DRAFT PROPOSAL FOR SUPPLEMENTAL FUNDING IN SUPPORT OF THE

S A F G R A D

WESTERN & CENTRAL AFRICA COWPEA NETWORK

(R E N A C O)

SUBMITTED TO:

THE SPECIAL PROGRAM FOR AFRICAN AGRICULTURAL RESEARCH

(S P A A R)

INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE
P M B 5320
IBADAN, NIGERIA

April 7, 1988

G. THE REQUESTED BUDGET 10

H. BUDGET NOTES 11

ATTACHMENTS :

- Table 1.
- Program and Budget for Benin.
- Program and Budget for Burkina Faso.
- Program and Budget for Cameroon.
- Program and Budget for Cape Verde.
- Program and Budget for Ghana .
- Program and Budget for Guinea Bissau.
- Program and Budget for Guinea Conakry.
- Program and Budget for Mali.
- Program and Budget for Mauritania.
- Program and Budget for Niger.
- Program and Budget for Nigeria.
- Program and Budget for Senegal.

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- Program and Budget for Guinea Conakry.
- Program and Budget for Mali.
- Program and Budget for Mauritania.
- Program and Budget for Niger.
- Program and Budget for Nigeria.
- Program and Budget for Senegal.

A. BACKGROUND

1. Importance of Cowpea in West and Central Africa and IITA's involvement in the SAFGRAD Project.

In Semi-arid West and Central Africa, cowpea is either the most important food grain legume, or is second in importance to peanuts. Its primary use is as dry pulse, but green pods, green seeds and tender young leaves are often used as pot herbs. It is also used as feed for livestock.

Cowpea products are found in daily diet of low income people who represent over 85 % of the total population. They supply 50 %, if not more, of daily protein requirements ; these proteins are of high quality.

During dry years, in Sahelian zones, particularly in Mauritania, when cereal crops are severely handicapped, cowpea because of its drought and heat tolerances becomes the major staple food. Cowpea grains are then eaten daily as "couss-couss" and as such they supply both food energy -- i.e. carbohydrates and lipid -- and the body building blocks --i.e. proteins.

Cowpea, therefore, plays a crucial role in children's growth and development and in adults' productivity and production during normal years and in overall human survival during dry years.

Except in the northern of Sahelian zones, particularly in Senegal, Mauritania and Niger, where cowpea is found in monoculture, it is mostly grown in mixture with cereals, viz. maize, sorghum and millet. Most of the cowpea production in Africa is done by subsistence peasant farmers.

Cowpea seed yield potential in semi-arid West Africa is high, averaging from 1.5 to 2.5 T/ha. But this constrasts with its low average yield of less than 0.3 T/ha. This is because, in addition to its high susceptibility to several insect pests and diseases, other factors such as insufficient and poorly distributed rainfall, Striga damage, high air and soil temperatures, date of planting, low plant populations, poor soil physical properties, low soil fertility, poor weed control and mixed cropping depress cowpea yields.

Subsequent to the 1960 and 1970's soil degradation and drought which had resulted in reduced per capita food production and intake during normal years and complete crop failure together with the accompanying famine and starvation during dry years, IITA was contracted by the United States Agency for International Development (USAID) and the International Research and Development Centre (IDRC) of Canada to conduct under the auspices of the OAU/STRC/SAFGRAD, applied research to minimize seed yield losses and maximize grain yields during dry and rainy years, respectively.

Beginning 1979, IITA conducted two types of research : Resident Research and Regional Trials.

"Resident Research" was conducted in Burkina Faso in three ecologies. It consisted of development of new technologies, especially improved varieties and agronomic practices. Promising technologies so developed were subsequently tested along with others developed by National Agricultural Research Systems (NARS) in "Regional Trials", which was a collaborative research venture involving SAFGRAD, IITA and National programs.

SAFGRAD, as a whole, and the IITA cowpea improvement project in particular, were subjected to mid-term and end of project evaluations by USAID teams. In both instances, the evaluation teams concluded that implementation of Phase I of the Project had produced numerous positive results consistent with, and contributing to achievement of project goals. This was based on the following :

- Cowpea production constraints in semi-arid zones were clearly identified ;

- Appropriate research methodologies to overcome them were devised ;

- Sources of resistances or tolerances to the constraints were clearly identified ;

- Relevant crosses for combining those sources of resistances/ tolerances in good agronomic backgrounds were made and selection of promising lines were at an advanced stage ;

- Some relevant production technologies were developed and some others were in progress ;

- National scientists, in all SAFGRAD member countries were either actively participating in technology development as equal partners of IITA's scientists or testing the developed technologies ;

- Many national scientists were formally or informally trained by the project and ready to take on more research responsibilities ;

- Improved varieties such as KN-1 and TVx 3236 were released or in the process of being released in Burkina Faso, Mali, Senegal and Nigeria ; and

- Maize-cowpea relay cropping system was in the process of being released in Mali, Burkina Faso, Ghana etc.

Therefore, an extension of the SAFGRAD Project (Phase II) was recommended for another 5 years. During this period the emphasis will be to develop the capacity and initiative of national program scientists to enable them assume increasing leadership roles in cowpea collaborative research network for West and Central Africa.

2. Recommendation of the African Directors of Research for the Reorientation of SAFGRAD Cowpea Research Network.

The Directors of Agricultural Research from the 26 SAFGRAD member countries met at Ouagadougou, Burkina Faso, from 23 to 27 February, 1987 to review the progress made in SAFGRAD Phase I and to deliberate on the thrust of SAFGRAD Phase II. The Directors decided that : one of the major roles of SAFGRAD Phase II is the reorientation of research networks for at least four crops, namely cowpea, maize, millet and sorghum.

3. The birth of the Cowpea Network

In partial pursuance of the decisions of the Directors of Research, SAFGRAD Coordination Office, in collaboration with IITA, organized a

workshop for scientists working on cowpea in the 18 SAFGRAD member countries in West and Central Agrica from 23 to 27 March, 1987 at Ouagadougou. During the Workshop, national scientists inventorized several constraints hampering cowpea production in the sub-region identified those that are common to all member countries ; and, recognized the urgent need to work together to solve cowpea production problems. This was, then, the birth of the "West and Central Africa Cowpea Collaborative Research Network". A cowpea network steering committee of seven members was elected during the workshop. It met shortly afterwards and immediately established research priorities, assigned specific research responsibilities to some lead centres, (which had earlier expressed their desire to assume such responsibility) and designed regional trials which were received and conducted by member countries.

4. Definition :

This convenant is an inter-country working partnership on a regional level, whereby participants can exploit limited resources and expertise of scientists within the region and other organizations to achieve the objectives of their respective national cowpea programs.

B. HOW THE "WESTERN AND CENTRAL AFRICA COWPEA NETWORK" OPERATES

The "Western and Central Africa Cowpea Network", best known by its French acronym "RENACO" (Réseau Niébé de l'Afrique Centrale et Occidentale) works with national cowpea scientists of all the participating countries and any national, regional or international agencies and organizations concerned with improving the cowpea crop and promoting development and training of manpower for related research.

It serves as a focal point in facilitating links among national programs and other agencies in such areas as information and germplasm exchange. It provides forums, by organizing workshops bi-ennieally, for discussions at regional level, planning and guiding or directing cowpea research. It also strengthens national programs by providing limited financial support, research equipment and improving scientists' skills in various areas through short term training programs and cowpea monitoring tours in member countries.

The RENACO mobilizes national and regional resource persons and makes full use of all backstopping support from IITA in providing technical assistance to national cowpea programs. On request, the RENACO assists in the preparation of cowpea research projects and introducing new technologies in national programs of member countries.

C. PURPOSE AND OBJECTIVES OF RENACO

The purpose and objectives of the RENACO as defined by the Directors of Research of SAFGRAD member countries during their meeting of 23-27 February, 1987, at Ouagadougou are as follows :

"The main purpose for renewed interest in networking by member countries of SAFGRAD is the desire to break-down linguistic and political barriers and to judiciously pool human, infrastructural material, and financial resources of member countries to solve common problems of agricultural production and productivity .

The specific objectives of networking include, among others, the following :

- To strengthen national agricultural research systems in terms of personnel, infrastructure, funding, etc ;
- To transfer appropriate technology development at regional and international research centres to national programs ;
- To identify production constraints affecting the crop and development of technologies in national programs in order to solve these problems ;
- To facilitate exchange of information, technologies and scientists among national programs ; etc".

D. RENACO'S STRUCTURE AND FINANCES .

1. Structure

The RENACO is one of four SAFGRAD's commodity collaborative research networks. The other three include : The West African Sorghum/Millet Collaborative Research Network, the East African Sorghum/Millet Collaborative

Research Network, the West and Central Africa Maize Collaborative Research Network and the West African Farming System. These networks function under the following structures/entities :

i) Networks Steering Committees ;

ii) An Oversight Committee for all SAFGRAD Networks ;

iii) Council of Directors of National Agricultural Research Systems (NARS) of member countries.

- The Cowpea Network Steering Committee is made up of 6 members, representing different disciplines having been elected by national cowpea scientists, consisting of one official representative per participating country. (Election takes place during a biennial cowpea workshop.) A cowpea Network Coordinator, nominated by IITA, and seconded to SAFGRAD for a five year period is the seventh member of the Cowpea Network Steering Committee.

The Steeering Committee which meets biannually, has the following functions :

. To determine the objectives of the network ;
. To prioritize the activities of the network ;
. To provide guidelines on the implementation of the objectives of the network ;
. To monitor the implementation of the objectives of the network ;
. In collaboration with the Network Coordinator, develop collaborative research projects to be executed by lead centres, or by IARCS, where the required expertise is not available in national programs ; and
. To ensure that appropriate technologies for attainment of network objectives are made available to national programs.

- The Oversight Committee, which is made up of 7 members elected by the Council of National Agricultural Research Directors and which meets once yearly, has the following functions :

. To review work plans and advise SAFGRAD on better ways of providing efficient technical assistance to NARS of member countries ;

. To facilitate the development of crop research network and other networks managed by national researchers of participating countries ; and

. To evaluate annually the technical results of resident research, Accelerated Crops Production Officer (ACPO) and Farming Systems Research (FSR) programs as well as other SAFGRAD activities.

