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Dr. Laurence Stifel
Director General
International Institute of Tropical
Agriculture
Oyo Road, PMB 5320
Ibadan, Nigeria

Project: Semi-Arid Food Grains Research
and Development (SAFGRAD) II

Subject: Grant No. 698-0452-G-00-6024-00
Amendment No. 1

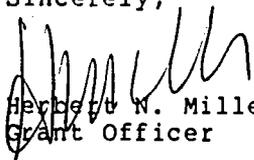
Dear Dr. Stifel,

The purpose of this Amendment No. 1 to the subject Grant, awarded to IITA on August 29, 1986, is to (1) provide additional funding in the amount of \$1,627,000, bringing total grant funding to date to \$3,472,000; and (2) extend the period covered by grant funding by thirty months from March 1, 1988 through August 31, 1990. The grant number is also hereby amended to read 698-0452-G-IC-6024-00.

Attachment I, entitled Schedule; Attachment II, Program Description; and Attachment III, Amplified Project Description have been deleted in their entirety and the revised attachments are enclosed herein. All other terms and conditions of the original Grant dated August 29, 1986 remain unchanged and in full force and effect.

Please sign the original and seven (7) copies of this letter to acknowledge your acceptance of this Amendment No.1 and return the original and six (6) copies to my office.

Sincerely,

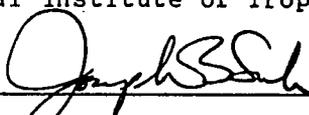

Herbert W. Miller
Grant Officer

Enclosures:

1. Schedule
2. Program Description
3. Amplified Project Description

ACKNOWLEDGED:

International Institute of Tropical
Agriculture

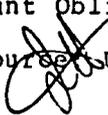
By: 

Title: Team Leader IITA/SAFGRAD

Date: 29 June 1987

FISCAL DATA

Appropriation: 72-1171021.3
Budget Plan Code: GDNA-87-21686-KG12
Total Estimated Amount: \$1,627,000.00
Total Amount Obligated: \$1,627,000.00
4527IITA

Funding Source:  USAID/Burkina Faso

72-1161021
GDAA-86-21686-AG12
625-0452-60022
\$1,845,000.00

(ALREADY OBLIGATED)

SCHEDULE

A. PURPOSE OF GRANT

The purpose of this Grant is to establish collaborative research networks for maize and cowpeas beginning in West and Central Africa. In addition the Grant will provide eighteen months of continued resident research on these crops in order to bring to fruition those technologies in the process of development over recent years which show greatest promise in terms of increasing maize and cowpea production in SAFGRAD countries. A principal program under SAFGRAD II is to develop the capacity and initiative of African scientists to direct maize and cowpea networks themselves.

B. PERIOD OF GRANT

The effective date of this Grant shall be the date on the first page of the Grant as is indicated therein. The expiration date of this Grant is August 31, 1991.

C. AMOUNT OF GRANT AND PAYMENT

1. AID hereby obligates the amount of \$1,627,000 for the purposes of this Grant, thus raising cumulative obligations to date to \$3,472,000.
2. This Grant is incrementally funded. The amount hereby obligated represents the estimated costs for the thirty-month period from March 1, 1988 to August 31, 1990. Additional funds shall be obligated as they become available in accordance with the Project Financial Plan.
3. Payment shall be made to the Grantee in accordance with procedures set forth in Attachment V - Optional Standard Provisions, 1, entitled "Payment - Periodic Advance".

D. FINANCIAL PLAN

The following is the Financial Plan for this Grant, including local cost financing items, if authorized. Revisions to this Plan shall be made in accordance with the Mandatory Standard Provision of this Grant, entitled "Revision of Grant Budget".

IITA GRANT FINANCIAL PLAN:
September 1, 1986 - August 31, 1990

Project No. 698-0452

	GRANT FINANCIAL PLAN			REVISIONS PER THIS ACTION			REVISED GRANT FINANCIAL PLAN		
	MAIZE NETWORK	COWPEA NETWORK	TOTAL	MAIZE NETWORK	COWPEA NETWORK	TOTAL	MAIZE NETWORK	COWPEA NETWORK	TOTAL
A. SALARIES & ALLOWANCES									
1. Professional Staff	414,000	276,000	690,000	212,100	212,100	424,200	626,100	488,100	1,114,200
2. Local Support Staff	149,000	99,400	248,400	90,100	68,000	158,100	239,100	167,400	406,500
Sub-total	563,000	375,400	938,400	302,200	280,100	582,300	865,200	655,500	1,520,700
B. OPERATIONAL EXPENSES									
1. Int'l/Local Travel	67,400	44,600	112,000	51,200	51,200	102,400	118,600	95,800	214,400
2. Vehicle Op./Maintenance	34,900	23,200	58,100	12,400	12,400	24,800	47,300	35,600	82,900
3. Workshops/Monitor. Tours	35,000	35,000	70,000	130,500	130,500	261,000	165,500	165,500	331,000
4. Advisory Comm. Meetings	15,000	15,000	30,000	54,000	54,000	108,000	69,000	69,000	138,000
5. Communications	18,000	12,000	30,000	28,900	28,900	57,800	46,900	40,900	87,800
6. Temporary Labor	75,600	50,400	126,000	45,700	22,900	68,600	121,300	73,300	194,600
7. Int'l Field/Lab Supplies	12,000	8,000	20,000	22,900	9,800	32,700	34,900	17,800	52,700
8. Local Field/Lab Supplies	69,600	46,400	116,000	12,100	9,600	21,700	81,700	56,000	137,700
9. Office Supplies	12,000	8,000	20,000	19,800	13,958	33,758	31,800	21,958	53,758
10. Network Support	12,000	12,000	24,000	41,000	41,000	82,000	53,000	53,000	106,000
11. Training	-	-	-	48,200	47,900	96,100	48,200	47,900	96,100
Sub-total	351,500	254,600	606,100	466,700	422,158	888,858	818,200	676,758	1,494,958
C. COMMODITIES & EQUIPMENT									
1. Field/Lab Equipment	33,500	33,400	66,900	5,000	5,000	10,000	38,500	38,400	76,900
2. Office Equipment	5,000	5,000	10,000	5,000	5,000	10,000	10,000	10,000	20,000
3. Household Equipment	5,000	5,000	10,000	-	-	0	5,000	5,000	10,000
4. Vehicles	50,000	22,000	72,000	25,000	25,000	50,000	75,000	47,000	122,000
Sub-total	93,500	65,400	158,900	35,000	35,000	70,000	128,500	100,400	228,900
D. OVERHEAD 1/									
	83,600	58,000	141,600	44,100	41,742	85,842	127,700	99,742	227,442
GRAND TOTAL	1,091,600	753,400	1,845,000	848,000	779,000	1,627,000	1,939,600	1,532,400	3,472,000

1/ 18% of A.1 + B.7 + C.1 + C.2 (rounded)

*See Section I this Schedule

The Financial Plan indicated above sets limitations for reimbursement of dollar costs for individual items. Without prior written approval of the Grant Officer, the Grantee may not exceed the grand total set forth in the budget nor may the Grantee exceed the dollar costs for any individual line item by more than 15% of such line item, except for the profit or fee which is fixed.

E. REPORTING AND EVALUATION

1. Financial Status Report

(a) The Grantee is required to use the standardized Financial Status Report, SF 269, to report the status of funds for this Grant.

(b) The report shall be on an accrual basis. If the recipient's accounting records are not normally kept on the accrual basis, the recipient shall not be required to convert its accounting system, but shall develop such accrual information through best estimates based on an analysis of the the documentation on hand.

(c) The report shall be required quarterly only. A final report shall be required at the completion of this Grant.

(d) The Grantee shall submit the Financial Status Report (original and no more than two copies) no later than 90 days after the end of each specified reporting period for quarterly and final reports. The specified report period, at the Grantee's election, may be either its fiscal year, or the yearly period commencing and ending on the last day of the month of the Grant's anniversary.

2. Monitoring and Reporting Program Performance

IITA will submit reports on the project as follows:

(a) Annual Report

The Grantee shall submit by May 31st of each year an annual progress report which will be related to the mid-year report and the Grant's Program Description and will include a narrative description of activities, the main achievements, major problems encountered, recommendations for improvement and follow-up activities in the next year.

(b) **Final Report**

Sixty (60) days prior to the completion of this Grant, the Grantee shall submit a draft of the final report summarizing findings and accomplishments over the Grant period, vis-a-vis the Grant's Program Description, as well as constraints encountered and recommendations for future research networking activities. If no comments are received from AID within 60 days of receipt of said report, the Grantee shall reproduce and submit the final report within 90 days after the expiration of this Grant.

(c) The Grantee shall promptly notify AID in writing of any problems, delays or adverse conditions that the Grantee believes will materially affect its ability to achieve program objectives.

(d) **Report Distribution**

(1) All annual and final reports will be distributed as follows:

- OAU/STRC 5 copies
- AID Project Officer 3 copies
- Contracting Officer 1 copy
- Network Advisory Committees 5 copies each
- Project Oversight Committee 5 copies

(2) Copies of all final reports shall be sent to the AID Reference Center, A.I.D., Washington, D.C. 20523 (2 copies).

(3) The Grantee shall have the right to publish according to the Grantee's standard procedures, any of the scientific and technical information generated under this Grant.

F. STANDARD PROVISIONS

The Mandatory Standard Provisions for "Non-U.S. Nongovernmental Grantees" (dated January 1985 and attached hereto as Attachment IV) and the Optional Standard Provisions (dated January 1985 and attached hereto as Attachment V) constitute the Standard Provisions of this Grant.

G. SPECIAL PROVISIONS

1. The following paragraphs of the Optional Standard Provisions are inapplicable and, therefore, have been deleted:

- 2. Payment - Cost Reimbursement
- 12. Participant Training
- 13. Voluntary Population Planning
- 14. Protection of the Individual as a Research Subject
- 18. Title to and Care of Property (U.S. Government)
- 19. Title to and Care of Property (Cooperating Country Title)
- 20. Cost Sharing.

2. Property Disposition:

At the end of the Project, or at any time that A.I.D.-financed commodities or equipment are no longer used for authorized Project purposes, the Grantee and A.I.D. will agree on final disposition based upon the written recommendations of the Grantee.

3. Evaluation:

Prior to any disbursement to finance project activities carried out by IITA after the second year of project implementation, except as A.I.D. may otherwise agree in writing, IITA shall furnish to A.I.D. in form and in substance satisfactory to A.I.D., evidence that the project evaluation performed during the second year of the project has been reviewed by IITA; that the performance of IITA has substantively met benchmarks established in this Grant Agreement or as set forth in Project Implementation Letters; and that IITA has taken into account recommendations, if any, made in the evaluation and has made adjustments so that its scope of work may be performed in a satisfactory manner.

4. The following additional provisions are applicable and form a part of this Grant:

- Attachment V.1 Health Unit Privileges/Burkina Faso
- Attachment V.2 Definitions of Absolute Language Proficiency Ratings

H. OVERHEAD RATE

Pursuant to the clause of the Optional Standard Provisions of this Grant entitled "Negotiated Overhead - Provisional Rates", a rate or rates shall be established for each of the Grantee's accounting periods during the term of the Grant. Pending establishment of final indirect cost rates for the initial period, provisional payments on account of allowable indirect costs shall be made on the basis of the following provisional rates applied to the base set forth below:

<u>Rate</u>	<u>*Base Figure</u>	<u>Period</u>
18%	\$1,263,800	From: 9/1/86 to 8/31/90

*The base of IITA costs includes salaries and allowances of professional staff, internationally-purchased field and lab supplies, field and lab equipment, and office equipment, as shown in Paragraph D, Financial Plan.

I. AUTHORIZED GEOGRAPHIC CODE

The Authorized Geographic Code for the procurement of goods and services under this Grant is the United States and the Cooperating Country. As used herein, "Cooperating Country" shall mean the country where the activity for which the goods and/or services are being procured will take place. Optional Standard Provision number five, entitled "Procurement of Goods and Services", and number six, entitled "Procurement of Restricted Goods and Services", provide additional guidance on Project procurement.

ATTACHMENT II

Grant No. 698-0452-G-IC-6024-00

Program Description: IITA

1. Introduction:

The International Institute of Tropical Agriculture (IITA) will provide technical assistance and program support under this grant for a period of 5 years for the implementation of the Semi-Arid Food Grains Research and Development (SAFGRAD) II Project. Specifically, IITA will have implementation responsibility for the Maize Collaborative Research Network and the Cowpea Collaborative Research Network. These two research networks are component parts of the overall SAFGRAD II Project. This grant is one of three grants provided by AID for the implementation of the Project; the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the Organization of African Unity/Scientific, Technical and Research Commission (OAU/STRC) are the other two recipients of AID grants. Each grantee's role and responsibilities under the Project are described in the Amplified Project Description, which is Attachment III to this grant. The IITA grant under the Project is briefly described in Article B., Sections 1(c) and 1(d) of the Amplified Project Description. This Program Description gives a more detailed description of IITA's functions and staffing pattern under SAFGRAD II.

2. Background

Since 1978, IITA has had primary responsibility under SAFGRAD to conduct regionally oriented research on cowpeas and maize in cooperation with national, regional and international research centers, and specifically to develop improved varieties of these crops and cultural practices which are compatible with African small farmers in semi-arid farming systems. The Government of Burkina Faso has hosted the resident research at Kamboinse Agricultural Research Station, with additional research being conducted at other research stations in different ecological zones throughout the country.

The technologies emanating from this resident research have provided the basis for a series of regional trials which are distributed annually on request to scientists from National Agricultural Research Systems (NARSs) from among SAFGRAD's 27 member countries. After having tested these technologies in their own countries, national researchers are then convened, along with other scientists, to an annual workshop hosted by IITA/SAFGRAD, in which results are evaluated and the subsequent year's program is established.

To reinforce this networking activity, IITA has also consulted frequently with NARSs and has conducted a variety of training programs in Burkina Faso and Nigeria. It has also assisted in the transfer of these technologies through on-farm tests in

collaboration with SAFGRAD Accelerated Crop Production Officers (ACPOs) in selected SAFGRAD member countries.

3. Current Program Objectives

Under this grant, IITA will maintain its current resident research team of five scientists based at Kamboinse station for a period of 18 months in order to bring to fruition those technologies in process of development over recent years which show greatest promise in terms of increasing maize and cowpea production in SAFGRAD member countries. These technologies will be required to fuel the incipient Maize Collaborative Research Network and Cowpea Collaborative Research Network--the development of which is the primary objective of the IITA/SAFGRAD program under SAFGRAD II.

IITA is expected to build on their previous years' experience, not only in the development of technologies, but also in initiating the new maize and cowpea networks. Both new networks are to be started first in West and Central Africa, but the exchange of relevant technical information across all regions of semi-arid Africa should not be ruled out when feasible. IITA will assign a coordinator for each crop network from among its five-member resident research team. It will also establish an Advisory Committee for each network composed of national researchers to help guide and direct the operations of the network. A principal underlying objective of the IITA program under SAFGRAD II is to develop the capacity and initiative of African scientists, and their respective national programs, to direct maize and cowpea networks themselves. This will necessarily involve an increasing willingness of NARSS and governments of SAFGRAD member countries to support agricultural research.

It is anticipated that the technologies which provide the scientific input for the networks will be forthcoming not only from IITA/SAFGRAD resident research but also from NARSS and other regional and international research programs. It is understood that the IITA/SAFGRAD resident research team will not have sufficient time to complete all lines of enquiry initiated under SAFGRAD I within the eighteen months allocated under SAFGRAD II. IITA is therefore to be encouraged to consider providing core or other funding for continued research activities beyond the 1987-88 cropping season. The funding for resident research under this grant will at least assure a sufficient supply of new production technologies to provide a basis for the establishment of the new cowpea and maize networks.

4. Research and Networking Description

4.1. Introduction

The SAFGRAD I Project as a whole and the IITA component in particular have been subjected to a mid-term and an

end-of-project evaluation, both of which concluded that the implementation has produced numerous positive results consistent with and contributing to the achievement of the project goals. The end-of-project evaluation team has recommended extending the project into a second phase and offered several recommendations as to program content. The present grant budgets \$3,472,000 for the period September 1, 1986 to August 31, 1990, the first four years of SAFGRAD Phase II. This grant will enable IITA:

- (1) to continue the resident research undertaken during SAFGRAD Phase I during the first eighteen months of the grant period, with only minimally necessary research activity to be undertaken during the remainder of the period;
- (2) to assume the leadership (by providing the network coordinators) to create the Collaborative Research Networks for maize and cowpeas. It is understood that during the first year and one-half of SAFGRAD Phase II resident research by IITA/SAFGRAD will continue but the maize and cowpea network coordinators will devote a substantial part of their time to establishing the networks.

