	60.0
Data analysis and follow-up	0.0	0.0	3.0	3.1	2.0	8.1
Participation by 6 national scientists in two workshops (\$1,500/person)	9.0	0.0	0.0	9.0	0.0	18.0
Travel costs for CIP backstopping	1.5	1.5	1.5	1.5	1.5	7.5
Subtotal	25.5	31.5	19.5	13.6	3.5	93.6
3. Fund for scientists in other research areas	4.5	4.5	4.5	4.5	4.5	22.5
4. Training						
Participation 4 NARS sweetpotato scientists in annual joint cassava/sweetpotato course	6.0	6.0	6.0	6.0	6.0	30.0
Travel costs for CIP resource people	2.0	2.0	2.0	2.0	2.0	10.0
Individual/small group training for NARS scientists collaborating in project #1	4.0	4.0	4.0	4.0	4.0	20.0
Degree training						
1 MSc course in Europe or US with field research in-country	0.0	20.0	7.0	23.0	0.0	50.0
2 MSc courses in African universities with field research	10.0	10.0	10.0	10.0	10.0	50.0
1 PhD course in Europe or US with field research in-country	0.0	20.0	15.0	7.0	23.0	65.0
Subtotal	22.0	62.0	41.0	52.0	45.0	225.0
5. Services (shipping, communications, etc)	2.0	2.0	2.0	2.0	2.0	10.0
Total	77.0	123.0	93.0	95.1	78.0	466.1
CIP overhead @ 18%	13.9	22.1	16.7	17.1	14.0	83.9
Grand Total	90.9	145.1	109.7	112.2	92.0	550.0

BUDGET NOTES

Personnel

The figures budgeted for the coordinator and the agronomist are based on IITA terms and conditions of service for internationally recruited staff. They include salary, health insurance, retirement benefits, initial/terminal travel, cost of living allowance, children and hardship allowances.

The regional agronomist will be recruited according to the terms and conditions of service operational in SACCAR. The package includes salary, health insurance, initial/terminal travel, children's education, contribution to water and electricity, and percentage gratuity of basic salary.

Support Staff

Only the coordination office in Lilongwe will have a secretary, accountant, administrative officer, documentalists, technicians and drivers.

The offices in Maputo, Mansa and Kibaha will have technicians and drivers only. The remuneration package will be in accordance with what other IARCs and NGOs operating in the individual countries are paying.

Vehicles

It is proposed to purchase a four-wheel drive vehicle for each location. In addition, a small vehicle will be bought for Lilongwe to run errands that do not require a four-wheel drive vehicle. Each of the four-wheel drive vehicles is estimated to cost \$30,000, so for four vehicles the total cost will be \$120,000. A small vehicle for Lilongwe is estimated to cost \$15,000.

Laboratory and Field Equipment

For the office in Lilongwe, office and field equipment is already in stock. Some of the office equipment will be handed over by FARRNET, and this will need to be replaced. The offices in Maputo, Kibaha and Mansa will need to establish laboratory and field facilities.

Office Equipment

This budget line item is for assisting in establishment of the offices by acquiring basic office equipment, e.g. computers, telephone, telex and fax machine.

Vehicle Insurance and Operation

This budget line item is for the purchase of comprehensive insurance and license for the vehicle, as well as fuel, spare parts and maintenance.

Laboratory Supplies

Chemicals and glassware will be needed in the laboratories and the charges will be debited against this budget line item.

Baseline Data Collection and Documentation

Since impact assessment is a major objective of the project, baseline data collection will be a major activity. These funds will cover travel, salaries and allowances for the enumerators, data analysis and publication of the results.

Office Utilities and Supplies

The offices will have electricity and water. Stationery will also be needed. The charges for utilities and supplies will be met under this budget item.

House and Office Rent

The coordinator, the agronomist and the two regional agronomists will be provided with rented houses. SARRNET will inherit the present ESARRN office (which is rented) in Lilongwe. The funds set aside under this budget line item will pay for house rent in Lilongwe, Maputo, Kibaha and Mansa as well as office rent in Lilongwe. It is expected that free office and laboratory space will be provided in Maputo, Kibaha and Mansa.

Communication

Communication is vital among the coordination office, the other officers employed by the network, and the NARS collaborating scientists. The funds set aside under this budget line item are to pay for these services.

External Audit

It is expected that the donor will employ external auditors as scheduled in the proposal to ensure that there is compliance with the terms of the grant award. Expenses for the external audit will be met under this budget line item.

Evaluation

The project will have a mid-term review at the end of the third year and an end-of-project review at the end of the fifth year. Both reviews will involve external, IITA and CIP scientists. The travel, per diem and honoraria for the external scientists will be met from the funds set aside under the budget line item.

International Travel

The coordinator, the agronomist and the two regional agronomists will need to pay two visits to IITA every year i.e. during the annual work planning week and during the meeting of collaborators. International travel within the SADC region is also anticipated. The funds set aside under this

budget line item will cover economy class air tickets, airport departure tax, transit charges, per diem, accommodations and local travel.

Local Travel

The scientists are expected to travel extensively within their area of assignment to participate in collaborative research, and technology validation and transfer. The funds set aside under this budget line item will pay per diem, fuel and accommodations.

Publications and Reports

SARRNET is expected to produce semi-annual reports to the donor as well as a newsletter. Two major workshops are planned during the life of the network, and the proceedings will have to be published. The funds set aside under this budget line item will be used to finance these activities.

Rehabilitation of Facilities

It is expected that NARS will provide the three agronomists with laboratory and office space that will need some rehabilitation. Furthermore, the NARS facilities themselves need rehabilitation, the extent of which will vary from one NARS to another.

Training

Provision is made for the following:

- ... in-service training within the region
- ... in-country training
- ... farmers' training and field days
- ... specialized short courses and demonstrations
- ... degree training.

Participants attending the courses outlined above will need funds to pay travel, accommodations, per diem, course materials and fees in the case of degree training. Funds set aside under the above budget line item will cover these expenses.

Visiting Scientists

SARRNET will encourage the exchange of visits by scientists within the SARRNET region or between a country within SARRNET and IITA. The funds set aside will pay for travel, per diem and accommodations.

Collaborators' Meeting

Each year the Root and Tuber Improvement Program (TRIP) organizes a collaborators' meeting at IITA. Funds set aside under this budget line item will support five to eight collaborators from the SARRNET region so that they can travel to IITA to attend the meeting. The funds will cover travel, transit expenses, per diem, lodging and taxes.

Regional Workshops

Two regional workshops are planned during the life of the project which will bring together collaborating NARS scientists to discuss future activities. These funds will cover travel, per diem, transit expenses and lodging for the participants sponsored by the network.

Steering Committee Meetings

The steering committee will meet twice a year. Funds under this budget line item will cover travel, transit expenses, per diem and lodging.

Board of Governors Meetings

The board of governors will meet twice a year and this budget line item will meet expenses similar to those of the steering committee meetings.

Consulting Services with the Regional Experts and Universities

SARRNET will require from time to time the services of regional experts to provide technical backstopping to the collaborating NARS. The honoraria, per diem, travel and lodging will be met from this budget line item.

18.8% IITA Overhead Charges

This is a fee IITA charges for the overhead expenses it incurs in managing the project.

ANNEX I :**SARRNET PHASE I LOGICAL FRAMEWORK**

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVE VERIFIABLE INDICATORS</u> <u>Measures of Goal Achievements:</u>	<u>MEANS OF VERIFICATION</u> <u>Illustrative means:</u>	<u>IMPORTANT ASSUMPTIONS</u>
<u>Program Goal:</u> To increase income and improve household food security for resource-poor farmers in Southern Africa	<ul style="list-style-type: none"> - Real income of resource-poor farmers in the region increases by 2% by the year 2010 - Food availability in resource-poor households increases by 150 calories per capita daily by the year 2010. 	<ul style="list-style-type: none"> - SADC Statistics - SACCAR - SADC Statistics - SACCAR 	<ul style="list-style-type: none"> - Normal climatic conditions prevail in the region.
<u>Project Purpose</u> To increase cassava and sweet potato productivity through the adoption of improved varieties and practices, and the strengthening of national root crops program research capability.	<u>Conditions that will indicate purpose has been achieved:</u> <u>End of project status</u> <ul style="list-style-type: none"> - 5% increase in root crops production. - Have in place a cadre of 300 technicians and 15 research scientists in the region. - 30% of root crops growers adopting improved root crops techniques and have increased income flow. 	<ul style="list-style-type: none"> - Yield measurements and production statistics of target areas/populations. - National program statements. - Output measurements. - NARS annual reports 	<ul style="list-style-type: none"> - Supportive Government policies toward root and tuber crops. - Adequate level of financial support for NARS.
<u>OUTPUTS</u>	<u>MAGNITUDE OF OUTPUT</u>	<u>MEANS OF VERIFICATION</u>	<u>IMPORTANT ASSUMPTIONS</u>
1. An effective collaborative research system supported by NARS and improved efficiency of cassava programs in member countries.	<ol style="list-style-type: none"> 1. Regional research strategy and program articulated and implemented. 2. Increased national support and participation in regional forums. 3. Research capacity strengthened through training. 4. Increase cassava research capacity. Better selection procedures and use of socio-economic and production economic data to set priorities. 5. Regional workshop 	<ul style="list-style-type: none"> - Semi-annual SARRNET reports - Minutes of Steering Directors Committee - Conference/Workshop proceedings - Evaluation Reports - Monitoring Reports - NARS Reports - No. of NARS exchange visits 	<ul style="list-style-type: none"> - NARS will continue to train staff in cassava research - National support for exchange of germplasm and information Research facilities and staff available for regional programs. - Collaboration between research and extension

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2. Improved sweet potato research programs, within regional framework.	<ol style="list-style-type: none"> 1. National research strategies in key countries based on clear goals. 2. Scientists trained to post-graduate level for sweet potato research. 3. Regional goals and strategy formulated for sweet potato research. 	<ul style="list-style-type: none"> - NARS reports - SARENST reports - CIP reports - Degrees completed these distributed. - SARENST reports 	- Support from NARS
3. Regional forums for information exchange.	170 Regional and International collaborators to participate.	- Proceedings of workshop	
4. Improved populations and varieties regionally adapted and acceptable to farmers/consumers (Resistance to cassava mosaic and brown streak virus, cassava mealybug and greenfly).	<ul style="list-style-type: none"> - Disease and insect resistant varieties demonstrating stable high yield, regional adaptability (2 varieties for each country) - Demonstrated on-farm cost benefits for new varieties adopted. - Superior clones and populations distributed in the region. (2 populations of 2000 seeds each per country per year) frequency of desirable genes to increase by 5%. 	<ul style="list-style-type: none"> - Performance monitoring system based upon research reports of specific indicators (semi-annual, evaluation reports) - Regional reports on germplasm entering the region and exchange of germplasm among member countries. - No. of resistant lines selected from the populations. - Research priority plans 	- Establishment of multiplication and distribution system using NGOs.
5. Advanced clones and improved populations of sweet potato introduced, evaluated, released and made available to farmers.	<ol style="list-style-type: none"> 1. Varieties introduced through CIP and from other countries and regional landraces evaluated in four lead country programs, and shared with other SARENST members. 2. In selected countries, crossing blocks may be set up to generate improved populations, and selection procedures developed. 3. Strategies developed for multiplication and distribution. 	<ul style="list-style-type: none"> - NARS reports - SARENST reports - NARS reports 	
6. Strengthened socio-economic capabilities.	<ul style="list-style-type: none"> - Socio-economic surveys characterizing cassava-based farming systems and marketing patterns in 5 countries. - Interview with 500 farmers/country - Harmonized socio-economic research in region and link it with policy and research priority setting. 	<ul style="list-style-type: none"> - Performance monitoring - Surveys 	
7. Baseline/impact studies on sweet potato carried out by interdisciplinary teams; opportunities for expanded utilization and marketing identified.	<ol style="list-style-type: none"> 1. Studies carried out in four countries. 2. Two workshops held; one for planning and methodology, the other for analysis and priority setting. 		

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3. Research plans show results of feed-back from studies.
8. Scientists working in other research areas on sweet potato receive small grants and backstopping.
9. Characterization of post-harvest handling, rural processing and drying methods of cassava.
10. Effective multiplication and distribution of varieties in the region.
11. Composite flours
12. Integrated pest management
1. Proposals submitted and approved by Executive Committee.
2. Research completed and reports submitted.
- Data from socio-economic surveys of cassava processing technologies and utilization in three countries (Zambia, Malawi and Zimbabwe).
 - Acceptability of simple improved processing techniques by 40% of processors.
 - Develop prototype pilot plant in each of 3 countries, (Zambia, Malawi and Zimbabwe).
 - Reduce cyanide content of processed cassava to negligible quantity.
 - Improve shelf life for up to 6 months of processed cassava.
- Survey reports
 - No. of processing machines manufactured and used.
 - No. of new products tested.
- Increased collaboration among 3 tissue culture units in the region.
 - Trained scientists and technicians in multiplication, 15 in each country and enhance distribution of new varieties to farmers.
 - Increased farmer NPO participation in on-farm testing and multiplication 100 per country.
- No. of farmers having adequate planting material.
 - no. of multiplication sites established.
- 4 cassava-based recipes developed
cassava - maize
cassava - soybean
gari
Pure cassava products
- Market surveys and processor interviews
- Types of predators and parasites established
 - Reduction of pest population yield increases of cassava
- Monitoring surveys reports
 - No. of varieties tested

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13. Strengthened National Research System.