- The Council of National Agricultural Research Directors, which meets biennially, has the following functions :

. To give political and management orientations to SAFGRAD ;

. To evaluate the reports of the Oversight Committee ; and

. To renew the Oversight Committee whenever necessary.

The activities of the cowpea network are, therefore, carefully monitored by the Cowpea Network Steering Committee, which in turn is monitored by the Oversight Committee, which itself, reports directly to the Council of Research Directors.

2. Finances

Financing of RENACO is by the USAID, while IITA contributes in kind. National programs also contributes towards specific research topics undertaken by the network as well as by providing research infrastructures - i.e. experimental stations, laboratories and research personnel.

E. FINANCIAL MANAGEMENT

1. Management of Network Funds :

All funds for network activities are managed and accounted for by the IITA Technical Coordinator. Disbursement by IITA is made ac-

cording to approved budget and in tranches, following receipt of financial statements on expenses previously incurred.

2. Management of Research Funds :

The network coordinator will be responsible for the management of operations and research funds by way of "Imprest account". Based on the submission of expense claims, IITA will replenish funds. The preparation and submission of financial statements will be the responsibility of the coordinator.

3. Management of National Program Funds :

IITA will be responsible for the disbursement of funds allocated to the direct support of national cowpea research program activities. Disbursement will be made according to the approved budget and in tranches following receipt of financial statements of expenses incurred. Recipients will account for expenditures to IITA through the steering committee. External financial audits will be done on all financial transactions for the network.

F. JUSTIFICATION FOR SUPPLEMENTARY FUNDINGS

As stated earlier : soil degradation, high wind velocity, and drought are reducing crop productivity and production in semi-arid Africa since early-1970's. The ensuing result is reduction of per capita food intake with its associated ill effects : frequent malnutrition and occasional famine and starvation.

Faced with this situation, the most appropriate and logical approach would be to increase crop productivity and production or to import more food items. In both cases substantial amounts of money will be required indeed :

- Regarding increased crop productivity and production, relevant technologies must be developed, extended to farmers and meeting their acceptance. This in itself, requires a great deal of

money for training agricultural scientists and technicians, development of infrastructures for conducting research, extending research results to farmers and facilitating farmers access to research results etc. ;

- As far as importation of food items is concerned, except donated free of charge by charitable organizations, if any, (but for how long?) the cost of production from the exporting country, transportation and distribution in the importing country must be met.

Owing to the current economic situation of African countries and their international debt of several billion dollars which they cannot afford to honour yearly because of falling prices of raw materials, mostly agricultural products for exportation ; poor agricultural performance, the backbone of Africa's economy etc., neither, increased crop productivity and production nor importation of food items can be afforded. Africa is, therefore, living in a vicious circle : the poor performance of agriculture cannot be improved because of inadequate funding for essential agricultural infrastructures while essential agricultural infrastructures cannot be improved due to poor agricultural performance which cannot generate enough resources. An external source of funding is, therefore, vital if any progress is to be made in African Agriculture in the foreseeable future.

IITA, as an external source of funding by : (i) establishing a cowpea improvement program at Ibadan, Nigeria and Ouagadougou, Burkina Faso (under the auspices of the OAU/STRC/SAFGRAD), (ii) identifying major constrainsts to cowpea production and the relevant sources of resistance, particularly for diseases, Striga, Alectra and some insect pests ; (iii) incorporating these sources into good agronomic backgrounds, (iv) organizing regional network of testing of these improved high yielding cowpea varieties ; and (v) training national cowpea scientists ; has contributed a lot towards alleviating cowpea production constraints in Africa. However, recent

experiences have shown that, owing to local specificities --i.e., ecological variability, farmers preferences, etc-- widespread testing and refinement of technologies developed by IITA as well as National Cowpea Research Programs is needed to satisfy farmers' requirements and needs in each agricultural environment within participating countries. This is crucial for a rapid adoption of new technologies for increasing cowpea productivity and production. IITA and National Programs, should, therefore, work as equal partners for the development and testing of farmers accepted technologies.

The present cowpea network has, for a period of 48 months, from september 1, 1986 to Agust 31, 1990, a budget provision of US $ 53,000.00 for support to national programs and US $ 47,900.00 for training of national scientists. This is grossly insufficient for the network research efforts since inadequate funding is a major constraint in all national programs. For instance : 15 of the 24 countries in West and Central Africa spend less than $ 3 million yearly on agricultural research. Supplemental funding to national programs is, therefore, required. Without this, the objectives of the research network are most unlikly to be achieved.

G. THE REQUESTED BUDGET :

The RENACO Steering Committee met at Ouagadougou, Burkina Faso, from 28 to 31 March, 1988, and approved a request for a supplementary budget of US $ 2,682,500 over a period of three years ; the details of the budget are shown on Table 1. It also mandated IITA to submit a draft proposal to SPAAR on their behalf for such supplementary funds.

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H. BUDGET NOTES :

The funds requested will be used specifically for the following line items :

[a] Collaborative National Research Expenses :

Following are the basis under which the budget for national research activities was reached. However, not all countries will receive what is detailed below as the needs differ from country to country. It is the responsibility of the steering committee working with the network coordinator to determine priorities among countries for the allocation of supplementary funds.

1. Local travel

All cowpea scientists are expected to survey cowpea production constraints at farmers' level in their respective countries. They will also make trips for planting : gathering data on insects, diseases, Striga etc ; and harvesting of national multilocation trials.

a) Each visit of an average of 5 days, duration with a perdiem rate of $ 40. Total amount being $ 200 per trip.

b) A team of two (2) scientists from each country is allowed 3 visits during a crop season to sites within 3 major agroecologies ; this amounts to a total of 18 trips per year at the cost of $ 200/trip $ 3,600.00.

c) Incidental expenses of $ 400.00

Total cost for local travel ($ 3,600 + $ 400.000)=$ 4.000.00

2. Transportation :

All participating countries which have no bilateral support do not have means of transport specifically designated for cowpea research activities. This project proposal therefore, provides for the purchase of a vehicle and its maintenance.

One pick-up	$ 25,000
Maintenance	$ 2,000
Fuel and lubricants	$ 3,000
Total transportation cost	$ 30,000

3. Field operations

Purchase of fertilizer, and insecticides	$ 160
Land preparation, planting, weeding and harvesting, threshing etc.	$1000
Incidental expenses of	$ 340
Total	$1500

4. Field and Laboratory supplies :

Conducting variety trials, collecting data and analysing requires some basic supplies.:

- Purchase of statistical calculators, scales, field tapes, sprayers, thresher, bags, labels, etc	$ 3,000.00
- Purchase of small microscope, bionoculers glass wares, lab expendable	$ 3,000.00
Total	$ 6,000.00

5. Hybridization activities :

Hibridization activities will be done by lead centres in Burkina Faso, Nigeria and Senegal and to some extent in Niger and Mali.

- Evaluation of potential parents, maintenance of identified parents, crossing of parents, advancing progenies to F5 - F6	$ 2,000.00
- Purchase of adequate supply of pollination bags, tags etc.	$ 2,000.00
- Hybridization, documentation, seed collection and storage in proper containers	$ 2,000.00
Total	$ 6,000.00

6. Parcelling and mailing :

Lead centres will produce seeds of improved varieties. The seeds will be parcelled and mailed to collaborating countries	$ 3,000.00

7. Office supplies :

- One typewriter	$ 1,000.00
- Paper, report preparation and communication	$ 1,000.00
Total	$ 2,000.00

8. In-country training

- Accommodation and meals for 20 trainees per year at $ 20/day for 10 days	$ 4,000.00
- Transportation and training materials	$ 3,000.00
- Stipend for trainees and specialized national staff	$ 2,000.00
Total	9,000.00

9. Seed Multiplication and storage

- Seed multiplication	$ 2,000.00
- Storage facilities	$ 3,000.00
Total	$ 5,000.00

[b] Regional Activities :

Regional actitity funds would remain as network managed funds.

1. Long term training or degree oriented training (15 M.Sc's or 9 Ph.D's).	$ 63,000.00
2. Short term training or short courses in cowpea production (4 scientists, for 3 months at IITA).	$ 16,000.00
3. Network consultation	$ 10,000.00
4. Workshops/monitoring tours supplement	$ 10,000.00
Total [b]	$ 99,000.00

Table 1. Budget for participating countries Research and Training and Regional Training Activities (In 1000's of US $)

Items	Year 1	Year 2	Year 3	Total
a) Countries Research and Training Activities				
Benin	86.00	60.25	46.25	192.50
Burkina Faso	136.00	78.00	64.00	278.00
Cameroun	49.00	44.00	42.00	135.00
Cape Verde	31.50	31.50	24.50	87.50
Central African Republic $	17.00	17.00	17.00	551.00
Côte d'Ivoire $	17.00	17.00	17.00	51.00
Gambia $	36.00	36.00	36.00	108.00
Ghana	48.00	42.25	42.25	132.50
Guinea Bisau	64.50	38.75	31.75	135.00
Guinea Conakry	83.00	57.25	43.25	183.50
Mali	55.50	55.50	41.50	152.50
Mauritania	54.00	54.00	40.00	148.00
Niger	70.50	54.75	40.75	166.00
Nigeria	132.00	80.00	59.00	271.00
Senegal	71.00	56.00	56.00	183.00
Siera-Leone ◊	-	-	-	-
Tchad $	20.00	20.00	20.00	60.00
Togo $	17.00	17.00	17.00	51.00
Sub Total	988.00	759.25	638.25	2,385.50
b) Regional Activities Management by IITA/SAFGRAD				
- Long term training of degree oriented training (M.Sc., Ph.D)	63.00	63.00	63.00	189.00
Short termtraining or short courses in cowpea production	16.00	16.00	16.00	48.00
Network Consultation	10.00	10.00	10.00	30.00
Workshop/Monitoring tours supplement	10.00	10.00	10.00	30.00
	99.00	99.00	99.00	297.00
Grand total	1,087.00	858.25	737.25	2,682.50

$ Active SAFGRAD member country but its supplementary budget proposal was not received as of 24 March 1988; indicated figures were made by the Steering Committee.

◊ Non active SAFGRA member country.

