PD-AAP-424
ISN-33043

UNCLASSIFIED
CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-44

1. PROJECT TITLE
Bean and Cowpea CRSP

2. PROJECT NUMBER
931-1310

3. MISSION/AID/W OFFICE
S&T/AGR/AP

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 85-11 10/27-83

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES
A. First PRO-AG or Equivalent FY 80
B. Final Obligation Expected FY 84
C. Final Input Delivery FY 85

6. ESTIMATED PROJECT FUNDING
A. Total $ 4,397,452
B. U.S. $ 16,700,000

7. PERIOD COVERED BY EVALUATION
From (month/yr.) 9/80
To (month/yr.) 9/82
Date of Evaluation Review

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Develop collaborative relationship with Farming Systems Support Project USAID/University of Florida to assist with farming systems and economic viability analysis.	J. Yohe B.L. Pollack S&T/AGR/AP	Continuing
2. Develop collaborative relationship with NIFTAL USAID/University of Hawaii for Biological Nitrogen Fixation technology.	J. Yohe B.L. Pollack S&T/AGR/AP	Continuing
3. Records on details of staff training should be improved i.e., formal versus nonformal, numbers by sex, source, etc.	P. Barnes-McConnell, MSU University	September 1983
4. Assure that nutrition and consumer acceptance is considered in all breeding and production projects.	B.L. Pollack S&T/AGR/AP	Continuing
5. ME should consider length of term of Board and Tech. Committee members, procedure of staff replacement and possible tendency of Board and Technical Committee to resist structure for organizational change.	P.Barnes-McConnell MSU	February 1984
6. Improve orientation of PIs working in host countries vis-a-vis tropical agriculture, subsistance farming systems, and cross cultural relationships.	P.Barnes-McConnell MSU	Continuing
7. Provide better orientation for AID in general both in Washington and the missions as to CRSP concepts, activities and accomplishments.	P.Barnes-McConnell MSU	September 1983

(Continued)

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS
☐ Project Paper
☐ Financial Plan
☐ Logical Framework
☐ Project Agreement
☐ Implementation Plan e.g., CPI Network
☐ PIO/T
☒ PIO/C
☐ PIO/P
☐ Other (Specify)
☐ Other (Specify)

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT
A. ☐ Continue Project Without Change
B. ☐ Change Project Design and/or ☐ Change Implementation Plan
C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)
S&T/AGR/AP, B. Pollack Project Manager [signature] Date: 10/7/83
S&T/AGR/AP, J.M.Yohe [signature] Date: 10/14/83
S&T/AGR, M.Mozynski [signature] Date: 10/18/83
S&T/PO, F.Campbell [signature] Date: 10/20/83
S&T/AGR, ARBertrand [signature] Date: 10/21/83

12. Mission/AID/W Office Director Approval
Signature [signature]
Typed Name S&T/FA, J. S. Robins
Date 10/28/83

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To (month/yr.) 9/82
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8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
8. TC procedures for project forward planning, adjustment and termination should be formalized and standardized CRSP-wide.	Board of Dir.- Bean/Cowpea CRSP	February 1984
9. Make provisions for technology transfer or incentives to farmers and consumers to adopt the new technology developed by the research and technical assistance activity of this CRSP	B.L. Pollack S&T/AGR/AP	Continuing

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

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12. Mission/AID/W Office Director Approval
Signature
Typed Name
Date

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13. SUMMARY: This PES covers the initial two years of the project from 9/25/80 to 9/30/82. In that period the principal accomplishments were establishing the organizational framework, choosing U.S. and host country institutions and selecting priority research areas and projects to fit those priorities. Ten U.S. and fourteen host country institutions have been chosen (See Attachment 2 for names and locations).

Eighteen subprojects have been selected. A brief project description and how it fits with the selected program priority areas is presented in the Outputs section. A financial analysis is presented in Attachment 5. Twelve of the projects are over a year old and six were started within the past year.