Non-degree training for technicians
Monitoring and Evaluation Research and Network management.

- 80 technicians trained in multiplication, processing of cassava.
- 20 trained in socio-economic analysis, surveys and impact assessment.
- 2 in in-country trainings per year
- 1 workshop during the period.
- Interviews, performance monitoring

14. Sweet potato scientists and technicians trained.

1. Individual and small-group training organized by CIP for scientists and technicians working on sweetpotato germplasm.
 - SARRNET reports
 - CIP reports
2. Sweet potato scientists participate in group training organized for both cassava and sweet potato, with resource people from both IITA and CIP.
 - SARRNET reports

INPUTS	IMPLEMENTATION TARGET	MEANS OF VERIFICATION	IMPORTANT ASSUMPTION
1. Technical Assistant staff supported by USAID.	- Coordinator, Agronomist, Socio-economist in place and also documentation specialist.	- Semi-annual SARRNET reports - Steering Committee minutes - Reports and proceedings	- Donor funding available - Adequate IITA backstop.
2. Consultants for benchmark data base and technology Adoption Surveys.	- To complete analysis of benchmark data survey conducted during 1993. - To complete technology adoption survey.	- Conference/workshop - Proceedings - Evaluation report	- NARS will provide adequate staff for regional activities. - Countries cooperate in exchange of germplasm.
3. Technical Training in in-country and at IITA.	- 180 technicians trained in in-country. 8 scientists for specialized training at IITA and regional centres.	- Budget Reports - Survey and data base publication - Increase in NARS technical expertise	
4. Network coordination and functions.	- Steering Committee meets biannually; Conference/workshops meet biannually. Monitoring tours held annually.		
5. Operational supplement to NARS for regional research.	- Ensure NARS have minimal operation support for regional trials annually.		
6. NARS support of regional research in-kind.	- NARS provide staff and facilities to do regional research annually.		
7. End of project evaluation	- Evaluations completed by mid-1996.		

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|---|--|
| 8. IITA technical support and in-kind contribution. | - IITA provides technical advice, consultation and genetic materials as requested in annual work plans. |
| 9. CIP technical backstopping and support to sweet potato programs. | 1. CIP provides sweet potato germplasm and technical backstopping, and channels network funds to SARRNET programs. |
| 10. Bilateral donor support to NARS for cassava research. | - Bilateral donor support to four major cassava producing countries in the region. |

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ANNEX II: STATUS OF CASSAVA AND SWEET POTATO IN MAJOR PRODUCERS OF THE SADC REGION

MOZAMBIQUE

Cassava

Cassava and sweet potato are the two most important root and tuber crops cultivated in Mozambique. They are used both as food for human consumption and as animal feed. Cassava flour is estimated to be used as a basic food by at least 50% of the population while 3% of cassava production is used as feed for animals.

The National Agricultural Research Institute (INIA) is presently identifying better yielding varieties of cassava and sweet potato that are adapted to Mozambique. A multiplication and distribution program was started in 1989. At present there are eight multiplication centers in six provinces. Since the 1984/85 cropping season, a number of selections have been introduced that yielded better than the local varieties. The yields of introduced cassava are in general higher than local varieties but are not as popular as sweet potato varieties. There are sweet local cassava varieties of higher quality in terms of taste that are difficult to surpass with introduced varieties.

Sweet Potato

Sweet potato is generally considered as a standby source of energy by the rural people when there is a shortage of maize, their staple food. However, sweet potato leaves are eaten throughout the year as a vegetable and are also fed to livestock. Accurate data is lacking, but over two million tons are estimated to be produced annually.

Under the Maputo-based root and tuber research program, local and introduced sweet potato germplasm has been evaluated, and several promising lines have been identified. Some of the most widely grown local varieties have been sent to CIP's headquarters in Peru to be cleaned of virus since clean material will permit more realistic comparisons with introduced varieties.

The crop has filled seasonal gaps between maize harvests and provided food in areas where fighting disrupted the normal patterns of production and trade. Sweet potato is expected to play an important role in the recovery of these rural areas.

ZAMBIA

Cassava

Cassava is estimated to provide the main staple food for over two million people in Zambia. As elsewhere in Africa, the ability of cassava to produce useful yields despite drought stress, poor soils and in the absence of fertilizer and other inputs, has made this crop vital to poor subsistence farmers in remote areas. Cassava production in Zambia has

been estimated at 7-16 tons/ha over a 2-3 year growing cycle (a very low yield by world standards) and cassava-dependent subsistence farmers have for some time been living on the borderline of chronic malnutrition.

The plight of these vulnerable farmers became more acute with the appearance in Zambia of two exotic pests of cassava, the cassava mealybug and the cassava green mite. Yield losses due to the green mite have been estimated elsewhere in Africa at 10-30% of tuber yields. The mealybug is an even more serious pest which can cause 60-100% crop losses.

Pesticides can, technically, be used to contain the pests, but both require frequent applications of highly toxic products, which is both ecologically and socially unsound as well as financially impracticable for subsistence farmers. Sources of plant resistance to the pests have been identified, but the strengthening of this resistance and its incorporation into high yielding, widely accepted varieties of cassava will be a long-term undertaking. Research on cultural practices has shown that rapidly growing cassava varieties planted early in the wet season suffer minimum losses. However, social, economic and family labor constraints make it very difficult for subsistence farmers to adopt these practices.

In 1986 a major program was instituted for a country-wide biological assault against both cassava pests. With services from IITA including staff training, technical assistance, and a substantial supply of natural enemies, especially the parasite E. lopezi, the cassava mealybug has now been brought under control.

Sweet Potato

Sweet potato is grown in a belt which runs through the northern provinces of Zambia, where it is an important secondary food crop, eaten as a complement to the staples. The zone is on a plateau over 1,100 meters above sea level and has a long, cool, dry winter season. Under these conditions, both sweet potato and cassava mature slowly and yields are relatively low.

The Root and Tuber Improvement Program has collaborated with IITA/ESARRN and with CIP to evaluate both local and introduced sweet potato germplasm. A number of promising clones have been identified. Pest and disease surveys have been carried out, and some information on the socio-economic conditions of the crop has been collected. Adaptive on-farm research on sweet potato varieties and agronomic practices has also been conducted.

TANZANIA

Cassava

Cassava was first introduced into Tanzania through Zanzibar, where it was regarded as an important staple in the 19th Century. The British colonial administration in the

1920s encouraged the cultivation of cassava as a food security crop. It has now spread to almost all parts of Tanzania, and an estimated five million tons are produced annually.

Cassava is mainly produced by subsistence small farmers, representing above 70% of the total population. Planting material is taken from mature plant stem cuttings. Harvest can take place after seven to eight months, but the crop is often left for longer times until it is required.

Its production is determined not only by preferences, but also by soil, rainfall and planting area. Cassava roots are harvested by pulling the stem up until the whole plant is uprooted. As cassava roots deteriorate very fast, immediate processing is important, so cassava is harvested just before it is required for consumption.

There are many traditional processing methods, sometimes with small variation even among neighboring households. There are four main methods: production of flour for ugali (a kind of porridge), boiling, roasting and frying. For preparation of ugali the cassava roots are peeled, chipped and dried. The dried root is then pounded into flour. Alternatively, cassava roots are fermented, in the open air, in a gunny sack or rough cloth or in water.

Women do most of the processing of cassava. The process relies on traditional lore and skills particularly in the peeling, since the quality of cassava products critically depends on the period between uprooting and peeling. In areas where hammer mills are not available for making flour, a stone grinder or wooden mortar and pestle must be used.

Although most cassava in Tanzania is grown by subsistence farmers, some is marketed, usually outside the official government channels.

Sweet potato

Tanzania is the most important sweet potato producer of the SADC countries. In the west of the country, the crop is a co-staple with maize, bananas and cassava. Its relative importance is increasing due to devastating pests of the latter two crops. In the southern highlands, it is an important secondary food, and in the north central and eastern zones, sweet potato is grown commercially for urban markets.

Research in Tanzania on sweet potato has been going on since the 1950s. Under the Tanzania Root Crops Improvement Program, activities on cassava and sweet potato are also carried out at four research stations and in farmers' fields. The major objectives of the Tanzania Root Crops Improvement Program are to develop high yielding varieties that are resistant to major pests and diseases, generate improved agronomic practices, develop improved root crops-based farming systems, and develop appropriate storage, processing and utilization methods.

The root and tuber crops program has received support from IITA and ESARRN and since 1988 from CIP, which helped to

arrange a bilateral grant to improve facilities and support sweet potato research. Recent activities include a national socio-economic survey combined with the collection, characterization, and evaluation of landraces found in farmers' fields. Work continues in breeding, agronomy and pest and disease management.

ZANZIBAR

Root and tuber crops constitute a major part of the diet of the people of Zanzibar. Out of a total of approximately 200,000 hectares of arable land, about 55,000 - 70,000 hectares are planted to root crops. Cassava is most popular, followed by sweet potato, yams and cocoyams.

Cassava is produced in almost all areas of the island. Production is mainly by small farmers, who own on the average of 0.25ha. Planting occurs twice in May-July and October-November. Sole cropping as well as intercropping is practiced with sweet potato. The yield per hectare in farmers' fields is 6-8 tons, though yields of up to 25 tons/ha have been obtained with improved varieties.

High yielding cassava varieties that are well adapted to the cropping systems of the island have been identified. By using rapid multiplication techniques the selected clones were bulked up at six strategic sites. A total of 24 villages involving about 250 farmers have benefited from the distribution of the cuttings.

MALAWI

The agricultural sector in Malawi provides a livelihood for nearly 90% of the population, many of whom live at subsistence levels. During the drought of 1991/92 the Government of Malawi issued the following policy statement:

"Root and tuber crops are important, especially as a source of food and cash. Even in areas where maize is the staple food, root and tuber crops are an important food supplement. They are particularly important as food security crops in seasons of drought, and survive relatively well in marginal soils."

Small farmers in Malawi depend upon root crops, especially cassava and sweet potato, as a dietary supplement and a major source of energy and nutritional requirements. Cassava is second only to maize as a source of dietary carbohydrates. Sweet potato, along with cassava, is generally regarded as an essential complement to maize production for maintaining household food security.

The Malawi National Root Crops Improvement Programme, which has officers at several research stations located throughout the country, has benefited from a close association with the regional office of IITA/ESARRN. Spurred by the recent drought, the national program, IITA/ESARRN and a number of NGOs collaborated on a large-scale program for the

multiplication and distribution of planting material for both sweet potato and cassava. Other lines of research include studies of intercropping, time of harvest, consumer acceptance, and ecologically sustainable plant protection. IITA has collaborated in the development of a tissue culture lab to facilitate the introduction of germplasm and virus clean-up.

A preliminary post-drought survey of farmers in Lilongwe Agricultural Development Division revealed that more than 70% of farmers grew cassava and sweet potato for both food and cash. In terms of hectarage under cultivation, the area cultivated for both crops jointly is second to maize.

While farmers are convinced about the productivity of improved varieties, the availability of planting material remains a leading constraint.

ANNEX III: ORGANIZATIONAL/INDIVIDUAL RESPONSIBILITIES

Board of Governors

The Board of Governors shall be the listed authority governing SARRNET whose composition and funding have been described by SACCAR as follows:

- (i) The Board of Governors shall consist of not more than 16 Governors appointed as follows:
 - (a) each Member State shall appoint its National Director of Agricultural Research or equivalent office holder to the Board. Such Governor shall hold office for as long as he retains appointment in his own country as the Director of Agricultural Research or equivalent office;
 - (b) six Governors shall be elected by the Board from among the Deans of Agriculture of the Faculties of Agriculture of the Member States of SADCC. They shall hold office for a term of three years provided they retain their appointments as Deans of Faculties of Agriculture. Initially, one shall be elected for two years, one for three years and one for four years. In the event of any one of them resigning from his office as Dean or dying whilst a Dean of the Faculty of Agriculture, his successor in office shall automatically succeed to the Board and serve the unexpired term of membership of the Board;
 - (c) two Governors shall be elected by the Board from within the SADCC countries. They shall have proven competence in the objectives and some area of the activities of SACCAR and have had experience in a SADCC country. They shall be elected for three years and may be re-elected for a second three-year term. Initially, one shall be elected for three years and one for four years.
 - (d) the Director of SACCAR shall be ex-officio a member of the Board of Governors and Secretary to the Board. He shall be a member with a voice but without a vote at meetings of the Board;
 - (e) a substitute shall not act on behalf of a Governor at a Board meeting or Executive Committee meeting.

