

**UNITED STATES OF AMERICA**  
**AGENCY FOR INTERNATIONAL DEVELOPMENT**

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

United States Postal Address  
U.S.A.I.D./REDSO/ESA  
UNIT 64102  
APO AE 09831-4102

NOV 29 1993

Section

International Postal Address

POST OFFICE BOX 30261  
NAIROBI, KENYA

27 June 1993

Mr. Lucas Brader  
Director General  
International Institute of  
Tropical Agriculture  
P.O. Box 5320  
Ibadan, Nigeria

**Subject: Grant No. 623-0103-G-00-3147-00**

Dear Mr. Brader:

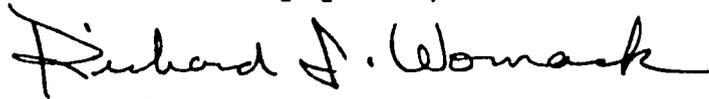
Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development (hereinafter referred to as "A.I.D." or "Grantor") hereby provides to Institute of Tropical Agriculture (hereinafter referred to as "IITA" or "Grantee") the sum set forth in Section 1C.2 of Attachment 1 of this Grant to provide financial support for the program described in Attachment 2 of this Grant entitled "Program Description."

This Grant is effective as of the date of this letter and funds obligated hereunder shall be used to reimburse the Grantee for allowable program expenditures for the period set forth in Section 1B. of Attachment 1 of this Grant.

This Grant is made to the Grantee on condition that the funds will be administered in accordance with the terms and conditions as set forth in the attachments listed under my signature below, which together constitute the complete Grant document and have been agreed to by your organization.

Please sign the original and six (6) copies of this letter to acknowledge your acceptance of this Grant, retain one copy for your records, and return the original and four (4) copies to the undersigned.

Sincerely yours,



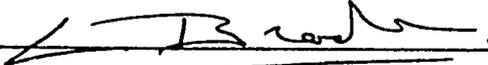
Richard J. Womack  
Grant Officer

Attachments:

1. Schedule
2. Program Description
- ~~3. Standard Provisions~~
- ~~4. Special Provision entitled "Restrictions on lobbying"~~

ACKNOWLEDGED:

International Institute of Tropical Agriculture

BY: 

TYPED NAME: Lucas Brader

TITLE: Director General

DATE: 27 June 1993

FISCAL DATA

A. General

- A.1. Total Estimated Amount: \$386,000
- A.2. Total Obligated Amount: \$386,000
- A.3. Project No.: 617-0103
- A.4. A.I.D. Project Office: C/ADO, USAID/Uganda
- A.5. Funding Source: Controller, USAID/Uganda
- A.6. DUNS Number: N/A
- A.7. Tax I.D. Number: N/A

B. SPECIFIC

- B.1. PIO/T NO. : 617-0103.00-00079
  - Appropriation : 72-1101014
  - Budget Plan Code : GSSA-90-21617-KG13
  - Amount : \$16,000
- B.2. PIO/T NO. : 617-0103.00-20041
  - Appropriation : 72-112/31014
  - Budget Plan Code : GSS2-92-21617-KG13
  - Amount : \$170,000
- B.3. PIO/T NO. : 617-0103.00-20041, A1
  - Appropriation : 72-112/31014
  - Budget Plan Code : GSS2-92-21617-KG13
  - Amount : \$100,000
- B.2. PIO/T NO. : 617-0103.00-00079
  - Appropriation : 72-1101014
  - Budget Plan Code : GSSA-92-21617-KG13
  - Amount : \$100,000

TOTAL OBLIGATED AMOUNT: \$386,000

SCHEDULE

**1A. PURPOSE OF GRANT**

The purpose of this Grant is to provide support for the establishment of a Regional Center for East and Southern Africa for the improvement of cassava, banana and plantain as more fully described in Attachment 2 of this Grant entitled "Program Description".

**1B. PERIOD OF GRANT**

The effective date of this Grant is the date of the Cover Letter and the estimated completion date is 26 June 1998. Funds obligated hereunder are authorized for program expenditures and are anticipated to be sufficient for one year. Continued USAID contributions to this project over the five year period will be contingent upon 1) the extent to which agreed upon work plans are accomplished, 2) the availability of funds and 3) IITA and other donor contributions to the center budget at a level sufficient to maintain project operations.

**1C. AMOUNT OF GRANT AND PAYMENT**

**1C.1.** The total estimated amount of this Grant for its full period, as set forth in Section 1B. above, is \$386,000.

**1C.2.** A.I.D. hereby obligates the amount of \$386,000 for the purposes of this grant during the indicated period set forth in Section 1B. above, thereby fulfilling A.I.D.'s funding requirements. A.I.D. shall not be liable for reimbursing the Grantee for any costs in excess of the obligated amount unless conditions expressed in 1.B. are met.