B E N I N

RENACO's contribution in 1988: $580
Country's contribution : N/A

Contact person/Collaborator :

Dr. J. Detongnon

Direction de la Recherche
Agronomique
B.P. 884
Cotonou
BENIN

1. Objectives :

Identification of high yielding, widely adapted, disease , insect pests and Striga resistant cultivars. This, within the context of Benin's humid and subhumid zones (to the South) and semi-arid zone (to the North).

2. Background

Cowpea is the most important grain legume crop in the Republic of Benin. It is, therefore, a major source of cheap protein for low income groups. In the last 15 years, the average annual production is about 28,300 Tonnes with a maximum of 47,500 Tonnes in the 1984/85 cropping season and a minimum of 13,500 Tonnes in 1974/75 cropping year. Benin's average cowpea seed yield is 400 kg/ha, which is very low as compared to the reported potential seed yield of 2,500 kg/ha.

The low yield of cowpea in Benin is due to several constraints including (i) insufficient and poor distribution and erratic rainfall experienced during the last two decades ; (ii) high incidence of diseases and insect pests and Striga in some areas ; (iii) production of cowpea in mixed cropping with poor or inappropriate technologies ; (iv) soil degradation due to continuous cultivation without appropriate soil

fertility restoration technique or conservation measures.

The Benin cowpea research program has established a strong link of cooperation with IITA/Ibadan and IITA/SAFGRAD in Burkina Faso. Through this cooperation high yielding (1500 to 2000 kg/ha) varieties have been identified at two research stations: One in the Borgan province and the other in the Zou province. They include IT 82E-16, IT 82E-32, IT 81D-1137, TVx 1999-01F, TVx 1850-01E. The Benin cowpea research does not, however, have sufficient resources to further test these varieties and others in multilocation trials in all their major cowpea growing areas. It is for this purpose that this supplementary budget is requested.

3. Areas of Research

The main objectives of this project is to deliver to peasant farmers, at a short term, new cowpea varieties which are : high yielding, drought resistant, disease , insect and Striga resistant and acceptable to farmers. To this effect, the following will be the areas of research of this project.

i) Cowpea breeding :

Evaluation of local and improved cowpea cultivars.

ii) Cowpea protection

This will consist of identifying cowpea pests and studying appropriate solutions in suppressing them or reducing their damage. The following studies will be conducted :

- Bio-ecology of cowpea pests ;
- Economy of cowpea protection ;
- Identification of cheap safe , but effective pesticides ;
- identification of better storage methods.

iii) Cowpea agronomy

The following studies will be conducted : - sowing dates ; - plant populations ; - mixed cropping ; - effect of various factors on cowpea seed yield and seed quality (viz. harvesting dates, seed longevity and storage methods).

4. Location of project

The project will be carried out at two main stations : Niaoli, 70 km North of Cotonou, in the Southern region and INA, 470 km North of Cotonou, in the Northern region. Each region has its network for multilocation trials.

5. Personnel :

Name	Qualification	Cowpea Research Areas
Jean DETONGNON	Cowpea breeder (Ph.D)	Cowpea breeding
Moustapha ADAMOU	Soil scientist (B.Sc)	Cowpea agronomy
Kouessi AIHOU	Agro-chemist (B.Sc)	Cowpea agronomy
David ARODOKOU	Entomologist (B.Sc)	Cowpea protection

6. Workplan

(see point 3 : Areas of Research)

7. List of items for which supplementary fundings is sought :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Office supplies
- Seed production and storage
- In-country training
- Long term training
- Documentation

BUDGET PROPOSAL FOR BENIN 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	30,000	5,000	5,000	40,000
b) Activities/Supplies				
3. Field operation	6,000	6,000	6,000	18,000
4. Field and Lab. Supplies	6,000	6,000	6,000	18,000
5. Office Supplies	2,000	1,250	1,250	4,500
6. Seed production and storage	5,000	5,000	5,000	15,000
c) Training				
7. In-country training	9,000	9,000	9,000	27,000
8. Long term training (1 Ph.D + 2 M. Sc.)	21,000	21,000	7,000	49,000
d) Documentation				
9. Documentation	3,000	3,000	3,000	9,000
Total	86,000	60,250	46,250	192,500

⑫ BURKINA FASO

RENACO's contribution in 1988: $ 3,000

Country's contribution : N/A

Contact person/Collaborator :

Mme Clémentine DABIRE

Entomologist
INERA Station Kamboinse
B.P. 7192
OUAGADOUGOU

1. Objectives :

- To develop high yielding cowpea cultivars better adapted to semi-arid zones together with diseases, insect pests and Striga resistances ;

- To protect cowpea crop against major insect pests by use of cheap, safe and effective insecticides.

- To develop proper prodcution practices and to devise effective storage methods compatible with peasant farmers conditions.

2. Background :

Cowpea is a most important grain legume crop widely grown in Burkina. Its cultivation is particularly concentrated in the central plateau, commonly known as "Plateau Mossi". Cowpea dry grain and young leaves are consumed daily by over 85 % of the people of this area. This makes cowpea a very important source of cheap and good quality protein for rural and low-income urban groups. Cowpea fodder is also an important feed for livestock in the Sudan Savanna and the Sahelian zones. Burkina Faso used to produce 90 to 100,000 tonnes of dry grain yearly, but that production quantity dropped to as low as

20,000 tonnes in 1987, which was a hot and dry year. Several factors handicaps cowpea production in Burkina Faso. They include :insufficient, poorly distributed and erratic rainfall ; several field and storage problems, insect pests ; fungal, bacterial and viral diseases, Striga infestation ; poor varieties ; inadequate infrastructures, extension services, agricultural credit and research facilities, and traditional farming.

The early and mid-seventy's droughts prompted the Government of Burkina Faso and the "International Development Research Centre " (IDRC) of Canada to sign an agreement in order to strengthen Burkina's cowpea research program. The main purpose of the agreement was to enable the national cowpea program to conduct relevant research that would overcome the afore described non socio-economic constraints ; this to increase cowpea productivity and production.

From this agreement the International Institute of Tropical Agriculture (IITA) was called upon in 1977, to train national cowpea scientists and to collect local cowpea varieties, introduce new improved cultivars and evaluate them for better adaptation under Burkina's conditions. In 1979, with the establishment of the SAFGRAD project funded by USAID, the activities of the Burkina national cowpea program expanded to include : agronomic and entomological research.

At this point, when the IITA/SAFGRAD resident research is closing down, and the Burkina cowpea research program is to evolve alone, the results obtained by both programs can be summarized as follows :

i) Cowpea improvement and adaptation studies :

- Local varieties :

  Adaptation of local varieties tend to shift southwards. Therefore, cultivars that were adapted in Sahelian zones show better adaptation in Southern Sudan Savanna zones : those that are adapted

to the Sudan Savanna show better adaptation in the Northern Guinea Savanna. Whereas those that were adapted to the Northern Guinea Savanna show no adaptation at all to semi-arid zones. Shifting of varieties from hot and dry areas to relatively cool and humid zones, if beneficial at all in terms of plant type, grain quality, yield and acceptability to farmers has, however, brought problems of disease susceptibility. Consequently varieties so transferred show high susceptibility to following diseases ;

. Scab, Web blight, pod blotch, septoria, rust and virus in Northern Guinea Savanna ; and

. Pythium, bacterial blight and bacterial pustule in Sudan Savanna.

Their seed yield can drop to as low as zero during excessive rainy years.

In the absence of a major disease epidemic the following cultivars have shown better performances :

.. Local Gorom-Gorom (SUVITA-2) for Sahelian zones ;

.. Local Kaokin, Local Ouahigouya and KVu 150 for the Sudan Savanna zone ; and

.. Local Kaya, Local Kamboinse (rouge and noir) and Local Ouahigouya for Northern Guinea Savanna.

- Introduced cultivars :

Several improved and introduced cultivars have shown better performances, multiple disease resistances and some level of resistance/tolerance to some insect pests. They, however, have some poor characteristics which make them less attractive to peasant farmers. These include daylength insensitivity ; spreading, or semi-upright or upright growth habits, which makes them undesirable in traditional mixed cropping , commonly practiced by peasant

farmers. They also require at least one spray with insecticides to have an acceptable yield. Their seed quality is sometimes less attractive, either because of its size, colour, seed-coat-texture or taste.

The best performing cultivars can be grouped as follows, depending on ecologies :

.. Sahelian zones :
58-57, SUVITA-2, TN 88-63, TVx 3236.

.. Sudan Savanna :

TVx 3236, KN-1

.. Northern Guinea Savanna :

TVx 3236, KN-1

Other best performing cultivars on experimental stations but not yet subjected to multilocation and on-farm testings are the following :

- Sahelian zones

  TVx 1999-01F, IT82D-952

- Sudan Savanna

  IT82D-875, TVx 4659-03F, TVx 1999-01F,TVx 1948-01F.

- Northern Guinea Savanna

  IT82D-875, TVx 4659-03F, TVx 1999-01F, TVx 1948-01F.

- Newly developed cultivars :

  Several crosses were made at Kamboinse during the last decade and their progenies tested mainly in the Sahel and Sudan Savannas. The main objectives of the crosses consisted of increasing resistance to insect pests (Aphids, Thrips and Bruchids), Striga and drought. The following lines,

most of which are daylength neutral, have shown better performance in pure cropping under experimental station conditions. They are still to undergo multilocation and on-farm testings.

- Sahelian zones :

KVx 30-305-36, KVx 30-309-6G, KVx 396-4

- Sudan Savanna :

KVx 30-305-3G, KVx 30-309-6G, KVx 396-4

- Northern Guinea Savanna :

KVx 396-4, KVx 396-16

Lines or cultivars below, have shown resistance or tolerance to the following yield reducing factors :

- Insect pests :

. Aphids

KVx 145-27-6, KVx 146-27-4, KVx 146-44-1, KVx 165-14-1, TVu 36.