(ii) Powers of the Board of Governors.

The Board of Governors shall:

- (a) elect a Chairman from the Member State responsible for coordinating agricultural research and a Vice-Chairman from among its membership for such period as it deems appropriate;
- (b) establish and adopt rules and regulations for the conduct of its meetings and the general governance

of SACCAR. All decisions of the Board shall be taken by consensus. Two thirds of the membership shall constitute a quorum for a meeting. The Board shall hold regular meetings every year at such time and place as it shall determine. It may hold special meetings if it so decides or at the request of one third of the membership of the Board, or at the request of the Chairman;

- (c) consider and approve SACCAR's programme of work developed by the Director;
- (d) consistent with generally recognized accounting principles, establish and adopt the general guidelines for the preparation of regular budgetary estimates and for the regulation of the financial affairs of SACCAR;
- (e) examine and recommend to the Council of Ministers the regular budgetary estimates of SACCAR;
- (f) recommend to the Council of Ministers the external auditors for the annual audit of the SACCAR accounts and financial transactions;
- (g) submit annually within a period of three months after the end of each fiscal year a report on the activities of SACCAR for that year, including a financial statement of SACCAR and the auditor's report thereon;
- (h) the Board shall make appointments to SACCAR, and shall do so to the extent possible by recruiting from Member States of SADCC on as wide a representational basis as possible;
- (i) appraise SADCC agricultural research activities.

(iii) Legal, Political and Logistic Support

SACCAR, the research arm of SADC, shall provide the legal and political umbrella for SARRNET. SACCAR's main task will be to facilitate the provision of support services as may be necessary in order to assist the coordinator and the NARS leaders in the design, planning, monitoring and implementation of the network's program.

The responsibilities of SADC/SACCAR will be as follows:

- * to convene meetings of the Board of Governors.
- * to participate through the Board of Governors in the execution of network activities.
- * to draw up the memorandum of understanding among all parties involved (SACCAR, IITA, NARS) to formally establish the network to enable its effective functioning.

- * to provide assistance for obtaining donor support where required.
- * to secure, in close interaction with IITA, CIP, the Coordinator, and NARS, the overall political support of the regional network activities, particularly workshops, seminars and other activities which will help promote the rapid and continuous interchange and utilization of scientific and technical information in the SADC region.

The Steering Committee (SC)

The Steering Committee of SARRNET is formed by the heads of the national cassava/sweet potato programs of each collaborating country, the SARRNET coordinator and his assistant. IITA, CIP and USAID are also members.

The SC serves as the technical arm of SARRNET. To achieve its objectives, it acts as follows:

- (a) Prepares and submits medium- and long-term plans for sweet potato and cassava-based research for the consideration and approval of the Board of Governors.
 - (b) On the basis of long-term plans, prepares and submits on a timely basis, annual programs and budgets for the Board of Governors.
 - (c) Executes approved annual plans and submits quarterly and annual reports through the office of the coordinator, quarterly reports to be submitted in November, February, May and August of each year.
 - (d) Prepares new projects to further strengthen SARRNET.
 - (e) Carries out other activities as requested by the Board of Governors from time to time.
 - (f) Appoints a chairman of the meeting to serve for a period of one year. The chairman is appointed on a rotational basis and on alphabetical order of the name of the member countries. The chairman conducts the meetings of the SC.
- (iv) The Steering Committee (SC) meets twice a year during the months of February and August. The major objective of the meetings is to examine the results of research and other activities carried out during the previous agricultural year and on the basis of those results to develop a work plan for the next agricultural year. The second (August) meeting is mainly to examine progress of the network activities during the previous agricultural season.

- (a) For the analysis of progress made, each country presents a written report on the previous year.
- (b) Extraordinary meetings of the SC may be called, in case important issues develop. The meetings may be called by the Coordinator at the request of two-thirds of the number of SC members.
- (c) The venue of the meetings rotates among the SARRNET member countries in the form of one meeting per country following the alphabetical order of the name of the member countries.
- (d) A quorum is established as half plus one the number of the SC members.
- (e) The Secretary of the SC meeting is the Coordinator.

The SARRNET Coordinator

- (a) The network Coordinator will be appointed by the executing agency and shall be ratified by the director of SACCAR on behalf of the Board of Governors.
- (b) The Coordinator attends the SC meetings as an inherent member and as a resource person and provides active support to their deliberations.
- (c) The Coordinator is the liaison between the Board of Governors and the SC.
- (d) ...is directly accountable to the Board of Governors of SARRNET.
- (e) ...is responsible for the proper organization and functioning of the SARRNET coordination office and provides dynamic and professional service or effective and efficient implementation of its assigned responsibilities.
- (f) The Coordinator serves as the facilitator in the preparation and execution of annual programs at national and regional levels.
- (g) ...prepares and submits for approval by the Board of Governors an annual work plan including visits to member countries.
- (h) ...organizes or helps to organize training, workshops, and seminars in relation to the mandate crops of the network.
- (i) ...assists national programs in identifying and procuring materials and services relevant for the execution of SARRNET activities.
- (j) ...organizes the meeting and field visits of the DC and SC.

- (k) On the basis of reports received from the national program leaders , CIP and IITA, the Coordinator prepares annual consolidated technical and financial reports for submission to the board of governors .
- (l) The Coordinator prepares and submits on a timely basis, a quarterly report and annual report of SARRNET activities to the Board of Governors.
- (m) ...maintains close contact with the Director of SACCAR, National Directors of Research of member countries and members of the SC.
- (n) ...assembles and maintains an up-dated database of network activities.
- (o) ...carries out other activities as required by the board of governors and/or the Director of SACCAR.
- (p) ...serves as a liaison officer with CIP's regional office, facilitating planning and the flow of information.

The Assistant Coordinator

- (a) The network assistant coordinator will be appointed by the executive agency and ratified by the director of SACCAR on behalf of the board of governors.
- (b) The assistant coordinator attends the meetings of the SC and acts as a resource person.
- (c) The assistant coordinator who will be the agronomist based in Mozambique is directly accountable to the SARRNET Coordinator.
- (d) Follows up the implementation and development of the research training and technology transfer activities of the national programs planned by the SC and approved by the board of governors.
- (e) Serves as a technical adviser to the national program scientists.
- (f) May prepare research projects on cassava which, after being included in the workplan and approved by the board of governors, could be carried out in collaboration with the national program scientists or directly by himself or herself.
- (g) Prepares reports on training courses, seminars, workshops and visits to SARRNET programs.
- (h) Carries out other activities as requested by the coordinator.

The International Institute of Tropical Agriculture (IITA)

- (a) Provides technical backstopping in the planning, implementation, monitoring and/or evaluation of research programs in cassava by the multidisciplinary teams in the region.
- (b) Participates actively in collaborative research with NARS scientists in cassava and sweet potato.
- (c) Facilitates the implementation of training programs of network scientists and technicians.
- (d) Makes available its facilities and expertise in procuring materials and services to the network.
- (e) Assists in identifying and recruiting a network coordinator as and when requested by the board of governors.
- (f) Assists in any other matter that strengthens the effectiveness of SARRNET.

The International Potato Center (CIP)

- (a) Provides technical backstopping in the planning, implementation, monitoring, and evaluation of research programs on sweet potato within the network.
- (b) Facilitates the implementation of training for sweet potato scientists.
- (c) Provides literature and information to sweet potato scientists.
- (d) Within a framework of open communication, cooperates with the SARRNET Coordinator, SACCAR and IITA to assist in any other matter to support the effectiveness of sweet potato research and technology transfer within SARRNET.

Technical Reporting

Technical reporting on training and regional research activities will take the form of semi-annual narrative reports and annual technical reports to the donors and participating national program directors. Such reports will be reviewed during the evaluation.

All publications emanating from the project shall be subject to the approval of all the parties involved. Recognition will be given to the funding agencies.

Consultants

IITA/SACCAR will assist in the selection and recruitment of consultants. The appointment of short-term consultants

will be the responsibility of the SARRNET coordinator in consultation with the donors.

Financial Management

(a) Management of Network Funds by Network Coordinator

All funds for network activities will be managed and accounted for by the International Institute of Tropical Agriculture, the International Potato Center and the Coordination Office. Funding in support of national program development will be disbursed directly to participating countries by IITA and CIP as recommended by the coordinator. Disbursements will be made according to the approved budget and in tranches, following receipt of financial statements on expenses previously incurred or by other forms that would be recommended by the steering committee and approved by SACCAR. Reimbursement from the donors will be requested accordingly.

(b) Management of Research Funds By NARS

The network coordinator will be responsible for the day-to-day management of operating and research funds of the coordination base by means of an imprest account. Based on the submission of expense claims, IITA will replenish the funds. The preparation and submission of financial statements will be the responsibility of the IITA staff. The program accountant will handle salaries and allowances for project staff.

Program Evaluation and Audits

At least two evaluations will be conducted during the five year life of the project. A mid-term in-house review will assess progress on the workplan. It will be shared with donors and national program directors. A final evaluation will be conducted by donor, CIP and IITA representatives or designees, in conjunction with participating country officials. This review will assess project accomplishments and determine the capability of the national programs to assume a larger role in the network. To the extent practicable, the evaluation will assess the impact of research and networking activities on crop production.

Financial audits of the project will be carried out as required by the donors.

Staffing of the Network

International Staff

The network shall hire two internationally recruited staff according to IITA policies. These two scientists will include:

(a) The network coordinator

The network coordinator shall be hired internationally and will be based at the headquarters of the network at

Chitedze Research station in Lilongwe, Malawi. The coordinator who shall hold a Ph. D. in Plant breeding or Agronomy of root crops shall be assisted by the following staff who shall be locally recruited in Malawi:

- * Administrative Officer
- * Documentation Specialist
- * Secretary
- * Accountant
- * Technicians
- * Drivers
- * Messengers

The network coordinator will have overall responsibility for the network and will work closely with cassava and sweet potato research specialists in the SADC Member countries to advance both network and individual country project objectives. The terms of reference for the network coordinator are shown in Annex IV.

(b) Agronomist

An agronomist for the network will be recruited internationally and shall be posted to the Instituto Nacional Investigacao Agronomica (INIA) in Maputo, Mozambique. The Agronomist shall hold a Ph. D. degree in agronomy and shall work closely with root crops research scientists in Mozambique and shall collaborate with scientists in other countries. With peace in Mozambique many refugees are returning home, and the demand for planting materials is very high. The agronomist shall work with the NARS in Mozambique to mobilize the many donor initiatives in Mozambique to improve cassava and sweet potato production in the country.

The agronomist shall be assisted by two technicians recruited locally. All other administrative backup shall be provided by the IITA-SADC Cowpea Project, whose headquarters are located at INIA in Maputo.

The SARRNET project staff will be responsible for coordinating collaborative field research activities in the region. Provision will be made for regular consultations with the appropriate IITA/CIP/SACCAR scientists through field visits and other appropriate levels of interaction.

Selected materials which have been adapted to the major agro-ecological zones and have shown high stable performance can be rapidly multiplied for distribution to farmers. These lines will also be used as parent material for population improvement. Such improved populations consisting of regionally-adapted germplasm with a high level of desirable genes will be shared with other national programs for cyclic selection and recombination to upgrade the breeding population.

c. Regional Scientists

The network shall hire two regional scientists who shall preferably be recruited from member countries of the SADC region. The regional scientists shall be hired by IITA but

shall be governed by the terms and conditions of service operational in SACCAR. The regional scientists shall be stationed in Tanzania and Zambia. Their terms of reference shall be similar to those for the agronomist to be stationed in Mozambique.

(i) Regional Scientist for Tanzania:

He or she shall have a Ph.D. degree in plant breeding/agronomy and shall be stationed at the Sugarcane Research Institute at Kibaha outside Dar es Salaam where IITA/IRRI INGER Regional program scientists are also located. He or she shall be assisted by two technicians who shall be locally recruited and shall receive administrative backstopping from the staff of the center.

The scientist shall work in collaboration with cassava research scientists in Tanzania mainland and Zanzibar to advance both network and country specific objectives.

(ii) Regional Scientist for Zambia:

He or she shall have a Ph. D. degree in agronomy/plant breeding and shall be stationed at Luapula Research Station at Mansa in Zambia. The scientist shall be assisted by two locally recruited technicians, and administrative backstopping shall be provided by the Swedish funded Svalof project. The scientist shall work in collaboration with root crops research scientists in Zambia, Angola and Zimbabwe to advance both network and individual country objectives.