**1C.3.** Payment shall be made to the Grantee in accordance with procedures set forth in the Standard Provision of this Grant entitled "Payment - Periodic Advance", as shown in Attachment 3.

**1C.4.** Subject to availability of funds, evaluation of the program, program priorities at the time, and the requirements of the Standard Provisions of this Grant entitled "Revision of Grant Budget" additional funds may be obligated under this Grant as stipulated in para.1.B.

**1D. GRANT BUDGET**

**1D.1.** The following is the Budget for this Grant. The Grantee may not exceed the total estimated amount or the obligated amount, whichever is less (see Section 1C. above). Except as specified in the Standard Provision of this Grant entitled

"Revision of Grant Budget", as shown in Attachment 3, the Grantee may adjust line item amounts as may be reasonably necessary for the attainment of program objectives.

1D.2. Budget

<u>Cost Element</u>	<u>Amount</u>
<b>A. Operational expenses:</b>	
Purchase of office supplies	\$ 16,000
Farm and Laboratory supplies	\$ 45,000
<b>B. Office, Laboratory equipment and farm machinery:</b>	
Office and laboratory equipment	\$ 60,000
Farm machinery	\$127,000
<b>C. Project Vehicles:</b>	
4 four-wheel drive vehicles	\$ 76,000
<b>D. Technology Transfer and linkage Vehicles:</b>	
	\$ 62,000
<b>TOTAL</b>	<b>\$386,000</b>

1D.3. Inclusion of any cost in the budget of this Grant does not obviate the requirement for prior approval by the Grant Officer of cost items designated as requiring prior approval by the applicable cost principles (see the Standard Provision of this Grant set forth in Attachment 3 entitled "Allowable Costs") and other terms and conditions of this Grant, unless specifically stated in Section 1I. below.

1E. REPORTING

1E.1. Financial Reporting

1E.1.(a) Financial reporting requirements shall be in accordance with the Standard Provision of this Grant entitled "Payment - Periodic Advance", as shown in Attachment 3.

1E.1.(b) All financial reports shall be submitted to the Controller, USAID/Uganda. In addition, three copies of all financial reports shall be submitted to the A.I.D. Project Office

5

concurrently with submission of the Quarterly Technical Reports (See Section 1E.2. below).

**1E.1.(c)** The frequency of financial reporting and the due dates of reports shall be as specified in the Standard Provision of this Grant referred to in Section 1E.1.(a) above.

**1E.2. Program Performance Planning and Reporting**

**1E.2.(a) Project implementation Plan**

Not later than sixty (60) days from the effective date of this Grant (see Section 1B.above), the Grantee shall prepare and submit to the A.I.D. Project Officer, USAID/Uganda, five (5) copies of a project implementation plan, with critical path indicators (as described in Appendix A of A.I.D. Handbook 3), for the full term of this Grant.

**1E.2.(b) Quarterly Reports**

The Grantee shall submit five (5) copies of brief quarterly program performance reports, which coincide with the financial reporting periods described in Section 1E.1. above, to the A.I.D. Project Office. These reports shall be submitted with 30 days following the end of the reporting period, and shall briefly present the following information:

**1E.2.(b)(1)** A comparison of actual accomplishments with the goals established for the period. If the output of programs can be readily quantified, such quantitative data should be related to cost data for computation of unit costs.

**1E.2.(b)(2)** Reasons why established goals were not met, if applicable.

**1E.2.(b)(3)** Other pertinent information including the status of finances and expenditures and, when appropriate, analysis and explanation of cost overruns or high unit costs.

**1E.2.(c) Special Reports**

Between the required program performance reporting dates, events may occur that have significant impact upon the program. In such instances, the Grantee shall inform the A.I.D. Project Officer as soon as the following types of conditions become known:

**1E.2.(c)(1)** Problems, delays, or adverse conditions that will materially affect the ability to attain program objectives, prevent the meeting of time schedules and goals, or preclude the attainment of work units by established time periods. This

disclosure shall be accompanied by a statement of the action taken, or contemplated, and any A.I.D. assistance needed to resolve the situation.

**1E.2.(c)(2)** Favorable developments or events that enable time schedules to be met sooner than anticipated or more work units to be produced than originally projected.

**1E.2.(c)(3)** If any performance review conducted by the Grantee discloses the need for change in the budget estimates in accordance with the criteria established in the Standard Provision of this Grant entitled "Revision of Grant Budget," the Grantee shall submit a request for budget revision to the Grant Officer and the A.I.D. Project Officer.