. Thrips

TVx 3236

. Maruca

Local Kamboinse

. Bruchids

KVx 30-G172-1-6K, IT82D-716, TVu 2027, IT81D-994

. Striga

SUVITA-2, 58-57, B 301, IT82D-849, KVx 61-1, KVx 61-74, KVx 183-1, KVx 65-114

. Drought

KVx 60-P04-1, KVx 250-K27-18, KVx 268-K03-3, KVx 396-4, KVx 396-18, SUVITA-2, TN 88-63, 58-57.

ii) Cowpea agronomy

Studies on sowing dates, cultivar and variety adaptation, plant populations, crucial time of insecticide sprayings, seedbed preparation methods, soil water management, sources and levels of phosphatic fertilisers and mixed cropping were conducted and excellent results obtained. The following should be noted, however :

- Soil water management :

Although, tied ridges and mulching (including zero tillage with in-situ mulch) proved to be effective in preventing severe seed yield losses during hot and dry years, the genetic (cultivar) effect was by far greater than the environmental (seedbed) preparation) effect in those studies. This underlines the importance of identification and development of drought and heat tolerant cultivars, without which no substantial yield can be obtained during bad years irrespective of better crop management practices. In this regard, the inclusion of a cowpea physiologist in the research team is strongly recommended. He would ensure that selected lines are resistant to drought and heat by subjecting them to those stresses. It should also be pointed out that tying ridges or collecting crop residues and applying them as mulch are energy and time consuming operations. Farmers are, therefore, reluctant in practicing them except when they predict an imminent drought, which might be too late to obtain an acceptable yield. Therefore, cultivars to be released should be genetically well buffered against drought and heat stresses.

- Mixed cropping :

The genetic (cultivar) effect was also very important in these studies. The contribution of an agronomist/physiologist in the cowpea research team is again very important.

iii) Cowpea entomology

Following studies have been or are being conducted :

- Dosages and minimum number of sprayings of cheap, safe and effective insecticides for cowpea protection ;
- Integrated pest management ;
- Surveying and identification of insecticidal plants traditionally used in cowpea protection, particularly in storage ;
- Evaluation of structures and traditional methods used in cowpea storage.

Excellent results were obtained. However, it should be pointed out that : owing to economic difficulties and inadequate infrastructures, Burkinabe peasant farmers may not have easy access to modern inputs in the next 10 to 15 years. Therefore, contrary to what has been done so far any promising lines would have to be proven equally or even better than the local varieties under farmers' conditions--i.e., under the levels of inputs peasant farmers use currently. This will require a greater contribution from an entomologist in assessing promising lines.

iv) Cowpea pathology

Cowpea pathology has received less emphasis to-date. This was because most of the cowpea breeding work was conducted in the Sudan and Sahel Savannas, where diseases are normally not important. But, good rains in 1985 and 1986 and the use of Northern varieties in the relatively cool and humid weathers in the South resulted in a heavy outbreak of diseases.

With the exception of diseases, northern daylength-sensitive varieties are better adapted in mixed croppings and yields equal

to or better than introduced and improved daylength neutral cultivars in the South ; they need to be improved for disease resistance. It should be noted, however, that their seed quality, plant type and local usage are those preferred by peasant farmers.

The following results have been obtained in the area of cowpea pathology in Burkina Faso :

- Sources of multiple disease resistance have been identified : cv's KN-1, IT82D-716, TVx 1999-01F, IT82D-994, etc.

- Two viruses have been identified : Cowpea Mottle Virus (CMeV) and Cowpea Aphid Borne Mosaic Virus (CMcV).

As shown above, a number of technologies and a great deal of scientific information have been generated and steady progress is being made towards achieving the objectives of the Burkina cowpea research program. Since the IDRC financial support to the Burkina cowpea research, and the USAID/IDRC financial assistance to the IITA/SAFGRAD resident research is coming to an end in 1988. And considering also that the Burkina Government, owing to its economic difficulties, is not able to come up, in the near future, with substantial financial support, this budget proposal is , therefore, submitted to obtain supplementary funds that would enable the Burkina cowpea research to sustain the current research momentum.

3. Areas of Research

i) Cowpea breeding :

- Multilocation testing of promising lines and introduced cultivars ;
- Observation and screening of early generations for resistance to insect pests, Striga, drought and heat ;

- Preliminary and advanced yield trials of advanced generation lines ;
- Evaluation of introduced cultivars for resistance to insect pests, diseases, Striga, drought and heat ;
- Crossing and backcrossing programs for incorporating and transferring disease , Striga, insect pest , drought and heat resistances into local prostate daylength-sensitive varieties.

ii) Cowpea agronomy-physiology :

- Adaptation studies for identification of better adapted introduced materials, for use in cowpea breeding program, and promising lines, for their possible release to farmers ; these studies will include pure as well as mixed cropping.
- Studies of spacial arrangements and time of planting cowpea and cereals in mixed cropping systems.
- Soil and soil water management studies.

iv) Cowpea entomology :

- Evaluation of lines and introduced cultivars for resistance, to Aphids, Bruchids and possibly to Thrips.
- Identification of lines and introduced cultivars for better response to insecticide spray , but also performing equally or better than local varieties without sprays. Such cultivars are seriously needed for release to peasant farmers.
- Identification of lines and introduced cultivars, which can be stored with and/or without pods with equal or less damages than farmers' varieties ;
- Studies of naturally occurring substances and different structures for improvement of traditional storage systems ;

- Studies of the biology of major insect pests.

v) Cowpea pathology :

- Evaluation of local varieties, lines and introduced cultivars for resistances to fungal, bacterial and viral diseases prevalent in different ecologies ;

- Study of the biology of major diseases of cowpea, Colletotricum, capsici will be considered first in Sudan Savanna and the Sahel ;

- Isolation and identification of major viruses infecting cowpea in Burkina ;

- Studies of the biology of the viruses and their mode of transmission.

4. Location of Project :

The headquarters of the Burkina cowpea research will be based at the Kamboinse research station, near Ouagadougou. But out-reach activities will be conducted at :

- Farako-Bâ and Niangoloko in Northern Guinea Savanna ;
- Gampela, Fada and Saria, in Sudan Savanna ; and
- Djibo, DORI and Ouahigouya in the Sahel.

On-farm testings will also be conducted throughout the country.

5. Personnel :

Name	Qualification	Crop Research Areas
Issa DRABO	Cowpea breeder (M.Sc)	(On- Ph.D Study leave)
Clementine DABIRE	Cowpea entomologist (Dr. 3eme C)	Cowpea entomology
Jeremy OUEDRAOGO	Cowpea breeder/Agronomist (B.Sc) IITA/SAFGRAD	Cowpea breeding
Seydou TRAORE	Entomologist (Dr. 3emeC)	Cowpea entomology
Guillaume SESSOUMA	Physiologist (Dr. 3emeC)	Cowpea physiology

Name	Qualification	Cowpea Research Areas
Paco SEREME	Phytopathologist (Dr/Ing)	Cowpea pathology
Gnissa KONATE	Virologist (Dr. d'Etat)	Cowpea virology

6. Work plan :

(see point 3 : Areas of Research)

7. List of items for which supplementary funding is requested :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Hibridization activities
- Parcelling and mailing
- Office supplies
- Seed production and storage
- In-country training
- Long term training
- Laboratory facilities
- Documentation

BUDGET PROPOSAL FOR BURKINA FASO 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	30,000	5,000	5,000	40,000
b) Activities/Supplies				
3. Field operation	6,000	6,000	6,000	18,000
4. Field and Lab. Supplies	12,000	12,000	12,000	36,000
5. Hybridization activities	6,000	6,000	6,000	18,000
6. Parcelling & mailing of seed	5,000	5,000	5,000	15,000
7. Office supplies	3,000	3,000	3,000	9,000
8. Seed production and storage	5,000	5,000	5,000	15,000
c) Laboratory facilities				
9. Air conditioned green house for pathology	16,000	4,000	4,000	24,000
10. Fumigation hall	8,000	2,000	2,000	12,000
11. Thresher	15,000	-	-	15,000
d) Training				
12. In-country training	9,000	9,000	9,000	27,000
13. Long term training	14,000	14,000	-	28,000
e) Documentation				
14. Documentation	3,000	3,000	3,000	9,000
Total	136,000	78,000	64,000	278,000

(3)

C A M E R O O N

RENACO's contribution in 1988: $ 2,000
Country's contribution : N/A

Contact person/Collaborator :

Mr. Georges Ntoukam
Entomologist
IRA, B.P. 33
Maroua
CAMEROON

1. Objectives :

- To search for better adapted cultivars and varieties through collection of local germplasm and introducing improved germplasm ;
- To identify major field and storage cowpea insect pests and quantify the importance of their economic damage ;
- To device appropriate cowpea storage methods compatible with peasant farmers' conditions.

2. Background :

Cowpea is the major source of cheap and high quality protein for over 75 % of peasant farmers in Northern Cameroon. It is mostly grown in association with cereals (sorghum and millet). Its current yield is 400 kg/ha against a potential of 2000 kg/ha, and the gross national production is about 110,000 tonnes per year.

In addition to major constraints -- insufficient, poorly distributed and erratic rainfall, insect pests, fungal, bacterial and viral diseases ; and inadequate extension services, lack of infrastructure, etc. --as in most countries, cowpea production is further reduced at storage by the weevil, Callosobruchus macultatus. To overcome these constraints, the

"Institut de la Recherche Agronomique" (IRA) of Cameroon signed an agreement with the University of Georgia (UG), through a "Collaborative Research Support Program" (CRSP) Financed by the United States Agency for International Development (USAID). The project, which was financed from 1982 to 1986, had, as a major thrust, to develop strategies for better cowpea protection, both in the field and storage in order to optimize its productivity and production in Northern Cameroon.

Some local germplasm was collected and improved germplasm from IITA, IITA/SAFGRAD and neighbouring countries were introduced. Some adequate research infrastructures have been developed ; one scientist, an entomologist, and a couple of technicians were trained. With the reduction of 50 % of the USAID grant and the concentration of 70 % of available funds on Callosobruchus maculatus weevil control, the project is severly handicaped in the achievement of its objectives.

This budget proposal is, therefore, submitted to obtain supplementary funds that would help strengthen the Cameroon's cowpea research program. It will enable the research team to carry-out cowpea agronomy/entomology experiments, which are crucial in accertaining agronomic values of promising insect pest resistant/tolerant lines or cultivars.