ANNEX IV

**IITA/SARRNET WORKPLAN
OCTOBER 1, 1993 -
SEPTEMBER 30, 1994**

Month	Activity	Location	Implementors
<u>I. Research Networking</u>			
October/ March	ESPP of CM & CGM Survey of pests and their enemies (exotic and natural). Determine varietal differences or preferences of the pests. Determine the effect of cultural practices on population dynamics in various agroecologies.	Tanzania/ Malawi/ Zambia/ Mozambique	NARS/ SARRNET/ CIP/ PHMD
June/ August	Evaluate effectiveness of the pest management package (cultural, biological, genetic and biotechnological).		
<u>Development of Processing Technology</u>			
October/ February	Baseline data collection. Characterization of processing and products of the target group (input use, processing equipment, end products, storage structures).	Malawi/ Zambia/ Zimbabwe/ Tanzania	NARS SARRNET U of Z U of M
	Based on the analysis of data, determine the most probable supplementary product to be promoted and accepted. Introduction of processing equipment. Analyse the data collected on the performance of different processing equipment introduced with regard	Malawi/ Zambia/ Zimbabwe Tanzania	

to acceptability and feasibility.

March/ August	Characterize and quantify characteristics of processed products from traditional and introduced equipment.	Malawi/ Zambia/ Zimbabwe Tanzania
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Impact Assessment

October/ August	Collect primary data on root crops varieties using appropriate indicators (varieties used, adoption rate, production input, yield, net income from crops). Purpose: Keep track of overall performance of project implementation and determine if objectives are being achieved.	All Collat orators	NARS/ IITA/SARRNET SOCIO-ECON
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Germplasm development
and distribution

Based on NARS priorities, advanced lines with desirable traits will be recombined and the advanced populations with high level of desirable genes will be distributed. Special focus is on mid-to high-altitude adoption, cool and dry ecologies.	Malawi/ Zambia	NARS/ SARRNET
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From multilocal testing, analysis for G X E will be noted in order to assist in the selection of parents for the target agroecology.

Rapid Multiplication
and distribution

October/ January	Establish five primary sites in strategic areas for the rapid increase of healthy planting material using the Malawi experience.	All collaborating countries	SARRNET/ NGOs/ MNRICP
November/ December	Establish secondary sites in several locations close to primary sites.	"	"
	Distribution of planting material to farmers and secondary multipliers (sweet potato).	"	"

II. Meetings/Workshops

November	Workshop on implementation of the SARRNET Proposal.	Maputo	SC/NARS/IITA SARRNET SACCAR
February	Consultation meeting work planning week.	IITA	SARRNET Coordinator Regional Scientists
March	Monitoring of network trials.	All Collaborators	NARS/ Donors
June	Collaborators meeting to exchange results, ideas and plan trials.	Malawi	NARS/ SARRNET

III. Training

October/ November	Zambia Root Crops Production and post harvest in-country training.	Zambia	NARS/ SARRNET/IITA Resource persons
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January	Recruit for in-service training as in proposal.	Region	NARS/ SARRNET
January	In-country rapid multiplication of planting materials and field plot management training.	Malawi	Coordinator Resource persons
May	Farmer training on rapid multiplication of cassava and sweet potato planting materials.	Collaborating Countries	Coordinator NARS Team Leaders
April/ May	In-country training on root crops production technology and transfer.	Zanzibar	NARS team Leader SARRNET Coordinator IITA
June	Regional In-service training (R & T production and tissue culture).	Malawi	NARS/ SARRNET
<u>IV.</u>	<u>Technical Backstopping</u>		
	Consultation visit to SARRNET by:	Malawi	ICP/TRIP
October/ February	1. International Cooperation to discuss management and personnel matters.		
April/ August	2. TRIP & Post-harvest unit to discuss regional strategy for population improvement and consultation on post-harvest problems.		
<u>V.</u>	<u>Information Exchange</u>		
December/ January	SARRNET Newsletter prepared and circulated.	Malawi	Coordinator
March April	Semi-Annual Report	Malawi	Coordinator

VI

Visits to collaborating
countries

- Zimbabwe
- Zambia
- Mozambique
- Tanzania

Coordinator

STANDARD PROVISIONS FOR
GRANTS TO PUBLIC INTERNATIONAL ORGANIZATIONS/1

- | | |
|----------------------------------|--|
| 1. Allowable Costs | 9. Publications |
| 2. Refunds | 10. Audit & Records (Select and include only the applicable version as specified in the applicability statement of the provision.) |
| 3. Revision of Grant Budget | |
| 4. Termination Procedures | |
| 5. U.S. Officials Not to Benefit | |
| 6. Nonliability | |
| 7. Amendment | |
| 8. Notices | 11. Payment (Select and include only the applicable version as specified in the applicability statement of the provision.) |

\1 Incorporates revisions through TM 13:59 (11/06/91)

1. ALLOWABLE COSTS (July 1988)

(a) The grantee shall be reimbursed for costs incurred in carrying out the purposes of this grant which are reasonable, allocable, and allowable.

(1) Reasonable shall mean those costs that do not exceed those which would be incurred by an ordinarily prudent person in the conduct of normal business.

(2) Allocable shall mean those costs which are necessary to the grant.

(3) Allowable shall mean those costs which are reasonable and allocable, and which conform to any limitations set forth in this grant.

(b) Prior to incurring a questionable or unique cost, the grantee is encouraged to obtain the grant officer's determination as to whether the cost will be allowable.

2. REFUNDS (July 1988)

(a) The grantee is encouraged to utilize interest bearing accounts where feasible and shall remit to A.I.D. all interest earned on funds provided by A.I.D.

(b) Funds obligated by A.I.D. but not disbursed to the grantee at the time the grant expires or is terminated shall revert to A.I.D., except for such funds encumbered by the grantee by a legally binding transaction applicable to this grant. Any funds advanced to but not expended by the grantee at the time of expiration or termination of the grant shall be refunded to A.I.D. except for such funds encumbered by the grantee by a legally binding transaction applicable to this grant.

(c) If, at any time during the life of the grant, or as a result of final audit, it is determined that A.I.D. funds provided under this grant have been expended for purposes not in accordance with the terms of this grant, the grantee shall refund such amount to A.I.D.

3. REVISION OF GRANT BUDGET (July 1988)

(a) The approved grant budget is the financial expression of the grantee's program as approved during the grant award process.

(b) The grantee shall immediately request approval from the grant officer when there is reason to believe that within the next 30 calendar days a revision of the approved grant budget will be necessary for any of the following reasons:

(1) To change the scope or the objectives of the project and/or revise the funding allocated among project objectives.

(2) Additional funding is needed.

(3) The grantee expects the amount of A.I.D. authorized funds to exceed its needs by more than \$5,000 or five percent of the A.I.D. award, whichever is greater.

(c) Except as required by other provisions of this grant specifically stated to be an exception from this provision, the Government shall not be obligated to reimburse the grantee for costs incurred in excess of the total amount obligated under the grant. The grantee shall not be obligated to continue performance under the grant (including actions under the "Termination Procedures" provision) or otherwise to incur costs in excess of the amount obligated under the grant, unless and until the grant officer has notified the grantee in writing that such obligated amount has been increased and has specified the new grant total amount.

4. TERMINATION PROCEDURES (July 1988)

This agreement may be terminated, in whole or in part, by either party at any time upon 30 days written notice of termination. Upon receipt of and in accordance with a termination notice from the grant officer, the grantee shall take immediate action to cease all expenditures financed by this grant to cancel all unliquidated obligations if possible. Further, upon receipt of notice of termination, the grantee shall not enter into any further obligations under this grant. Except as provided below, no further reimbursement shall be made after the effective date of termination. The grantee shall within 30 days of the effective date of termination repay to the Government all unexpended A.I.D. funds which are not otherwise obligated by a legally binding transaction applicable to this grant. Should the funds paid by the Government to the grantee prior to the effective date of termination be insufficient to cover the grantee's obligations in a legally binding transaction, the grantee may submit to the Government within 90 days after the effective date of termination a written claim for such amount. The grant officer shall determine the amount(s) to be paid by the Government to the grantee under such claim in accordance with the "Allowable Costs" provision of this grant.

5. U.S. OFFICIALS NOT TO BENEFIT (July 1988)

No member of or delegate to the U.S. Congress or resident U.S. Commissioner shall be admitted to any share or part of this grant or to any benefit that may arise therefrom.

6. NONLIABILITY (July 1988)

A.I.D. does not assume liability for any third party claims for damages arising out of this grant.

7. AMENDMENT (July 1988)

The grant may be amended upon mutual consent of the parties by formal modifications to the basic grant document or by means of an exchange of letters between the grant officer and an appropriate official of the grantee.

8. NOTICES (July 1988)

Any notice given by A.I.D. or the grantee shall be sufficient only if in writing and delivered in person, mailed, or cabled as follows:

(a) To the A.I. D. grant officer, at the address specified in the grant;

(b) To grantee, at grantee's address shown in the grant or to such other address designated within the grant.

Notices shall be effective when delivered in accordance with this provision, or on the effective date of the notice, whichever is later.

9. PUBLICATIONS (July 1988)

(a) If it is the grantee's intention to identify A.I.D.'s contribution to any publication resulting from this grant, the grantee shall consult with A.I.D. on the nature of the acknowledgement prior to publication.

(b) The grantee shall provide the A.I.D. project officer with one copy of all published works developed under this grant and with lists of other written work produced under the grant.

(c) Except as otherwise provided in the terms and conditions of the grant, the author or the recipient is free to copyright any books, publications, or other copyrightable materials developed in the course of or under this grant, but A.I.D. reserves a royalty-free nonexclusive and irrevocable right to reproduce, publish, or otherwise use, and to authorize others to use the work for U.S. Government purposes.

10. AUDITS and RECORDS (Standard) (March 1992)

(a) The Grantee shall furnish A.I.D. such information and reports relating to the Project and to this Agreement as A.I.D. may reasonably request.

(b) The Grantee shall maintain accounting books, records, documents, and other evidence relating to the Project and to this Agreement, adequate to show, without limitation, all costs incurred under the Grant, the receipt and use of goods and services acquired under the Grant, the costs of the Project supplied from other sources, the nature and extent of solicitations of prospective suppliers of goods and services acquired, the basis of award of contracts and orders, and the overall progress of the Project toward completion ("Project Books and Records"). At the Grantee's option, with approval by A.I.D., Project books and records will be maintained in accordance with one of the following methods: (1) generally accepted accounting principles prevailing in the United States, (2) generally accepted accounting principles prevailing in the country of the grantee, (3) standards committee (an affiliate of the International accounting standards committee) (an affiliate of the International Federation of Accounts), or (4) such

other accounting principles as the parties may agree to in writing. Project books and records shall be maintained for at least three years after the date of last disbursement by A.I.D.

(c) If Dols. 25,000 or more is disbursed directly to the Grantee in any one calendar year under the Grant, the Grantee, except as the Parties may otherwise agree in writing, shall have financial audits made of the funds disbursed to the Grantee under the Grant in accordance with the following terms.

(1) The Grantee shall select an independent auditor in accordance with the "Guidelines for Financial Audits Contracted by Foreign Recipients" issued by the A.I.D. Inspector General ("Guidelines"), and the audits shall be performed in accordance with the "Guidelines".

(2) An audit of the funds provided under the Grant shall be conducted for each fiscal year of the Grantee. The audit shall determine whether the receipt and expenditure of the funds provided under the Grant are presented in accordance with generally accepted accounting principles agreed to in section (b) above and whether the Grantee has complied with the terms of the Agreement. Each audit shall be completed no later than one year after the close of the Grantee's fiscal year.

(d) The Grantee shall submit an audit report to A.I.D. within 30 days after completion of each audit arranged for by the Grantee in accordance with this section. The A.I.D. Inspector General will review each report to determine whether it complies with the audit requirements of this Agreement. Subject to A.I.D. approval, costs of audits performed in accordance with the terms of this section may be charged to the Grant. In cases of continued inability or unwillingness to have an audit performed in accordance with terms of this section, A.I.D. will consider appropriate sanctions which include suspension of all or a portion of disbursements until the audit is satisfactorily completed or A.I.D. performs its own audit.

(e) The Grantee shall submit to A.I.D., in form and substance satisfactory to A.I.D., a plan by which the Grantee will ensure that funds made available to sub-recipients that receive Dols. 25,000 or more in any one calendar year under the Grant are audited in accordance with this Agreement. The plan should describe the methodology to be used by the Grantee to satisfy its audit responsibilities with respect to any sub-recipients or on appropriate procedures performed by the internal audit or program staff of the Grantee, by expanding the scope of the independent

financial audit of the Grantee to encompass testing of sub-recipients' accounts, or by a combination of these procedures. The plan should identify the funds made available to sub-recipients that will be covered by audits conducted in accordance with other audit provisions that would satisfy the Grantee's audit responsibilities (a nonprofit organization organized in the United States is required to arrange for its own audits; a for profit contractor organized in the United States that has a direct contract with A.I.D. is required to arrange for its own cognizant Grantee contracting agency). The Grantee shall ensure that appropriate corrective actions are taken on the recommendations contained in the sub-recipients audit reports; consider whether sub-recipients' audits necessitate adjustment of its own records; and require each sub-recipient to permit independent auditors to have access to records and financial statements as necessary.

(f) A.I.D. may, at its discretion, perform the audits required under this Agreement on behalf of the Grantee by utilizing funds under the Grant or other resources available to A.I.D. for this purpose. The Grantee shall afford authorized representatives of A.I.D. the opportunity at all reasonable times to audit or inspect the Project, the utilization of goods and services financed by A.I.D., and books, records and other documents relating to the Project and the Grant.