**1E.2.(d)** Technical and Research Reports and Publications

The Grantee shall summarize technical and research activities of the project in reports, and distribute such reports to the appropriate USAID Missions, LCDs, and host country and international institutions in order to encourage use of the technology developed. Such reports will be completed within 60 days after completion of the activity. Journal articles and other publications are encouraged. See also Section 1I. of this Grant pertaining to publications.

**1E.2.(e)** Environmental Impact

If it appears that outputs of this project will result in an adverse environmental impact, the Grantee shall notify the A.I.D. Project Officer prior to implementation, in order to allow for orderly preparation of an environmental impact statement. The Grantee shall assure that appropriate U.S. Government and/or host country procedures are followed.

**1E.2.(f)** Trip Reports

Within 30 days following the completion of each international trip, the Grantee shall submit 3 copies of a trip report summarizing the accomplishments of the trip to the A.I.D. Project Officer specified in the cover letter of this Grant. If several individuals are travelling together to one site, a single report representing the group will suffice. The report shall include the purpose of the trip, technical observations, suggestions and recommendations, overall impressions of the site situation (if appropriate), and a list of persons visited with their title and organization affiliation.

**1E.2.(g)            Training Reports**

1E.2. (g) (1) If the Standard Provision entitled "Participant Training" applies to this Grant (see Section 1K. for applicability) the Grantee shall comply with reporting and information requirements of the Standard Provision of this Grant entitled "Participant Training", as well as Chapters 5 and 24 of A.I.D. Handbook 10.

1E.2.(g) (3) The Grantee shall provide ten (10) copies of all training manuals produced under this Grant to the A.I.D. Project Officer.

**1E.2.(h)            Final Report**

Within 90 days following the estimated completion date of this Grant (see Section 1B. above), the Grantee shall submit five (5) copies of a final report to the A.I.D. Project Office. In addition, two copies shall be submitted to A.I.D., POL/CDIE/DI, Washington, DC 20523-1802. It will cover the entire period of the Grant and include all information shown in Sections 1E.2.(b) through 1E.2.(f) above.

**1F.            Title to Property**

Title to property acquired hereunder shall vest in the Grantee, subject to the requirements of the Standard Provision of this Grant entitled "Title To and Use of Property (Grantee Title)" regarding use, accountability, and disposition of such property may be specified in Section 1I. below.

**1G.    PROCUREMENT AND (SUB)CONTRACTING**

**1G.1.            Applicability**

This section 1G. applies to the procurement of goods and services by the Grantee (i.e., contracts, purchase orders, etc.) from a supplier of goods and services (see the Standard Provisions of this Grant entitled "Procurement of Goods and Services" and "AID Eligibility Rules for Goods and Services"), and not to assistance provided by the Grantee (i.e., a subgrant or [sub]agreement) to a subrecipient (see the Standard Provision of this Grant entitled "Subagreements").

8

**1G.2.        Requirements**

In addition to other applicable provisions of this Grant, the Grantee shall comply with paragraph (b) (1) of the Standard Provision of this Grant entitled "AID Eligibility Rules for Goods and Services", concerning total procurement value of less than \$250,000 under this Grant. If, under the order of preference set forth in paragraph (b) (1) (i) of said Standard Provision, the Grantee procures goods or services from cooperating country sources, the Standard Provision of this Grant entitled "Local Cost Financing" shall also apply. However, paragraph (b) (1) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" does not apply to: the restricted goods listed in paragraph (e) of the Standard Provision entitled "Local Cost Financing", which must be specifically approved by the Grant Officer in all cases, except to the extent that such approval may be provided in Section 1I. below; or to paragraph (d) of said Standard Provisions pertaining to air and ocean transportation, to which the Standard Provision entitled "Air Travel and Transportation" and "Ocean Shipment of Goods" apply, respectively. Paragraph (b) (2) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" does not apply.

**1G.3.        Approvals**

Inclusion of costs in the budget of this Grant for the purchase of nonexpendable equipment obviates neither the requirement of Section j.13. of OMB Circular A-21 (for educational institutions) or Section 13 of Attachment B of OMB Circular A-122 (for nonprofit organizations other than educational institutions) for prior approval of such purchases by the Grant Officer, nor any other terms and conditions of this Grant, unless specifically stated in Section 1I. below.

**1G.4.        Title to Property**

See Section 1F. above.