4.2. Research

4.2.1. Locations

IITA/SAFGRAD will conduct research at the following sites in Burkina Faso:

a) Sudan Savanna

Kamboinse Research Station (INERA), located 14 km NE of Ouagadougou. Ferruginous tropical, hydromorphic and some ferrallitic soils (Palenstalfs, Plinthustalfs and Ustochrepts). Mean annual rainfall: 800 mm. Area: 30 hectares.

Loumbila (Ministry of Agriculture), located 15 km north of Ouagadougou. Mostly ferruginous tropical soils (Hapludalfs, Plinthustalfs, Ustorthents and Haplustalfs). Mean annual rainfall: 800 mm. Limited irrigation facilities are available. Area: 3 hectares.

Gampela (ISP), located about 20 km east of Ouagadougou. Mostly ferruginous tropical soils. Mean annual rainfall: 700 mm. Area: 6 hectares.

b) Sahel Savanna

Saouga, Gorom-Gorom (Ministry of Agriculture), located about 300 km north of Ouagadougou. Mean annual rainfall: 400 mm, or

Pobé (Ministry of Agriculture), located about 200 km north of Ouagadougou. Mostly ferruginous tropical soils (Haplargids and Cambiorthids). Mean annual rainfall: 450 mm. Area: 7 hectares.

c) Northern Guinea Savanna

Farako-Bâ Research Station (INERA), located 12 km SW of Bobo-Dioulasso. Weakly ferrallitic soils (Eustrustox, Haplustalfs, Ustorhents, and Palenstalfs). Mean annual rainfall: 1100 mm. Area: 17 hectares.

Valee du Kou Sub-station (INERA), located 20 km NE of Bobo-Dioulasso. Ferruginous tropical soils and hydromorphic soils "peu humifies." (Ustorhents and Tropaquepts). Mean annual rain-rainfall: 1100 mm. Area: 2 hectares. Irrigation facilities are available.

In addition to the above sites, some verificative research and demonstration type trials are conducted in farmers' fields.

Cowpea work is conducted in the three major ecologies, but maize work has dealt only with the Sudan and Northern Guinea Savannas.

4.2.2. Outline of Activities

4.2.2.1. Maize Breeding

Breeding for extra-early maize and drought resistant varieties will be the main objectives in the Sudan Savanna. In the Northern Guinea Savanna, intermediate streak resistant varieties from CIMMYT-IITA will be evaluated.

(1) Breeding for drought resistance

a) 194 Full-sib families have been developed from the cycle 1 of Pool-16. They will be tested for drought and general adaptability at four locations (Kamboinse, Gampela, Farako-Bâ and Tlaltizapan, Mexico). Experimental varieties (resistant and susceptible) will be developed and the best families recombined to start the cycle 3 of selection.

b) S1 families developed from latente x latente will be evaluated to identify the best families adapted to this environment.

c) Conjointly with the maize agronomist, 60 different materials will be tested for final evaluation and making the drought resistant maize pool.

(2) Breeding for extra-early maize

a) 32 F2 crosses between improved early and extra-early maize (Kamandaogo Tollo and Gua 314) will be evaluated and the remnant seed planted to make the first backcross. The earliest F2 single crosses will be recombined to make two extra-early populations (white and yellow).

b) Compuesto selection precoz, well adapted in this environment, will go through a cycle of selection for earliness.

c) A new population made from crosses between Jaune Flint de Saria (well-adapted early local material) and early improved materials will go through recombination and selection for earliness.

(3) Breeding for relay cropping

In the Northern Guinea Savanna zone, conjointly with the cowpea agronomist, intermediate and early streak resistant materials will be evaluated in relay cropping with cowpea.

(4) On-farm trials

The maize breeder and the maize agronomist will cooperate with INERA/SAFGRAD farming systems team and the ACPO in setting up multilocation testing and demonstration trials in farmers' fields of the most promising varieties.

(5) Cooperation with regional and international organizations

Conjointly with CIMMYT and IITA/Ibadan, the IITA/SAFGRAD team will conduct trials of intermediate and early populations and pools, including those having streak virus resistance.

(6) 1986-87 Regional testing

The Semi-Arid Regional Maize Trials (SARMAT) will continue. The Regional Uniform Variety Trials of early (RUVT-1), intermediate (RUVT-2), and extra-early (RUVT-3) varieties will be conducted in most SAFGRAD countries.

(7) Seed multiplication

- a) 36 varieties used in RUVT-1, RUVT-2, and RUVT-3 will be planted for seed increase.
- b) 60 varieties used for drought resistance trials will be planted for seed increase.

4.2.2.2. Maize Agronomy

Maize Agronomy research will continue in the Sudan and Northern Guinea Savanna to develop and refine management practices that: (1) better capture and utilize available rainfall; (2) reduce soil compaction; (3) maintain and/or improve soil fertility and productivity; (4) improve maize productivity under semi-arid conditions.

The following types of trials will be conducted:

- a) Methods of soil and seedbed preparation studies.
- b) Effect of soil cultivation on maize growth and yield.
- c) Intercropping, relay-cropping and crop rotation experiments, in order to establish systems that best utilize the available rainfall, reduce the risk of total crop loss by drought, and improve or conserve soil productivity--particularly by the use of legumes in the cropping system.
- d) Evaluation of the residual effect of fertilizers.
- e) Testing local and improved maize varieties for adaptation to conditions of low fertility and drought stress.
- f) Refinement of the tied ridging and tied earthing-up techniques:
Optimum timing of the tying operation, intensity of the tying operation (all the ridges or only every second furrow), utilization of old tied ridges in order to decrease labor costs, interaction of tied ridges with other cultural practices.
- g) Development, adaptation and testing of implements suitable for the construction of tied ridges in animal traction systems, both for donkeys and oxen.

h) Effect of planting dates on the efficiency of use of available rainfall and fertility.

i) Toposequence studies: reduction of the risk of drought stress by site selection or by other cultural practices in the high stress soils. Interactions between maize genotypes and crop position along the toposequence.

j) Mulching studies: effect of crop residues on water infiltration and crop growth and yield.

k) Evaluation of the local phosphatic rock (Burkinaphosphate).

l) Evaluation of soil physical and chemical properties and changes associated with the use of traditional and improved cultural practices.

m) Miscellaneous studies.

4.2.2.3. Maize Entomology

(1) Assessment of local and improved maize varieties for resistance to termites under natural field infestation (in collaboration with the maize agronomist and breeder).

(2) Evaluation of available insecticides (systematic, foliar treatments) for limited use in suppressing maize field insect pests (termites, Cicadulina, armyworms, Lepidopterous borers).

(3) Development of an integrated pest management system for successful maize production in semi-arid regions involving use of resistant varieties, judicious pesticide use and improved agronomic practices.

4.2.2.4. Cowpea Breeding

(1) Breeding for Striga resistance

The main objective is to combine Striga resistance with other desirable traits such as resistance to insect pests (aphids and bruchids), resistance to diseases (bacterial blight, pod blotch, etc), good seed quality, high yield, and to study agronomic factors associated with resistance. Work already in progress will be continued.

(2) Breeding for drought tolerance

The objective is to identify and develop cowpea lines resistant, tolerant or having escaping mechanisms to drought conditions. Experiments will be carried out to determine cowpea characteristics associated with drought resistance. Breeding material and varieties developed in 1985-86 will be tested in Pobé and Kamboinse.

(3) Breeding for insect resistance

The objective is to develop varieties resistant to important insect pests and to combine various resistances together in otherwise good backgrounds (high yielding, widely adapted, good seed quality, disease resistant, etc). Emphasis will be on lines particularly suitable for the semi-arid tropics, including Sahel zones, and photoperiod-sensitive cowpea.

(4) Breeding for adaptation

The objective is to develop or identify cowpea varieties that can be adapted to different ecological zones of the semi-arid tropics, with particular emphasis on their adaptability to dry areas and inter- or mixed cropping systems. Trials will include both photosensitive and photo-insensitive material developed by IITA/SAFGRAD and IITA/Nigeria.

In addition to overall adaptation, varietal tests will be made to select dual purpose cowpea varieties, i.e., varieties which will have both higher grain, as well as forage, yield.

(5) 1986-87 Regional trials

Two trials, one each on drought and Striga, were sent to participating national programs in the SAFGRAD project.

4.2.2.5. Cowpea Agronomy

The objective of the cowpea agronomy program is to develop new crop production technologies for economic cowpea seed yield in African semi-arid zones. Resident agronomic research will be conducted in 3 ecologies: Northern Guinea, Sudan and Sahel Savanna. Experiments will be

conducted both on-station and on-farm as described below:

(1) Northern Guinea Savanna

- a) Maize-cowpea relay cropping system.
 - i) Response of cowpea cultivars in a maize-cowpea relay cropping system.
- b) Sorghum intercropping with cowpea or soybean.
 - i) Response of cowpea cultivars in a sorghum/cowpea intercropping system.
 - ii) Response of soybean cultivars in a sorghum/soybean intercropping system.
- c) Soil and soil-water management.
 - i) Effect of interaction of tillage methods and soil fertility on a maize-cowpea relay cropping system.
 - ii) Effect of cowpea, crotalaria and sorghum as preceding crops on the performance of maize-cowpea relay cropping system.
 - iii) Residual effect of P 0 (applied to cowpeas) from two different sources on maize grain yield.
 - iv) Background effect of P 0 from two different sources, applied on cowpeas in 1984 and on maize in 1985, on sorghum performance in 1986.
 - v) Residual effect of liming applied on cowpea in 1985 on maize-cowpea relay cropping.

(2) Sudan Savanna

- a) Cowpea/sorghum intercropping.
 - i) Response of cowpea cultivars in a cowpea/sorghum intercropping system.
 - ii) Effect of sorghum and cowpea plant populations on their performance in an intercropping system.
- b) Management of pure crop cowpeas

i) Effect of dates of planting on the performance of newly developed cowpea cultivars (drought resistance).

ii) Effect of dates of planting on the performance of cowpeas under Striga infestation (Striga resistance).

iii) Effect of high soil temperature and drought on the performance of cowpeas (pot culture).

iv) Effect of dates of planting on dry matter production and partitioning of improved cowpea cultivars.

c) Soil and soil-water management

i) Residual effect of P O levels from two different sources, applied to cowpeas in 1984, on sorghum in 1986.

ii) Effect of interaction of mulching and zero tillage on cowpea performance.

iii) Effect of soil tillage methods and crop residue management on sorghum/cowpea intercropping system.

(3) Sahel Savanna

a) Millet-cowpea intercropping system.

i) Response of cowpea cultivars in a millet/cowpea intercropping system.

ii) Effect of millet and cowpea plant populations on their performance in an intercropping system.

b) Management of pure stand cowpeas.

i) Effect of dates of planting on the performance of newly-developed cowpea cultivars (drought resistance).

i) Effect of dates of planting on dry matter production and partitioning of improved cowpea cultivars.

iii) Effect of row-spacing and plant populations on cowpea performance.

iv) Effect of windbreak on the performance of cowpeas.

v) Integrated crop management windbreak (straw mulch and cultivars) in the Sahel.

(4) 1986-87 Regional testing

a) Maize/cowpea relay cropping trials conducted by NARSs in five countries:

Togo (1), Burkina Faso (1), Gambia (2), Senegal (2), Guinea (Conakry) (2).

b) Sorghum/cowpea intercropping trials conducted in six countries: Central African Republic (1), Burkina Faso (1), Chad (2), Gambia (2), Zambia (2), Guinea (Conakry) (1).

c) Cowpea management trial for the Sudan Savanna, conducted in two countries: Gambia (2), Senegal (2).

4.2.2.6. Cowpea Entomology

The objective is to develop an integrated pest management technology that is economically sound, environmentally safe and agronomically feasible. Functionally, much emphasis is placed on a vigorous host plant resistance breeding program to generate materials that are agronomically useable under different ecological conditions.

(1) Resident Research

a) Host plant resistance studies for reducing yield losses caused by insect pests: Aphids, Bruchids, Thrips, Maruca, Hemipteran Pod Bugs (in collaboration with cowpea breeder).

b) Cultural pest management studies (in collaboration with cowpea agronomist).

i) Intercropping trial (Effect of intercropping sorghum and cowpea on cowpea insect pests and grain yield).

ii) Row (or strip) intercropping trials: Effect of row or strip intercropping of cereals (maize, sorghum, millet) and cowpeas on cowpea insect pests and grain yield .

- c) Evaluation of available insecticides for cowpea pest suppression, with emphasis on safety, judicious use and cost.

(2) 1986-87 Regional Program

Minimum insecticide protection trial (Assess performance of improved cowpea varieties from national programs and IITA under minimum protection).

4.2.2.7. Soil-Water Management

(1) Water use by cropping systems.

- a) Water extraction by a maize/fodder crop mixture.
- b) Water extraction patterns of a maize/cotton association (in collaboration with the Maize Agronomy program).
- c) Soil water balance of cowpea under tied ridging.
- d) Root growth, water use and crop growth of millet in the Sudan Savanna.
- e) Water use by intercrop of millet and bambara groundnut.

(2) Soil management systems (in collaboration with ICRISAT).

- a) Effect of a water harvesting system and a soil management system on soil water availability and growth of sorghum.
- b) Seedbed trial (in collaboration with the Maize Agronomy Program).
- c) Soil amelioration with cover crops. The following cover crops to be planted under tied ridging, and changes in soil physical properties over time to be monitored:
Psopchocarpus palustris, Lablab purpureus cv. Highworth, Cajanus cajan, Alysicarpus vaginalis, Macroptilium artropurpureum cv siratro, Echnichloa colona, Vigna unguiculata, Digitaria horizontalis, Phaseolus aureus, Control (continuous maize), and Leucaena leucocphala.

d) Establishment of nursery of shrub species for future alley-cropping trials, planted as single rows, following methodology of ICRAF. Observations will be made on growth rates and root growth patterns of the following species: Acacia bidwilli, A. Ampliceps, A. ligulata, A. stenophylla, A. adsurgens, A. ancistrocarpa, A. cowleana, A. difficilis, A. hammondii, A. holosericea, A. stipuligera, A. tenuissima, A. torulosa, A. tumida, Casuarina equisetifolia ssp., equisetifo, C. cristata, A. senegal, A. nilotica, Jatropha cureus, Prosopis julifera, Leucaena leucocephala, and Cajanus cajan.

e) Effect of termites on soil physical properties.

f) Effect of 'biological' tied ridges on soil water storage.

(3) Erosion studies

a) Effect of artificial desurfacing on soil properties and crop growth.

(4) Miscellaneous

a) Modelling soil temperature in the Sudan Savanna.

4.2.2.8. Collaborative Research with the Burkina National Program (INERA)

Following the formal cessation of resident research activities under this grant (after 18 months), it is anticipated that a minimal amount of research on both maize and cowpeas will continue to be conducted, largely through collaboration with INERA scientists. The purpose of this resident research will be to support network activities.

(1) Maize

Trials will be conducted at Kamboinsé and Gampèla in the Sudan Savanna Zone and at Farako-Bâ in the Northern Guinea Savanna Zone. The following research activities are proposed:

a) Selection for extra early maturing maize varieties.

b) Selection for drought resistant maize varieties.

- c) Participation in regional variety trials.
- d) Increase in seed of varieties nominated for regional trials.
- e) Establishment of nurseries for training needs.

(2) Cowpea

Trials will be conducted at Kamboinsé in the Sudan Savanna zone and at Pobé and Djibo in the Sahel Savanna zone. The following research activities are proposed:

- a) Effect of sorghum (or millet) and cowpea plant populations and time of cowpea sowing on sorghum and cowpea performance in an intercropping system.
- b) Breeding and evaluation of cowpea cultivars for adaptation to semi-arid zones (including striga resistance).
- c) Increase in seed of cultivars nominated by national scientists for regional testing.

4.3. Networking

4.3.1. Description

SAFGRAD II is designed to increase the efficiency and effectiveness of agricultural research. A key element to this objective is the development of collaborative research networks in which African national scientists will play an increased decision-making role. IITA, while continuing resident research during the first year and one-half of SAFGRAD II, will take the leadership in establishing Collaborative Research Networks for maize and cowpeas. In particular, IITA will provide the Network Coordinator for maize (maize breeder) and the Network Coordinator for cowpeas (cowpea agronomist), each of which will devote a substantial part of his time during the first year and one-half to establishing and building up the networks. IITA will also provide technical backstopping and training on networking matters. The emphasis is on the development of linkages within and among the collaborating national research programs in order to promote the generation and transfer of new production technologies. Although IITA will fill an initial leadership role in facilitating the networks, their management should be such that researchers in national programs play an important role in network planning, monitoring and coordination. Over time, national agricultural research systems will assume leadership of the networks, with IITA providing a support role.