3. Areas of Resaerch :

i) Cowpea entomology

- Study of the biology of insect pests :Thrips, Maruca, and Aphids.
- Screening local cowpea germplasm for Bruchid resistance ;
- Survey of traditional cowpea storage methods ;
- Study of new insecticides for cowpea protection.

ii) Cowpea agronomy/entomology

- Study of seedbed preparation methods and their impact on cowpea insect pest damage ;

- Study of intercropping systems and their impact on cowpea insect pest damage ;

- Study of relay-intercropping systems and their impact on cowpea insect pest damage.

4. Location of project :

The project will be based in Northern Cameroon at Maroua, Garoua and Ngaoundéré as main stations. On-farm testing will also be carried-out in collaboration with the Farming Systems Research and Extension Services.

5. Personnel :

Name	Qualification	Crop Research Areas
Moffi TA'AMA	Entomologist (PH.D) (CRSP Tech. Assist.)	Cowpea entomology
Georges Ntoukam	Entomologist (M.Sc)	Cowpea entomology
Chevalier Endondo	Agronomist (B.Sc)	Cowpea agronomy

6. Work plan :

(see point 3 : Areas of Research)

7. List of items for which supplementary funding is requested :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Seed production and storage
- Office supplies
- Training
- Documentation

BUDGET PROPOSAL FOR CAMEROUN 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	2,000	2,000	2,000	6,000
2. Transportation	5,000	5,000	5,000	15,000
b) Activities/supplies				
3. Field operation	6,000	6,000	6,000	18,000
4. Field and lab. supplies	6,000	6,000	6,000	18,000
5. Office supplies				
6. Seed production & storage	5,000	5,000	5,000	15,000
7. Storage facilities	5,000	-	-	5,000
c) Training				
8. Long term training (1 Ph.D + 2 M.Sc.)	17,000	17,000	15,000	49,000
d) Documentation				
9. Documentation	3,000	3,000	3,000	9,000
Total	49,000	44,000	42,000	135,000

(4) CAPE VERDE

RENACO's contribution in 1988: $ 580

Country's contribution : : N/A

Contact Person/Collaborator :

Carlos Silva

Chercheur Maïs/Niébé
Instituto Nacional de Investigaçao
Agraria
C.P. 84
PRAIA
CAPE VERDE

1. Objectives :

- To evaluate local varieties and introduced cultivars for their adaptation to the Cape Verde's growing conditions ; and eventually release those that are well adapted, high yielding and of farmers' preference.

- To determine environmental factors -- soil, water and management practices -- which are critical in cowpea crop productivity ;

- To determine the optimum combination of cowpea and maize varieties with other grain legumes in resource -- soil and water -- utilisation and conservation.

2. Background :

In Cape Verde, cowpea is a grain legume crop highly appreciated by farmers because of its earliness and high resistance/tolerance to drought. It is usually grown in association with maize -- with both crops sown simultaneously in the same hill -- or other grain legume crops such as pigeon pea, common bean ; Dolichos lablab etc. Its area of cultivation is about 25,000 ha per year but seed yield is very low varying from 150 to 250 kg/ha. It is consumed either as green pods or as dry grains.

The major constraints to cowpea production in Cape Verde are as follows :

- Insect pests, particularly Aphids ;
- Insufficient, poor distribution and erratic rainfall ;
- Traditional farming systems ;
- Inadequate infrastructures, extension services, credit facilities ; agricultural research systems etc...
- Insufficient funding for agricultural research.

This budget proposal is, therefore, submitted to obtain supplementary funds that would help Cape Verde's cowpea research achieve its objectives described above.

3. Areas of Research

i) Cowpea breeding :

- Screening of varieties and lines for resistance to Aphids ;
- Evaluation of varieties and lines for earliness, yielding ability and seed quality (physical appearance as well as cooking/preparation time and taste).

ii) Cowpea agronomy :

- Identification of environmental factors-- soil and soil-water management practices -- which are critical in cowpea productivity ;

- Determination of the optimum combination of cowpea and maize varieties with other grain legume crops in resources --soil and water -- utilization and conservation.

4. Location of project :

The project will be based at the Sao Jorge Station, in Santiago Island. On-farm testing will be conducted throughout the Santiago Island where a great population of Cape Verde reside.

5. Personnel :

Name	Qualification	Crop Research Areas
Carlos SILVA	Agronomist/breeder (B.Sc)	Cowpea Agronomy/breeding
-	Grain legume entomologist (B.Sc)	Pigeon pea entomology
-		

6. List of items for which supplementary funding is requested :

- Transportation
- Field operations
- Field and laboratory supplies
- Office supplies
- Seed production and storage
- Storage facilities
- In country training
- Long term training
- Documentation

BUDGET PROPOSAL FOR CAPE VERDE: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Transportation	5,000	5,000	5,000	15,000
b) Activities/supplies				
2. Field operation	3,000	3,000	3,000	9,000
3. Field and lab. supplies	3,000	3,000	3,000	9,000
4. Office supplies	1,500	1,500	1,500	4,500
5. Seed production and storage	5,000	5,000	5,000	15,000
c) Training				
6. In-service training	4,000	4,000	4,000	12,000
7. Long term training (1 M.Sc.)	7,000	7,000	-	14,000
d) Documentation				
8. Documentation	3,000	3,000	3,000	9,000
Total	31,500	31,500	24,500	87,500

(5) G H A N A

RENACO contribution in 1988 : $ 580
Country's contribution : N/A

Contact person/Collaborator :

Mr. G. Atuahene-Amankwa

Crops Research Institute
P.O.Box 3785
Kumasi
GHANA

1. Objectives :

- To evaluate local and introduced cowpea cultivars for their adaptation to the Ghanaian cropping conditions. and
- To improve local varieties

2. Background :

Cowpea is an important traditional grain legume in Ghana. Although it occupies 43 % of the total acreage planted to grain legumes, it accounts for only 8 % of the total grain legume production. Its average seed yield is about 100 kg/ha.

Cowpea production in Ghana is hampered by : insufficient, poorly distributed and erratic rainfall; poor soil physical properties and low soil fertility, local varieties, mixed cropping with inappropriate sowing dates and poor spacial arrangements of plants, insect pests, diseases, competition by weeds such as Imperata, Rotboella, Cyperum and Striga, together with socio-economic factors, such as inadequate or lack of proper distribution of inputs, inadequate pricing (both inputs and products) and poor seed storage.

With the aid of Canada and Germany, the Ghanaian Government has been providing support for cowpea and groundnut research since 1980. Cowpea research is conducted at Kwadaso/Kumasi Agric. station for the humid zone

and Nyankpala station for the semi-arid zone . From extensive testing on research stations and on farmers' fields, five new cowpea varieties have been identified and released to the Ghana Seed Company. This budget proposal is, therefore, submitted to obtain supplementary funds that would further strengthen Ghana's cowpea research program through training and acquisition of crucial material and equipment.

3. Areas of Research :

This project involves the following areas of research :

i) Cowpea breeding

- Further evaluation of introduced materials from IITA, SAFGRAD and neighbouring countries ;
- Identification of drought, diseases, insect pest and Striga resistance germplasm ;
- Improvement of local prostate varieties through incorporation of valuable genes from identified sources of resistances.

ii) Cowpea agronomy

- Identification of cowpea varieties, cereals and other crop varieties compatible in mixed cropping ;
- Study spacial arrangements, time of sowing cowpea, fertilization and weed control under mixed cropping conditions.

iii) Cowpea entomology

- Study an integrated pest management approach towards reducing number of sprays in cowpea protection.

4. Location of project :

This project will be carried out at the Nyankpala Agric. station and at several locations, including farmers' fields in Northern Ghana.

5. Personnel :

Name	Qualification	Crop Research Areas
(Nyankpala Station)		
K. O. Marfo	Cowpea breeder	(On Ph.D study leave)
M. A. Assibi	Cowpea breeder (B.Sc)	Cowpea breeding
P. B. Tanzubil	Entomologist	(On study leave)
E. Frey	Agronomist (German Tech. Assist.)	Cowpea agronomy
L. Sipkens	Agronomist (German Tech. Assist.)	Cowpea agronomy
(Kwadaso/Kumasi Station)		
M. A. Hossain	Cowpea breeder (Ph.D) IITA Tech. Assist.)	Cowpea breeding
B. Asafu Adjei	Cowpea breeder	(On-study leave)
G. Atuahene-Amankwa	Cowpea breeder(M.Sc)	Cowpea breeding
Stella Ennin	Agronomist (B.Sc)	Cowpea agronomy
M. Owusu-Akyaw	Entomologist (Ph.D)	Cowpea entomology
J. K. Twamasi	Pathologist (Ph.D)	Cowpea pathology
V. Jakpasu Affum	Entomologist	(On M.Sc. study leave)

6. Work plan

(see point 3 : Areas of Research)

7. List of items for which supplementary funding is requested :

- Transportation
- Field and laboratory supplies
- Short term training
- Long term training
- Long term training
- Drying facilities
- Office supplies

BUDGET PROPOSAL FOR GHANA: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Transportation	5,000	5,000	5,000	15,000
b) Activities/supplies				
2. Field and lab supplies	6,000	6,000	6,000	18,000
3. Office supplies	2,000	1,250	1,250	4,500
4. Drying facilities	5,000	-	-	5,000
c) Training				
5. In-service training at IITA: 3 persons/year for 3 months	9,000	9,000	9,000	27,000
6. Long term training	21,000	21,000	21,000	63,000
Total	48,000	42,250	42,250	132,500

(6) GUINEA BISSAU

RENACO's contribution in 1988 : $ 580
Country's contribution : N/A

Contact person/Collaborator :

Mr. Malam SADJO
MRDP-DEPA
B.P. 71
BISSAU
GUINEA (BISSAU)

Mrs Isabel MIRANDA
MRDP-DEPA
B.P. 71
BISSAU
GUINEA (BISSAU)

1. Objectives :

- To collect local varieties, test them with improved and introduced cultivars and identify those that are best adapted, high yielding and acceptable to peasant farmers ;
- To study new production practices which are compatible with peasant farmers' conditions ;
- To conduct on-farm testing and demonstration of improved technologies.