**1H.         Indirect Cost Rates**

**1H.1.**       Pursuant to the Standard Provision of this Grant entitled "Negotiated Indirect Cost Rates - Provisional", an indirect cost rate or rates shall be established for each of the Grantee's accounting periods which apply to this Grant. Pending establishing of final or revised provisional indirect cost rates, provisional payments on account of allowable indirect costs shall

be made on the basis of the following negotiated provisional rate(s) applied to the base(s) which is (are) set forth below:

TYPE	RATE	BASE
Off-Site	18.8%	1/

1/ Base of Application: Total Direct Costs

**1I. Special Provisions**

**1I.1. Limitations on Reimbursement of Costs of Compensation for Personal Services and Professional Service Costs**

**1I.1.(a) Employee Salaries**

Except as the Grant Officer may otherwise agree in writing, A.I.D. shall not be liable for reimbursing the Grantee for any costs allocable to the salary portion of direct compensation paid by the Grantee to its employees for personal services which exceed the highest salary level for a Foreign Service Officer, Class 1 (FS-1), as periodically amended.

**1I.1.(b) Consultant Fees**

Compensation for consultants retained by the Grantee hereunder shall not exceed, without specific approval of the rate by the Grant Officer: either the highest rate of annual compensation received by the consultant during any full year of the immediately preceding three years; or the maximum rate of a Foreign Service Officer, Class 1 (FS-1) (as periodically amended), whichever is less. A daily rate is derived by dividing the annual compensation by 2,087 and multiplying the result by 8.

**1I.2. Compliance With Federal Guidelines and Regulatory Procedures Pertaining to Recombinant DNA**

**1I.2.(a)** The Grantee shall implement any research activities under this Grant which involve recombinant DNA in accordance with:

**1I.3.(c)** If A.I.D. does not choose to disclaim endorsement or dissociate itself from sponsorship or publication, the Grantee shall, in accordance with the Standard Provision of this Grant entitled "Publications", acknowledge A.I.D. support as follows:

"This publication was made possible through support provided by the Office of Agriculture, Bureau for Research and Development, U.S. Agency for International Development, under Grant No. LAG-4111-G-00-2026-00."

1I.3.(d) In addition to providing one copy of all published works and lists of other written work produced under this Grant to the A.I.D. Project Officer, as required by paragraph (b) of the Standard Provision of this Grant entitled "Publications", the Grantee shall also provide two copies of such publications and lists to A.I.D., PPC/CDIE/DI, Washington, D.C. 20523-1802.

1I.4. Equipment Purchases

1I.4.(a) Requirement for prior Approval

Pursuant to Sections 1D.3. and 1G.3. above and the Standard Provisions of this Grant entitled "Allowable Costs" and "Revision Grant Budget", and by extension, Section 13 of attachment B of OMB Circular A-122, the Grantee must obtain A.I.D. Grant Officer approval for purchases of the following:

1I.4. (a)(1) General Purpose Equipment, which is defined as an article of nonexpendable tangible personal property which is usable for other than research, medical, scientific or technical activities, whether or not special modifications are needed to make them suitable for a particular purpose (e.g., office equipment and furnishings, air conditioning equipment, reproduction and printing equipment, motor vehicles, and automatic data processing equipment having a useful life of more than two years and an acquisition cost of \$500 or more per unit); and

1I.4. (a)(2) Special Purpose Equipment, which is defined as an article of nonexpendable tangible personal property, which is used only for research, medical, scientific, or technical activities (e.g., microscopes, x-ray machines, surgical instruments, and spectrometers), and which has a useful life of more than two years and an acquisition cost of \$1,000 or more per unit).

1I.4. (b) Approvals

In furtherance of the foregoing, the Grant Officer does hereby provide approval for the following purchases, which shall not be construed as authorization to exceed the total estimated amount or the obligated amount of this Grant, whichever is less (see Section 1C. above): N/A

||

**1I.4.(c) Exception for Automation Equipment**

Any approval for the purchase of automation equipment which may be provided in Section 1I.4.(b) above or subsequently provided by the Grant Officer is not valid if the total cost of purchases of automation equipment (e.g., computers, word processors, etc.), software, or related services made hereunder will exceed \$100,000. The Grantee must, under such circumstances, obtain the approval of the Grant Officer for the total planned system of any automation equipment, software, or related services.

**1.I.4.(d) Compliance with A.I.D. Eligibility Rules**

Any approvals provided in Section 1I.4.(d) above or subsequently provided by the Grant Officer shall not serve to waive the A.I.D. eligibility rules described in Section 1G. of this Grant, unless specifically stated.

**1I.5. Restricted Goods**

Pursuant to Section 1G. above, paragraph (a) (3) of the Standard Provisions of this Grant entitled "AID Eligibility Rules for Goods and Services," and, if applicable (see Section 1K. below for applicability), paragraph (e) of the Standard Provision of this Grant entitled "Local Cost Financing," the Grant Officer's approval is required for purchase of the restricted goods described therein. In furtherance thereof, the Grant Officer does hereby provide such approval to the extent set forth below. The Grant officer's approval is required for purchases of such restricted goods if all of the conditions set forth below are not met by the Grantee. Any approval provided below or subsequently provided by the Grant Officer shall not serve to waive any terms and conditions of this Grant unless specifically stated.