The CRSP has involved a number of able senior U.S. university scientists in support of overseas development, and has linked those scientists and their home institutions in cooperative programs of work for development with overseas institutions for the benefit of both overseas and U.S. institutions..

There are now clear indications that a flow of highly useful technology will be forthcoming in the foreseeable future. Institutionalizing this capacity in the host country institutions seems likely for the long run.

Bean/cowpea CRSP activities have markedly benefitted both the host countries and the U.S. institutions where they take place. The CRSP provides relatively small but critically needed financial support to the collaborating host country institutions, allowing them to acquire staff, equipment, and other support and thereby enhance their capacity for successfully conducting the planned research activities. The informal and formal training being conducted in conjuction with the CRSP will provide a major assist in long-term project accomplishments.

A remarkable mutally rewarding working relationship, in most cases, has developed between PIs from the U.S. and host country institutions. Scientific knowledge and know-how has been shared or transferred. In addition non-technical constraints and potentials of the host country institutions are relatively better understood and dealt with on the part of the U.S. scientists.

Participation in the CRSP is beginning to create a concept of program identity among the PIs and a much broader awareness and understanding of the roles and significance of beans and cowpeas in third world agriculture. This understanding, together with the emphasis on the role of women in agricultural development, will substantially strengthen research efforts toward solution of production and consumption problems.

The organization necessary to achieve the project purpose and subpurpose is in place and well underway to attain these purposes. The factors involved here are well within their control and therefore are attainable by the CRSP organization.

The problem lies with goal attainment which is dependent on host country action. To date little progress has been made in the way of extension or training activity, or monetary or other incentives to gain farmer adaption of available technology. Considerable technology in the way of germplasm and in proven cultural practices is available for local adaption and adoption but little effort is being made to extend and capitalize on these available resources.

Other problems such as staff turnovers, procurement, finances and cultural understanding are present but they do not seriously jeopardize the success of the project. Lack of technology transfer to farmers and consumers can be a major problem for goal achievement.

14. EVALUATION METHODOLOGY: As called for in the project grant document an external review (ER) of the project is required every two years. In compliance with this requirement an ER scope of work was developed by S&T/AGR and a team of experts selected to conduct the ER. The roster of experts is presented in Attachment 1.

The primary purposes were to measure progress, verify the program hypothesis and make recommendations for improved implementation. The review team studied project reports and research findings, interviewed staff of the Management Entity and management offices at Michigan State University, met with the Board of Directors and members of the technical committee and talked with a number of principal investigators to gain information about the project. Some of the review team members visited project sites in the U.S. and talked with A.I.D. officials involved with the project. A week of structured activity was conducted at the Kellogg Center at Michigan State University to accomplish much of the formal review. All of the project administration factions as well as A.I.D. project management were represented at these meetings. The close cooperation of the project staff greatly facilitated the information gathering process of the review.

ER team members were given specific project and subject matter assignments for research and reporting to other team members. Presentations were made by U.S. and host country principal investigators in general sessions with question and answer sessions following.

The budget for developing the review was $1518. This accounts for the review team members expenses. U.S. and host country institutions providing primary research sites are shown in Attachment 2.

15. EXTERNAL FACTORS: External factors have not impinged to an appreciable extent on the project as a whole. The socio-political environment has not been conducive to agriculture development in a few cases. On the other hand, technology developed prior to the CRSP initiation has been found readily adaptable to some LDC and U.S. sites allowing benefits to accure to the beneficiary population early in the project life.

Basic assumptions such as the availability of joint funding, mutual benefits to both U.S. LDC research on beans and cowpeas, the collaborative relationship developed between principal investigators, the general cooperativeness of host countries and the ability to develop innovative administrative techniques by the project management all have remained valid.

The assumption that technoloy would be extended to farmers by LDC entities as yet has not proven valid. Communication at all levels will require continual monitoring and support.

16. INPUTS: Procurement of research commodities and equipment through A.I.D. procedures has resulted in serious delays. Discussions are ongoing between the Management Entity and A.I.D. to resolve this problem. Funding levels and transfer of funds between the U.S. and host countries was a problem in a few cases.