Each network will have an Advisory Committee composed of active researchers from the National Agricultural Research Systems (NARSs) and the IITA Network Coordinator, with a representative of the OAU/STRC SAFGRAD Coordination Office attending as an observer. The Advisory Committee will meet bi-annually. It will function as the coordinating body of the network, providing overall leadership and direction for the network. The Advisory Committees of the respective networks will have responsibility to set agendas for annual meetings, monitoring tours and commodity oriented, problem-specific workshops. The Network Coordinators will purchase tickets and make arrangements, as necessary, to support planning, implementing, analyzing and reporting on trials.

Regional workshops for both cowpeas and maize will be held in 1987, 1989 and 1991. These workshops will allow presentation and assessment of the results from the previous year's regional trials and other relevant research conducted by national programs. Based on these results, the workshop will recommend, and individual countries will select, trials for the current season. Other general decisions relating to the functioning of the network will also be taken at this time, including electing new members of the Advisory Committee as this becomes necessary.

During 1988 and 1990, monitoring tours will be conducted for both maize and cowpeas. These tours will permit researchers from certain network member countries to visit several other national programs and to observe and discuss the attributes and problems of these programs in considerable detail with the responsible parties. Monitoring tours thus provide a means for in-depth interaction and first-hand observation by national program scientists which reinforces the goals of the network and is otherwise rarely available.

Funds provided by USAID for maize and cowpea networking under SAFGRAD II are to be used to initiate activities first in West and Central African countries. It should be noted, however, that in 1986 IITA/SAFGRAD, operating under the framework of SAFGRAD I, sent regional maize and cowpea trials to all those SAFGRAD member countries that had requested them by April 1986.

In order to establish the maize and cowpea networks, the first task is to create the Advisory Committees. To this effect, a workshop was held in Ouagadougou in March 1987 and participants from the NARSs and IITA elected the scientists for the Advisory Committees. Before the workshop, the Network Coordinators, jointly with the OAU/STRC SAFGRAD Coordination Office, had informed the Agricultural Research Directors of the countries concerned about the SAFGRAD II aims and the workshop objective. The Advisory Committees elected at the workshop had their first meeting immediately after the workshop and have scheduled another one later in 1987.

Training is another vital aspect of networking which is to be undertaken under the grant. It is anticipated that this will take the form of small, annual in-service training workshops focusing on particular production problem areas or research methods. Participants at different training sessions will include research scientists and technicians from SAFGRAD member countries. Some potential topics include the applications of tied ridges, seed production and varietal maintenance, and data processing and interpretation.

4.3.2. Regional Trials

Each year's regional trials will be approved by the regional workshop (in years in which the workshop is held) or the network Advisory Committee (in alternate years). Individual NARSs will then select those trials which are of interest to them and/or which have been assigned as part of that country's responsibilities within the network. The 1987 regional trials are listed below. Maize agronomic trials related to soil fertility, drought stress, soil compaction and crop rotation, as well as trials on seed quality, are expected to get underway during the 1988 crop season.

4.3.2.1. Maize

- (1) Regional Uniform Early Variety Trials (RUVT-1) to identify early maize varieties, i.e. 90-95 days to maturity.
- (2) Regional Uniform Intermediate Variety Trials (RUVT-2) to identify intermediate maize varieties, i.e. 96-110 days.
- (3) Regional Uniform Extra-Early Variety Trials (RUVT-3) to identify extra-early maize varieties, i.e. less than 82 days.

4.3.2.2. Cowpea

- (1) Regional Trials for Drought Tolerance (SAC-DRT) to study the adaptation of promising cowpea lines in semi-arid zones.
- (2) Regional Cowpea Striga Resistance Trials (SAC-SRT) to study the reaction of Striga resistant lines from Burkina Faso in other Striga-infested countries.
- (3) Regional Observations Nursery (SAC-ONT) to observe the reaction of newly developed lines selected for insect and multiple disease resistance in different SAFGRAD member countries.

(4) Regional Sorghum-Cowpea Intercropping Trials (SAS-CIT) to study the response of cowpea cultivars to insecticide treatments in an intercropping system with sorghum.

(5) Regional Millet-Cowpea Intercropping Trials (SAM-CIT) to study the response of cowpea cultivars to insecticide treatments in an intercropping system with millet.

(6) Regional Maize-Cowpea Relay Cropping Trials (SAM-CRT) to study the response of cowpea cultivars in a relay cropping system.

(7) Regional Minimum Insecticide Application Trials (SA-MIAT) to study the response of cowpea cultivars to minimum insecticide application.

5. Implementation and Staffing

In fulfilling the program set forth under this grant, IITA/SAFGRAD will cooperate actively with other SAFGRAD entities and National Agricultural Research Systems, as laid out in the Amplified Project Description. Specifically, IITA will consult with the OAU/STRC SAFGRAD Coordination Office in planning for workshops, Advisory Committee meetings and monitoring tours -- although IITA will retain primary implementation responsibility for these activities. IITA representatives will also attend project Oversight Committee meetings as observers in order to receive guidance on IITA's research and networking programs and to interact with other SAFGRAD cooperators. As appropriate, IITA will also provide research materials for on-farm trials for SAFGRAD's Accelerated Crop Production Officer (ACPO) and Farming Systems Research (FSR) programs. IITA will also provide limited amounts of seed for on-farm trials for SAFGRAD's ACPO and FSR programs.

The following staffing will be required for the purpose of carrying out the above research and networking activities during the first four years of SAFGRAD II:

Maize Network

1 Maize Breeder/Network Coordinator	48 man/months
1 Maize Agronomist	18 man/months
1 Soil-Water Management Specialist	18 man/months

Cowpea/Network

1 Cowpea Agronomist/Network Coordinator	48 man/months
1 Entomologist	18 man/months

It should be noted, however, that the staff grouping above is only a matter of convenience. The Soil-Water Management Specialist works with both maize and cowpeas, as

well as other crops in the context of cropping systems. The Entomologist devotes about 75% of his time to cowpea pests and about 25% to maize pests.

6. Logistical Support

The Grantee shall be responsible for the administrative and logistical support, including housing and utilities, to the technical assistance personnel provided by this Grant. Technical assistance personnel in Burkina Faso shall be allowed limited access to the American Embassy Health Unit, in accordance with regulations for its use and as stated in Attachment 5.1. The host government plans on providing office space to the Grantee.

7. Language Requirements

Technical assistance personnel stationed in West Africa shall have the capability to speak French at the S-3 level (FSI rating). Refer to Attachment 5.2, language criteria. AID reserves the right to test such capability.

ATTACHMENT III
Grant No. 698-0452-G-IC-6024-00
IITA

Amplified Project Description

Article A: Background and Summary:

This Project Agreement for the Semi-Arid Food Grains Research and Development (SAFGRAD) II Project provides \$9,800,000 over a five year life-of-project to enhance the capabilities of national scientists and research institutions of SAFGRAD member countries to conduct agricultural research. This will be done through the establishment of agricultural research networks for those food crops predominating in the semi-arid zones of Africa, i.e. sorghum, millet, maize and cowpeas. The networking mechanism is intended to allow participating SAFGRAD member countries to share research results and related information through the interaction of agricultural commodity researchers within the National Agricultural Research Systems (NARSS) and the international agricultural research community. The Project's emphasis on the strengthening of agricultural research networks will foster stronger linkages within and among collaborating NARSSs for the promotion, development and transfer of new production technologies for semi-arid food crops.

The overall SAFGRAD program is under the sponsorship of the Organization of African Unity/Scientific, Technical and Research Commission (OAU/STRC), with participation of the International Institute of Tropical Agriculture (IITA) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the two principal International Agricultural Research Centers (IARCs) responsible for semi-arid crop research in sub-Saharan Africa.

The goal of SAFGRAD II is to increase the productivity and production of sorghum, millet, maize and cowpeas among small-scale producers in SAFGRAD member and cooperating countries. The purpose of the Project is to increase the efficiency and effectiveness of agricultural research on the aforementioned staple food crops in the SAFGRAD region by:

- strengthening commodity-specific research networks to plan, broaden their base of support and make productive use of resources; and
- strengthening the service capacity of the OAU/STRC SAFGRAD Coordination Office (SCO) to facilitate NARSS' participation in networking and obtain internal support for national agricultural research programs to accomplish this purpose.

To achieve the Project's purpose and output objectives, the United States Government will support the implementation of the following five components: networking (including resident commodity research); the SAFGRAD Coordination Office, including on-farm testing through the Accelerated Crop Production Officer (ACPO) Program; project management; evaluation and audit; and contingencies.

Article B: United States Government Contribution:

A.I.D. project inputs under this Project Agreement will total \$9,800,000 over a five year period as detailed in this Article B (refer to Attachment I, Project Financial Plan):

1. Networking:

This Project will support the establishment of collaborative agricultural research networks on sorghum in West Africa, sorghum and millet in East Africa, maize -- starting in West and Central Africa, and cowpeas -- starting in West and Central Africa. In support of the research networks, the project will support resident commodity research on sorghum, millet, maize and cowpeas for the first year and a half of the project. The resident commodity research will provide necessary scientific input into the research networks and will be supported by a regional research program which implements region-wide trials, i.e. uniform variety trials for the four principal SAFGRAD - mandated crops. The resident research will be conducted by IITA for maize and cowpeas and by ICRISAT for sorghum and millet.

Initially, the IARCs will provide network coordinators, but will gradually shift responsibility for network coordination to national scientists as is feasible over the life of the project.

Each network will be assisted in its organization and direction by an advisory committee. The advisory committees will be composed of practicing researchers from participating SAFGRAD member countries, the network coordinator and the SCO as observer. The advisory committees, in collaboration with IITA and ICRISAT, will implement and monitor network activities and provide policy direction for the network membership. To this end, the advisory committees will review work plans and progress reports and will provide guidance on all technical and managerial matters of the networks. This includes responsibility for setting agendas for regional workshops, monitoring tours and problem-specific workshops within each commodity network.

a. West African Sorghum Collaborative Research Network:

Under the Project, the West African Sorghum Collaborative Research Network will be established comprising up to seventeen countries. ICRISAT, in collaboration with the advisory committee for the West African Sorghum Network, will have the principal responsibility for the implementation and coordination of this network for the full five-year period of the project. As such, ICRISAT will provide a network coordinator, who will be based in Burkina Faso, to direct the sorghum research network and who will be funded for the full five-year period of the project. The network coordinator, a sorghum breeder, will also carry out a limited amount of his own research if time permits. In support of this research

network, ICRISAT will also provide an additional sorghum breeder who, with the network coordinator, will conduct resident commodity research for the development of improved technologies (varieties and agronomic practices) for improved sorghum production. The ICRISAT sorghum breeder will, likewise, be based in Burkina Faso and will be funded for eighteen (18) months under the project.

Budget for the West African Sorghum Collaborative Research Network:

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	813,000
B. Operational	655,000
C. Commodities	90,000
D. Overhead	<u>122,000</u>
TOTAL	1,680,000

b. East African Sorghum/Millet Collaborative Research Network:

The Project will support the East African Sorghum/Millet Collaborative Research Network which comprises six African countries and was established during the SAFGRAD I Project. ICRISAT, in collaboration with the advisory committee for this network, will, likewise, have the principal responsibility for the implementation and coordination of the network for the full five-year period of the project. To this end, ICRISAT will provide a network coordinator, who will be based in Nairobi, Kenya, to direct this network and who will be funded for the full five years of the project. Additionally, ICRISAT will provide an Agronomist to conduct direct research in support of networking activities. The Agronomist will, likewise, be based in Nairobi, Kenya, and will be funded for twelve (12) months under the Project.

Budget for East African Sorghum/Millet Collaborative Research Network:

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	693,000
B. Operational	603,000
C. Commodities	50,000
D. Overhead	<u>104,000</u>
TOTAL	1,450,000

C. Cowpea Collaborative Research Network:

The Project will support the Cowpea Collaborative Research Network which will first be undertaken in West and Central Africa. A prototype cowpea network was established during the SAFGRAD I Project with the participation of nearly all of SAFGRAD's twenty-six member countries. IITA, in collaboration with the advisory committee to be established for this network, will have the principal responsibility for the implementation and coordination of the network for the full five-year period of the project. IITA will provide a network coordinator, who will be based in Ouagadougou, Burkina Faso, for at least two years to direct this network and who will be funded for the full five years of the project. IITA will support the Cowpea Collaborative Research Network by providing a two-member resident commodity research team (agronomist and part-time entomologist) to conduct research for the development of improved technologies (varieties and agronomic practices) for improved cowpea production. It is anticipated that a member of the resident commodity research team will also serve the function of network coordinator. The IITA cowpea resident commodity research team will be funded for one and a half years under the project. A cowpea breeder not funded by AID is also a member of this team.

Budget for Cowpea Collaborative Research Network

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	774,000
B. Operational	835,000
C. Commodities	100,000
D. Overhead	116,000
TOTAL	1,825,000

d. Maize Collaborative Research Network:

The Project will support the Maize Collaborative Research Network which will also be first undertaken in West and Central Africa. A prototype maize network was, likewise, established during the SAFGRAD I Project which included countries from all regions of the continent. IITA, in collaboration with the advisory committee to be established for this network, will have the principal responsibility for the implementation and coordination of this network. IITA will provide a network coordinator, who will be based in Ouagadougou, Burkina Faso, to direct this network and who will be funded for the full five years of the project. IITA will support the Maize Collaborative Research Network by providing a three-member

resident commodity research team (agronomist, maize breeder and a soil and water management specialist) to conduct research for the development of improved technologies (varieties and agronomic practices) for improved maize production. It is anticipated that a member of the resident commodity research team will also serve the function of network coordinator. The IITA maize resident commodity research team will be funded for one and a half years under the project. The IITA entomologist, while spending most of his time on cowpea research, will also conduct some research on maize.

Budget for Maize Collaborative Research Network:

	<u>U. S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	993,000
B. Operational	989,000
C. Commodities	128,000
D. Overhead	145,000
TOTAL	2,255,000

2. SAFGRAD Coordination Office (SCO):

The Project will provide support to the OAU/STRC for the continued operation of the SAFGRAD Coordination Office (SCO) located in Ouagadougou, Burkina Faso, for a period of two years to assist the participating NARSs and the IARCs in establishing the collaborative research networks and in implementing broad research policies established by the Oversight Committee for the SAFGRAD-mandated crops. The SCO will provide the political dimension required to assist the participating scientists and research organizations in transcending national boundaries to facilitate the movement of scientists, germplasm, research information, and research supplies between countries, including support for network meetings. The SCO is the key organization for facilitating the transition of the networking responsibilities to leadership provided by the NARSs. The SCO will serve as a liaison between the IARCs and NARSs and will help organize and sit as observers on the various advisory committees for the collaborative crop research networks. The SCO will also promote cooperation among the SAFGRAD member countries and provide assistance to help overcome political and operational problems which may limit the effectiveness of the networks by encouraging NARSs to allocate the necessary resources required for the effective participation in the networks.

a. Oversight Committee and Sponsoring Group:

A project Oversight Committee will be organized through the intervention of the SAFGRAD Coordination Office in conjunction with Directors of Research from SAFGRAD member countries. The committee will be composed of approximately five members representing African national agricultural research administrators, prominent scientists and members of university faculties of agriculture. The SAFGRAD Coordination Office, IITA and ICRISAT will attend committee meetings as observers. The role to be played by the Oversight Committee is as follows:

- to provide guidance in management and policy issues for SAFGRAD;
- to review work plans and provide guidance on how SAFGRAD could provide effective technical services to national research programs of member countries;
- to facilitate the formation of food grain and related networks administered by scientists of participating countries; and
- to review technical progress of network resident research, ACPOs and other SAFGRAD activities to ensure further financial support.

The SAFGRAD Coordination Office will also organize a Sponsoring Group, composed primarily of donors, which will be convened periodically to be presented progress reports and proposals of the various SAFGRAD research cooperators. The purposes of this forum are to keep current and potential donors informed of progress to date within each research component and to floor proposals for additional research activities requiring further donor support.

b. On-Farm Testing:

A key component of SAFGRAD I was the Accelerated Crop Production Officer (ACPO) Program which promoted the transfer of promising technologies between national agricultural research institutions and extension services. The ACPO program conducted on-farm tests of relevant technologies and reported the results back to national research and extension programs, as well as to researchers at regional centers. The SAFGRAD II Project will support the ACPO programs in Burkina Faso and Mali for an additional year and a half to assist in their transfer into the respective national programs. The Project will also support an evaluation of the SAFGRAD ACPO experience for purposes of delineating any possible future interventions for technology transfer activities, and one ACPO workshop is also to be funded.