**1I.5.(a) Agricultural Commodities**

Agricultural commodities may be purchased provided that they are of U.S. source (generally, the country from which the commodities are shipped) and origin (generally, the country in which the commodities are mined, grown, or produced) and purchased from a U.S. supplier, except that Wheat, rice, corn, soybeans, sorghum, flour, meal, beans, peas, tobacco, hides and skins, cotton, vegetable oils, and animals fats and oils cannot be purchased under any circumstances without the prior written approval of the Grant Officer.

**1I.5.(b) Motor Vehicles**

Motor vehicles may be procured from code 935 countries due to the

source of funds (DFA) and right hand drive vehicle requirement in Uganda.

**1I.5.(c) Pharmaceutical**

Pharmaceuticals may be purchased provided that all of the following conditions are met: (1) the pharmaceutical must be safe and efficacious; (2) the pharmaceutical must be of U.S. source and origin (see Section 1G. above) ; (3) the pharmaceutical must be of at least 51% U.S. componentry (see Section 1G. above); (4) the pharmaceutical must be purchased from a supplier whose nationality is in the U.S. (see Section 1G. above); (5) the pharmaceutical must be in compliance with U.S. Food and Drug Administration (FDA) (or other controlling U.S. authority) regulations governing United States interstate shipment of pharmaceutical; (6) the manufacturer of the pharmaceutical must be infringe on U.S. patents; and (7) the pharmaceutical must be competitively procured in accordance with the procurement policies and procedures of the Grantee and the Standard Provision of this Grant entitled "Procurement of Goods and Services."

**1I.5.(d) Pesticides**

Pesticides may only be purchased if the purchase and/or use of such pesticides is for research or limited field evaluation by or under the supervision of project personnel. Pesticides are defined as substances or mixtures of substances: intended for preventing destroying, repelling, or mitigating any unwanted insects, rodents nematodes, fungi, weeds, and other forms of plant or animal life or viruses, bacteria, or other micro-organisms (except viruses, bacteria, or other micro-organisms on or living in man or other living animals); or intended for use as a plant regulator defoliant, or desiccant.

**1I.5.(e) Rubber Compounding Chemicals and Plasticizer**

Rubber compounding chemicals and plasticizer may only be purchased with the prior written approval of the Grant Officer.

**1I.5.(f) Used Equipment**

Used equipment may only be purchased with the prior written approval of the Grant Officer.

**1I.5.(g) Fertilizer**

Fertilizer may be purchased if it is either purchased in the U.S. and used in the U.S., or if it is purchased in the cooperating country with local currency for use in the cooperating country. Any fertilizer purchases which do not comply with these

limitations must be approved in advance by the Grant Officer.

**1I.6. Limitation on Use of Funds**

1I.6.(a) The Grantee shall not utilize funds provided by A.I.D. for any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference or training in connection with the growth or production in countries other than the United States of an agricultural commodity for export which would compete with a similar commodity grown or produced in the United States.

1I.6.(b) The reports described in Section IE.2. shall contain statement indicating the projects or activities to which United States funds have been attributed, together with a brief description of the activities adequate to show that United States funds have not been used for the purpose in Section 1I.6.(a) above.

1I.6.(c) The Grantee agrees to refund to A.I.D. upon request an amount equal to any United States funds used for the purposes prohibited by Section 1I.6.(a) above.

1I.6.(d) No funds provided by A.I.D. under this Grant shall be used to provide assistance, either directly or indirectly, to any country ineligible to receive assistance pursuant to the Foreign Assistance Act as amended, related appropriations acts, or other statutes and Executive orders of the United States (also see the Standard Provisions of this Grant entitled "ineligible Countries").

**1J. RESOLUTION OF CONFLICTS**

Conflicts between any of the Attachments of this Grant shall be resolved by applying the following descending order of precedence:

- Attachment 1 - Schedule
- Attachment 2 - Program Description
- Attachment 3 - Standard Provisions
- Attachment 4 - Special Provision entitled  
"Restrictions on Lobbying"

ATTACHMENT 2

PROGRAM DESCRIPTION

The Statement of Work formulated by USAID/Uganda is attached hereto as the Program Description (Attachment 1) and is made a part of this Grant.