11. PAYMENT

a. Periodic Advance (July 1988)

(1) Periodic advances shall be limited to the minimum amounts needed to meet current disbursement needs (defined as the next 30 days unless a specific waiver for extension up to 90 days is granted by the Mission Director) and shall be scheduled so that the funds are available to the grantee as close as is administratively feasible to the actual disbursements by the grantee for program costs. Cash advances made by the grantee to secondary recipients or to the grantee's field organizations shall conform substantially to the same standards of timing and amount as apply to cash advances made by AID to the grantee.

(2) The grantee shall submit requests for advances (using SF-270, "Request for Advance or Reimbursement") at least monthly to the paying office specified in the schedule. Requests shall state the estimated disbursements to be made during the period covered by the request, less the estimated balance of cash on hand at the beginning of the period and the advance amount being requested.

(3) The Grantee shall submit a "Financial Status Report" (SF-269A) quarterly, no later than 30 days after the end of

the period, to the paying office specified in the grant letter. The report shall show the disbursements, advances received, and any cash remaining on hand for the period covered by the report. Within 90 days following the expiration of the grant, the grantee shall submit a SF-269A showing total disbursements, total advances received, and any cash remaining on hand, which will be refunded to AID.

(4) If at any time, the AID Controller determines that the grantee has demonstrated an unwillingness or inability to:

- (i) establish procedures that will minimize the time elapsing between cash advances and the disbursement thereof,
- (ii) timely report cash disbursements and balances as required by the terms of the grant, or
- (iii) impose the same standards of timing of advances and reporting on any subrecipient or any of the grantee's overseas field organizations;

the AID Controller shall advise the grant officer who may suspend or revoke the advance payment procedure.

b. Cost Reimbursement (July 1988)

The grantee shall submit to the paying office specified in the grant letter an original and 3 copies of SF 1034, "Public Voucher for Purchases and Services Other Than Personal" and SF 1034A, "Continuation of SF 1034, normally once a month, but in any event no less than quarterly. Each voucher shall be identified by the grant number and shall state the total costs for which reimbursement is being requested.

UNITED STATES OF AMERICA

AGENCY FOR INTERNATIONAL DEVELOPMENT

REGIONAL ECONOMIC DEVELOPMENT SERVICES OFFICE FOR EAST AND SOUTHERN AFRICA (REDSO/ESA)

United States Postal Address

International Postal Address

REDSO/ESA, Unit 64102
APO AE 09831-4102

Post Box 30261
Nairobi, Kenya

FAX TRANSMISSION

FROM: FAX NO: 254-2-330945 TELEPHONE NO. 254-2-331160

TO: KURT A. ROCKEMAN FAX NO. 265-783-181

OFFICE: USAID/MALAWI TEL. NO. 782-455/378

FROM: RUMU SARKAR, REDSO/ESA/LEG TOTAL NO. OF PAGES: 1

APPROVED BY: R. SARKAR DATE: September 8, 1993

OFFICIAL XX PERSONAL

SUBJECT: RLA Clearance of Grant to IITA for SARRNET Project No. 690-0268

MESSAGE:

1. This constitutes RLA clearance of the subject grant authorization memorandum to the Mission Director and the Grant letter to the International Institute of Tropical Agriculture (IITA) to establish the Southern Africa Root Crops Research Network (SARRNET) subject to the following: (1) that IITA is, in fact, a public international organization ("PIO") entitled to receive a Handbook 13, Chapter 5 grant although it is not listed in HB 13, App. 5A as a PIO; and (2) that a total budget allowance of \$3 million was communicated to the Mission via STATE 411848 and 224150 which were not attached to the fax copy received by REDSO/ESA/LEG.

2. The RLA signature page is attached for your files. Thanks, Rumu Sarkar (Acting RLA).

BEST AVAILABLE

RE: 690-0268

ACTION TO:	DIR	DD	AFS	COIT	EXO	GSO	MPN	MRDQ	PAE	PID	DATE:
AFS											9/10/93
INFO:											INITIALS
											DATE

ACTION TAKEN:

Draftedby: AFS: KRockeman _____ Date: _____

Clearances: AFS: JTHale _____ Date: _____

PPD: MSarhan _____ Date: _____

PPD: TLofgren _____ Date: _____

FMO: MPowdermaker _____ Date: _____

DD: STScott _____ Date: _____

RLA: AVance *[Signature]* _____ Date: 7/8/93

STAFF RESOURCES, CONGRESSIONAL TARGETS AND EARMARKS, AND PIPELINE. ISSUES REMAIN TO BE RESOLVED IN EACH OF THESE AREAS. IN SOME CASES, THEY WILL NEED TO BE RESOLVED IN THE COMING WEEKS BEFORE ESTABLISHMENT OF THE FY 93 OPERATIONAL YEAR BUDGET AND PREPARATION OF THE FY 94 CF CAN PROCEED. OTHERS WILL BE RESOLVED OVER THE COMING YEAR AS MISSIONS SUBMIT NEW STRATEGIES.

4. PROGRAM FOCUS. IN GENERAL, AFRICA BUREAU MISSIONS HAVE DONE A RELATIVELY GOOD JOB OF FOCUSING THEIR PROGRAMS. IN CASES WHERE THERE IS NO AGREED-UPON STRATEGY OR WHERE A NEW STRATEGY IS EXPECTED TO BE SUBMITTED IN 92-93, FINAL PROGRAM DECISIONS WERE DEFERRED UNTIL NEW STRATEGY APPROVAL. FYI - BY THE END OF CY 1993, ALL AFRICA BUREAU COUNTRY PROGRAMS WILL BE OPERATING UNDER AGREED-UPON STRATEGIES. END FYI.

5. OE AND STAFFING. IN REGARD TO THE BUREAU'S OE AND STAFFING REQUEST, WE HAVE NOT RECEIVED FINAL BUREAU LEVELS YET AND THEREFORE WE ARE UNCERTAIN TO WHAT EXTENT OUTSTANDING ISSUES CAN BE RESOLVED EASILY. MORE INFORMATION WILL BE PROVIDED AS OUR SITUATION BECOMES CLEARER.

6. CONGRESSIONAL EARMARKS AND TARGETS. DESPITE THE FACT THAT THIS YEAR'S AGENCY AND BUREAU ABS GUIDANCE STRESSED THE NEED TO OBLIGATE MORE FUNDS IN DFA TARGET AND AGENCY EARMARK AREAS SUCH AS CHILD SURVIVAL AND POPULATION, WE HAVE FALLEN CONSIDERABLY SHORT OF OUR REQUIREMENTS, BOTH IN FY 93 AND FY 94. AS A RESULT, WE HAVE HAD TO WORK WITH MISSIONS TO ACHIEVE THE REQUIRED LEVELS, WHILE STILL TRYING TO MAINTAIN THE INTEGRITY OF MISSION STRATEGIES. WE REALIZE THAT IN SOME CASES THESE CHANGES ARE DIFFICULT AND LESS THAN OPTIMAL, BUT WE MUST FULFILL THE LEGAL REQUIREMENTS ASSOCIATED WITH OUR PROGRAMS. WE APPRECIATE THE COOPERATION OF MISSIONS THAT HAVE MADE CHANGES IN THEIR BUDGET TO ACCOMMODATE THESE REQUIREMENTS TO DATE.

YOUR FLEXIBILITY HAS PERMITTED US TO MAKE CONSIDERABLE HEADWAY IN OUR ATTEMPT TO MEET OUR SHARE OF TARGETS AND EARMARKS. THE FINAL TALLY IS NOT IN YET, HOWEVER, AND WE MAY HAVE TO CALL UPON OTHERS TO ALSO QUOTE GIVE AT THE OFFICE UNQUOTE.

7. PIPELINE. MOST AFRICA BUREAU MISSION PIPELINES, AS WELL AS THE BUREAU PIPELINE AS A WHOLE, FALL WITHIN AN ACCEPTABLE RANGE. THERE ARE EXCEPTIONS, HOWEVER. MANY OF THE PROJECTS WITH RELATIVELY HIGH PIPELINES ARE NEW

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STARTS, AND WE EXPECT THAT PIPELINES WILL GO DOWN AS PROJECT IMPLEMENTATION GEARS UP. OTHERS HAVE BEEN DRIVEN UP BY THE NEED TO MEET CONGRESSIONAL TARGET AND FARMARK AREAS AND MAY REQUIRE EXTRA IMPLEMENTATION ATTENTION. IN SOME CASES, HOWEVER, WE WERE UNABLE TO ASCERTAIN THE REASON FOR THE HIGH PIPELINE LEVELS. WHERE PROJECT PIPELINES ARE HIGH, ESPECIALLY WHERE A DOWNWARD TREND IS NOT EVIDENT IN THE PLANNING YEARS, MISSIONS ARE ASKED TO CABLE BY OCTOBER 15 THE REASONS FOR THE HIGH PIPELINES AND ACTION THEY PROPOSE TO TAKE TO AMELIORATE THE SITUATION. SPECIFIC MISSION PROJECTS REQUIRING ACTION ARE IDENTIFIED BELOW.

9. NEW STARTS. THE BUREAU IS COMMITTED TO INCREASING DELEGATION OF AUTHORITY (DOA) TO THE FIELD. IN PRINCIPLE, FOLLOWING NEW PROJECT DESCRIPTION (NPD) REVIEWS, THE BUREAU WOULD DELEGATE ALL AGREED-TO PROJECT/SECTOR ASSISTANCE ACTIONS TO FIELDPOSTS. PAIP/FID AUTHORITY WILL BE RETAINED IN A.I.D./W WHEN THERE ARE POLICY OR CAPACITY ISSUES WHICH REQUIRE A.I.D./W OVERSIGHT.

IN BROADENING THE DOA, THE BUREAU MUST ASSURE THAT THE APPROPRIATE PROCEDURES ARE IN PLACE TO RESPOND TO A VARIETY OF CONCERNS, INCLUDING MISSION ACCOUNTABILITY AND CASES WHERE THERE IS NO AGREED-UPON MISSION STRATEGY. THE BUREAU IS CURRENTLY IN THE PROCESS OF DEVELOPING PROCESSES TO SUPPORT THE RESPONSIBLE USE OF BROADER DELEGATIONS, INCLUDING A FORMAL AND MORE INTENSIVE COMMUNICATION SYSTEM WITH FIELD MISSIONS THAT INCLUDES FREQUENT FORMAL PARTICIPATION OF BUREAU STAFF IN MAJOR PROJECT/SECTOR ASSISTANCE DESIGNS AND MINI-MISSION ASSESSMENTS. THE BUREAU ALSO PLANS TO MONITOR MISSION AND BUREAU PERFORMANCE WITH THESE EXPANDED DELEGATIONS THROUGH ANNUAL FIELD ASSESSMENTS. FURTHER DETAILS WILL BE FORTHCOMING SEPT.

CONSISTENT WITH FOCUS AND CONCENTRATION, AS WELL AS WITH THE DELEGATION OF AUTHORITY, IN GENERAL, NEW STARTS FOR COUNTRIES WITHOUT AGREED-UPON STRATEGIES CAME UNDER MORE

CAREFUL SCRUTINY DURING THE ABS REVIEW. MANY OF THESE STARTS WERE DEFERRED, OR WERE RETAINED FOR AFR/W REVIEW IF AN AGREED-UPON STRATEGY WAS NOT IN PLACE. IN SOME INSTANCES, THE PROPOSED START DID NOT APPEAR TO BE WITHIN THE MISSION'S AREA OF FOCUS, AND IN OTHER CASES THERE WERE CONCERNS ABOUT MANAGEABLE INTEREST. MISSIONS SCHEDULED FOR STRATEGY DEVELOPMENT/REVIEW IN CALENDAR YEAR 1993 (SEE REPTEL) ARE THUS ENCOURAGED TO REMAIN ON SCHEDULE FOR THESE PROCESSES. AT THE TIME OF THE PROGRAM REVIEW WEEK, NEW PROJECT PROPOSALS THAT THE MISSION WISHES TO HAVE RECONSIDERED WILL BE DISCUSSED FOR APPROVAL/FIELD DELEGATION.

IN THE FY 94 ABS EXERCISE, FID APPROVAL AUTHORITY WAS DELEGATED TO THE FIELD FOR APPROXIMATELY HALF OF THE PROPOSED NEW PROJECTS, A SIGNIFICANT INCREASE. NO PAIPs FOR SECTOR ASSISTANCE ACTIVITIES WERE DELEGATED TO THE FIELD. DECISIONS REGARDING INDIVIDUAL MISSION NEW START

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PROPOSALS ARE REPORTED BELOW.

9. RESULTS OF THE APS REVIEW OF SPECIFIC SARP ACTIVITIES AND PROGRAMS FOLLOW:

A. OVERALL PROGRAM LEVELS. THE DFA PROGRAM LEVEL FOR SARP REMAINS AT THE ANNUAL OYE OF 50 MILLION USDOLS. FTE LEVELS WILL BE SUBJECT OF SEPTFL.