Lack of knowledge about host country resources and culture have resulted in some technical assistance not being as useful as possible. This is more a function of experience and mutual knowledge on the part of both the U.S. and LDC staff. The rapid turnover of LDC research staff is a continual problem though as yet it has not jeopardized research programs.

While extension is not a function of this project, this essential element of agricultural development is going to require attention before the benefits of the technology developed herein is used by farmers resulting in more bean and cowpea production and consumption. High profit margins to farmers in some cases substituted for extension activity in the introduction of high yielding wheat and rice. Either education/extension or some readily appreciated incentive will be necessary to gain adoption of yield increasing technology and achieve the stated project goals.

17. OUTPUTS: Ten specific problem areas were listed in the grantee's project proposal as being representative and of highest concern among the major constraints to increased bean and cowpea production and consumption. The major constraint areas were determined by a committee of plant and social scientist involved with beans and cowpeas from U.S. and LDC institutions.

The ten problems and activities to correct these problems are listed below. A more complete discussion of the accomplishments of the project is taken from the ER team report and included as Attachment 3.

PROBLEM AREAS:

1. Disease and Pests in Field and Storage

   a. A Brazil/Boyce Thompson project is identifying and training local staff in the use of insect pathogens for biological control of cowpea insects.

   b. The Brazil/U. of Wisconsin project is developing improved disease screening techniques for use by plant breeders to identify resistant bean strains.

   c. Intergrated pest management techniques are being developed in the Cameroon/U. of Georgia project.

   d. The Dominican Republic/U. of Nebraska project is screening major bean cultivars for blight/rust resistance. These genes will be incorporated in other regionally popular cultivars to provide resistance in these accepted varieties.

e. The U. of Puerto Rico, building on past research is working with Honduras and Dominican Republic plant breeders in identifying and distributing bean cultivars with established multiple disease resistance. These cultivars will be used both in breeding programs and as recommended varieties for farmer use.

f. A Tanzanian/Washington State U. project is studying disease and insect infestation in several ecological zones and developing breeding programs to impact on special ecological problems.

2. Low Yield and Low Yield Stability

a. While no project is working specifically in this area all will, if successful, contribute to increasing yields and stabilizing yields at a higher level.

3. Environmental Stress and Narrow Range of Adaptability Problems

a. Botswana and Colorado State are initiating research on cowpea production in semi-arid regions of Botswana.

b. Studies on heat and drought tolerance of established disease resistant varieties is being conducted by a Kenyan/U. of Calif./Davis team. Tepary and Kenyan common bean crosses are expected to provide new breeding lines.

c. Senegal and U. of Calif./Riverside are researching cowpea cultivars for production and utilization in semi-arid zones.

4. Improving Inefficient Nitrogen Fixation in Farmer Fields

a. The Brazilian/U. of Wisconsin project has its purpose the identification of superior nitrogen fixing bean cultivars under different micro-climates and cropping systems.

b. A Mexico/Michigan State U. project impacts on stress tolerance by genetic selecting for bean lines of improved carbohydrate partioning and biological nitrogen fixation.

5. The Hard Seed Characteristics of Beans and Cowpeas Which Increase Cooking Time

a. Guatemala's INCAP and Washington State U. project addresses a broad complex of factors effecting dry bean utilization, seedcoat hardness being only one of several characteristics that impinge on nutritive value, consumer acceptance and use.

6. Problems of Traditional Farming Systems, Socio-Cultural Issues and the Role of Women

Several projects are considering the farming systems environment in which crops will be produced.

a. Cornell U. in its work in Ecuador with INIAP on socio-anthropological aspects of small farming systems is putting greater emphasis in this area.

b. The Management Entity has on its staff a Women in Development Specialist who works with principal investigators determining various project activity effects on the role of women.

7. Legume Protein Digestibility Problems

a. Medical problems associated with eating cowpeas particularly by children is the major emphasis of a Nigeria/Michigan State U. project.

b. The INCAP/Washington State Project mentioned above is also studying nutritional quality and digestibility characteristics.