PROGRAM DESCRIPTION

**I. PREAMBLE**

IITA has developed plantain hybrids and cooking bananas resistant to the black sigatoka disease that is now widespread across East and Southern Africa. These varieties need to be tested and adopted to conditions in East and Southern Africa. In order to accomplish this a regional IITA center is needed in Uganda. With such a station, hybrids developed by IITA and cooking bananas from the region and elsewhere will be screened for resistance to black sigatoka. Resistant cultivars will be rapidly multiplied using in-vitro culture techniques and distributed to the national programs.

The overall objective of the regional center is to generate and distribute technologies which can facilitate increased production of cassava, bananas and plantains commensurate with national needs. In order to achieve this objective, the center will be designed to strengthen national cassava, banana and plantain research capacity in the development of high yielding and stable varieties for the mid-altitude ecologies of East and Southern Africa.

**II. CONSTRAINTS TO PRODUCTION OF CASSAVA, BANANAS AND PLANTAINS IN EAST AND SOUTHERN AFRICA**

One of the principal constraints to production of cassava, bananas and plantains in East and Southern Africa is the prevalence of pests and diseases. Cassava yields are heavily affected by the cassava mosaic virus and by bacterial blight disease. For example, an estimated 50% of the cassava crop in North-East and Eastern Uganda is being lost through serious infection by cassava mosaic virus resulting in food shortages in certain districts. Additionally, the rapid spread during the seventies and eighties of two pests, namely the cassava mealybug and the cassava green mite substantially reduced the output of cassava production in Uganda, Rwanda, Burundi, Zambia, Tanzania, Malawi and Mozambique.

The cassava green mite has been in Uganda since 1970 resulting in seasonal defoliation of top shoots of the many susceptible varieties being grown. The cassava mealybug has just been recorded in Uganda for the first time but it is already spreading rapidly. The devastation caused in neighboring countries by the mealybug necessitates emergency steps to address the situation. Owing to the stunted growth of the infested plants, the mealybug restricts availability of planting materials for subsequent seasons in addition to severe losses of root yield. These problems are further compounded by the presence of the cassava mosaic virus.

The spread of this disease is exacerbated by the use of infected cassava planting materials. Frequently, in disease infected areas, a lack of alternative propagation stock leaves farmers no choice but to use materials from the previous harvest of infected plants.

In addition, improper handling and storage of cassava stem cuttings prior to planting leads to poor crop establishment and, consequently, yield reduction. A related problem concerns the slow rate of multiplication of cassava at farm level, even though IITA and other national research institutions have developed rapid multiplication techniques for cassava.

The black sigatoka disease, caused by the fungus *Mycosphaerella fijiensis*, has become the overriding constraint to plantain and banana production. It causes leaf necrosis either partially or entirely, resulting in reduced foliage area and reducing yields between 30 - 50%, depending on the severity and incidence.

In West and Southern Africa, black sigatoka disease was first observed in Zambia in 1973, but it was first identified in East Africa (Rwanda, Burundi and Zanzibar) in 1987 (Sebasigari and Stover, 1988). In the last four years it has spread widely in the region and is already causing severe damage in the coastal areas of Tanzania and in parts of Uganda and Kenya.

The banana weevil, nematodes, fusarium wilt and bunchy-top virus also cause significant losses on banana and plantains in East and Southern Africa. These pests, together with soil fertility decline, contribute greatly to the rapid decline in yield of plantains and bananas in Africa compared to plantations in other parts of the world. In Uganda areas of major production have continually drifted northwards as people abandon their fields in a few years to seek more productive sites, mainly because of weevil and nematode problems.

### III. CASSAVA, BANANA AND PLANTAIN RESEARCH IN EAST AND SOUTHERN AFRICA

For the past several years, IITA's Root and Tuber Improvement Program has encouraged the development of national root and tuber improvement programs. The aim was to develop collaboration so that scientists in the region could benefit from and contribute to a cooperative regional research network. This led to the formation of the East and Southern African Root Crops Research Network (ESARRN) which works with the national programs and other agencies in information and germplasm exchange and the organization of regional forums. Testing of several lines of cassava in multilocational trials in most countries in East and Southern Africa is in progress. Multiplication of planting materials is also in progress.

Biological control of the cassava mealybug and green mite is in progress in Rwanda, Burundi, Uganda, Kenya, Tanzania, Zambia Malawi and Mozambique through collaboration between IITA and the national programs strengthened or set up by IITA's Biological Control Program. The biological control of the cassava mealybug has been very successful where implemented so far.

Little attention has been given to banana research in East and Southern Africa. Tanzania has perhaps the most active research program on the crop. In the Kagera Region a research and development project supported by the EEC has been concentrating on producing clean planting materials for farmers. Another project on weevil control has been coordinated by ICIPE and funded by GTZ.