2. Background :

Cowpea is the most important grain legume crop cultivated and consumed by peasant farmers and majority of low income groups, particularly in the Northern region of Guinea Bissau. Its production is hindered by : insufficient, poorly distributed and erratic rainfall ; unadapted local varieties ; various insect pests ; various fungal,

bacterial and viral diseases ; Striga infestation ; low soil fertility ; and inadequate research infrastructures, and personnel, etc.

Cowpea research in Guinea Bissau was initiated in 1981. After three years of research,an extra-early cultivar (55 days to maturity), IT 82E-9, was identified as adapted and suitable to farmers' needs. It is currently grown all over the country ; and its seed demand is so high that 20 farmers were contracted to carry out a seed multiplication effort for sale/distribution within the country.
Research needs are great, but only limited resources are allocated to cowpea research. This budget proposal is, therefore, submitted to obtain supplementary fundings that will enable Guinea Bissau's cowpea research to intensify its activities in order to achieve the afore described objectives.

3. Areas of Research :

i) Cowpea breeding :

- Introduction of improved cultivars and collection of local cowpea ;
- Evaluation of introducted local varieties for adaptation, resistance to diseases, insect pests and Striga infestation ;
- Preliminary yield trials of promising varieties ;
- Advanced yield trials of best performing varieties.

ii) Cowpea agronomy :

- On farm testing and on-farm demonstration of best performing varieties to be released ;
- Studies of agronomic practices such as : sowing dates, plant population, etc.

4. Location of Project :

This project will be conducted at two main stations :

- Contuboel, located in the Eastern region of Guinea Bissau. This region falls under the Sudan Savanna ecology with 1200 to 1500 mm rainfall, often poorly distributed.
- Caboxanque, located in the Southern region of the country, which falls under the Northern Guinea Savanna ecology with 1200 to 2500 mm rainfall.

On farm testing and demonstrations will also be conducted in each ecological zone.

5. Personnel

Name	Qualification	Crop Research Areas
-	Cowpea Agronomist/Breeder (B.Sc)	Cowpea agronomy/ breeding

6. Work plan

(see point 3 : Areas of Research)

7. List of items for which supplementary funding is requested

- Local travel
- Transportation
- Field and laboratory supplies
- Office supplies
- Seed multiplication and storage
- In-country training
- Long term training
- Documentation

BUDGET PROPOSAL FOR GUINEA BISAU

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	2,500	2,500	2,500	7,500
2. Transportation	30,000	5,000	5,000	40,000
b) Activities/Supplies				
3. Field and Lab. supplies	6,000	6,000	6,000	18,000
4. Office supplies	2,000	1,250	1,250	4,500
5. Seed production and storage	5,000	5,000	5,000	15,000
c) Training				
6. In-country training	9,000	9,000	9,000	27,000
7. Long term training (1 M.Sc.)	7,000	7,000	-	14,000
d) Documentation				
8. Documentation	3,000	3,000	3,000	9,000
Total	64,500	38,750	31,750	135,000

(7) GUINEA CONAKRY

RENACO's contribution in 1988 : $ 580

Country's contribution : N/A

Contact person/Collaborator :

Mr. Saikou S. BAH

Chef de Programme DNRA/MDR
B.P. 576
Conakry
REP. DE GUINEE

1. Objectives :

- To introduce improved cowpea cultivars from IITA/SAFGRAD and neighbouring countries and collect local cowpea germplasm to study their adaptation in different ecological zones in Guinea ; and

- To introduce and test improved agronomic practices and identification and release of those that are compatible with peasant farmers' conditions and effective in overcoming cowpea production constraints.

2. Background :

Cowpea is one of the grain legumes -- peanut, field bean, bambara groundnut, pigeon pea, soya bean, etc -- generally considered as minor crops, yet is very important in supplementing human diet with cheap and high quality protein. It is grown throughout the country, generally in mixed cropping.

Insect pests ; various fungal, bacterial and viral diseases, inadequate infrastructures, extension services and agricultural research and traditional farming systems are major constraints limiting cowpea production in Guinea. Since the present economic condition of Guinea does

not permit the country to support the entire cost of cowpea research, this budget proposal is submitted to obtain supplementary funds that will help Guinea introduce, test and identify cowpea production technologies that can strengthen cowpea production by peasant farmers.

3. Areas of Research :

i) Cowpea breeding :

- Collection, introduction and evaluation of germplasm ;
- Preliminary and advanced yield trials ;
- Multilocation trials and on-farm testings.

ii) Cowpea agronomy

- Studies of sowing dates, plant populations, tillage methods, seedbed preparation methods, soil fertilization, rotation and cropping systems.

iii) Cowpea entomology :

- Identification of cheap, safe and effective insecticides and economical spraying methods ;

- Studies of insect pest biology and population dynamics.

4. Location of Project :

The project will be based at the Foulaya Station. Multilocation trials will be conducted at the following sub-stations : Bordo (Kankan), Bareing (Pita), Kilissi (Kindia) and Tindo (Faranah). On-farm testing will also be conducted in various rural development projects.

4. Personnel :

Name	Qualification	Crop Research Areas
-	One Ing/Agronome	National Cowpea Coordinator
-	One Ing/Agronome	Cowpea breeding
-	Three Ing/Agronomes	Cowpea Agronomy
-	One Cowpea Entomologist	Cowpea Entomology
-	One Cowpea Pathologist	Cowpea Pathology

5. List of items for which supplementary funding is requested :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Office supplies
- Seed multiplication and storage
- Training
- Documentation

BUDGET PROPOSAL FOR GUINEA CONAKRY: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	30,000	5,000	5,000	40,000
b) Activities/supplies				
3. Field operation	6,000	6,000	6,000	18,000
4. Field & lab. supplies	6,000	6,000	6,000	18,000
5. Office supplies	2,000	1,250	1,250	4,500
6. Seed production & storage	5,000	5,000	5,000	15,000
c) Training				
7. In-service training	4,000	4,000	4,000	12,000
8. Long term training (2 M.Sc.)	14,000	14,000	-	28,000
9. In-country training	9,000	9,000	9,000	27,000
d) Documentation				
10. Documentation	3,000	3,000	3,000	9,000
Total	83,000	57,250	43,250	183,500

(8) MALI

RENACO's contribution in 1988 : $ 580

Country's contribution : N/A

Contact person/Collaborator :

Mr. Ondié KODIO

IER, DRA, SRCVO
Légumineuses Alimentaires
B.P. 438
Bamako
MALI

1. Objectives :

- To develop and release to peasant farmers better adapted, high yielding, good seed quality, and drought, Striga, diseases and insect pests resistant cowpea cultivars ;

- To develop appropriate agronomic practices for achieving economic cowpea yields ;

- To improve the storability of cowpea through genetic as well as environmental manipulations.

2. Background :

Cowpea, after peanut, is the major grain legume grown by peasant farmers in Mali. For farmers and low income groups in urban centres, it is the most important source of cheap and high quality protein. Cowpea fodder is also an important feed for livestock particularly in the Sudan Savanna and the Sahel. In 1985, Mali produced a total of 9,913 tonnes of cowpea grains.

As is the case in most SAFGRAD member countries, cowpea production is handicapped by the following constraints : insufficient, poorly distributed and erratic rainfall ; various insect pests ; various fungal, bacterial and viral diseases ; Striga damage ; inadequate infrastructures,

extension services and agricultural research ; and traditional farming. To overcome some of non-socio-economic constraints described above, the "International Development Research Centre" (IDRC) of Canada signed a contract with the Government of Mali to strengthen Mali's national cowpea program. With this support and in collaboration with IITA, IITA/SAFGRAD and neighbouring countries, the Malian cowpea program identified and released new cowpea production technologies, cultivars as well as cultural practices, which are being adopted by peasant farmers. Because long term research activities are required to obtain high yielding, good quality seed and better adapted (which have accumulated all required genes to resist yield reducing factors) cultivars and considering also that the IDRC support came to an end in1986, the present budget proposal is, therefore, submitted to obtain supplementary funds that will help the Malian cowpea program achieve the objectives described earlier.

3. Areas of Research :

i) Cowpea breeding

Through appropriate crosses involving introduced and local germplasm,efforts will be concentrated in the development of high yielding, better adapted, Striga and disease resistant cultivars. In order achieve this, the following will have to be done :

- Evaluation of introduced and local germplasm for the identification of suitable parents for appropriate crosses ;

- Screening of early generations for Striga ; fungal, viral and bacterial diseases and possibly insect pest resistance, and

- Evaluation of promising lines in preliminary and subsequently to advanced yield trials.

ii) Cowpea agronomy

- Evaluation of newly developed cultivars under farmers conditions and for their adaptation in various mixed cropping systems ; and

- Development of various agronomic practices compatible with peasant farmers' conditions.

iii) Cowpea entomology

- Survey of traditional cowpea storage methods ;
- Evaluation of traditional and improved cowpea storage systems.

iv) Socio-economics

Studies of cowpea grain for consumption and other uses.

4. Location of Project :

The project shall be based at the Sotuba station near Bamako, but will have out-reach activities at Same, Nioro, Massantola, Cinzana and Longorola sub-stations.