Budget for SCO/ACPO Programs:

	<u>U.S. Dollars</u>
A. Salaries and Allowances	330,000
B. Operations	05,000
C. Commodities	40,000
D. Oversight Committee and Sponsoring Group Meetings	60,000
E. ACPO Programs	<u>350,000</u>
TOTAL	\$1,085,000

3. Project Management

Lessons learned during the implementation of SAFGRAD I underline the importance of clear and unified project management support for SAFGRAD II. As such, full implementation responsibility will be with USAID/Burkina, with support from the USAID Regional Economic Development Service Office for West and Central Africa (REDSO/WCA). In addition to USAID's in-house project management, the Project will fund a Senior Agricultural Project Advisor and an Accountant to assist USAID/Burkina and its Office of General Development in carrying out their responsibilities. Short-term technical assistance will also be provided for under this Project Agreement on an as-needed basis.

a. Senior Agricultural Project Advisor:

The Senior Agricultural Project Advisor will be an experienced agricultural research administrator with specific skills in networking. He will monitor the implementation of all project components and activities and be a working link between USAID/Burkina and the OAU/STRC. He will consult regularly with commodity network coordinators and participating national scientists. This individual will be provided to the project under a direct contract with USAID/Burkina. The services of the Senior Agricultural Project Advisor will be required for the full five years of the project.

b. Accountant:

In view of the expanded USAID/Burkina project management role, it is necessary to fund the services of an Accountant under the project for a two year period. The Accountant will be recruited locally and be contracted under a direct contract with USAID/Burkina. The Accountant will be directly responsible to the USAID/Burkina Office of Financial Management and will act as the Project's financial expert in coordinating the finances for the project -- including assisting the SCO in financial management and reporting, budgeting, review of

Project Implementation Letters relating to budget revisions, liaison with the SCO in applying USAID financial regulations, and maintaining USAID/Burkina financial records and files for the overall project.

c. Short-Term Technical Assistance

Short-term technical assistance will be for support to the SCO in problem and opportunity-specific areas such as research policy, information and documentation management, and operations and administration.

Budget for Project Management:

	<u>U.S. Dollars</u>
A. Senior Agricultural Project Advisor	819,000
B. Accountant	37,000
C. Short-Term Technical Assistance	50,000
D. Oversight Committee Meetings (years 3-5)	75,000
E. National Agricultural Research Directors Meetings (years 3 and 5)	<u>90,000</u>
TOTAL	1,071,000

4. Evaluation and Audit:

The Project will provide funding for a mid-term and final evaluation and audit to enable USAID/Burkina and all Project cooperators to gauge the Project's impact and provide analyses upon which more effective project implementation can be promoted.

Budget for Evaluation and Audit:

	<u>U.S. Dollars</u>
A. Evaluations	200,000
B. Audit	30,000
TOTAL	230,000

5. Contingencies:

The Project will provide funding under this Project Agreement to accommodate contingency needs and to offset the effects of inflation. U.S. Dollars 204,000 is provided for this purpose.

Article C: SAFGRAD Member Country Contribution:

The SAFGRAD member countries participating in the Project will provide in-kind contributions totally \$1,800,000. The bulk of this contribution will be comprised of staff salaries and facility use -- including equipment, land, researchers and research support personnel salaries and administrative support.

Article D: Outputs:

The SAFGRAD II Project Outputs will be the following:

1. SAFGRAD Coordination Office will be fully staffed.
2. SAFGRAD Oversight Committee meets annually.
3. Research for each collaborative research network reviewed and evaluated annually.
4. Future research activities identified, planned and allocated among participants.
5. In-country research implemented by NARSs.
6. Varieties released and cultural practices recommended.
7. Responsive technical backstopping by IITA and ICRISAT.
8. Network advisory committees meet biannually.
9. Network priorities are reflected in NARSs' decision-making.
10. Opportunities for future donor support at regional and national levels clarified.

Article E: End of Project Status:

The End of Project Status for SAFGRAD II will be the following:

1. Effectively operating collaborative research networks (West African sorghum, East African sorghum/millet, maize and cowpea) which will operate by the following criteria:

- established common goals;
- leadership by an apolitical entity with continuity;
- policy set by advisory committee of researchers;
- conducts, at least, annual meetings to identify objectives, technical problems, and review past research; and
- effective linkage to Southern African millet/sorghum network.

2. Effectively functioning service-oriented SCO that:
 - implements policies established by the Oversight Committee;
 - exercises oversight on research networking;
 - analyzes and plans for the future; and
 - facilitates information exchange on research.

Article F: Implementation:

1. OAU/STRC Responsibilities:

One implementing organization for the SAFGRAD II Project will be the OAU/STRC, which is headquartered in Lagos, Nigeria. The OAU/STRC has established the SAFGRAD Coordination Office (SCO) in Ouagadougou, Burkina Faso, and will delegate to it certain authorities which will facilitate effective implementation of the project, such as financial management and program coordination. The SCO will be directed by the International Coordinator for SAFGRAD and be staffed by additional professional and support personnel funded by AID. The SCO will also oversee the implementation of the ACPO programs.

The International Coordinator will be the principal OAU/STRC liaison official between the OAU/STRC and USAID/Burkina for project management. The International Coordinator will have direct control over the administration of the SCO, the operating expense budget, facility use, and SCO personnel. Administrative support will be provided by the OAU/STRC headquarters in Lagos, Nigeria. The SCO will have a Controller responsible for the overall financial management of the Project, with financial management and audit support from OAU/STRC in Lagos.

2. USAID Responsibilities:

A direct hire staff member of the USAID/Burkina Office of General Development will be the designated Project Officer and will have project management and monitoring responsibilities for overall project implementation on the part of USAID. USAID/Burkina will also be responsible for procuring evaluation and audit teams.

Utilizing funds under this Project Agreement, USAID/Burkina will contract the services of a Senior Agricultural Project Advisor to assist with project management and advise the SCO and SAFGRAD research cooperators on SAFGRAD program and policy issues. Additionally, USAID/Burkina will contract the services of an Accountant to assist USAID/Burkina's Office of Financial Management in providing financial management backstopping to the Project. Occasionally the services of the Regional Legal Advisor and Regional Contracting Officer will be requested from REDSO/WCA.

3. IARCs:

The two IARCs participating in the Project, IITA and ICRISAT, will receive direct grants from USAID to implement the network coordination and resident commodity research activities under the Project.

3/10

IITA and ICRISAT will follow program and policy directives for SAFGRAD as formulated by the project Oversight Committee and will cooperate actively with the respective committees for the collaborative research networks.

Article G: Financial Plan

The Project Financial Plan is subject to change by representatives named in Section 8.2, or their designated representatives, without formal amendment of the Project Grant Agreement. Transfers may be made between line items provided that no line item is increased by more than 15% without written agreement of the parties and further provided that the total funds available to the Project are not exceeded.

Article H: Disbursement Procedures:

The disbursement of funds for the operating expenses of the SCO and IITA will be done by reimbursement of funds against periodic advances. The financial reporting system to be used will be the one developed and set in place by the USAID Sahel Regional Financial Management Project. Financial reporting for the Burkina Faso ACPO will also be handled by the SCO. USAID/Mali will disburse funds and provide accounting for the Mali ACPO program.

The disbursement of funds for the direct grant to ICRISAT will be done through the submission of financial reports justifying expenditures against the grant and subsequent reimbursement for approved grant expenditures.

ATTACHMENT III

SEMI-ARID FOODGRAINS RESEARCH AND DEVELOPMENT II
PROJECT NO. 698-0452
PROJECT AGREEMENT, ANNEX I

ATTACHMENT 1: PROJECT FINANCIAL PLAN (\$000)

=====				
	Authorized Project Funding	Obligations To Date	Obligations Per This Action	Total Project Obliga- tions
=====				
I. West Africa Sorghum Collaborative Research Network (ICRISAT)	1,680	430	1,250	1,680
II. East Africa Sorghum/Millet Collab. Research Network (ICRISAT)	1,450	270	1,180	1,450
ICRISAT Subtotal	<u>3,130</u>	<u>700</u>	<u>2,430</u>	<u>3,130</u>
III. Cowpea Collaborative Research Network (IITA)	1,825	753	779	1,532
IV. Maize Collaborative Network (IITA)	2,255	1,092	848	1,940
IITA Subtotal	<u>4,080</u>	<u>1,845</u>	<u>1,627</u>	<u>3,472</u>
V. SAFGRAD Coordination Office/ ACPO Programs	1,085	643	442	1,085
VI. Project Management	1,071	165	542	707
VII. Evaluation and Audit	230	-	100	100
VIII. Contingencies	204		59	59
OUA/STRC Subtotal	<u>2,590</u>	<u>808</u>	<u>1,143</u>	<u>1,951</u>
PROJECT TOTAL	<u>9,800</u>	<u>3,353</u>	<u>5,200</u>	<u>8,553</u>

UNITED STATES
INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
OUAGADOUGOU, BURKINA FASO

UNITED STATES ADDRESS
OUAGADOUGOU (I.D.),
DEPARTMENT OF STATE
WASHINGTON, D.C. 20520

INTERNATIONAL ADDRESS
U.S.A.I.D.
C/O AMERICAN EMBASSY
B.P. 35
OUAGADOUGOU BURKINA FASO

Official File Copy

Dr. Leslie Swindale
Director General
ICRISAT
Patancheru P.O
Andhra Pradesh 502324

Project: Semi-Arid Food Grains Research
and Development (SAFGRAD) II
Project Number: 698-0452

Subject: Grant No. 698-0452-G-00-6023-00
Amendment No. 1

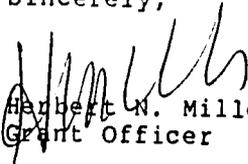
Dear Dr. Swindale,

The purpose of this Amendment No. 1 to the subject Grant, awarded to ICRISAT on September 1, 1986 is to (1) provide additional funding in the amount of \$2,430,000, thereby fully funding the grant to its life-of-project total of \$3,130,000; and (2) extend the period covered by grant funding by forty-eight months through the SAFGRAD II PACD, August 31, 1991. The Grant number is also amended to read 698-0452-G-IC-6023-00.

Attachment I, entitled Schedule; Attachment II, Program Description; and Attachment III, Amplified Project Description have been deleted in their entirety and the revised attachments are inserted in lieu thereof. All other terms and conditions of the original Grant dated September 1, 1986 remain unchanged and in full force and effect.

Please sign the original and seven (7) copies of this letter to acknowledge your acceptance of this Amendment No. 1 and return the original and six (6) copies to my office.

Sincerely,


Herbert N. Miller
Grant Officer

Enclosures:
- Attachment a/s

Acknowledged:

International Crops Research Institute
for the Semi-Arid Tropics

By :


Ronald W. GIBBONS

Title: Executive Director, ICRISAT-Sahelian Center and
West African Programs

Date: 26 June 1987

FISCAL DATA

Appropriation: 72-1171021.3
Budget Plan Code: GDNA-87-21686-KG12
Total Estimated Amount: \$ 2,430,000.00
Total Amount Obligated: \$ 2,430,000.00
4527ICRISAT
Funding Source: USAID/Burkina Faso

72-1161021
GDAA_86-21686-AG12
625-0452-60021
\$ 700,000.00
(ALREADY OBLIGATED)



Attachment I
Grant No. 698-0452-G-IC-6023-00
ICRISAT

SCHEDULE

A. PURPOSE OF GRANT

The purpose of this Grant is to address the sorghum improvement problems of Western Africa and sorghum and millet improvement problems in East Africa by concentrating on production problems and constraints having regional significance, and by establishing the necessary links with national, regional and international institutes to serve the entire region effectively, as more specifically described in Attachment II to this Grant entitled "Program Description".

B. PERIOD OF GRANT

The effective date of this Grant is September 1, 1986. The expiration date of this Grant is August 31, 1991.

C. AMOUNT OF GRANT AND PAYMENT

1. AID hereby obligates the amount of \$2,430,000 for the purposes of this Grant, bringing total Grant financing to date to \$3,130,000.
2. This Grant is incrementally funded. The amount hereby obligated represents the estimated costs for the remaining forty-eight months of the grant period, i.e., from September 1, 1987 to August 31, 1991.
3. Payment shall be made to the Grantee in accordance with procedures set forth in Attachment V - Optional Standard Provisions, 2, entitled "Payment - Cost Reimbursement".

D. FINANCIAL PLAN

The following is the Financial Plan for this Grant, including local cost financing items, if authorized. Revisions to this Plan shall be made in accordance with the Mandatory Standard Provision of this Grant, entitled "Revision of Grant Budget".

The Financial Plan indicated below sets limitations for reimbursement of dollar costs for individual items. Without prior written approval of the Grant Officer, the Grantee may not exceed the dollar costs for any individual line item by more than 15% of such line items, except for the profit or fee which is fixed.

I C R I S A T G R A N T F I N A N C I A L P L A N
 Sept. 1, 1986 - Aug. 31, 1991

	GRANT FINANCIAL PLAN 09-01-86 TO 08-31-87			REVISIONS PER THIS ACTION 09-01-87 TO 08-31-91			REVISED GRANT FINANCIAL PLAN 09-01-86 TO 08-31-91		
	WEST AFRICA	EAST AFRICA		WEST AFRICA	EAST AFRICA	TOTAL	WEST AFRICA	EAST AFRICA	TOTAL
A. SALARIES & ALLOWANCES									
1. Senior Professional Staff	174,500	85,000	259,500	411,910	456,410	868,320	586,410	541,410	1,127,820
2. Support Staff	49,000	26,000	75,000	177,225	125,890	303,115	226,225	151,890	378,115
Sub-total	223,500	111,000	334,500	589,135	582,300	1,171,435	812,635	693,300	1,505,935
B. OPERATIONAL EXPENSES									
1. Travel	30,000	15,000	45,000	91,300	87,100	178,400	121,300	102,100	223,400
2. Research Labor	15,000	30,000	45,000	30,300	29,750	60,050	45,300	59,750	105,050
3. Vehicle Op./Maintenance	6,000	10,000	16,000	17,500	15,900	33,400	23,500	25,900	49,400
4. Reg. Workshop/Mon. Tours	40,000	40,000	80,000	150,000	150,000	300,000	190,000	190,000	380,000
5. Communications	10,000	5,000	15,000	48,600	45,600	94,200	58,600	50,600	109,200
6. Advisory Com. Meetings	20,000	10,000	30,000	70,000	64,000	134,000	90,000	74,000	164,000
7. Office/Lab Supplies	9,500	4,500	14,000	28,295	36,305	64,600	37,795	40,805	78,600
8. Network Support	12,000	6,000	18,000	47,000	23,500	70,500	59,000	29,500	88,500
9. Training	-	5,000	5,000	30,000	25,000	55,000	30,000	30,000	60,000
Sub-total	142,500	125,500	268,000	512,995	477,155	990,150	655,495	602,655	1,258,150
C. COMMODITIES & EQUIPMENT									
1. Field/Lab Equipment	5,500	5,000	10,500	11,000	9,000	20,000	16,500	14,000	30,500
2. Office Equipment	5,000	2,800	7,800	7,750	7,600	15,350	12,750	10,400	23,150
3. Household Equipment	20,000	4,000	24,000	2,750	2,600	5,350	22,750	6,600	29,350
4. Vehicles	-	-	-	28,000	14,000	42,000	28,000	14,000	42,000
5. Crop Processing	-	5,000	5,000	10,000	-	10,000	10,000	5,000	15,000
Sub-total	30,500	16,800	47,300	59,500	33,200	92,700	90,000	50,000	140,000
D. OVERHEAD 1/	33,500	16,700	50,200	88,370	87,345	175,715	121,870	104,045	225,915
GRAND TOTAL	430,000	270,000	700,000	1,250,000	1,180,000	2,430,000	1,680,000	1,450,000	3,130,000

1/ 15% of Salaries and allowances (rounded)

CA

E. REPORTING AND EVALUATION

1. Financial Status Report

- (a) The Grantee is required to use the standardized Financial Status Report, SF 269, to report the status of funds for this Grant.
- (b) The report shall be on an accrual basis. If the recipient's accounting records are not normally kept on the accrual basis, the recipient shall not be required to convert its accounting system, but shall develop such accrual information through best estimates based on an analysis of the the documentation on hand.
- (c) The report shall be required quarterly only. A final report shall be required at the completion of this Grant.
- (d) The Grantee shall submit the Financial Status Report (original and no more than two copies) no later than 90 days after the end of each specified reporting period for quarterly and final reports. The specified report period, at the Grantee's election, may be either its fiscal year, or the yearly period commencing and ending on the last day of the month of the Grant's anniversary.