8. Improved Processing and Preserving Methods

a. Nigeria and the U. of Georgia are doing research on storage and processing methods to improve nutrition and use by both rural and urban users. A potential new product for both the U.S. and Nigeria is being tested.

9. Comparative Economic Values of Introduced Versus Traditional Production and Use Practices

a. A number of projects are researching the comparative economics of new versus old techniques in both production and use. The Malawi/Michigan State U. project has made more progress in their study of the wide range of diversity of the bean in Malawi.

Additional research in the production projects is necessary to assure that new technology is economically viable and socially and culturally acceptable to the client population. The ER reports speaks well to these problems in the Social Science and Farming Systems sections.

10. Need for Improved Professional Competence

The project has moved rapidly in this area to provide host country training. 80 host country staff have received informal training via seminars and workshops plus numerous field contacts with U.S. counterparts. Also, 50 MS and Ph. D. level host country staff are studying in the U.S.

Excellent management capability has been demonstrated by the Management Entity and its Management Office. In essentially a new environment, administrative procedures have to be devised and established to consider project proposals, staff nominations, provide overseas travel and funding, equipment and supply procurement, and to monitor research and training activity of ten U.S. institutions and fourteen foreign country institutions. Their ability to solve the many problems that developed has been outstanding.

The establishment of the basic organization of a Board of Directors, Technical Committee, External Review Panel, Principal Investigators and Host Country Collaborators was a major undertaking in addition to implementing eighteen new projects in the twenty-four institutions mentioned above. The Bean and Cowpea CRSP organizational chart is shown in Attachment 4.

Given the less than two year life of the research projects and the organizational complex that has been established, outputs are considered to be on target. No major unsolved problems are seen as constraints to achieving project outputs.

18. PURPOSE: Organize and mobilize financial and human resources necessary for monitoring a major multi-institutional U.S./LDC collaborative effort of research and training in bean and cowpea related areas.

Subpurpose

Improve the capabilities of appropriate LDC institutions to generate, adopt and apply improved knowledge to local conditions.

The organizational structure stated in the Purpose has been achieved (see Organizational Chart Attachment 3). Eighteen research projects are functioning and for the initial two years of project life a great deal has been accomplished toward achieving the project purpose. At the end of the next two years when the second ER is accomplished then an assessment of the new technology available for use by farmers can be made. It will take a minimum of an additional two years, i.e. year six of the project life before an assessment of farmer adoption can be made and the initial inpact of the project can be determined.

Both formal and informal training programs have been started as reported in the Output section. Of even more importance are the numerous close collegueal relationships that have been established and the advisory and study trips that have been made to the U.S. institutions by host country staff. The long term outlook for institution building in the host countries is excellent if these institutional and colleagueal relationships are further developed and retained.

19. GOAL: Make a significant contribution in improving the living conditions of small farm producers in LDCs and increase availability of low cost nutritious foodstuffs in the marketplace for the rural and urban poor in LDCs.

The foundation has been laid for the project's contribution to the stated goal. Technology is now available that can contribute significantly to increase production at lower per unit cost. Further joint subprojects have been implemented in various host countries in collaboration with U.S. institutions that will greatly improve the adaptability of this technology to the host country environment. However, the key factor to goal achievement is the adoption of this technology by host country farmers. This CRSP does not have that responsibility and as stated in the Inputs section, some form of training or incentives for farmers must be put in place to achieve this adoption. Adoption is not an automatic response as has been demonstrated many times over in many countries both developed and developing.

20. BENEFICIARIES: Direct beneficiaries to date have been the U.S. and host country institutions and staff involved. Both have received funds for staff and equipment, formal and informal training and highly valuable professional experience.

Proposed beneficiaries are the small LDC farmer and the comsumers of bean and cowpeas both rural and urban. Both farmer and consumer groups are envisioned as generally poorer people in their country who would directly benefit from increasead yields, lowered per unit cost and improved nutritional quality and consumer acceptance factor.