A national banana cropping systems research project in Uganda has started. Participation by the Ministry of Agriculture is supported by IDRC, while Makerere University is supported by the Rockefeller Foundation. IITA has started a project with the Rockefeller Foundation to identify the constraints in banana production and to develop sustainable plant protection strategies against the major pests and diseases. Within the framework of this project, IITA has stationed an entomologist and a nematologist in Uganda, who are working with the national program in the detailed diagnostic survey of the banana cropping system. The International Institute for Biological Control (IIBC) carries out research on weevil control through fungal pathogens.

#### IV. OVERALL OBJECTIVES OF THE CENTER

The overall objectives of the Regional Center are to generate and distribute technologies which can facilitate increased and sustainable production of cassava, bananas and plantains commensurate with national needs. In order to achieve this objective, the Center will carry out research on the improvement of banana and cassava production systems in close cooperation with the National Agricultural Research Systems in the Region.

#### V. SPECIFIC OBJECTIVES

##### A) Banana and plantains

To provide systems analysis to determine the biotic and abiotic parameters affecting pest and disease distribution and severity, (including quantitative assessment of yield loss).

To study and improve traditional production practices within the context of an integrated pest management approach emphasizing host plant resistance, cultural and biological control.

To collect, characterize/evaluate, document and conserve Musa germplasm available in the region.

To develop and make available to small farmers improved cultivars with: (i) resistance to major diseases and pests with special emphasis on black sigatoka, banana weevil, parasitic nematodes and bunchy top virus, (ii) higher nutrient use efficiency for better adaptation to low input systems and (iii) good culinary quality.

To develop post-harvest processing techniques that will enhance banana and plantain utilization and storage.

To introduce rapid multiplication of planting materials using tissue culture techniques.

To conduct on-farm adaptive research.

#### **B. Cassava**

To collect, characterize/evaluate, document and conserve cassava germplasm available in the region.

To select and evaluate and make available to small farmers genotypes with improved plant types, good quality characteristics and suitable for the major intercropping systems in the cassava producing mid-altitude zones of the region.

To incorporate and select for resistance to cassava mosaic virus, bacterial blight and anthracnose and to enhance resistance/tolerance to cassava mealybug and green mite.

To adapt and develop sustainable and ecologically sound plant protection practices.

To facilitate releases of exotic natural enemies of the cassava green mite and the cassava mealybug, carry out follow up surveys and impact assessments.

To introduce and evaluate improved cassava processing and utilization technologies.

To expand rapid multiplication of cassava planting materials.

To conduct on-farm adaptive research.

#### **C. Soil Management**

To initiate studies on soil management systems that will enhance soil fertility and sustain the productivity of these crops.

#### **D. Training**

To provide a base, in collaboration with Makerere University and other regional institutions, for post graduate research training.

To provide for regional in-service production technology group training courses for cassava and banana/plantain technicians.

To organize individual training courses and exchange visits.

To produce training materials.

#### **VI. PROJECT ACTIVITIES**

The Regional Center will have its headquarters at Namulonge Research Station in Uganda. Currently it is planned to be staffed by a team of 7 scientists: a cassava breeder, a banana breeder, an entomologist, a soil scientist, an agronomist, a pathologist/nematologist and a team leader.

IITA will ensure that all research generated information is directed at farmers' needs, and that a system will be put in place to extend such information to farmers.

In order to ensure that appropriate and relevant technologies will be generated, the Regional Center will closely cooperate with the various national agricultural research systems.

It will be supported by IITA headquarters in Nigeria, and at Cotonou (Benin), as well as by its station at Onne (Nigeria), for sources of improved germplasm, plant protection activities, research management, and training.

Project activities will involve: establishment of the Regional Center with appropriate offices, laboratory and field research facilities for use by project scientists, post-graduate students, post-doctoral fellows and visiting national scientists. Other activities will include:

- (i) construction of residential houses
- (ii) development of the research farm
- (iii) construction of crop handling facilities including a workshop
- (iv) initiation of regional collaborative research.

#### **VII. REPORTING REQUIREMENTS**

The Grant will require that IITA submit 6 copies of a quarterly report detailing research and outreach activities to date. In addition, IITA will submit for approval by the IITA's Board of Directors and USAID, 6 copies of the annual workplan.

The quarterly progress reports will report on the degree of compliance with projected plans/targets as presented in the annual work plan, and will provide satisfactory explanations, should outputs differ substantially from anticipated targets. These quarterly reports will summarize the work performed during the period, note the problems encountered and the solutions developed to resolve them, and provide updated plans for next quarters. Quarterly financial statements for the quarter and projected expenditures for the next quarter will be attached as annexes.