2. Monitoring and Reporting Program Performance

- (a) Annual Progress Report: The Grantee shall be required to submit an Annual Progress Report which will be related to the Grant's Program Description and include a summary narrative description of activities, major achievements, problems, and recommendations for future research relating to the West Africa Regional Sorghum Research Network and the East Africa Sorghum/Millet Research Network. This report will be due on June 1 of each year.
- (b) Final Report: Sixty (60) days prior to the completion of the Grantee's services, the Grantee will submit a draft final report providing an overall analysis of the West Africa Regional Sorghum Research Network and the East Africa Sorghum/Millet Research Network. Within ninety (90) days after completion of Grantee services, the Grantee shall submit the final report. The Final Report shall include a review of the Project's accomplishments, lessons learned and recommendations for future research networking efforts.
- (c) The Grantee shall promptly notify A.I.D. in writing of any problems, delays, or adverse conditions that the Grantee believes will materially affect its ability to achieve program objectives.

(d) All annual and final reports shall be distributed as follows:

USAID/Burkina	4 copies
OAU/STRC	5 copies
Network Advisory Committees	5 copies each
Project Oversight Committee	5 copies

Copies of all final reports shall be sent to the AID Reference Center, A.I.D., Washington, D.C. 20523 (2 copies).

F. STANDARD PROVISIONS

The Mandatory Standard Provisions for Grants with Non-Profit Organizations - Other Than Educational Institutions (dated January 1985 and attached hereto as Attachment IV) and the Optional Standard Provisions (dated January 1985 and attached hereto as Attachment V) constitute the Standard Provisions of this Grant.

G. SPECIAL PROVISIONS

1. The following paragraphs of the Optional Standard Provisions are inapplicable and, therefore, have been deleted:

1. Payment - Periodic Advance
12. Participant Training
13. Voluntary Population Planning
14. Protection of the Individual as a Research Subject
18. Title to and Care of Property (U.S. Government)
19. Title to and Care of Property (Cooperating Country Title)
20. Cost Sharing.

2. Property Disposition:

At the end of the Project, or at any time that A.I.D.-financed commodities or equipment are no longer used for authorized Project purposes, the Grantee and A.I.D. will agree on final disposition based upon the written recommendations of the Grantee.

3. Evaluation:

Prior to any disbursement causing cumulative expenditures to exceed \$1,998,000, or to finance Project activities carried out by ICRISAT after the second year of Project implementation,

except as A.I.D. may otherwise agree in writing, ICRISAT shall furnish to A.I.D. in form and in substance satisfactory to A.I.D., evidence that the Project Evaluation performed at the end of the second year of the Project has been reviewed by ICRISAT; that the performance of ICRISAT has substantively met benchmarks established in this Grant Agreement or as set forth in Project Implementation Letters; and that ICRISAT has taken into account recommendations, if any, made in the evaluation and has made adjustments so that its scope of work may be performed in a satisfactory manner.

4. The following additional provisions are applicable and form a part of this Grant:

- Attachment V.1 Health Unit Privileges/Burkina Faso
- Attachment V.2 Definitions of Absolute Language Proficiency Ratings

H. OVERHEAD RATE

Pursuant to the clause of the Optional Standard Provisions of this Grant entitled "Negotiated Overhead - Provisional Rates", a rate or rates shall be established for each of the Grantee's accounting periods during the term of the Grant. Pending establishment of final indirect cost rates for the initial period, provisional payments on account of allowable indirect costs shall be made on the basis of the following provisional rates applied to the base set forth below:

<u>Rate</u>	<u>*Base Figure</u>	<u>Period</u>
15%	\$1,505,935	From: 9/1/86 to 8/31/91

*The base figure of ICRISAT costs includes salaries and allowances as shown in Paragraph D, Financial Plan.

I. AUTHORIZED GEOGRAPHIC CODE

The Authorized Geographic Code for procurement of goods and services under this Grant is the United States and the Cooperating Country. As used herein, "Cooperating Country" shall mean the country where the activity for which the goods and/or services are being procured will take place. Optional Standard Provision number five, entitled "Procurement of Goods and Services", and number six, entitled "Ineligible and Restricted Goods and Services", provide additional guidance on Project procurement.

ATTACHMENT II: PROGRAM DESCRIPTION

Grant No. 698-0452-G-IC-6023-00
ICRISAT

I. INTRODUCTION:

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) will provide technical assistance and program support under this grant for a period of 5 years for the implementation of the Semi-Arid Food Grains Research and Development (SAFGRAD) II Project. Specifically, ICRISAT will have implementation responsibility for the West Africa Regional Sorghum Research Network and the East Africa Regional Sorghum/Millet Research Network. These two research networks are component parts of the overall SAFGRAD II Project. This grant is one of three grants provided by AID for the implementation of the Project; the International Institute of Tropical Agriculture (IITA) and the Organization of African Unity/Scientific, Technical and Research Commission (OAU/STRC) are the other two recipients of AID grants. Each grantee's role and responsibilities under the Project is described in the Amplified Project Description which is Attachment III to this grant. The ICRISAT grant under the Project is briefly described in Article A., Section 1. a. and b. of the Amplified Project Description. This Program Description gives a detailed description of ICRISAT's functions under SAFGRAD II.

2. PREAMBLE

2.1. East Africa. ICRISAT and SAFGRAD jointly initiated an Eastern and Southern Africa Sorghum and Millet program in which the main objective was to initiate a regional network of sorghum and millet research and to organize and coordinate regional sorghum and millet varietal trials. The regional coordination office was set up in August 1982 in East Africa and now operates in cooperation with OAU/STRC/IBAR in Nairobi, Kenya. Since its establishment the program has developed good links with the national sorghum and millet programs of the region. Six countries are currently involved in the network.

A major sorghum and millet project covering the SADCC countries and funded by USAID is now in progress. Therefore, it will be appropriate to consider the Eastern Africa region alone as a unit and develop a program for that region.

2.2. West Africa. During Phase I, SAFGRAD has strengthened on-going ICRISAT activities in sorghum improvement in West Africa by placing three scientists at the Institute of Agricultural Research at Samaru in Nigeria and one scientist in the research station at Kamboinsé in Burkina Faso. By 1984, as a result of reorganization, two scientists' positions were initiated at Kamboinsé and all positions at Samaru were abolished.

The overall objective of the team of scientists funded through SAFGRAD and other sources was to initiate research programs on sorghum breeding, pathology, entomology, Striga and agronomy so as to generate improved genetic material possessing resistance to diseases, pests and drought which could produce significantly more and more stable yield than the land races currently grown by farmers, when grown under improved management and input conditions. Finally, a second objective was to establish a research network among the 17 national programs in the region interested in sorghum improvement so as to facilitate rapid transfer of information, knowledge, genetic material and technology.

3. ORIENTATION AND BRIEF PROJECT DESCRIPTION

3.1. East Africa. The East African region is very large and diverse. It has a total area of about 3.0 million square kilometers. Elevations range from sea level to over 3000 meters. Most of the region is an elevated plateau lying between 900 and 3000 meters. Sorghum and millet are cultivated between 800 and 2200 meters except in Somalia where sorghum and millet are grown from 400 to 1400 meters. Differences in location and physiography are reflected in the wide range of climates, soils, and crop requirements found within the region. Well over 75% of the region is semi-arid in nature, where rainfall ranges between 400 and 1000 mm during the growing season.

Rainfall is seasonal, falls for 3.5 to 5 months, and is highly variable. Countries involved in the SAFGRAD network are Burundi, Ethiopia, Kenya, Rwanda, Somalia, and Uganda.

There is concern in East Africa over the low and unpredictable yields of all food crops. There is an urgent need to increase and stabilize food production and to improve the conditions of small farmers through research and training in areas prone to drought. Shortages of basic food grains have become a common occurrence, and the region is a net importer of food.

ICRISAT can have an immediate role in catalyzing research by providing research personnel, germplasm, information, training and research technology.

A major part of ICRISAT's role will be to identify and facilitate training of national scientists, to strengthen the current national sorghum and millet programs' immediate needs for research, and to participate with national programs in breeding and agronomy programs. This will ensure long-term continuity of research, follow-through on the crops and cropping systems associated with production, and transfer of both technology and improved cultivars to the farmer.

The project proposes to address the sorghum and millet improvement problems of Eastern Africa on a regional basis. The project will concentrate on problems and constraints having regional significance. The Regional Network Coordinator will establish the necessary links with national, regional and international institutes to serve the entire region effectively.

The objectives of the regional project are:

- a) To increase the production of sorghum and millet through development of improved cultivars and cropping systems, thereby contributing to stabilization of food supplies in the region, and leading to improved nutrition and income for farmers in the drier areas of the region.
- b) To assist and strengthen the research capability of national sorghum and millet improvement programs and contribute to their effectiveness in all agro-ecological, semi-arid zones.
- c) To develop varieties and hybrids adapted to the different agro-ecosystems in East Africa and fit these into agronomic/management practices capable of giving high and stable yields in this semi-arid environment.
- d) To organize and promote systematic regional testing of available, introduced, and locally improved cultivars and hybrids, and of technologies developed specifically for this semi-arid zone.
- e) To facilitate training and manpower development of East African nationals at all levels.
- f) To organize regional workshops to improve the effectiveness of scientists in all areas of research and the capabilities of the private and public sectors to produce an adequate supply of seed for distribution to farmers.

3.2. West Africa. Sixty-six percent of the semi-arid tropics (SAT) lie in Africa, of which 24% lie in West Africa -- where nearly 100 million people live on small farms at a subsistence level. Sorghum and millet are important cereal crops in the region. West Africa accounts for about one-fourth of SAT production of sorghum. The average yield of sorghum is low: 600 to 900 kg per hectare. To serve West Africa, and especially the Sudanian (600-900 mm rainfall) and North Guinean (900-1200 mm) bioclimatic zones, ICRISAT has reorganized its regional multi-disciplinary team of sorghum scientists to undertake continued sorghum improvement. The two sorghum scientists in SAFGRAD Phase II will be complementary to the ICRISAT

sorghum improvement team based at the Regional Center in Niamey. Countries involved in the SAFGRAB network are Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Gambia, Ghana, Guinea, Guinea Bissau, Côte d'Ivoire, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

ICRISAT can have an immediate role in catalyzing research by providing germplasm, information, training and research technology.

A major element in strategy should be to identify and facilitate training of national scientists, coupled with strengthening the current national sorghum programs' immediate needs for research. This will ensure long-term continuity and follow-through on the crops and systems associated with production.

The proposed project is to address the sorghum improvement problems of West Africa on a regional basis. The project will concentrate on problems and constraints having regional significance. The Regional Network Coordinator will establish the necessary links with national, regional and international institutes to serve the entire region effectively. The Sorghum Breeder will concentrate his activity in the rainfall zone of 900-1200 mm in West Africa.

The objectives of the regional project are:

- a) To increase the production of sorghum, thereby contributing to stabilization of food supplies in the region and leading to improved nutrition and income for farmers in the drier areas of the region.
- b) To assist and strengthen national sorghum improvement programs and contribute to their research needs in all agro-ecological, semi-arid zones.
- c) To develop improved varieties and hybrids and agronomic/management practices capable of giving higher and more stable economic yields in the semi-arid environments.
- d) To organize and promote systematic regional testing of available and improved genetic material and technology in the semi-arid zone.
- e) To facilitate the training and manpower development of West African nationals at all levels.
- f) To organize regional workshops and monitor uniform yield trials through field inspections.

4. PROJECT JUSTIFICATION:

4.1. East Africa. The six East African countries of Burundi, Ethiopia, Kenya, Rwanda, Somalia and Uganda have a population of 89 million. Present population growth is far greater than the rate of increase in food production. It is essential that production of cereals and legumes be increased by at least 3% annually.

Shortage of trained manpower and of resources seriously limit the effectiveness of regional sorghum and millet improvement programs. Useful basic breeding material and trained manpower, however, are available at several research centers and can form the core for an effective regional program. Individual national programs on sorghum improvement in the region range from the relatively strong, such as in Ethiopia, to very weak, such as in Burundi and Rwanda. Research programs that will provide the needed cultivars and crop production and protection technologies to give stable and satisfactory yields must be developed.

The development and transfer of improved cultivars and sorghum and millet production technologies among similar ecological zones in the region is essential. Hence, strengthening the sorghum research links between the different national programs is expected to be beneficial for all countries in the region, provided that a major thrust in such expansion of the regional program focuses on strengthening the national programs of the region.

4.1.1. Sorghum Production

Most of the sorghum produced in East Africa is used on the homestead for food or home brewing of beer and relatively little is traded to urban areas. Sorghum, unfermented or fermented, is an important food item in the rural areas. Average grain yields obtained by small farmers in the region range between 500 and 1000 kg/ha, compared with yields of between 1000 and 2500 kg/ha on research stations in several countries of East Africa, where improved varieties are grown under good management. These figures illustrate the potential for sorghum grown under rainfed conditions, provided all factors related to production are favorable. In the lower end of the range (500 kg/ha in Somalia) the potential for increased yields is at least equal to the potential increase in the upper range (1000 kg/ha in Ethiopia). The well-being and survival of the people in the region are intertwined with the performance of the sorghum crop. Bountiful sorghum harvests signal periods of prosperity for the native population. Over 70% of the population in the region is engaged in agriculture and lives in rural areas.

4.1.2. Sorghum and Millet Production Constraints

Local landrace varieties are generally tall and late. These varieties fail to produce grain in the lower elevations when rain stops early in the growing season. Thus, there is a need in the region to develop different varieties that can produce grain under the variable rainfall regimes in the lowlands, highlands and midlands.

a) Soils in the region are mostly heavy or light and of low fertility. Increases in production on such soils, even with improved varieties, are not possible without some improvement in soil management and other farming practices.

b) Stem borer, midge and shoot fly are serious problems in the region. Varieties resistant to these insect pests are needed.

c) Birds (Quelea) do severe damage on sorghum and millet, especially in Somalia, Burundi, Kenya and Uganda. Bird resistant cultivars with good nutritional qualities need to be identified.

d) Diseases such as grain mold, long smut, ergot and downy mildew can seriously reduce cereal yields in the region. ICRISAT has recently initiated cooperative research projects with national programs to identify resistant breeding lines.

4.1.3. Importance of Sorghum Versus Millet in the Region

Both sorghum and millet are grown in East African countries. The total national surface area and production of sorghum is much higher than that of millet in all the Eastern African countries except Uganda. This is reflected by the emphasis being placed on sorghum in national programs. Little information is available on millet production in the region except for Kenya, where soil and water resources are limited. The potential for millet cultivation, however, is tremendous. As a cereal, it is adapted to areas with as little as 250 mm of rainfall during the growing season. Increases in population pressure demand parallel increases in food production, even in this extremely arid zone.

4.2. West Africa. The 17 West African countries have a population of around 100 million and the rate of increase in population is greater than the rate of increase in food production. It is essential that cereal food production be stepped up.

The shortage of trained manpower and resources seriously hinder the development of a strong regional sorghum improvement program, although in some countries useful basic varietal material and information are available from regional research centers. Individual national programs on sorghum improvement in the region range from the relatively strong, such as in Nigeria, Senegal, Mali and Cameroon, to very weak, such as in Mauritania, Gambia, Togo, Benin, etc.. Crop production and protection technologies that give stable and satisfactory yields need to be developed.

The transfer of cultivars and other improved sorghum production technologies among similar ecological zones in the region is essential. Hence, strengthening the sorghum research links between the different national programs is expected to be beneficial for all countries in the region, provided that a major thrust in such expansion of the regional program focuses on strengthening the national programs of the region.

4.2.1. Constraints to Sorghum Production

The constraints to sorghum production in West Africa are many. Soil, water (rainfall), temperature, and solar energy constitute the natural resources for sorghum production. While within-season variability in solar energy and temperature are not limiting, soil fertility and water (rainfall) constitute the major constraints. Sorghum varieties and socio-economic conditions, which limit farmers' capacity for change, impose additional constraints.

In general, the upper horizons of the soils are predominantly sandy-loam and the clay fraction is low. A great proportion of clay is kaolinite and amorphous ferrous hydroxide. Thus, the water holding capacity and fertilizer use efficiency are low. The soils are generally low in cation exchange capacity and exchangeable cations. The most important mineral deficiencies that affect growth and production are phosphorus and nitrogen.

The physical properties of soils of the upper horizons include poor structure, low porosity (maximum 40-43%) -- which hinders root growth and water permeability, and a strong tendency for compaction and hardening during the dry season. Infiltration capacity is

generally low (except for soils originating from eoline deposits), with a tendency to form a superficial crust. The potential for erosion is very high when cultivated. Finally, the soils are fragile and can be rapidly degraded under some forms of management.

As sorghum is predominantly rainfed, its production is dependent on rainfall (amount, duration and distribution) and water holding capacity of soils. The Guinean and southern Sudanian zones (900-1200 mm rainfall) have longer duration of rainfall and a higher number of rainy days, whereas the northern Sudanian and Sahelian zones (500-900 mm rainfall) have a lower number of rainy days and higher coefficient of variation, which results in higher risks to agricultural production. Due to surface crusting and high intensity storms, up to 80% of rainfall is not available to crops. Combined with the highly variable rainfall distribution, this can contribute to frequent periodic drought stress.