The institutional infrastructure is in place or being organized to provide the technology to accomplish these benefits. The only factor generally lacking is the infrastructure to gain adoption of this technology by farmers and processors of the increased production.

21. UNPLANNED EFFECTS: Not pertinent at this time.

22. LESSONS LEARNED:

a. The relatively large scale effort of the CRSP staff in organizing a critical mass of expertise in the bean and cowpea discipline has attracted considerable involvement and collaboration by other institutions interested in beans and cowpeas. The international centers of CIAT and IITA are examples of this interest.

b. CRSP scientists need background training in tropical agriculture; social, cultural and political environmental subsistance farming systems; and the development process.

23. SPECIAL COMMENTS OR REMARKS: NA

Attachments:
1. Roster of External Review Panel (1pp.)
2. U.S. and Host Country Research Sites (2pp.)
3. Progress Toward CRSP Objective Accomplishment (2pp.)
4. Bean and Cowpea CRSP Organizational Chart (1pp.)

WANG NO. 0570f

Attachment 1

ROSTER
Bean /Cowpea CRSP External Review Panel

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Attachment 2

~~Figure 2.~~ Location of collaborating institutions in the United States and collaborating host countries in Latin America.

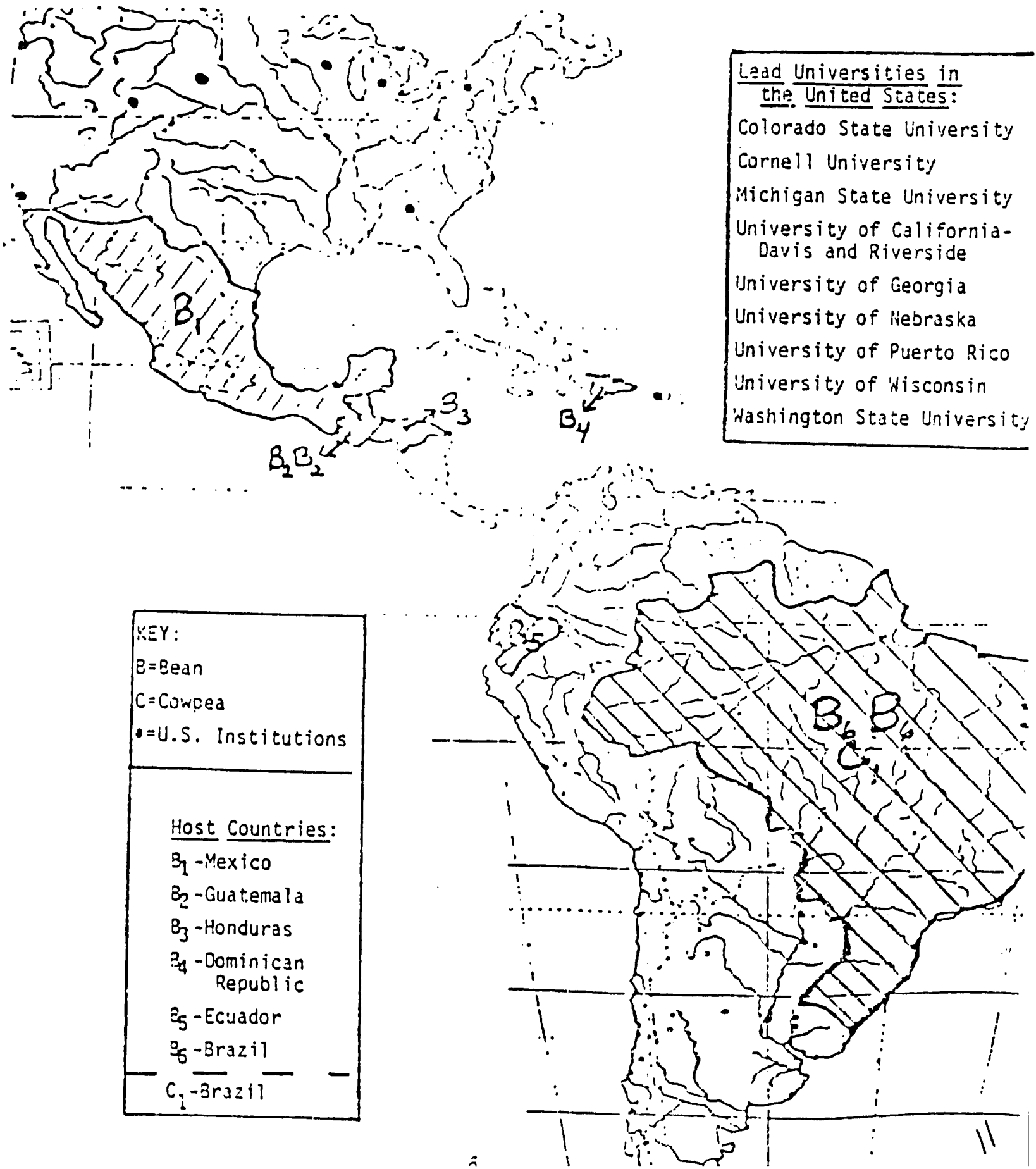
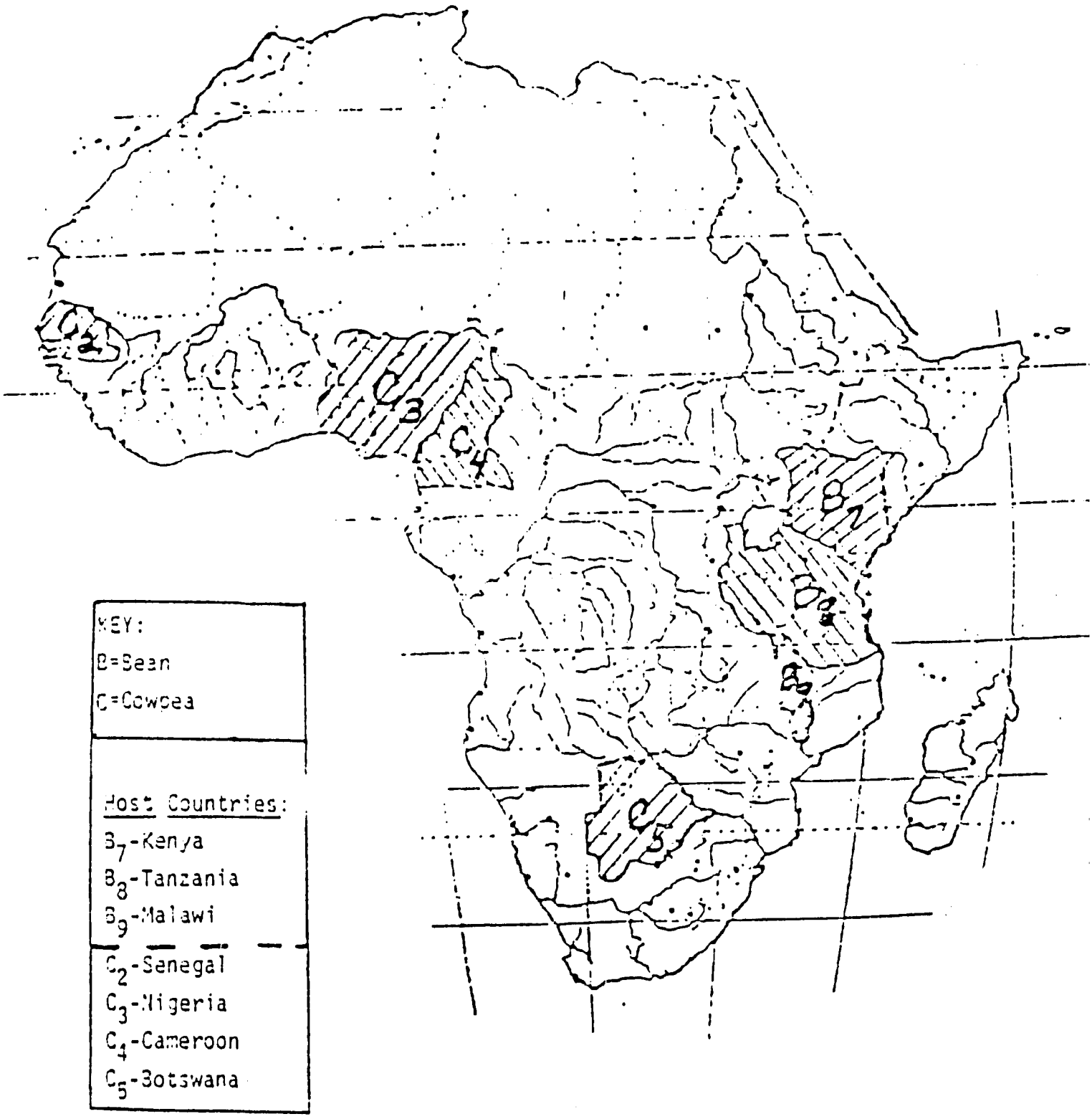