5. Personnel

Name	Qualification	Crop Research Areas
Ondié KODIO	Cowpea breeder (B. Sc)	Cowpea Breeding
Aliou TRAORE	" " (B. Sc)	" "
Mamadou TOURE	" " (B.Sc)	(On study leave for M. Sc.)
Oumar NIANGADO	Breeder (Dr./Ing.)	Cowpea breeding
Yacouba O. DOUMBIA	Entomologist (Dr./Ing).	Cowpea entomology
S. V. R. SHETTY	Cereal agronomist (Ph.D) (ICRISAT Tech. Assist.)	Cowpea agronomy
Adama COULIBALY	Agronomist (B.Sc)	Cowpea agronomy
Diakalio SOGODOGU	Cereal agronomist (B.Sc) (ICRISAT)	Cowpea agronomy
H. H. VUONG	Phytopathologist (B.Sc) (French Tech. Assist.)	Cowpea pathology

Name	Qualification	Crop Research Areas
Aly KARAMBE	Phytopathologist (B.Sc)	Cowpea pathology
Aliou KONATE	Weed scientist (B.Sc)	Cowpea agronomy
Moussa D. TRAORE	Physiologist (B.Sc)	Cowpea physiology
Mrs COULIBALY	Grain technologist (B.Sc)	Cowpea grain utilization
Mrs HAIDARA	Grain technologist (B.Sc)	Cowpea grain utilization
Sidi Bekaye COULIBALY	Agronomist (B.SC)	Cowpea multilocation testing
Moussa D. SANOGO	Agronomist (B.Sc)	Cowpea multilocation testing
Lamine TRAORE	Agronomist (M.Sc)	Cowpea on-farm testing
Abdoulay TRAORE	Agronomist (B.Sc)	Cowpea soil fertilization
Zoumana KOUYATE	Agronomist (B.Sc)	Cowpea agronomy

6. Work plan

(see point 3 : Areas of Research)

7. List of items for which supplementary funding is requested

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Hybridization activities
- Parcelling and mailing
- Office supplies
- Seed multiplication and storage
- In-country training
- Long term training
- Documentation

BUDGET PROPOSAL FOR MALI: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	5,000	5,000	5,000	15,000
b) Activities/Supplies				
3. Field operation	3,000	3,000	3,000	9,000
4. Field and Lab. supplies	6,000	6,000	6,000	18,000
5. Hybridization activities	3,000	3,000	3,000	9,000
6. Parcelling & mailing of seeds	1,500	1,500	1,500	4,500
7. Office supplies	2,000	2,000	2,000	6,000
8. Seed production & storage	5,000	5,000	5,000	15,000
c) Training				
9. In-country training	9,000	9,000	9,000	27,000
10. Long term training	14,000	14,000	-	28,000
d) Documentation				
11. Documentation	3,000	3,000	3,000	9,000
Total	55,500	55,500	41,500	152,500

(9) MAURITANIA

RENACO's contribution in 1988 : $ 580

Country's contribution : N/A

Contact person/Collaborator :

Mr. Sidi FALL

CNRADA
B.P. 22
Kaedi
MAURITANIA

1. Objectives :

To evaluate cowpea cultivars introduced from IITA, SAFGRAD and neighbouring countries for adaptation and high seed and forage yields.

2. Background :

In Mauritania, cowpea is a most important grain legume crop. Its seeds and young leaves are served as food; its fodder are used as forage. Cowpea becomes more crucial for the survival of peasant farmers during dry years, when complete failure of a cereal crop is experienced. Cowpea is then used as stapple food consumed in the form of "cousscouss". For low income groups, cowpea constitutes, thus, a cheap source of high quality protein, during normal years, and a unique source of food energy during severe dry years, which has been frequently experienced during the last two decades.

Though traditionally grown in mixtures, cowpea is more and more grown as a pure crop under rainfed conditions since the last few years ; Average yields varies from 250 to 500 kg/ha. Cowpea in Mauritania, more than anywhere else in Subsaharian Africa, is severely hampered by : insufficient, poor distribution and erratic rainfal, high solar radiations, high air temperatures and wind speeds, poor soil physical properties,low

soil fertility, diseases, insect pests, poor varieties and socio-economic factors such as : inadequate or lack of distribution centres for inputs, inadequate pricing (both inputs and products), poor seed storage facilities and inadequate extension services. This budget proposal is therefore submitted to enable the Mauritanian Cowpea Research Program to introduce and test more lines from IITA/SAFGRAD and neighbouring countries.The lines are to be extensively tested in cowpea growing areas.

3. Areas of Research :

i) Cowpea breeding :

- Collection of local germplasm and their maintenance ;
- Introduction of improved germplasm from IITA/SAFGRAD and neighbouring countries ;
- Evaluation of local and introduced germplasms for identification of those that are better adapted under Mauritanian climatic conditions.

ii) Cowpea agronomy :

- Multilocation yield trial of promising cultivars ;
- On-farm testing of best identified cultivars.

4. Location of Project :

The project is based at Kaedi, but will be carried out at three research stations : Belinabe, Sylla and Rindiaw in Southern Mauritania. Four sub-stations and several on-farm testing sites will also be included.

5. Personnel :

Name	Qualification	Crop Research Areas
Sidi FALL	Plant breeder (B.Sc)	Cowpea breeding
Sidi RACHID	Agronomist (Diploma)	Cowpea agronomy
Mohamed Y. BATHILI	Agronomist (Diploma)	Cowpea Agronomy

6. List of items for which supplementary fundings is requested :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Office supplies
- Seed multiplication and storage
- Training
- Documentation

BUDGET PROPOSAL FOR MAURITANIA: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	5,000	5,000	5,000	15,000
b) Activities/Supplies				
3. Field operation	6,000	6,000	6,000	18,000
4. Field & Lab. supplies	6,000	6,000	6,000	18,000
5. Office supplies	2,000	2,000	2,000	6,000
6. Seed production & storage	5,000	5,000	5,000	15,000
c) Training				
7. In country training	6,000	6,000	6,000	18,000
8. In-service training	3,000	3,000	3,000	9,000
9. Long term training (2 M.Sc.)	14,000	14,000	-	28,000
d) Documentation				
10. Documentation	3,000	3,000	3,000	9,000
Total	54,000	54,000	40,000	148,000

(10)

N I G E R

RENACO's contribution in 1988 : $ 2,000

Country's contribution : N/A

Contact person/Collaborator :

Mr. Hassane HAMA

Malherbologist
INRAN B.P. 240
Maradi
NIGER

Mr. A. BONKOULA

Departement des Recherches
Agricoles
B.P. 429
Niamey
NIGER

1. Objectives :

- To develop high yielding cowpea cultivars better adapted to semi-arid zones together with diseases, insect pests, and Striga resistances ;

- To protect cowpea crop against insect pests by use of cheap, safe and effective insecticides ; and

- To develop appropriate production practices for increased cowpea production.

2. Background :

Cowpea is the only crop for which the growing area and production have substantially increased since Niger's independence : 360,000 ha in 1960 against 1,600,000 ha in 1986 and grain yield of 40,000 T in 1960 against 300,000 T in 1986.It has become, therefore, the second major crop, after millet for which production has doubled--700,000 T in 1960 against 1.400,000 T in 1986. Sorghum is the third major crop but its production has hardly increased --300,000 T in 1960 against 360,000 T in 1986.

The current cowpea yield average is 320 kg/ha, is still a significant increase compared to 120 kg/ha in 1960. Cowpea crop is still crippled by the following production constraints : insufficient , poorly distributed and erratic rainfall ; high air and soil temperatures, high wind velocity, sand blast , various damages (caused by insect pests ; fungal, viral and bacterial diseases ; and Striga), poor infrastructures, inadequate agricultural research fundings and traditional farming systems practiced by the majority of farmers.

Cowpea breeding and agronomic research was funded by the "Projet Appui à la Recherche Agricole" (PARA), and cowpea entomology by the "Comité International de Lutte contre la Sécheresse du Sahel" (CILSS), both of which were sponsored by the "United States Agency for International Development (USAID). Good production technologies were developed and successfully extended to farmers. This explains the average cowpea seed yield increase reported earlier. However, because combining all sources of resistances into high yielding and better adapted cultivars and developing appropriate production practices requires long term research ; considering that the USAID support to PARA and CILSS came to an end in 1987 , and, owing to the economic difficulties of Niger, the Government is unlikely to come up, in the near future, with any substantial financial support : This budget proposal is, therefore, submitted to obtain supplementary funds that would enable the Niger cowpea research to continue in order to achieve its objectives.

3. Areas of Research :

i) Cowpea breeding

- Screening of local and introduced materials for adaptation ; resistance to diseases, insect pests (including storage insects) and Striga ;

- Incorporation of various sources of resistance into good agronomic backgrounds and development of new, better adapted, high yielding cultivars of farmers' preference.

ii) Cowpea agronomy :

- Studies of appropriate production practices including millet-cowpea intercropping.

iii) Cowpea protection :

- Study of biology of Bruchids insects ; and
- Study of the biology of two disease agents : Xantomonas vignicola and Macrophomina phasealina.

4. Location of Project :

Experiments will be conducted at Kolo and Maradi main stations and at Chikal, Konni, Bengou and Magaria sub-stations and at the University of Niamey.

5. Personnel :

NAME	QUALIFICATION	CROP RESEARCH AREAS
Abdoulaye BONKOULA	Cowpea breeder (B.Sc)	Cowpea breeding
B. NTARE	Cowpea breeder (Ph.D) (IITA/ICRISAT Tech. Assist.)	Cowpea breeding
Maman NOURI	Agronomist (B.Sc)	Cowpea agronomy
Abdel BERRADA	Agronomist (B.Sc)	Cowpea agronomy
Ahamadou N'DIAYE	Entomologist (B.Sc)	Cowpea entomology
Adam TOUDOU	Phytopathologist	Cowpea pathology
Hassane HAMA	Phytopathologist (B.Sc)	Cowpea pathology
ALZOUMA I.	Entomologist (Ph.D)	Cowpea entomology
Ouamrou MOUSSA	Seed technologist (B.Sc)	Cowpea seed technology

6 . Work plan :

(see point 3 : Areas of Research).

7. List of items for which supplementary funding is requested :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- hybridization activities
- Parcelling and mailing
- Seed multiplication and storage
- Office supplies
- Thresher
- Training
- Documentation

BUDGET PROPOSAL FOR NIGER 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	5,000	5,000	5,000	15,000
b) Activities/Supplies				
3. Field operations	3,000	3,000	3,000	9,000
4. Field and Lab Supplies	6,000	6,000	6,000	18,000
5. Hybridization activities	3,000	3,000	3,000	9,000
6. Parcelling and mailing seeds	1,500	1,500	1,500	4,500
7. Office Supplies	2,000	1,250	1,250	4,500
8. Seed production and storage	5,000	5,000	5,000	15,000
9. Thresher	15,000	-	-	15,000
c) Training				
10. In-country training	9,000	9,000	9,000	27,000
11. Long term training (2 M.Sc.)	14,000	14,000	-	28,000
d) Documentation				
12. Documentation	3,000	3,000	3,000	9,000
Total	70,500	54,750	40,750	166,000

(16) N I G E R I A

RENACO's contribution in 1988 : $ 4,000.00

Country's contribution : N/A

Contact person/Collaborator :

Prof. Ono Leleji

Prof. Ono Leleji
IAR, Ahmadu Bello University
P.M.B. 1044
Zaria
NIGERIA

1. Objectives :

- Further test promising lines throughout the semi-arid regions of Nigeria.
- Identify sources of diseases, viruses, insect pests, Striga, Alectra, drought and heat resistant or tolerant materials ;
- Incorporation of identified sources of resistance/tolerance into good agronomic backgrounds and good seed quality, and development of new, high yielding, widely and better adapted cultivars ; and
- Development of better agronomic practices compatible with peasant farmers' conditions and maximising grain yield ; minimising seed yield losses during rainy and dry years, respectively.