Among the range of factors responsible for poor and unstable yields, the lack of high performance sorghum varieties is one of the most important. Local sorghum varieties, generally selected by farmers during past periods of more adequate rainfall for cultivation on more favorable land types, are becoming poorly adapted to farmers' changing needs. Variability for early maturity is limited. Therefore, in recent years, due to the reduced duration of rainfall, short-cycle varieties with higher and more stable yields under harsh soil conditions are increasingly in demand, but are not available. Moreover, yield potential is low for local varieties. Notwithstanding the above constraints, local varieties have excellent adaptation to low input management systems.

In addition to the severe physical environment, there are a number of insect pests and diseases which adversely affect production. Shootfly (Atherigona soccata) reduces plant stands in late-planted crops in high-rainfall zones. Stem borer (Buseola fusca) infestations are severe in the same areas. Midge (Contarinia sorghicola) can cause severe grain abortion where there is staggered flowering within a location. Covered smut (Spacelotheca sorghi) can cause significant losses when seed is not dressed with fungicides. Long smut (Tolyposporium ehrenbergii) is severe in the Sahelian zone and on many residual-moisture sorghums. The plant parasite, Striga, is found throughout the region and is particularly devastating where nutrient and water stresses prevail.

Most farmers rely on traditional low-input management practices. Historically low man/land ratios have encouraged long bush-fallow systems with little use of non-labor inputs. Due to power limitations, good soil preparation and incorporation of crop residues are uncommon, and the use of organic manure is low and inefficient. Due to low response rates in the local varieties and policies of fertilizer rationing, chemical fertilizer use is the lowest of any region in the developing world. Most farmers are subsistence-oriented and risk-averse. Low incomes further restrict farmers' capacity to invest in modern inputs.

Finally, factors exogenous to the farmers also limit their capacity for change. Support services to small farmers are generally very poorly developed. Understaffing, multiplicity of extension agent responsibilities, lack of transportation and insufficient training characterize most extension services. Foreign exchange constraints, high transport costs and poor management also severely hinder the input distribution systems of most countries in the region.

5. SPECIFIC NETWORK ACTIVITIES

The following activities are proposed for both East and West Africa:

- a) Establish regional research cooperation across each region.
- b) Develop varieties and hybrids with high and stable yield for use by small farmers.
- c) Exchange germplasm among cooperating countries.
- d) Collect, evaluate and utilize germplasm from the region, as well as from other ICRISAT programs.
- e) Organize workshops and facilitate training of national scientists. Coordination of the regional research activities will be facilitated by an annual workshop attended by the project scientists and all sorghum and millet workers in the East African countries. In West Africa, the workshop will be conducted every alternate year and during the intervening years the national researchers will have monitoring tours of yield trials in different national programs in the region. The workshop will essentially be an in-house review, where progress reports will be presented and discussed and plans made for future work. Thus, most activities in the region will be planned by group action, an important aspect of the network.

f) Establish an Advisory Committee for each regional network and conduct twice-yearly meetings of these committees. Advisory Committees will be composed of approximately five scientists from national agricultural research systems who are actively engaged in sorghum or millet research. A representative of the OAU/STRC SAFGRAD Coordination Office will also attend as observer. These committees will be important management bodies for the networks in that they will follow up on recommendations of regional workshops, plan and make substantive arrangements for network activities, assign leadership responsibilities for particular activities, help determine appropriate resource allocation and generally guide and promote the networks.

g) Training. Training of personnel from the national programs in both of the regions will be an important and integral part of the regional programs. The main objective of this training is to strengthen national programs at the research level. It will generally take the form of a workshop, including practical demonstrations, focused on specific technical problems related to network activities.

The training program will be designed to provide the trainees with the following opportunities:

- a) Learn to identify agronomically useful traits and become familiar with breeding and production techniques to improve and stabilize sorghum and millet grain yields.
- b) Assess and study the potential of the germplasm available in the region, from ICRISAT Center and other sources.
- c) Work and interact with crop improvement scientists from different countries.
- d) Develop skills in organizing and managing successful breeding and production programs.

6. THE REGIONAL PROGRAM AND ICCRN

The programs will make use of the ICRISAT Cooperative Cereals Research Network (ICCRN) in identifying useful breeding material and varieties.

Crop genotypes produced by ICRISAT contribute to national breeding programs and agriculture in the semi-arid tropics on a global scale. To facilitate screening and testing, and to reduce the time required for transfer of cultivars from experimental field to farmers' fields, a Cooperative Cereals Research Network is being established at the ICRISAT Center. Three levels of testing are involved in the identification of

promising breeding lines and cultivars. First, international trials and nurseries (ITN) to screen and compare all ICRISAT elite material across a range of agro-ecosystems in the SAT of Africa, Asia and Mesoamerica. Second, regional cooperative trials and nurseries (CTN) to compare selected material from ITN and elite lines from national programs within regions. Third, regional adaption trials (RAT) in which breeding lines and cultivars selected from CTN are tested by national programs for inclusion in their breeding programs or released to farmers. Such a research network involves national programs as equal partners with ICRISAT in testing and allows them direct access to elite breeding lines and cultivars produced by all ICRISAT programs.

7. STAFFING

7.1. East Africa

Regional Sorghum and Millet Research Network Coordinator

The responsibilities of the Regional Network Coordinator are to plan research and become actively involved in research on the improvement of existing varieties of sorghum and millet and development of new varieties of sorghum and millet with better adaptation to environmental stress than those presently available. His major responsibility will be to integrate the sorghum and millet improvement program of SAFGRAD with those of member states in Eastern Africa. To this end, he will introduce, evaluate and distribute appropriate germplasm to national programs, develop high-yielding varieties and hybrids, organize and help evaluate regional trials and nurseries, interact with national programs and ICRISAT on improvement strategies for sorghum and millet and conduct workshops on topics of mutual interest and benefit. He will collaborate with other members of ICRISAT teams in India, West Africa, Southern Africa and Mesoamerica, as well as with SAFGRAD research entities and relevant regional and national research programs. The Network Coordinator will be a plant breeder and will be assisted in research by one agronomist at the appropriate time. He will be required for the full five years of the project and will be based in Nairobi, Kenya.

Agronomist

East Africa is characterized by a range of farming systems, extending across a range of environmental zones. The agronomist will determine the most effective farming system for various soil and rainfall types, and adopt cultivars produced through breeding to selected agro-ecosystems. In cooperation with national programs, he will take an active part in planning and conducting trials and nurseries and in

evaluating data obtained from these experiments. The Agronomist will be required for a twelve-month period and will be based in Nairobi, Kenya.

7.2. West Africa

Regional Sorghum Research Network Coordinator

The responsibilities of the Regional Network Coordinator will be to help develop relevant research programs to solve sorghum production problems in the region, to coordinate and manage activities of the multi-disciplinary team of scientists of ICRISAT, to formulate plans for effective exchange of improved germplasm and technologies within the region, to establish cooperative and useful relationships with the national researchers in the region, to organize annual workshops/monitoring tours for the national scientists in the region, and to evaluate training needs of personnel in the national programs. He will collaborate with ICRISAT Center and other ICRISAT regional programs in the continent, other SAFGRAD research entities, and relevant regional and national research programs. The Network Coordinator will be required for the full five years of the project and will be based, at least initially, in Ouagadougou, Burkina Faso.

Sorghum Breeder

The Breeder will identify/breed sorghum varieties and hybrids that can improve and stabilize yields, not only in the traditional production systems, but which can also contribute to quantum jumps in yields through the efficient use of resources in an improved production system in the rainfall zone of 900-1200 mm. Because of a relatively longer rainfall period and better distribution of rains, this zone offers maximum potentiality for overall production improvement. However, it has been traditionally neglected for sorghum research and development for a variety of reasons. Because of severe incidence of diseases and insect pests in this higher rainfall zone, the SAFGRAD Breeder is obliged to work hand-in-hand with the ICRISAT Pathologist and Entomologist to incorporate appropriate resistances to diseases and pests and to develop management practices such that the improved varieties produce significantly higher and more stable yield than the farmer's variety, without deterioration in grain quality. The Sorghum Breeder will be funded for eighteen (18) months and will be based in Ouagadougou, Burkina Faso.

8. LOGISTICAL SUPPORT

The Grantee shall be responsible for the administrative and logistical support, including housing and utilities, for the technical assistance personnel provided by this Grant. Technical assistance personnel in Burkina Faso shall be allowed

limited access to the American Embassy Health Unit, according with regulations for its use and as stated in Attachment V.1. The host government plans on providing office space to the Grantee.

9. LANGUAGE REQUIREMENTS

Technical assistance personnel stationed in West Africa shall have the capability to speak French at the S-3 level (FSI rating). Refer to Attachment V.2, Definitions of Absolute Language Proficiency Ratings. A.I.D. reserves the right to test such capability.

Amplified Project Description

Article A: Background and Summary:

This Project Agreement for the Semi-Arid Food Grains Research and Development (SAFGRAD) II Project provides \$9,800,000 over a five year life-of-project to enhance the capabilities of national scientists and research institutions of SAFGRAD member countries to conduct agricultural research. This will be done through the establishment of agricultural research networks for those food crops predominating in the semi-arid zones of Africa, i.e. sorghum, millet, maize and cowpeas. The networking mechanism is intended to allow participating SAFGRAD member countries to share research results and related information through the interaction of agricultural commodity researchers within the National Agricultural Research Systems (NARSs) and the international agricultural research community. The Project's emphasis on the strengthening of agricultural research networks will foster stronger linkages within and among collaborating NARSs for the promotion, development and transfer of new production technologies for semi-arid food crops.

The overall SAFGRAD program is under the sponsorship of the Organization of African Unity/Scientific, Technical and Research Commission (OAU/STRC), with participation of the International Institute of Tropical Agriculture (IITA) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the two principal International Agricultural Research Centers (IARCs) responsible for semi-arid crop research in sub-Saharan Africa.

The goal of SAFGRAD II is to increase the productivity and production of sorghum, millet, maize and cowpeas among small-scale producers in SAFGRAD member and cooperating countries. The purpose of the Project is to increase the efficiency and effectiveness of agricultural research on the aforementioned staple food crops in the SAFGRAD region by:

- strengthening commodity-specific research networks to plan, broaden their base of support and make productive use of resources; and
- strengthening the service capacity of the OAU/STRC SAFGRAD Coordination Office (SCO) to facilitate NARSs' participation in networking and obtain internal support for national agricultural research programs to accomplish this purpose.

To achieve the Project's purpose and output objectives, the United States Government will support the implementation of the following five components: networking (including resident commodity research); the SAFGRAD Coordination Office, including on-farm testing through the Accelerated Crop Production Officer (ACPO) Program; project management; evaluation and audit; and contingencies.

Article B: United States Government Contribution:

A.I.D. project inputs under this Project Agreement will total \$9,800,000 over a five year period as detailed in this Article B (refer to Attachment I, Project Financial Plan):

1. Networking:

This Project will support the establishment of collaborative agricultural research networks on sorghum in West Africa, sorghum and millet in East Africa, maize -- starting in West and Central Africa, and cowpeas -- starting in West and Central Africa. In support of the research networks, the project will support resident commodity research on sorghum, millet, maize and cowpeas for the first year and a half of the project. The resident commodity research will provide necessary scientific input into the research networks and will be supported by a regional research program which implements region-wide trials, i.e. uniform variety trials for the four principal SAFGRAD - mandated crops. The resident research will be conducted by IITA for maize and cowpeas and by ICRISAT for sorghum and millet.

Initially, the IARCs will provide network coordinators, but will gradually shift responsibility for network coordination to national scientists as is feasible over the life of the project.

Each network will be assisted in its organization and direction by an advisory committee. The advisory committees will be composed of practicing researchers from participating SAFGRAD member countries, the network coordinator and the SCO as observer. The advisory committees, in collaboration with IITA and ICRISAT, will implement and monitor network activities and provide policy direction for the network membership. To this end, the advisory committees will review work plans and progress reports and will provide guidance on all technical and managerial matters of the networks. This includes responsibility for setting agendas for regional workshops, monitoring tours and problem-specific workshops within each commodity network.

a. West African Sorghum Collaborative Research Network:

Under the Project, the West African Sorghum Collaborative Research Network will be established comprising up to seventeen countries. ICRISAT, in collaboration with the advisory committee for the West African Sorghum Network, will have the principal responsibility for the implementation and coordination of this network for the full five-year period of the project. As such, ICRISAT will provide a network coordinator, who will be based in Burkina Faso, to direct the sorghum research network and who will be funded for the full five-year period of the project. The network coordinator, a sorghum breeder, will also carry out a limited amount of his own research if time permits. In support of this research

network, ICRISAT will also provide an additional sorghum breeder who, with the network coordinator, will conduct resident commodity research for the development of improved technologies (varieties and agronomic practices) for improved sorghum production. The ICRISAT sorghum breeder will, likewise, be based in Burkina Faso and will be funded for eighteen (18) months under the project.

Budget for the West African Sorghum Collaborative Research Network:

	U.S. Dollars
A. Salaries and Allowances Professional Staff and Support Staff	813,000
B. Operational	655,000
C. Commodities	90,000
D. Overhead	<u>122,000</u>
TOTAL	1,680,000

b. East African Sorghum/Millet Collaborative Research Network:

The Project will support the East African Sorghum/Millet Collaborative Research Network which comprises six African countries and was established during the SAFGRAD I Project. ICRISAT, in collaboration with the advisory committee for this network, will, likewise, have the principal responsibility for the implementation and coordination of the network for the full five-year period of the project. To this end, ICRISAT will provide a network coordinator, who will be based in Nairobi, Kenya, to direct this network and who will be funded for the full five years of the project. Additionally, ICRISAT will provide an Agronomist to conduct direct research in support of networking activities. The Agronomist will, likewise, be based in Nairobi, Kenya, and will be funded for twelve (12) months under the Project.

Budget for East African Sorghum/Millet Collaborative Research Network:

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	693,000
B. Operational	603,000
C. Commodities	50,000
D. Overhead	<u>104,000</u>
TOTAL	1,450,000

C. Cowpea Collaborative Research Network:

The Project will support the Cowpea Collaborative Research Network which will first be undertaken in West and Central Africa. A prototype cowpea network was established during the SAFGRAD I Project with the participation of nearly all of SAFGRAD's twenty-six member countries. IITA, in collaboration with the advisory committee to be established for this network, will have the principal responsibility for the implementation and coordination of the network for the full five-year period of the project. IITA will provide a network coordinator, who will be based in Ouagadougou, Burkina Faso, for at least two years to direct this network and who will be funded for the full five years of the project. IITA will support the Cowpea Collaborative Research Network by providing a two-member resident commodity research team (agronomist and part-time entomologist) to conduct research for the development of improved technologies (varieties and agronomic practices) for improved cowpea production. It is anticipated that a member of the resident commodity research team will also serve the function of network coordinator. The IITA cowpea resident commodity research team will be funded for one and a half years under the project. A cowpea breeder not funded by AID is also a member of this team.

Budget for Cowpea Collaborative Research Network

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	774,000
B. Operational	835,000
C. Commodities	100,000
D. Overhead	116,000
TOTAL	1,825,000

d. Maize Collaborative Research Network:

The Project will support the Maize Collaborative Research Network which will also be first undertaken in West and Central Africa. A prototype maize network was, likewise, established during the SAFGRAD I Project which included countries from all regions of the continent. IITA, in collaboration with the advisory committee to be established for this network, will have the principal responsibility for the implementation and coordination of this network. IITA will provide a network coordinator, who will be based in Ouagadougou, Burkina Faso, to direct this network and who will be funded for the full five years of the project. IITA will support the Maize Collaborative Research Network by providing a three-member

resident commodity research team (agronomist, maize breeder and a soil and water management specialist) to conduct research for the development of improved technologies (varieties and agronomic practices) for improved maize production. It is anticipated that a member of the resident commodity research team will also serve the function of network coordinator. The IITA maize resident commodity research team will be funded for one and a half years under the project. The IITA entomologist, while spending most of his time on cowpea research, will also conduct some research on maize.