#### VIII. PROGRAMMING OF INCREMENTAL DISBURSEMENTS

IITA will submit to USAID for review and approval its annual work plan. To the extent possible the dates by which specific project interventions will be accomplished e.g. varietal improvement, should be specified. Outreach activities should be detailed along with any training activities. The incremental funding to be provided by USAID/Kampala is subject to its availability, and will be programmed in accordance with approved workplan requirements.

#### IX. ORGANIZATION OF THE PROJECT

IITA shall be the Executive Agency and shall have a management agreement with the donors.

IITA shall have a Headquarters Agreement with the Government of Uganda.

The technical management of the research program will be the responsibility of the responsibility of the Executing Agency. It will work with NARS on regular basis for the purpose of planning and implementing the research program.

#### X. PROJECT EVALUATION

Monitoring and evaluation of the project will be accomplished through:

- i) Biennial regional planning workshops
- ii) An indepth evaluation during the third and fifth year in accordance with specific donor agreements. USAID/Kampala will provide one individual to serve on the evaluation team.

In addition, the activities will be subjected to regular IITA reviews which include internal and external reviews.

## **XI. EXPECTED IMPACT**

Banana/Plantain research in the region is relatively under developed, with very few trained researchers and very limited resources. The Center will develop improved technologies suitable to the region and establish breeding and plant health capabilities in East and Southern Africa, and will develop strong linkages with banana/plantain projects or networks in the region.

### **Indicators for Measuring impact**

- i) Number of improved genotypes identified and released as varieties.
- ii) Number of farmers growing improved varieties of cassava, bananas and plantains.
- iii) The amount of extra food realized as a result of planting improved varieties of cassava, bananas and plantains.
- iv) The extent to which cash income of farmers has improved as a result of planting improved varieties of cassava, bananas and plantains.
- v) The extent to which the mealybug and the cassava green mite have been controlled and the capacity for the production of natural enemies has been developed in the region.
- vi) The extent to which losses caused by pests and diseases has been reduced.
- vii) The number of NARS scientists trained in various areas of cassava, bananas and plantain research.
- viii) Number of exchange visits organized by the Center.
- ix) Amount of banana/plantain and cassava germplasm collected and documented.
- x) Number of operational tissue culture facilities for virus elimination and indexing of cassava and rapid multiplication of bananas and plantains.

## **XII. FUNDING CONTINGENCIES**

The grant from USAID to IITA provides partial funding for the operation of the regional center. IITA and other donors are expected to make up the balance. Continued USAID contributions to this project over the five year period will be contingent upon 1) the extent to which agreed upon workplans are accomplished, 2) the availability of funds and 3) IITA and other donor contributions (see Table II) to the center budget at a level sufficient to maintain project operations.

BEST AVAILABLE COPY

Table 1.: Estimated Budget for the USAID Contribution to the operation of the IITA Regional Center in Uganda

ITEM	1993	1994	1995	1996	1997	TOTAL
<b>1. Operational Expenses</b>						
Purchase of Office supplies	8	70	27	27	30	112
Farm and Laboratory Supplies	8	50	65	65	70	258
Sub-Total	16	70	92	92	100	370
<b>2. Office, Laboratory equipment and farm machinery</b>						
Office and laboratory equipment	41	90	30			161
Farm machinery	37	90	50			177
Sub-Total	78	180	80			338
<b>3. Project Vehicles</b>						
4 four-wheel drive vehicles	36	40				76
1 lorry (10 ton)*						
Sub-Total	36	40				76
*Already purchased by USAID Kampala for Namulonge Research Station; to be shared						

Table II

TOTAL ESTIMATED COSTS OF THE IITA REGIONAL  
SUB STATION - 5 YEAR BUDGET

<u>SOURCE</u>	<u>AMOUNT</u> <u>US\$</u>
MPED/USAID	1,681,180
IITA's contribution	2,969,000
USAID/Uganda	1,381,650
* GOU	750,000
** Unfunded costs	5,144,020
	-----
Total	11,925,850
	=====

\* In kind contributions by the GOU, land, houses, office and laboratory space etc.

\*\* To be requested from other donors

BEST AVAILABLE COPY

Table 1. cont.

ITEM	1993	1994	1995	1996	1997	TOTAL
4. Technology Transfer and Linkage						
4 pick-up trucks	16.00	46.00*				62.00
5. Publications			10.00	10.00	25.00	45.00
6. Research Expenses	10.00	45.00	60.00	60.50	66.50	242.00
7. Rehabilitation		27.00	3.00			30.00
8. Total	156.00	408.00	245.00	162.50	191.50	1163.00
9 18.8% overhead costs	29.32	76.71	46.06	30.55	36.00	218.65
10. Grand Total	185.33	484.71	291.06	193.05	227.50	1381.65

\* 1 pick-up  
1 lorry

26