B. PROGRAM STRATEGY. THE ABSENCE OF AN APPROVED STRATEGY AND CONCENTRATION OF ACTIVITIES WITHIN SARP MADE IT DIFFICULT TO APPROVE ALL NEW PROPOSED ACTIVITIES. THE PROPOSED SECTORS, AND NINE PROJECT ACTIVITIES (NEW AND AMENDMENTS), WERE ADDRESSED AS FOLLOWS:
AGRICULTURE:

--(1) SADC MAIZE AND WHEAT IMPROVEMENT (CYMMIT) AMENDMENT (IMPLEMENTED IN ZIMBABWE); PROJECT NO. 690-C273. DOA REQUEST APPROVED

--(2) SOUTHERN AFRICA ROOT CROPS RESEARCH NETWORK (SARRNET) - NEW ACTIVITY TO BE IMPLEMENTED IN MALAWI; PROJECT NO. 690-7268. DOA REQUEST APPROVED.

--(3) SORGHUM AND MILLET RESEARCH AND TRAINING (ICRISAT) AMENDMENT (IMPLEMENTED IN ZIMBABWE, NEAR BULAWAYO); PROJECT NO. 690-0224. DOA REQUEST APPROVED, WITH SPECIAL DELEGATION TO BE PROVIDED DUE TO MAGNITUDE AND TIME-FRAME

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OF EXTENDED PROJECT.

PRIVATIZATION/BUSINESS DEVELOPMENT:

--(4) REGIONAL BUSINESS ADVISORY SERVICES - UNSOLICITED PROPOSAL (IESC AND VITA) - PROJECT 690-0271. DOA REQUEST APPROVED.

TRANSPORTATION:

-- (SECTORAL PRIORITY IN REGION MAY NEED TO BE REASSESSFD.)

--(5) LOBITO CORRIDOR TRANSPORT RECOVERY (PHASES I AND II) - TO BE IMPLEMENTED IN ANGOLA - PROJECT 690-0272. PROGRAM APPROVAL FOR THIS PROPOSED FY 93 START HAS BEEN DEFERRED AT THIS TIME, PRIMARILY FOR TWO REASONS: (1) FURTHER INFORMATION IS REQUIRED ON ANGOLA AID REP OFFICE IMPLEMENTATION CAPACITY (TO BE DISCUSSED AT ELS/ANGOLA/NAMIBIA INTERIM TRANSITION MANAGEMENT STUDY REVIEW ON 10/2/92), RELATIONSHIP OF THE PROJECT TO THE IBRD LOBITO CORRIDOR TRANSPORT RECOVERY PROJECT, ETC; AND (2) THE POSSIBLE NEED TO APPLY SARP RESOURCES OVER AND ABOVE THE REVISIONS TO THE PROPOSED FY 93 FUNDING LEVEL FOR THIS PROJECT PRESENTED IN SUPPARA D. BELOW TOWARD CONGRESSIONAL INTEREST TARGETS FOR NATURAL RESOURCES. THIS PROJECT WILL ALSO BE DISCUSSED AT THE UPCOMING MEETING OF THE SOUTHERN AFRICA MISSION DIRECTORS PREPARATORY TO ISSUANCE OF FY 94 CP CULANCE.

--(6) SADC TRANSPORTATION EFFICIENCY PROJECT (STEP) - IMPLEMENTATION LOCUS IS UNCLEAR - PROJECT 690-2256. ALTHOUGH A SATCC INITIATIVE, MANY PROGRAMMATIC QUESTIONS HAVE YET TO BE ANSWERED, INCLUDING RELATIONSHIP TO RECENTLY APPROVED BUDGET TRANSPORTATION EFFICIENCY PROGRAM. STEP PROGRAM CONCURRENCE AND LOA IS BEING WITHHELD PENDING FURTHER INFORMATION, CLARIFICATION, AND NPD RESUBMISSION IF THIS PROJECT IS STILL PLANNED FOR FY 1993 NEW START.

--(7) KAFUE RAIL BRIDGE - TO BE IMPLEMENTED IN ZAMBIA - PROJECT 690-2253. CONCEPTUAL PROGRAM IS STILL INCOMPLETE, INCLUDING FINAL SUBMISSION OF PRIMARY FEASIBILITIES AND ALTERNATIVES. SARP IS EXPECTED TO RESUBMIT NPD LATER IN FY 93, AT WHICH TIME NPD AND DOA APPROVAL WILL BE CONSIDERED.

NEWLY PROPOSED SECTORS. PROGRAM CONCURRENCES AND DOA REQUESTS WERE NOT APPROVED. THESE PROPOSED AREAS CONTAIN POSSIBLE SIGNIFICANT ISSUES ON WHICH THE BUREAU WISHES TO BE CLOSELY APPRISED. SPECIFIC INFORMATION FOLLOWS:

--(8) TELECOMMUNICATIONS SECTOR DEVELOPMENT - FY 1994 NEW START PROPOSAL - TO BE IMPLEMENTED WITH SATCC, PROJECT NO. 690-2274. THIS NEW SECTOR PRESUMABLY TO BE ADDRESSED IN STRATEGY DOCUMENTS. THE SECTOR SCOPING STUDY IS YET TO BE RELEASED, ALTHOUGH REGIONAL "INTEREST" IN TELECOMMUNICATIONS APPEARS TO BE VERY HIGH. PROGRAM CONCURRENCE REQUEST TO BE REVIEWED AFTER STRATEGY

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SUBMISSION.

--(9) REGIONAL ECONOMIC INTEGRATION - FY 94 NEW START PROPOSAL - INCLUDES CROSS-BORDER INVESTMENT FACILITY - PROJECT NO. 693-0275. ANOTHER NEW SECTOR TO BE ADDRESSED IN REGIONAL STRATEGY DEVELOPMENT... BUT CLOSELY FITS WITH NEW REGIONAL FOCUS OF NEW SADC. PROGRAM CONCURRENCE REQUEST TO BE REVIEWED AFTER STRATEGY SUBMISSION AND AFTER FURTHER INFORMATION ON PROJECT IS PRESENTED.

(C) DELEGATIONS OF AUTHORITY. TO SUMMARIZE DOA DECISIONS (SEE PARA 9.B. ABOVE) STEMMING FROM ALS REVIEW PROCESSES: APPROVAL/GO AHEADS PROVIDED TO SARP ON THE THREE AGRICULTURE/FOOD SECURITY/TROUGHT ASSISTANCE PROJECTS (CYMMYT, SARRNET, AND ICRISAT) AND FOR LONG-STANDING BUSINESS ADVISORY SERVICES PROJECT (IFSC/VITA). ALL OTHER NPD AND PROGRAM APPROVAL SUBMISSIONS HAVE BEEN RETAINED BY THE BUREAU OR HAVE BEEN PLACED IN ABERYANCE PENDING REVISED STRATEGY SUBMISSION AND/OR FURTHER INFORMATION AND CLARIFICATION FROM SARP.

(D) TARGET AREA REVISIONS. PENDING FINAL DETERMINATION ON LOBITO CORRIDOR PROPOSAL, PARA 9.E.(5) ABOVE, THE FOLLOWING INITIAL CHANGES TO FY 93 AND FY 94 PROJECT LEVELS WILL ALLOW THE BUREAU TO ADD USDOLS 3 MILLION TO NRM TARGET IN FY 93, SUBSEQUENTLY REDUCING PLANNED OBLIGATIONS IN NRMS BY 1.0 MIL IN FY 94, 1.5 MIL IN FY 95, AND .5 MIL IN FY 96. THE FOLLOWING TABLE REFLECTS THESE

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REVISIONS:

PROJECT (USDOLS 000)	FY93	FY94	FY95
NRMS (690-0251)			
--PLAN	4.6	9.5	2.5
--NEW	7.5	8.5	1.0
--CHANGE	3.0	-1.0	-1.5
LOBITO (690-0272)			
--PLAN	5.0	5.0	0
--NEW	3.5	5.0	1.5
--CHANGE	-1.5	0	1.5
ZAMBIA RAIL (690-0262)			
--PLAN	2.0	5.0	3.0
--NEW	.5	5.0	4.0
--CHANGE	-1.5	0	1.0
REG.ECON.INTEG (690-0275)			
--PLAN	0	2.0	3.0
--NEW	0	3.0	2.0
--CHANGE	0	1.0	-1.0

(E) GENERAL ABS. SARP WILL NOTE SOME DIFFERENCES IN FINAL PRINTED ABS FROM THAT ORIGINALLY SUBMITTED. A TABLE OF CONTENTS HAD TO BE CREATED, AND ALL PAGES REORDERED AND NUMBERED. THIS PRINTED FORMAT CORRESPONDS TO THE ABS GENERIC MODEL.

12. WE APPRECIATE YOUR HELPFUL AND PROMPT RESPONSES AND CORRECTIONS AS WE WENT THROUGH THE ABS REVIEW PROCESS ON THIS END, WITH PARTICULAR ASSISTANCE FROM ZIMBABWE'S PROGRAM OFFICE. GIVEN THE DROUGHT AND THE DEMANDS OF THE BILATERAL PROGRAMS...PLUS ALL OF THE REPORTING/ASSESSMENT REQUIREMENTS, YOUR REGIONAL PROGRAM ACCOMPLISHMENTS ARE CONSIDERABLE. EAGLEBURGER

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TO RUEHLG/AMEMBASSY LILONGWE 5934
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2. Approval of
3. ETC*

*1. KURT
2. PRM. 3.8*

Thanks!

AIDAC

LILONGWE FOR J. HALE
AID/W FOR AFR/SA

E.O. 12356: N/A
SUBJECT: FY 1994 ABS REVIEW FOR SOUTHERN AFRICA REGIONAL
PROGRAM (SARP)

REF: (A) TELCON ARMSTRONG/HALE ON 10/21/92 (B) STATE
321956

PER REF A, USAID/HARARE/SARP UNDERSTANDS REF B PARA 9 (3)
PROVIDES USAID/MALAWI WITH THE DOA TO DESIGN AND
IMPLEMENT SARP FUNDED PROJECT 690-0268 (SARRNET).

SARP GDO ARMSTRONG IS PLEASED TO LIAISE WITH USAID/MALAWI
DESIGN TEAM CONCERNING SARP MONITORING REQUIREMENTS BUT
USAID/MALAWI SHOULD ASSUME FULL RESPONSIBILITY FOR
SARRNET DESIGN AND IMPLEMENTATION. LANPHER
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INITIALS: _____ DATE: _____

Joanne Hale

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TO AMEMBASSY LILONGWE 9761
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23 DEC 92 0630
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DIST: AID

Handwritten "Kurt" with an arrow pointing to the left

AIDAC

E.O. 12356: N/A

TAGS:

SUBJECT: SS3 ALLOWANCE

1. APPROPRIATION 72113/41014, BUDGET PLAN CODE GSS3.93"
21612-IG12 (ALLOWANCE 381-60-612-00,69-31) ESTABLISHED FOR
DOLLARS 2,000,000 FOR PROJECT 690-0263, SOUTH AFRICA ROOT
CROPS NETWORK.

2. FUNDS CANNOT BE OBLIGATED UNTIL CN HAS EXPIRED WITHOUT
OBJECTION.

3. ADVICE OF ALLOWANCE FOLLOWS. EAGLEBURGER

PT
#1848

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STATE 411848

Form with fields: DATE: 12/28/92, ACTION TO: Mozambique - Fmo, INFO:, DIR, DD, AFS, CONT, EXO, GSO, HPN, HRDO, PAE, PID, DUE DATE: 12/30/92, ACTION TAKEN:

INITIALS DATE

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STATE - 097264

ACTION: AID INFO: AMS DCM/ECON

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INFO RUEHSE/AMEMBASSY HARARE 4005
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F.C. 12356: N/A
TAGS:

SUBJECT: CN EXPIRATION FOR SOUTHERN AFRICA RCOT CROPS
RESEARCH NETWORK (SARRNET 697-0268)

REF: STATE 080034

THE CONGRESSIONAL NOTIFICATION FOR SUBJECT PROJECT FOR
LOLS 2,000,000 EXPIRED WITHOUT OBJECTION ON
MARCH 30, 1993. OBLIGATION MAY NOW BE INCURRED.
CHRISTOPHER
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STATE 097264

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RUEHLG/AMEMBASSY LILONGWE PRIORITY 1430

RUEHBP/AMEMBASSY BAMAKO PRIORITY 2918

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LOC: F10 289
27 JUL 93 2528
CN: 28757
CPFC: AID
DIST: AID

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E.O. 12356: N/A

TAGS:

SUBJECT: SS3 ALLOWANCE - SO. AFRICA REGIONAL - MALAWI

REF: STATE 218175

REF MESSAGE SENT TO BAMAKO IN ERROR. MESSAGE REPEATED FOR LILONGWE.