Budget for Maize Collaborative Research Network:

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	993,000
B. Operational	989,000
C. Commodities	128,000
D. Overhead	145,000
TOTAL	2,255,000

2. SAFGRAD Coordination Office (SCO):

The Project will provide support to the OAU/STRC for the continued operation of the SAFGRAD Coordination Office (SCO) located in Ouagadougou, Burkina Faso, for a period of two years to assist the participating NARSS and the IARCs in establishing the collaborative research networks and in implementing broad research policies established by the Oversight Committee for the SAFGRAD-mandated crops. The SCO will provide the political dimension required to assist the participating scientists and research organizations in transcending national boundaries to facilitate the movement of scientists, germplasm, research information, and research supplies between countries, including support for network meetings. The SCO is the key organization for facilitating the transition of the networking responsibilities to leadership provided by the NARSS. The SCO will serve as a liaison between the IARCs and NARSS and will help organize and sit as observers on the various advisory committees for the collaborative crop research networks. The SCO will also promote cooperation among the SAFGRAD member countries and provide assistance to help overcome political and operational problems which may limit the effectiveness of the networks by encouraging NARSS to allocate the necessary resources required for the effective participation in the networks.

a. Oversight Committee and Sponsoring Group:

A project Oversight Committee will be organized through the intervention of the SAFGRAD Coordination Office in conjunction with Directors of Research from SAFGRAD member countries. The committee will be composed of approximately five members representing African national agricultural research administrators, prominent scientists and members of university faculties of agriculture. The SAFGRAD Coordination Office, IITA and ICRISAT will attend committee meetings as observers. The role to be played by the Oversight Committee is as follows:

- to provide guidance in management and policy issues for SAFGRAD;
- to review work plans and provide guidance on how SAFGRAD could provide effective technical services to national research programs of member countries;
- to facilitate the formation of food grain and related networks administered by scientists of participating countries; and
- to review technical progress of network resident research, ACPOs and other SAFGRAD activities to ensure further financial support.

The SAFGRAD Coordination Office will also organize a Sponsoring Group, composed primarily of donors, which will be convened periodically to be presented progress reports and proposals of the various SAFGRAD research cooperators. The purposes of this forum are to keep current and potential donors informed of progress to date within each research component and to floor proposals for additional research activities requiring further donor support.

b. On-Farm Testing:

A key component of SAFGRAD I was the Accelerated Crop Production Officer (ACPO) Program which promoted the transfer of promising technologies between national agricultural research institutions and extension services. The ACPO program conducted on-farm tests of relevant technologies and reported the results back to national research and extension programs, as well as to researchers at regional centers. The SAFGRAD II Project will support the ACPO programs in Burkina Faso and Mali for an additional year and a half to assist in their transfer into the respective national programs. The Project will also support an evaluation of the SAFGRAD ACPO experience for purposes of delineating any possible future interventions for technology transfer activities, and one ACPO workshop is also to be funded.

Budget for SCO/ACPO Programs:

	<u>U.S. Dollars</u>
A. Salaries and Allowances	330,000
B. Operations	305,000
C. Commodities	40,000
D. Oversight Committee and Sponsoring Group Meetings	60,000
E. ACPO Programs	<u>350,000</u>
TOTAL	\$1,085,000

3. Project Management

Lessons learned during the implementation of SAFGRAD I underline the importance of clear and unified project management support for SAFGRAD II. As such, full implementation responsibility will be with USAID/Burkina, with support from the USAID Regional Economic Development Service Office for West and Central Africa (REDSO/WCA). In addition to USAID's in-house project management, the Project will fund a Senior Agricultural Project Advisor and an Accountant to assist USAID/Burkina and its Office of General Development in carrying out their responsibilities. Short-term technical assistance will also be provided for under this Project Agreement on an as-needed basis.

a. Senior Agricultural Project Advisor:

The Senior Agricultural Project Advisor will be an experienced agricultural research administrator with specific skills in networking. He will monitor the implementation of all project components and activities and be a working link between USAID/Burkina and the OAU/STRC. He will consult regularly with commodity network coordinators and participating national scientists. This individual will be provided to the project under a direct contract with USAID/Burkina. The services of the Senior Agricultural Project Advisor will be required for the full five years of the project.

b. Accountant:

In view of the expanded USAID/Burkina project management role, it is necessary to fund the services of an Accountant under the project for a two year period. The Accountant will be recruited locally and be contracted under a direct contract with USAID/Burkina. The Accountant will be directly responsible to the USAID/Burkina Office of Financial Management and will act as the Project's financial expert in coordinating the finances for the project -- including assisting the SCO in financial management and reporting, budgeting, review of

Project Implementation Letters relating to budget revisions, liaison with the SCO in applying USAID financial regulations, and maintaining USAID/Burkina financial records and files for the overall project.

c. Short-Term Technical Assistance

Short-term technical assistance will be for support to the SCO in problem and opportunity-specific areas such as research policy, information and documentation management, and operations and administration.

Budget for Project Management:

	<u>U.S. Dollars</u>
A. Senior Agricultural Project Advisor	819,000
B. Accountant	37,000
C. Short-Term Technical Assistance	50,000
D. Oversight Committee Meetings (years 3-5)	75,000
E. National Agricultural Research Directors Meetings (years 3 and 5)	<u>90,000</u>
TOTAL	1,071,000

4. Evaluation and Audit:

The Project will provide funding for a mid-term and final evaluation and audit to enable USAID/Burkina and all Project cooperators to gauge the Project's impact and provide analyses upon which more effective project implementation can be promoted.

Budget for Evaluation and Audit:

	<u>U.S. Dollars</u>
A. Evaluations	200,000
B. Audit	30,000
TOTAL	230,000

5. Contingencies:

The Project will provide funding under this Project Agreement to accommodate contingency needs and to offset the effects of inflation. U.S. Dollars 204,000 is provided for this purpose.

Article C: SAFGRAD Member Country Contribution:

The SAFGRAD member countries participating in the Project will provide in-kind contributions totaling \$1,800,000. The bulk of this contribution will be comprised of staff salaries and facility use -- including equipment, land, researchers and research support personnel salaries and administrative support.

Article D: Outputs:

The SAFGRAD II Project Outputs will be the following:

1. SAFGRAD Coordination Office will be fully staffed.
2. SAFGRAD Oversight Committee meets annually.
3. Research for each collaborative research network reviewed and evaluated annually.
4. Future research activities identified, planned and allocated among participants.
5. In-country research implemented by NARSs.
6. Varieties released and cultural practices recommended.
7. Responsive technical backstopping by IITA and ICRISAT.
8. Network advisory committees meet biannually.
9. Network priorities are reflected in NARSs' decision-making.
10. Opportunities for future donor support at regional and national levels clarified.

Article E: End of Project Status:

The End of Project Status for SAFGRAD II will be the following:

1. Effectively operating collaborative research networks (West African sorghum, East African sorghum/millet, maize and cowpea) which will operate by the following criteria:

- established common goals;
- leadership by an apolitical entity with continuity;
- policy set by advisory committee of researchers;
- conducts, at least, annual meetings to identify objectives, technical problems, and review past research;
- and
- effective linkage to Southern African millet/sorghum network.

2. Effectively functioning service-oriented SCO that:
 - implements policies established by the Oversight Committee;
 - exercises oversight on research networking;

- analyzes and plans for the future; and
- facilitates information exchange on research.

Article F: Implementation:

1. OAU/STRC Responsibilities:

One implementing organization for the SAFGRAD II Project will be the OAU/STRC, which is headquartered in Lagos, Nigeria. The OAU/STRC has established the SAFGRAD Coordination Office (SCO) in Ouagadougou, Burkina Faso, and will delegate to it certain authorities which will facilitate effective implementation of the project, such as financial management and program coordination. The SCO will be directed by the International Coordinator for SAFGRAD and be staffed by additional professional and support personnel funded by AID. The SCO will also oversee the implementation of the ACPO programs.

The International Coordinator will be the principal OAU/STRC liaison official between the OAU/STRC and USAID/Burkina for project management. The International Coordinator will have direct control over the administration of the SCO, the operating expense budget, facility use, and SCO personnel. Administrative support will be provided by the OAU/STRC headquarters in Lagos, Nigeria. The SCO will have a Controller responsible for the overall financial management of the Project, with financial management and audit support from OAU/STRC in Lagos.

2. USAID Responsibilities:

A direct hire staff member of the USAID/Burkina Office of General Development will be the designated Project Officer and will have project management and monitoring responsibilities for overall project implementation on the part of USAID. USAID/Burkina will also be responsible for procuring evaluation and audit teams.

Utilizing funds under this Project Agreement, USAID/Burkina will contract the services of a Senior Agricultural Project Advisor to assist with project management and advise the SCO and SAFGRAD research cooperators on SAFGRAD program and policy issues. Additionally, USAID/Burkina will contract the services of an Accountant to assist USAID/Burkina's Office of Financial Management in providing financial management backstopping to the Project. Occasionally the services of the Regional Legal Advisor and Regional Contracting Officer will be requested from REDSO/WCA.

3. IARCs:

The two IARCs participating in the Project, IITA and ICRISAT, will receive direct grants from USAID to implement the network coordination and resident commodity research activities under the Project.

IITA and ICRISAT will follow program and policy directives for SAFGRAD as formulated by the project Oversight Committee and will cooperate actively with the respective committees for the collaborative research networks.

Article G: Financial Plan

The Project Financial Plan is subject to change by representatives named in Section 8.2, or their designated representatives, without formal amendment of the Project Grant Agreement. Transfers may be made between line items provided that no line item is increased by more than 15% without written agreement of the parties and further provided that the total funds available to the Project are not exceeded.

Article H: Disbursement Procedures:

The disbursement of funds for the operating expenses of the SCO and IITA will be done by reimbursement of funds against periodic advances. The financial reporting system to be used will be the one developed and set in place by the USAID Sahel Regional Financial Management Project. Financial reporting for the Burkina Faso ACPO will also be handled by the SCO. USAID/Mali will disburse funds and provide accounting for the Mali ACPO program.

The disbursement of funds for the direct grant to ICRISAT will be done through the submission of financial reports justifying expenditures against the grant and subsequent reimbursement for approved grant expenditures.

ATTACHMENT III

SEMI-ARID FOODGRAINS RESEARCH AND DEVELOPMENT II
PROJECT NO. 698-0452
PROJECT AGREEMENT, ANNEX I

ATTACHMENT 1: PROJECT FINANCIAL PLAN (\$000)

	Authorized Project Funding	Obligations To Date	Obligations Per This Action	Total Project Obliga- tions
I. West Africa Sorghum Collaborative Research Network (ICRISAT)	1,680	430	1,250	1,680
II. East Africa Sorghum/Millet Collab. Research Network (ICRSAT)	1,450	270	1,180	1,450
ICRISAT Subtotal	3,130	700	2,430	3,130
III. Cowpea Collaborative Research Network (IITA)	1,825	753	779	1,532
IV. Maize Collaborative Network (IITA)	2,255	1,092	848	1,940
IITA Subtotal	4,080	1,845	1,627	3,472
V. SAFGRAD Coordination Office/ ACPO Programs	1,085	643	442	1,085
VI. Project Management	1,071	165	542	707
VII. Evaluation and Audit	230	-	100	100
VIII. Contingencies	204		59	59
OUA/STRC Subtotal	2,590	808	1,143	1,951
PROJECT TOTAL	9,800	3,353	5,200	8,553

AMENDMENT NO. 1
TO THE
PROJECT GRANT AGREEMENT
BETWEEN THE
SCIENTIFIC, TECHNICAL AND RESEARCH COMMISSION
OF THE
ORGANIZATION OF AFRICAN UNITY
AND THE
UNITED STATES OF AMERICA
FOR
SEMI-ARID FOOD GRAINS RESEARCH AND DEVELOPMENT II
AID PROJECT NUMBER [REDACTED]

AMENDMENT NUMBER 1
TO THE
PROJECT GRANT AGREEMENT
FOR
SEMI-ARID FOOD GRAINS RESEARCH AND DEVELOPMENT II
AID PROJECT NUMBER 693-0452

The Project Grant Agreement between the Scientific, Technical and Research Commission of the Organization of African Unity ("Grantee") and the United States of America, acting through the Agency for International Development ("A.I.D."), dated August 30, 1986, is hereby amended as follows to add the sum of One Million, One Hundred and Forty-Three Thousand United States ("U.S.") Dollars (\$1,143,000) to the Grant.

A. Under SECTION 2.1.: Definition of Project, Subsection 2.1.2 is hereby amended by adding text concerning an ACPO workshop and ACPO program evaluation. The entire text of the amended subsection reads as follows:

"2) implementing the Accelerated Crop Production Officer Program ("ACPO Program") for Mali and Burkina Faso, which will consist of on-farm testing of technologies developed by, among others, the NARSS, IITA and ICRISAT. One ACPO workshop and an overall evaluation of the ACPO programs in Mali, Cameroon, Burkina Faso and Togo will also be organized; and"

B. SECTION 3.1.: The Grant is hereby deleted in its entirety and the following is substituted in lieu thereof:

"SECTION 3.1.: The Grant

To assist the Grantee to meet the costs of carrying out the Project, A.I.D., pursuant to the Foreign Assistance Act of 1961, as amended, agrees to grant the Grantee under the terms of this Agreement an amount not to exceed One Million, Nine Hundred and Fifty-One Thousand United States ("U.S.") Dollars (\$1,951,000) ("Grant"). The Grant may be used to finance foreign exchange costs, as defined in Section 6.1, and local currency costs, as defined in Section 6.2, of goods and services required by the project."

C. SECTION 3.3(a) is hereby deleted in its entirety and the following is substituted in lieu thereof:

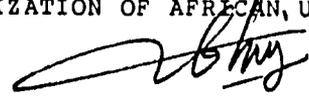
"(a) The "Project Assistance Completion Date" (PACD) which is August 31, 1991, or such other date as the Parties may agree to in writing, is the date by which the Parties estimate that all services financed under the Grant (except those for the SAFGRAD Coordination Office activity) and all goods financed under the Grant (except those for the SAFGRAD Coordination Office activity) will have been furnished for the Project as contemplated in this Agreement. The PACD for the SAFGRAD Coordination Office activity is September 30, 1988, unless the Parties otherwise agree in writing."

D. Annex 1, Amplified Project Description, is hereby deleted in its entirety and a revised Annex 1, attached, is substituted in lieu thereof and forms part of the amended Project Grant Agreement.

Except as modified herein, all terms and conditions of the Project Grant Agreement of August 30, 1986, remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the Scientific, Technical and Research Commission of the Organization of African Unity and the United States of America, each acting through its duly authorized representative, have caused this Agreement to be signed in their names and delivered as of the day and year below written.

SCIENTIFIC, TECHNICAL AND
RESEARCH COMMISSION OF THE
ORGANIZATION OF AFRICAN UNITY

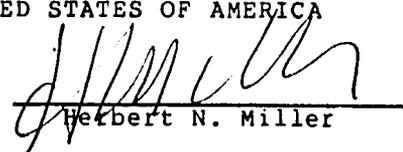
By: 

Prof. COUAOVI A. JOHNSON

Title: Assistant Executive Secretary
OAU/STRC

Date: JUN 22 1987

UNITED STATES OF AMERICA

By: 

Herbert N. Miller

Title: Mission Director,
USAID/Burkina

Date: JUN 22 1987

Funds Available 
Controller: John B. Tuleja
Amount: \$1,143,000
AID Project Number: 698-0452
OAU Project Number: JP 31
Appropriation: 72-1171021.3
Allotment: GDAA-87-21686-AG12
Allowance Number: 743-60-686-00-69-61

ANNEX 1

Amplified Project Description

Article A: Background and Summary:

This Project Agreement for the Semi-Arid Food Grains Research and Development (SAFGRAD) II Project provides \$9,800,000 over a five year life-of-project to enhance the capabilities of national scientists and research institutions of SAFGRAD member countries to conduct agricultural research. This will be done through the establishment of agricultural research networks for those food crops predominating in the semi-arid zones of Africa, i.e. sorghum, millet, maize and cowpeas. The networking mechanism is intended to allow participating SAFGRAD member countries to share research results and related information through the interaction of agricultural commodity researchers within the National Agricultural Research Systems (NARSs) and the international agricultural research community. The Project's emphasis on the strengthening of agricultural research networks will foster stronger linkages within and among collaborating NARSs for the promotion, development and transfer of new production technologies for semi-arid food crops.

The overall SAFGRAD program is under the sponsorship of the Organization of African Unity/Scientific, Technical and Research Commission (OAU/STRC), with participation of the International Institute of Tropical Agriculture (IITA) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the two principal International Agricultural Research Centers (IARCs) responsible for semi-arid crop research in sub-Saharan Africa.

The goal of SAFGRAD II is to increase the productivity and production of sorghum, millet, maize and cowpeas among small-scale producers in SAFGRAD member and cooperating countries. The purpose of the Project is to increase the efficiency and effectiveness of agricultural research on the aforementioned staple food crops in the SAFGRAD region by:

- strengthening commodity-specific research networks to plan, broaden their base of support and make productive use of resources; and
- strengthening the service capacity of the OAU/STRC SAFGRAD Coordination Office (SCO) to facilitate NARSs' participation in networking and obtain internal support for national agricultural research programs to accomplish this purpose.