2. Background :

Cowpea is a most important grain legume consumed in all parts of Nigeria. As dry grain, it contributes more than 57 % of the total protein from legumes in Nigerian diet. Its fodder is also an important feed for livestock in semi-arid zones, where 75 % of the total cowpea in Nigeria (estimated to be about one million tonnes per year) is produced.

During the last two decades, cowpea production in Nigeria has been experiencing large annual rainfall deficits, specifically erratic and/or poor distribution. The situation is further aggravated by the prevalence of unadapted and photo-sensitive varieties, diseases, insect pests and parasitic weeds; inadequate research funding for the development of appropriate technologies ; inadequate extension services and agricultural credit facilities ; and the prevalence of traditional farming system. The research team is also suffering from severe shortage of well trained support staff (field and laboratory technicians and scientists), which reduces the effectiveness of research activities.

Inspite of limited funding by the Nigerian Government, the Institute of Agricultural Research (IAR) has developed promising lines (such as : SAMPEA 7, IAR-335, and IAR-353 etc) ; identified sources of resistance to major diseases (such as : scab, brown blotch, etc) ; and in collaboration with IITA/SAFGRAD, sources of resistance to the Nigerian Striga strain has been identified.

In addition, a number of agronomic practices (including cheap and safe insecticides and number of insecticide prays) have been developed and recommended to farmers.

This budget proposal is submitted to obtain supplementary funds that would further strengthen the Nigeria's cowpea research program. It will enable the research team to increase their local labour and to have adequate logistic support (serviceable vehicles and fuel, perdiem/allowances etc) for the establishment and management of trials and visiting experimental sites for data collection.

3. Areas of Research :

i) Cowpea breeding :

- In collaboration with a plant pathologist, identify new sources of resistance to diseases, Striga and Alectra.

- In collaboration with an agronomist, identify new sources of

appropriate maturity groups which are tolerant to drought and heat stresses ;

- Through appropriate crosses, incorporate different sources of valuable genes so identified into good agronomic backgrounds and good seed quality and development of better adapted high yielding cultivars.

ii) Cowpea pathology :

- Collect Striga and Alectra seed from farmers' fields for artificial inoculation in pot culture (screenhouse) ;

- Screen breeding materials (up to about 300 lines) for Striga and Alectra resistance in pot culture (screenhouse).

- Artificial inoculation of Striga and Alectra sick plots for further evaluation of breeding materials under field conditions ;

- Screen breeding materials for resistance to fungal and bacterial diseases of the northern Guinea savanna : Elsinoe phaseoli ; Septoria vignae ; Colletotricum capsici ; Xanthomonas compestris p.v. Vignicola.

- Screen breeding materials for resistance to diseases of the Sudan Savanna : Macrophomina blight ; Xanthomonas campestris p.v. Vignicola.

iii) Cowpea agronomy

- Varietal interaction, planting patterns, relay and intercropping experiments involving cereals, (sorghum, millet and maize) and cowpea will be conducted in appropriate ecologies of semi-arid zones.

4. Location of Project :

The bulk of the crosses, early generation testing, screening for resistances to various diseases, Striga and Alectra will be

carryed out at Samaru. While evaluation of various technologies in addition to Samaru, will be done at Bakura (Sokoto State), Minjibir, Tomas and Kadawo (Kano State).

5. Personnel :

Names	Qualification	Crop Research Areas
Ono Leleji	Cowpea breeder (Ph.D)	Cowpea breeding
A. A. Zaria	Cowpea breeder (M.Sc)	Cowpea breeding
A. M. Emechebe	Cowpea pathologist (Ph.D)	Cowpea pathology
E. C. Odion	Cowpea agronomist (M.Sc)	Cowpea agronomy
C. Amatobe	Cowpea entomologist (Ph.D)	Cowpea entomology

6. Work plan

(see point 3 : Areas of Research)

7. List of items for which supplementary funding is requested:

- Local travel
- Transportation
- Field and laboratory supplies
- Hybridization activities
- Parcelling and mailing
- Office supplies
- Training
- Seed multiplication
- Insect laboratory
- Thresher

BUDGET PROPOSAL FOR NIGERIA: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	30,000	5,000	5,000	40,000
b) Activities/Supplies				
3. Field operation	6,000	6,000	6,000	18,000
4. Field and Lab. supplies	12,000	12,000	12,000	36,000
5. Hybridization activities	6,000	6,000	6,000	18,000
6. Parcelling & mailing of seeds	5,000	5,000	5,000	15,000
7; Office supplies	3,000	3,000	3,000	9,000
8. Seed production & storage	5,000	5,000	5,000	15,000
9. Insect Laboratory	16,000	4,000	4,000	24,000
10. Thresher	15,000	-	-	15,000
c) Training				
11. In country training	9,000	9,000	9,000	27,000
12. Long term training (2 Ph.D)	21,000	21,000	-	42,000
	132,000	80,000	59,000	271,000

(19) S E N E G A L

RENACO's contribution in 1988 : $ 3,000

Country's contribution : N/A

Contact person/Collaborator :

Dr. Amadou Bocar Bal

Entomologist
CNRA - B.P. 53
Bambey
SENEGAL

1. Objectives :

The main objective of this project is to put up efforts together to develop and release a cowpea production package to peasant farmers in the 250-600 mm rainfall northern belt of Senegal. To this effect the following specific objectives will have to be undertaken :

- To evaluate local and introduced cowpea varieties for adaptation and resistances to diseases and insect pests and identification of those that are high yielding and well suited to farmers' conditions ;

- To protect cowpea crop against major insect pests by use of cheap, safe and effective insecticides.

2. Background :

Cowpea with cereals, namely sorghum and millet are the most important food crops in Senegal. Because of its good quality and cheap protein and availability to low income groups, minimizing cowpea yield losses would greatly prevent human malnutrition. Thus, cowpea production appears crucial in maintaining, if not improving, the well being of the most vulnerable section of the human population : child bearing and pregnant women and children, in the dry areas.

Because crops plants, including cowpeas, are experiencing severe drought , resulting in great yield losses since the mid-seventy's, Senegal

has established "Food self sufficiency" program as its top economic priority. It is also believed that, to achieve Food self sufficiency, relevant agricultural research must be undertaken to develop new crop varieties and crop production practices which would limit yield losses and increase yield. This is very important for the cowpea crop, of which production is severely hampered not only by drought, but also by insects, viruses and diseases.

Senegal reinstituted a cowpea research program in 1981. With financial support from USAID through the CRISP project. Owing to the decline in the value of the Dollar, Financial support of the CRISP project came to an end since 1986. This explains the difficulties the Senegalese cowpea research is experiencing in field operations and justifies this supplementary budget request.

3. Areas of research

i) Cowpea breeding :

- Evaluation of introduced and improved varieties for adaptation and resistances to diseases and insect pests and identification for release of those varieties that are well suited to Senegalese farmers' conditions ;
- Crossing of appropriate parents for selection to further improve cowpea varieties ;
- Preliminary yield trials of promising lines and cultivars ;
- Advanced yield trials of best lines and cultivars.

ii) Cowpea entomology

- Screening cowpea for resistance to insect pests.
- Identification of cheap, safe and effective insecticides for cowpea crop protection against insect pests.

iii) Cowpea agronomy :

- On-farm testing and demonstration of improved cowpea technologies (varieties, insecticide spraying and agronomic practices).

4. Location of project :

The breeding and crop protection aspects of the project shall be conducted at the Bambey station and its four sub-stations : Ndiol, Lougha, Thilmaka and Nioro, scattered in the Central and Northern regions of Senegal.

The agronomic aspect of the project shall be carried out on farmers' fields in the areas mentioned above.

5. Personnel

NAME	Qualification	Crop Research Areas
Ndiaga CISSE	Cowpea breeder (M.Sc)	Cowpea breeding
Amadou Bocar BAL	Entomologist (Dr./Ing.)	Cowpea entomology
D. G. GAIKWAD	phytopathologist (Ph.D) (Indian Tech. Assistant)	Cowpea pathology
Mamadou GAYE	Microbiologist (Dr./Ing)	Cowpea microbiology

6. Work plan

(See point 3 : Areas of Research)

7. List of items for which supplementary funding is requested :

- Local travel
- Transportation
- Field operations
- Field and laboratory supplies
- Hybridization activities
- Parcelling and mailing
- Office supplies
- Seed production and storage
- Thresher
- Training
- Documentation

BUDGET PROPOSAL FOR SENEGAL: 1988-1990

FUNDS REQUESTED THROUGH SPAAR

(in US $)

Item/Activity	Year 1	Year 2	Year 3	Total
a) Travel				
1. Local travel	4,000	4,000	4,000	12,000
2. Transportation	5,000	5,000	5,000	15,000
b) Activities/Supplies				
3. Field operations	6,000	6,000	6,000	18,000
4. Field and Lab. supplies	6,000	6,000	6,000	18,000
5. Hybridization activities	6,000	6,000	6,000	18,000
6. Parcelling & mailing of seeds	3,000	3,000	3,000	9,000
7. Office supplies	2,000	2,000	2,000	6,000
8. Seed production & storage	5,000	5,000	5,000	15,000
9. Thresher	15,000	-	-	15,000
c) Training				
10. In country training	9,000	9,000	9,000	27,000
11. Long term training (1 Ph.D)	7,000	7,000	7,000	21,000
d) Documentation				
12. Documentation	3,000	3,000	3,000	9,000
Total	71,000	56,000	56,000	183,000

1988-04

DRAFT PROPOSAL FOR SUPPLEMENTAL FUNDING IN SUPPORT OF THE S A F G R A D WESTERN & CENTRAL AFRICA COWPEA NETWORK (R E N A C O)

AU-SAFGRAD

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