1. APPROPRIATION 72-118/11111 BUDGET PLAN CODE GSS3-93-21612-1G12 INCREASED BY ~~1,000,000~~ 1,000,000 FOR PROJECT 690-0268.12 SOUTH AFRICA ROOT CROPS NETWORK. TOTAL ALLOWED FOR THIS PROJECT IS DOLLARS 3,000,000. TOTAL ALLOWED TO DATE UNDER THIS BPC IS DOLLARS 3,000,000.

2. ADVICE OF ALLOWANCE FOLLOWS.

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STATE 224150

DATE: 07/23/93

ACTION TO:
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INITIAL ENVIRONMENTAL EXAMINATION

I. PROJECT DATA

Project Location : Southern African
Development Community

Project Title and Number : SACCAR/IITA/Southern Africa
Root Crop Research Network
(SARRNET)

Sub-grant Recipient : SACCAR

Funding : US\$7,000,000

Life of Project : 5 years

IEE Prepared by : Richard Pelleck, REDSO/ESA
(Draft) and
: Benson Phiri, USAID/Malawi

Environmental Actions Recommended : Categorical Exclusion for
research activities and
surveys
: Negative Determination for
other activities

Approval : Cynthia Rozell.
Cynthia Rozell, Director
USAID/Malawi

Date : 17 August 1993.

Clearances : Samuel T. Scott
Samuel T. Scott
Deputy Director
USAID/Malawi

Date : 17 August 1993

: (Attached)
Mary A. Kleinjan, GC/AFR
Washington DC

: (Attached)
John Gaudet,
AFR/ARTS/FARA

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II. INTRODUCTION

The Southern African Centre for Cooperation in Agricultural Research (SACCAR), in collaboration with the International Institute of Tropical Agriculture (IITA), the International Potato Center (CIP), and the Eastern Africa Root Crops Research Network (ESARRN) proposes to expand and consolidate the promotion of high yielding, improved cassava and sweet potato varieties in the Southern Africa Development Conference (SADC) region through the establishment of the Southern Africa Rootcrops Research Network (SARRNET).

The project will formally establish SARRNET as a fully functioning network focussed on SACCAR's four priority areas: technology generation; germplasm improvement; training; and information exchange among collaborating countries in the region. SADC member countries which have heretofore contributed to the successful operation of the East and Southern Africa Root Crops Network (ESARRN) are Angola, MalaWi, Mozambique, Tanzania, and Zambia. SARRNET will expand network activities to Botswana, Lesotho, Namibia, Swaziland and Zimbabwe. Several aspects of the proposed project build upon the strategic research objectives of the present root and tuber crop research network by:

- a. originating and introducing improved cassava and sweet potato populations with high frequency of desirable genes adapted to the mid-altitude ecological zones of the SADC region;
- b. conducting surveys in the other member countries to establish country and regional baseline data on rootcrop production, processing, marketing and consumption trends;
- c. developing post-harvesting technology through the establishment of pilot processing plants, and initiating development of processed rootcrop products to encourage their use in the region;
- d. encouraging the establishment effective national biocontrol activities within the plant protection units of existing rootcrop programs; and
- e. establishing multiplication, distribution, survey and monitoring systems in all collaborating countries to hasten the distribution and adoption of improved varieties and production technologies by farmers.

III. PROJECT GOAL AND PURPOSE

The goal of the SARRNET project is to increase rootcrop (cassava and sweet potato) production of resource poor farmers in Southern Africa through improvement of germplasm adapted to the mid-altitude ecological zones and adoption of production, processing and integrated pest management technologies throughout the region.

The purposes of the SARRNET project and its network focus will be to:

- * provide a forum for the rapid exchange of technologies in areas such as improved varieties, biocontrol and agronomic practices, and village post-harvest processing delivered by the participating national rootcrop programs and other institutions;
- * foster a collaborative approach to the setting of regional priorities in cassava research and training needs;
- * minimize duplication of efforts and share complementary research responsibilities among member National Agricultural Research Stations (NARS) based on their respective comparative advantages; and
- * provide technical and financial support to enable NARS to have a lead role to effectively discharge their responsibilities.

IV. PROJECT PROBLEMS

Two major problems constrain the allocation of resources for rootcrop research in the region: (1) the lack of improved germplasm adapted to the mid-altitude ecological zones of Eastern and Southern Africa, and; (2) the need for trained manpower and improved processing technologies for root and tuber crops.

V. PROJECT OUTLINE, STRATEGY AND IMPACTS

Five research topic areas have already been identified and agreed upon by collaborators; and approved by the steering committee within the ESARRN framework. The titles of the activities are:

- A. "Integrated Pest Management (IPM) in Cassava Pests with Respect to Cassava Mealy Bug (CM) and Cassava Green Mite (CGM)": lead countries - Tanzania and MalaWi;
- B. "Development of Improved Technologies for Processing, Drying and Utilization of Cassava": lead countries - Tanzania, MalaWi and Zambia;
- C. "Impact Assessment" lead countries - all collaborating programs;
- D. "Cassava Germplasm Development and Distribution": lead countries - MalaWi and Zambia; and
- E. "Rapid Multiplication and Distribution of Improved Planting Material": lead - all collaborating programs.

VI. ENVIRONMENTAL CONCERNS AND MITIGATION

Environmental Concerns

The transmission of disease and pests from research plots to farmer's fields is perhaps the chief environmental risk. When germplasm is multiplied and transported in large quantities to planting sites, environmental consequences will follow. Although the stated intention of the proposed SARRNET project is to develop IPM and associated mitigation techniques, IPM must keep abreast of the multiplication and distribution components of the project to ensure parity in regard to risk and/or mitigation.

Mitigation

Because each of the operational units has a history of close collaboration, and their knowledge of mitigation techniques is state-of-the-art, environmental risks will be minimized.

In addition during implementation of the multiplication activities, IITA will ensure that clean materials from the secondary sites are distributed to farmers. In addition, each secondary site will be supervised by a trained technician who will monitor the cassava and sweet potato planting materials for pest and disease incidence.

At the same time, these sites will be closely monitored by pathologists and entomologists for any sign of disease or pest problems. This close supervision will be undertaken to minimize the distribution of pest-infected and diseased planting materials to farmers. The project also includes a strong farmer training campaign to increase farmer awareness of sanitary practices.

Consulting pathologists from IITA in Nigeria and the United Kingdom have already visited the potential sites in the region, and have recommended steps to limit disease and pest problems.

For example, one recommendation is to stop multiplying planting materials in Malawi's Lower Shire Valley where there has been a high incidence of pests and diseases. Multiplication is now taking place only at high altitude sites. This action minimizes the incidence of pests and diseases being transferred from the primary sites to the farm level - thus eliminating the negative environmental consequences - and is indicative of the type of responsible, professional standards to which IITA, CIP and SACCAR adhere.

Since A.I.D. will only be financing extension advice and establishment of research priorities, but not actual establishment of processing plants, any activity regarding the plants is entitled to a categorical exclusion. Nevertheless, going beyond Reg 16 requirements, the technologies and designs used for processing plants will be carefully chosen to minimize potential environmental problems related to pollution.

Pesticide use will be restricted to limited applications inside research stations under controlled conditions, and thus are exempt from A.I.D.'s pesticide procedures under Section 216.3 (b) (2) (iii), provided that A.I.D. will ensure that the pesticide manufacturers provide the necessary toxicological and environmental data.

Summary of Mitigation Measures

1. Ensure that clean materials from the secondary sites are distributed to farmers.
2. Genotypes will be promoted which are disease resistant.
3. Each secondary site will be supervised by a trained technician who will monitor the cassava and sweet potato planting materials for pest and disease incidence.
4. These sites will be closely monitored by pathologists and entomologists. Close supervision will be undertaken to minimize the distribution of pest-infected and diseased planting materials to farmers.
5. In addition, the project will mount a strong farmer training campaign to increase farmer awareness of sanitary practices.
6. Consulting pathologists from IITA in Nigeria and from the United Kingdom will periodically visit the potential sites, and make recommendations to limit disease and pest problems.

VII. RECOMMENDED ENVIRONMENTAL ACTIONS

The following environmental actions are recommended:

- A. Categorical Exclusion for research, under Activity V.A, V.B, and V.C above, in accordance with 22 CFR 216.2 (c) (iii);
- B. Negative determination for cassava germplasm development and distribution, under Activity V.D; rapid multiplication and distribution of improved planting material under Activity V.E; and technology selection for part of Activity V.C above, with the provision that the precautionary measures listed above in Section VI, are implemented by IITA.

Clearance:AFS:Kurt Rockeman (Draft)
PID:William Brands (Draft)

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Appendix A -- Certification Regarding Debarment, Suspension, and Other Responsibility Matters -- Primary Covered Transactions

Instructions for Certification

1. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such person from participation in this transaction.
3. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.
4. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if at any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.
6. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
7. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

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8. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to check the Nonprocurement List.

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph 6 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters--Primary Covered Transactions

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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APPENDIX 3A, ANNEX 2

CERTIFICATION REGARDING DRUG-FREE WORKPLACE REQUIREMENTS

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Appendix C to Part 208 -- Certification Regarding Drug-Free Workplace Requirements

Instructions for Certification

1. By signing and/or submitting this application or grant agreement, the grantee is providing the certification set out below.
2. The certification set out below is a material representation of fact upon which reliance was placed when the agency determined to award the grant. If it is later determined that the grantee knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, the agency, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.
3. For grantees other than individuals, Alternate I applies.
4. For grantees who are individuals, Alternate II applies.

Certification Regarding Drug-Free Workplace Requirements

Alternate I

A. The grantee certifies that it will provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing a drug-free awareness program to inform employees about--
 - (1) The dangers of drug abuse in the workplace;
 - (2) The grantee's policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will--
 - (1) Abide by the terms of the statement; and
 - (2) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction;

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(e) Notifying the agency within ten days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction;

(f) Taking one of the following actions, within 30 days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted--

(1) Taking appropriate personnel action against such an employee, up to and including termination; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

B. The grantee shall insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

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Alternate II

The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance in conducting any activity with the grant.



Jacques P. Echeverri
District Director General, IIRG

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APPENDIX 38

PART 227 - NEW RESTRICTIONS ON LOBBYING

Subpart A - General

Sec.

- 227.100 Conditions on use of funds.
- 227.105 Definitions.
- 227.110 Certification and Disclosure.

Subpart B - Activities by Own Employees

- 227.200 Agency and legislative liaison.
- 227.205 Professional and technical services.
- 227.210 Reporting.

Subpart C - Activities by Other than Own Employees

- 227.300 Professional and technical services.

Subpart D - Penalties and Enforcement

- 227.400 Penalties.
- 227.405 Penalty procedures.
- 227.410 Enforcement.

Subpart E - Exemptions

- 227.500 Secretary of Defense.

Subpart F - Agency Reports

- 227.600 Semi-annual compilation.
- 227.605 Inspector General report.

Appendix A to Part 227 - Certification Regarding Lobbying
Appendix B to Part 227 - Disclosure Form to Report Lobbying

Authority: Section 319, Public Law 101-121 (31 U.S.C. 1352); [citation to Agency rulemaking authority].

Cross reference: See also Office of Management and Budget notice published at 54 FR 523-6. December 20, 1989.

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Subpart A - General

§227.100 Conditions on use of funds.

(a) No appropriated funds may be expended by the recipient of a Federal contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) Each person who requests or receives from an agency a Federal contract, grant, loan, or cooperative agreement shall file with that agency a certification, set forth in Appendix A, that the person has not made, and will not make, any payment prohibited by paragraph (a) of this section.

(c) Each person who requests or receives from an agency a Federal contract, grant, loan, or a cooperative agreement shall file with that agency a disclosure form, set forth in Appendix B, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under paragraph (a) of this section if paid for with appropriated funds.

(d) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a statement, set forth in Appendix A, whether that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

(e) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a disclosure form, set forth in Appendix B, if that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

§227.105 Definitions.

For purposes of this part:

(a) Agency, as defined in 5 U.S.C. 552(f), includes Federal executive departments and agencies as well as independent regulatory commissions and Government corporations, as defined in 31 U.S.C. 9101(1).

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(b) Covered Federal action means any of the following Federal actions:

- (1) The awarding of any Federal contract;
- (2) The making of any Federal grant;
- (3) The making of any Federal loan;
- (4) The entering into of any cooperative agreement; and,
- (5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

Covered Federal action does not include receiving from an agency a commitment providing for the United States to insure or guarantee a loan. Loan guarantees and loan insurance are addressed independently within this part.

(c) Federal contract means an acquisition contract awarded by an agency, including those subject to the Federal Acquisition Regulation (FAR), and any other acquisition contract for real or personal property or services not subject to the FAR.

(d) Federal cooperative agreement means a cooperative agreement entered into by an agency.

(e) Federal grant means an award of financial assistance in the form of money, or property in lieu of money, by the Federal Government or a direct appropriation made by law to any person. The term does not include technical assistance which provides services instead of money, or other assistance in the form of revenue sharing, loans, loan guarantees, loan insurance, interest subsidies, insurance, or direct United States cash assistance to an individual.

(f) Federal loan means a loan made by an agency. The term does not include loan guarantee or loan insurance.