To achieve the Project's purpose and output objectives, the United States Government will support the implementation of the following five components: networking (including resident commodity research); the SAFGRAD Coordination Office, including on-farm testing through the Accelerated Crop Production Officer (ACPO) Program; project management; evaluation and audit; and contingencies.

Article B: United States Government Contribution:

A.I.D. project inputs under this Project Agreement will total \$9,800,000 over a five year period as detailed in this Article B (refer to Attachment I, Project Financial Plan):

1. Networking:

This Project will support the establishment of collaborative agricultural research networks on sorghum in West Africa, sorghum and millet in East Africa, maize -- starting in West and Central Africa, and cowpeas -- starting in West and Central Africa. In support of the research networks, the project will support resident commodity research on sorghum, millet, maize and cowpeas for the first year and a half of the project. The resident commodity research will provide necessary scientific input into the research networks and will be supported by a regional research program which implements region-wide trials, i.e. uniform variety trials for the four principal SAFGRAD - mandated crops. The resident research will be conducted by IITA for maize and cowpeas and by ICRISAT for sorghum and millet.

Initially, the IARCs will provide network coordinators, but will gradually shift responsibility for network coordination to national scientists as is feasible over the life of the project.

Each network will be assisted in its organization and direction by an advisory committee. The advisory committees will be composed of practicing researchers from participating SAFGRAD member countries, the network coordinator and the SCO as observer. The advisory committees, in collaboration with IITA and ICRISAT, will implement and monitor network activities and provide policy direction for the network membership. To this end, the advisory committees will review work plans and progress reports and will provide guidance on all technical and managerial matters of the networks. This includes responsibility for setting agendas for regional workshops, monitoring tours and problem-specific workshops within each commodity network.

a. West African Sorghum Collaborative Research Network:

Under the Project, the West African Sorghum Collaborative Research Network will be established comprising up to seventeen countries. ICRISAT, in collaboration with the advisory committee for the West African Sorghum Network, will have the principal responsibility for the implementation and coordination of this network for the full five-year period of the project. As such, ICRISAT will provide a network coordinator, who will be based in Burkina Faso, to direct the sorghum research network and who will be funded for the full five-year period of the project. The network coordinator, a sorghum breeder, will also carry out a limited amount of his own research if time permits. In support of this research

network, ICRISAT will also provide an additional sorghum breeder who, with the network coordinator, will conduct resident commodity research for the development of improved technologies (varieties and agronomic practices) for improved sorghum production. The ICRISAT sorghum breeder will, likewise, be based in Burkina Faso and will be funded for eighteen (18) months under the project.

Budget for the West African Sorghum Collaborative Research Network:

	U.S. Dollars
A. Salaries and Allowances Professional Staff and Support Staff	813,000
B. Operational	655,000
C. Commodities	90,000
D. Overhead	<u>122,000</u>
TOTAL	1,680,000

b. East African Sorghum/Millet Collaborative Research Network:

The Project will support the East African Sorghum/Millet Collaborative Research Network which comprises six African countries and was established during the SAFGRAD I Project. ICRISAT, in collaboration with the advisory committee for this network, will, likewise, have the principal responsibility for the implementation and coordination of the network for the full five-year period of the project. To this end, ICRISAT will provide a network coordinator, who will be based in Nairobi, Kenya, to direct this network and who will be funded for the full five years of the project. Additionally, ICRISAT will provide an Agronomist to conduct direct research in support of networking activities. The Agronomist will, likewise, be based in Nairobi, Kenya, and will be funded for twelve (12) months under the Project.

Budget for East African Sorghum/Millet Collaborative Research Network:

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	693,000
B. Operational	603,000
C. Commodities	50,000
D. Overhead	<u>104,000</u>
TOTAL	1,450,000

C. Cowpea Collaborative Research Network:

The Project will support the Cowpea Collaborative Research Network which will first be undertaken in West and Central Africa. A prototype cowpea network was established during the SAFGRAD I Project with the participation of nearly all of SAFGRAD's twenty-six member countries. IITA, in collaboration with the advisory committee to be established for this network, will have the principal responsibility for the implementation and coordination of the network for the full five-year period of the project. IITA will provide a network coordinator, who will be based in Ouagadougou, Burkina Faso, for at least two years to direct this network and who will be funded for the full five years of the project. IITA will support the Cowpea Collaborative Research Network by providing a two-member resident commodity research team (agronomist and part-time entomologist) to conduct research for the development of improved technologies (varieties and agronomic practices) for improved cowpea production. It is anticipated that a member of the resident commodity research team will also serve the function of network coordinator. The IITA cowpea resident commodity research team will be funded for one and a half years under the project. A cowpea breeder not funded by AID is also a member of this team.

Budget for Cowpea Collaborative Research Network

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	774,000
B. Operational	835,000
C. Commodities	100,000
D. Overhead	116,000
TOTAL	1,825,000

d. Maize Collaborative Research Network:

The Project will support the Maize Collaborative Research Network which will also be first undertaken in West and Central Africa. A prototype maize network was, likewise, established during the SAFGRAD I Project which included countries from all regions of the continent. IITA, in collaboration with the advisory committee to be established for this network, will have the principal responsibility for the implementation and coordination of this network. IITA will provide a network coordinator, who will be based in Ouagadougou, Burkina Faso, to direct this network and who will be funded for the full five years of the project. IITA will support the Maize Collaborative Research Network by providing a three-member

resident commodity research team (agronomist, maize breeder and a soil and water management specialist) to conduct research for the development of improved technologies (varieties and agronomic practices) for improved maize production. It is anticipated that a member of the resident commodity research team will also serve the function of network coordinator. The IITA maize resident commodity research team will be funded for one and a half years under the project. The IITA entomologist, while spending most of his time on cowpea research, will also conduct some research on maize.

Budget for Maize Collaborative Research Network:

	<u>U.S. Dollars</u>
A. Salaries and Allowances Professional Staff and Support Staff	993,000
B. Operational	989,000
C. Commodities	128,000
D. Overhead	145,000
TOTAL	2,255,000

2. SAFGRAD Coordination Office (SCO):

The Project will provide support to the OAU/STRC for the continued operation of the SAFGRAD Coordination Office (SCO) located in Ouagadougou, Burkina Faso, for a period of two years to assist the participating NARSS and the IARCs in establishing the collaborative research networks and in implementing broad research policies established by the Oversight Committee for the SAFGRAD-mandated crops. The SCO will provide the political dimension required to assist the participating scientists and research organizations in transcending national boundaries to facilitate the movement of scientists, germplasm, research information, and research supplies between countries, including support for network meetings. The SCO is the key organization for facilitating the transition of the networking responsibilities to leadership provided by the NARSS. The SCO will serve as a liaison between the IARCs and NARSS and will help organize and sit as observers on the various advisory committees for the collaborative crop research networks. The SCO will also promote cooperation among the SAFGRAD member countries and provide assistance to help overcome political and operational problems which may limit the effectiveness of the networks by encouraging NARSS to allocate the necessary resources required for the effective participation in the networks.

a. Oversight Committee and Sponsoring Group:

A project Oversight Committee will be organized through the intervention of the SAFGRAD Coordination Office in conjunction with Directors of Research from SAFGRAD member countries. The committee will be composed of approximately five members representing African national agricultural research administrators, prominent scientists and members of university faculties of agriculture. The SAFGRAD Coordination Office, IITA and ICRISAT will attend committee meetings as observers. The role to be played by the Oversight Committee is as follows:

- to provide guidance in management and policy issues for SAFGRAD;
- to review work plans and provide guidance on how SAFGRAD could provide effective technical services to national research programs of member countries;
- to facilitate the formation of food grain and related networks administered by scientists of participating countries; and
- to review technical progress of network resident research, ACPOs and other SAFGRAD activities to ensure further financial support.

The SAFGRAD Coordination Office will also organize a Sponsoring Group, composed primarily of donors, which will be convened periodically to be presented progress reports and proposals of the various SAFGRAD research cooperators. The purposes of this forum are to keep current and potential donors informed of progress to date within each research component and to floor proposals for additional research activities requiring further donor support.

b. On-Farm Testing:

A key component of SAFGRAD I was the Accelerated Crop Production Officer (ACPO) Program which promoted the transfer of promising technologies between national agricultural research institutions and extension services. The ACPO program conducted on-farm tests of relevant technologies and reported the results back to national research and extension programs, as well as to researchers at regional centers. The SAFGRAD II Project will support the ACPO programs in Burkina Faso and Mali for an additional year and a half to assist in their transfer into the respective national programs. The Project will also support an evaluation of the SAFGRAD ACPO experience for purposes of delineating any possible future interventions for technology transfer activities, and one ACPO workshop is also to be funded.

Budget for SCO/ACPO Programs:

	<u>U.S. Dollars</u>
A. Salaries and Allowances	330,000
B. Operations	305,000
C. Commodities	40,000
D. Oversight Committee and Sponsoring Group Meetings	60,000
E. ACPO Programs	<u>350,000</u>
TOTAL	\$1,085,000

3. Project Management

Lessons learned during the implementation of SAFGRAD I underline the importance of clear and unified project management support for SAFGRAD II. As such, full implementation responsibility will be with USAID/Burkina, with support from the USAID Regional Economic Development Service Office for West and Central Africa (REDSO/WCA). In addition to USAID's in-house project management, the Project will fund a Senior Agricultural Project Advisor and an Accountant to assist USAID/Burkina and its Office of General Development in carrying out their responsibilities. Short-term technical assistance will also be provided for under this Project Agreement on an as-needed basis.

a. Senior Agricultural Project Advisor:

The Senior Agricultural Project Advisor will be an experienced agricultural research administrator with specific skills in networking. He will monitor the implementation of all project components and activities and be a working link between USAID/Burkina and the OAU/STRC. He will consult regularly with commodity network coordinators and participating national scientists. This individual will be provided to the project under a direct contract with USAID/Burkina. The services of the Senior Agricultural Project Advisor will be required for the full five years of the project.

b. Accountant:

In view of the expanded USAID/Burkina project management role, it is necessary to fund the services of an Accountant under the project for a two year period. The Accountant will be recruited locally and be contracted under a direct contract with USAID/Burkina. The Accountant will be directly responsible to the USAID/Burkina Office of Financial Management and will act as the Project's financial expert in coordinating the finances for the project -- including assisting the SCO in financial management and reporting, budgeting, review of

Project Implementation Letters relating to budget revisions, liaison with the SCO in applying USAID financial regulations, and maintaining USAID/Burkina financial records and files for the overall project.

c. Short-Term Technical Assistance

Short-term technical assistance will be for support to the SCO in problem and opportunity-specific areas such as research policy, information and documentation management, and operations and administration.

Budget for Project Management:

	<u>U.S. Dollars</u>
A. Senior Agricultural Project Advisor	819,000
B. Accountant	37,000
C. Short-Term Technical Assistance	50,000
D. Oversight Committee Meetings (years 3-5)	75,000
E. National Agricultural Research Directors Meetings (years 3 and 5)	<u>90,000</u>
TOTAL	1,071,000

4. Evaluation and Audit:

The Project will provide funding for a mid-term and final evaluation and audit to enable USAID/Burkina and all Project cooperators to gauge the Project's impact and provide analyses upon which more effective project implementation can be promoted.

Budget for Evaluation and Audit:

	<u>U.S. Dollars</u>
A. Evaluations	200,000
B. Audit	30,000
TOTAL	230,000

5. Contingencies:

The Project will provide funding under this Project Agreement to accommodate contingency needs and to offset the effects of inflation. U.S. Dollars 204,000 is provided for this purpose.

Article C: SAFGRAD Member Country Contribution:

The SAFGRAD member countries participating in the Project will provide in-kind contributions totaling \$1,800,000. The bulk of this contribution will be comprised of staff salaries and facility use -- including equipment, land, researchers and research support personnel salaries and administrative support.

Article D: Outputs:

The SAFGRAD II Project Outputs will be the following:

1. SAFGRAD Coordination Office will be fully staffed.
2. SAFGRAD Oversight Committee meets annually.
3. Research for each collaborative research network reviewed and evaluated annually.
4. Future research activities identified, planned and allocated among participants.
5. In-country research implemented by NARSs.
6. Varieties released and cultural practices recommended.
7. Responsive technical backstopping by IITA and ICRISAT.
8. Network advisory committees meet biannually.
9. Network priorities are reflected in NARSs' decision-making.
10. Opportunities for future donor support at regional and national levels clarified.

Article E: End of Project Status:

The End of Project Status for SAFGRAD II will be the following:

1. Effectively operating collaborative research networks (West African sorghum, East African sorghum/millet, maize and cowpea) which will operate by the following criteria:
 - established common goals;
 - leadership by an apolitical entity with continuity;
 - policy set by advisory committee of researchers;
 - conducts, at least, annual meetings to identify objectives, technical problems, and review past research;
 - and
 - effective linkage to Southern African millet/sorghum network.
2. Effectively functioning service-oriented SCO that:
 - implements policies established by the Oversight Committee;
 - exercises oversight on research networking;

- analyzes and plans for the future; and
- facilitates information exchange on research.

Article F: Implementation:

1. OAU/STRC Responsibilities:

One implementing organization for the SAFGRAD II Project will be the OAU/STRC, which is headquartered in Lagos, Nigeria. The OAU/STRC has established the SAFGRAD Coordination Office (SCO) in Ouagadougou, Burkina Faso, and will delegate to it certain authorities which will facilitate effective implementation of the project, such as financial management and program coordination. The SCO will be directed by the International Coordinator for SAFGRAD and be staffed by additional professional and support personnel funded by AID. The SCO will also oversee the implementation of the ACPO programs.

The International Coordinator will be the principal OAU/STRC liaison official between the OAU/STRC and USAID/Burkina for project management. The International Coordinator will have direct control over the administration of the SCO, the operating expense budget, facility use, and SCO personnel. Administrative support will be provided by the OAU/STRC headquarters in Lagos, Nigeria. The SCO will have a Controller responsible for the overall financial management of the Project, with financial management and audit support from OAU/STRC in Lagos.

2. USAID Responsibilities:

A direct hire staff member of the USAID/Burkina Office of General Development will be the designated Project Officer and will have project management and monitoring responsibilities for overall project implementation on the part of USAID. USAID/Burkina will also be responsible for procuring evaluation and audit teams.

Utilizing funds under this Project Agreement, USAID/Burkina will contract the services of a Senior Agricultural Project Advisor to assist with project management and advise the SCO and SAFGRAD research cooperators on SAFGRAD program and policy issues. Additionally, USAID/Burkina will contract the services of an Accountant to assist USAID/Burkina's Office of Financial Management in providing financial management backstopping to the Project. Occasionally the services of the Regional Legal Advisor and Regional Contracting Officer will be requested from REDSO/WCA.

3. IARCs:

The two IARCs participating in the Project, IITA and ICRISAT, will receive direct grants from USAID to implement the network coordination and resident commodity research activities under the Project.

IITA and ICRISAT will follow program and policy directives for SAFGRAD as formulated by the project Oversight Committee and will cooperate actively with the respective committees for the collaborative research networks.

Article G: Financial Plan

The Project Financial Plan is subject to change by representatives named in Section 8.2, or their designated representatives, without formal amendment of the Project Grant Agreement. Transfers may be made between line items provided that no line item is increased by more than 15% without written agreement of the parties and further provided that the total funds available to the Project are not exceeded.

Article H: Disbursement Procedures:

The disbursement of funds for the operating expenses of the SCO and IITA will be done by reimbursement of funds against periodic advances. The financial reporting system to be used will be the one developed and set in place by the USAID Sahel Regional Financial Management Project. Financial reporting for the Burkina Faso ACPO will also be handled by the SCO. USAID/Mali will disburse funds and provide accounting for the Mali ACPO program.

The disbursement of funds for the direct grant to ICRISAT will be done through the submission of financial reports justifying expenditures against the grant and subsequent reimbursement for approved grant expenditures.

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SEMI-ARID FOODGRAINS RESEARCH AND DEVELOPMENT II
PROJECT NO. 698-0452
PROJECT AGREEMENT, ANNEX 1

ATTACHMENT 1: PROJECT FINANCIAL PLAN (\$000)

=====				
	Authorized Project Funding	Obligations To Date	Obligations Per This Action	Total Project Obliga- tions
=====				
I. West Africa Sorghum Collaborative Research Network (ICRISAT)	1,680	430	1,250	1,680
II. East Africa Sorghum/Millet Collab. Research Network (ICRISAT)	1,450	270	1,180	1,450
ICRISAT Subtotal	3,130	700	2,430	3,130
III. Cowpea Collaborative Research Network (IITA)	1,825	753	779	1,532
IV. Maize Collaborative Network (IITA)	2,255	1,092	848	1,940
IITA Subtotal	4,080	1,845	1,627	3,472
V. SAFGRAD Coordination Office/ ACPO Programs	1,085	643	442	1,085
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