(g) Indian tribe and tribal organization have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B). Alaskan Natives are included under the definitions of Indian tribes in that Act.

(h) Influencing or attempting to influence means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

(i) Loan guarantee and loan insurance mean an agency's guarantee or insurance of a loan made by a person.

(j) Local government means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

(k) Officer or employee of an agency includes the following individuals who are employed by an agency:

- (1) An individual who is appointed to a position in the Government under title 5, U.S. Code, including a position under a temporary appointment:

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(2) A member of the uniformed services as defined in section 101(3), title 37, U.S. Code;

(3) A special Government employee as defined in section 202, title 18, U.S. Code; and,

(4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, title 5, U.S. Code appendix 2.

(l) Person means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

(m) Reasonable compensation means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

(n) Reasonable payment means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

(o) Recipient includes all contractors, subcontractors at any tier, and sub grantees at any tier of the recipient of funds received in connection with a Federal contract, grant, loan, or cooperative agreement. The term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

(p) Regularly employed means, with respect to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement or a commitment providing for the United States to insure or guarantee a loan, an officer or employee who is employed by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract, grant, loan, cooperative agreement, loan insurance commitment, or loan guarantee commitment. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

(q) State means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State, regional, or interstate entity having governmental duties and powers.

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§227.110 Certification and Disclosure.

(a) Each person shall file a certification, and a disclosure form, if required, with each submission that initiates agency consideration of such person for:

(1) Award of a Federal contract, grant, or cooperative agreement exceeding \$100,000; or

(2) An award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

(b) Each person shall file a certification, and a disclosure form, if required, upon receipt by such person of:

(1) A Federal contract, grant, or cooperative agreement exceeding \$100,000; or

(2) A Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000, unless such person previously filed a certification, and a disclosure form, if required, under paragraph (a) of this section.

(c) Each person shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under paragraphs (a) or (b) of this section. An event that materially affects the accuracy of the information reported includes:

(1) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,

(3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(d) Any person who requests or receives from a person referred to in paragraphs (a) or (b) of this section:

(1) A subcontract exceeding \$100,000 at any tier under a Federal contract;

(2) A sub grant, contract, or subcontract exceeding \$100,000 at any tier under a Federal grant;

(3) A contract or subcontract exceeding \$100,000 at any tier under a Federal loan exceeding \$150,000; or,

(4) A contract or subcontract exceeding \$100,000 at any tier under a Federal cooperative agreement, shall file a certification, and a disclosure form, if required, to the next tier above.

(e) All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the person referred to in paragraphs (a) or (b) of this section. That person shall forward all disclosure forms to the agency.

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(f) Any certification or disclosure form filed under paragraph (e) shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared by any tier to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification or disclosure, respectively. If a person fails to file a required certification or disclosure, the United States may pursue all available remedies, including those authorized by section 1352, title 31, U.S. Code.

(g) For awards and commitments in process prior to December 23, 1989, but not made before that date, certifications shall be required at award or commitment, covering activities occurring between December 23, 1989, and the date of award or commitment. However, for awards and commitments in process prior to the December 23, 1989 effective date of these provisions, but not made before December 23, 1989, disclosure forms shall not be required at time of award or commitment but shall be filed within 30 days.

(h) No reporting is required for an activity paid for with appropriated funds if that activity is allowable under either Subpart B or C.

Subpart B - Activities by Own Employees

§227.200 Agency and legislative liaison.

(a) The prohibition on the use of appropriated funds, in §227.100(a), does not apply in the case of a payment of reasonable compensation made to an officer or employee -of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(b) For purposes of paragraph (a) of this section, providing any information specifically requested by an agency or Congress is allowable at any time.

(c) For purposes of paragraph (a) of this section, the following agency and legislative liaison activities are allowable at any time only where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency (including individual demonstrations) the qualities and characteristics of the person's products or services, conditions or terms of sale, and service capabilities; and,

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

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(d) For purposes of paragraph (a) of this section, the following agencies and legislative liaison activities are allowable only where they are prior to formal solicitation of any covered Federal action:

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and,

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Public Law 95-507 and other subsequent amendments.

(e) Only those activities expressly authorized by this section are allowable under this section.

§227.205 Professional and technical services.

(a) The prohibition on the use of appropriated funds, in §227.100(a), does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement or an extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal contract, grant, loan, or cooperative agreement or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal contract, grant, loan, or cooperative agreement.

(b) For purposes of paragraph (a) of this section, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior

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to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(c) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation, or reasonably expected to be required by law or regulation, and any other requirements in the actual award documents.

(d) Only those services expressly authorized by this section are allowable under this section.

§227.210 Reporting.

No reporting is required with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

Subpart C - Activities by Other than Own Employees

§227.300 Professional and technical services.

(a) The prohibition on the use of appropriated funds, in §227.100 (a), does not apply in the case of any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action, if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal contract, grant, loan, or cooperative agreement or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal contract, grant, loan, or cooperative agreement.

(b) The reporting requirements in §227.110 (a) and (b) regarding filing a disclosure form by each person, if required, shall not apply with respect to professional or technical services rendered directly in the preparation, submission, or negotiation of any commitment providing for the United States to insure or guarantee a loan.

(c) For purposes of paragraph (a) of this section, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting or a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered

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Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(d) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation, or reasonably expected to be required by law or regulation, and any other requirements in the actual award documents.

(e) Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(f) Only those services expressly authorized by this section are allowable under this section.

Subpart D - Penalties and Enforcement

§227.400 Penalties.

(a) Any person who makes an expenditure prohibited herein shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure.

(b) Any person who fails to file or amend the disclosure form (see Appendix B) to be filed or amended if required herein, shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

(c) A filing or amended filing on or after the date on which an administrative action for the imposition of a civil penalty is commenced does not prevent the imposition of such civil penalty for a failure occurring before that date. An administrative action is commenced with respect to a failure when an investigating official determines in writing to commence an investigation of an allegation of such failure.

(d) In determining whether to impose a civil penalty, and the amount of any such penalty, by reason of a violation by any person, the agency shall consider the nature, circumstances, extent, and gravity of the violation, the effect on the ability of such person to continue in business, any prior violations by such person, the degree of culpability of such person, the ability of the person to pay the penalty, and such other matters as may be appropriate.

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(e) First offenders under paragraphs (a) or (b) of this section shall be subject to a civil penalty of \$10,000, absent aggravating circumstances. Second and subsequent offenses by persons shall be subject to an appropriate civil penalty between \$10,000 and \$100,000, as determined by the agency head or his or her designee.

(f) An imposition of a civil penalty under this section does not prevent the United States from seeking any other remedy that may apply to the same conduct that is the basis for the imposition of such civil penalty.

§227.405 Penalty procedures.

Agencies shall impose and collect civil penalties pursuant to the provisions of the Program Fraud and Civil Remedies Act, 31 U.S.C. sections 3803 (except subsection (c)), 3804, 3805, 3806, 3807, 3808, and 3812, insofar as these provisions are not inconsistent with the requirements herein.

§227.410 Enforcement.

The head of each agency shall take such actions as are necessary to ensure that the provisions herein are vigorously implemented and enforced in that agency.

Subpart E - Exemptions

§227.500 Secretary of Defense.

(a) The Secretary of Defense may exempt, on a case-by-case basis, a covered Federal action from the prohibition whenever the Secretary determines, in writing, that such an exemption is in the national interest. The Secretary shall transmit a copy of each such written exemption to Congress immediately after making such a determination.

(b) The Department of Defense may issue supplemental regulations to implement paragraph (a) of this section.

Subpart F - Agency Reports

§227.600 Semi-annual compilation.

(a) The head of each agency shall collect and compile the disclosure reports (see Appendix B) and, on May 31 and November 30 of each year, submit to the Secretary of the Senate and the Clerk of the House of Representatives a report containing a compilation of the information contained in the disclosure reports received during the six-month period ending on March 31 or September 30, respectively, of that year.

(b) The report, including the compilation, shall be available for public inspection 30 days after receipt of the report by the Secretary and the Clerk.

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(c) Information that involves intelligence matters shall be reported only to the Select Committee on Intelligence of the Senate, the Permanent Select Committee on Intelligence of the House of Representatives, and the Committees on Appropriations of the Senate and the House of Representatives in accordance with procedures agreed to by such committees. Such information shall not be available for public inspection.

(d) Information that is classified under Executive Order 12356 or any successor order shall be reported only to the Committee on Foreign Relations of the Senate and the Committee on Foreign Affairs of the House of Representatives or the Committees on Armed Services of the Senate and the House of Representatives (whichever such committees have jurisdiction of matters involving such information) and to the Committees on Appropriations of the Senate and the House of Representatives in accordance with procedures agreed to by such committees. Such information shall not be available for public inspection.

(e) The first semi-annual compilation shall be submitted on May 31, 1990, and shall contain a compilation of the disclosure reports received from December 23, 1989 to March 31, 1990.

(f) Major agencies, designated by the Office of Management and Budget (OMB), are required to provide machine-readable compilations to the Secretary of the Senate and the Clerk of the House of Representatives no later than with the compilations due on May 31, 1991. OMB shall provide detailed specifications in a memorandum to these agencies.

(g) Non-major agencies are requested to provide machine-readable compilations to the Secretary of the Senate and the Clerk of the House of Representatives.

(h) Agencies shall keep the originals of all disclosure reports in the official files of the agency.

§227.605 Inspector General report.

(a) The Inspector General, or other official as specified in paragraph (b) of this section, of each agency shall prepare and submit to Congress each year, commencing with submission of the President's Budget in 1991, an evaluation of the compliance of that agency with, and the effectiveness of, the requirements herein. The evaluation may include any recommended changes that may be necessary to strengthen or improve the requirements.

(b) In the case of an agency that does not have an Inspector General, the agency official comparable to an Inspector General shall prepare and submit the annual report, or, if there is no such comparable official, the head of the agency shall prepare and submit the annual report.

(c) The annual report shall be submitted at the same time the agency submits its annual budget justifications to Congress.

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(d) The annual report shall include the following: All alleged violations relating to the agency's covered Federal actions during the year covered by the report, the actions taken by the head of the agency in the year covered by the report with respect to those alleged violations and alleged violations in previous years, and the amounts of civil penalties imposed by the agency in the year covered by the report.

Appendix A to Part 227 - Certification Regarding Lobbying

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

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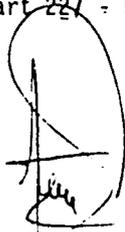
Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Appendix B to Part 227 - Disclosure Form to Report Lobbying.
[See attached.]



Jacques P. Ecuebil
Deputy Director General, USAID

DISCLOSURE OF LOBBYING ACTIVITIES CONTINUATION SHEET

Approved by OMB
0348-0046

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APPENDIX 3C

ASSURANCE OF COMPLIANCE WITH LAWS AND REGULATIONS
GOVERNING NONDISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS

International Institute of Tropical Agriculture (I.I.T.A.)
(Name of Applicant) (hereinafter called the "Applicant")

hereby assures that no person in the United States shall, on the bases set forth below, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under, any program of activity receiving financial assistance from AID, and that with respect to the grant for which application is being made, it will comply with the requirements of:

- (1) Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352, 42 U.S.C. 2000-d) which prohibits discrimination on the basis of race, color or national origin, in programs and activities receiving Federal financial assistance,
- (2) Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794), which prohibits discrimination on the basis of handicap in programs and activities receiving Federal financial assistance,
- (3) The Age Discrimination Act of 1975, as amended (Pub. L. 95-478), which prohibits discrimination based on age in the delivery of services and benefits supported with Federal funds,
- (4) Title IX of the Education Amendments of 1972 (20 U.S.C. 1681, et. seq.) which prohibits discrimination on the basis of sex in education programs and activities receiving Federal financial assistance (whether or not the programs or activities are offered or sponsored by an educational institution); and

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- (5) AID regulations implementing the above nondiscrimination laws, set forth in Chapter II of Title 22 of the Code of Federal Regulations.

If the Applicant is an institution of higher education, the Assurances given herein extend to admission practices and to all other practices relating to the treatment of students or clients of the institution, or relating to the opportunity to participate in the provision of services or other benefits to such individuals, and shall be applicable to the entire institution unless the Applicant establishes to the satisfaction of the AID Administrator that the institution's practices in designated parts or programs of the institution will in no way affect its practices in the program of the institution for which financial assistance is sought, or the beneficiaries of or participants in such program.

This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property, discounts or other Federal financial assistance extended after the date hereof to the Applicant by the Agency, including installment payments after such date on account of applications for Federal financial assistance which were approved before such date. The Applicant recognizes and agrees that such Federal financial assistance will be extended in reliance on the representations and agreements made in this Assurance, and that the United States shall have the right to seek judicial enforcement of this Assurance. This Assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign this Assurance on behalf of the Applicant.

I I T A
(Applicant)

BY (Signature) 

TITLE Deputy Director General 1077

TYPED NAME JAMES P. ECKEBIL

DATE September 22, 1993

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