Figure 3. Location of collaborating host countries in Africa.



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Progress toward Accomplishment of CRSP Objectives:

Although most of the CRSP research projects were reporting their first complete year of research activity, and a number of projects had not been underway one year, progress toward particular research goals and the larger objectives of the program as a whole was identified. The following sections describe progress toward CRSP objectives.

DIRECTLY TRANSFERRABLE TECHNOLOGY

Some of this progress was reported as research outputs of directly transferrable technology. This included, for example: 1) identification of microorganisms which are pathogens to cowpea pests; 2) development of some techniques for reducing dry grain legume (bean and cowpea) storage losses due to insects; 3) quantification of storage losses in some areas; 4) development of some new lines more resistant to various diseases than those traditionally used; 5) development of some lines with enhanced BNF (biological nitrogen fixation) capability; 6) improvement of irrigation techniques for field trials; and 7) development of processes to obtain tannin-free bean flour.

HIGHLY PROMISING TECHNOLOGY

The scientists also identified highly promising technology which should be available within the next three years, including: 1) use of insect pathogens for biological control of cowpea and bean insect pests; 2) varieties which offer moderate resistance and practices which reduce damage from major insect pests; 3) conditions for harvest and storage which will minimize insect infestation; 4) heat tolerant cowpea germ plasm; 5) improved planting and harvesting technology including intercropping systems for cowpeas; 6) new varieties with resistance to common bean diseases; 7) improved seed production practices and cultural management to reduce bacterial diseases; 8) additional lines with enhanced BNF capability under field conditions; 9) improved processing and development of ready-to-use cowpea meal or flour; 10) improved drying and storage methods to maintain cooking quality of dry beans; 11) fermentation techniques to improve nutritional quality of beans, and release of germ plasm for quick cooking beans.

DIRECTLY TRANSFERRABLE METHODS

The research scientists reported new methods ready for direct transfer. These include: 1) techniques for production of insect pathogens for use in biological control; 2) breeding procedures and a screening system to identify heat tolerant cowpea germ plasm; 3) use of a portable image analyzer for rapid assessment of leaf area in studies of plant growth and development; 4) a rapid, reliable, efficient method for rust inoculation; 5) phytopathological techniques for bacterial blight work; 6) methods to estimate relative BNF capability under field conditions; 7) improved assays for procyanidins and lectins; 8) new farming systems research methods (in both Spanish and English); and 9) comparison of production labor costs between village areas, and between men and women.

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HIGHLY PROMISING METHODS

PIs also identified highly promising methods which are expected to be available in one to three years. These include: 1) strategies for microbial control agents in insect pest management programs; 2) use of natural epizootics of disease in pest populations; 3. low water volume methods of insecticide application; 4) low cost seed storage with protection from pests; 5) pretreatment procedures to maximize milling efficiency; 6) screening for lines with improved rooting; 7) prediction of performance and quality of products prepared with cowpea meal/flour; 8) analysis of genetic diversity; 9) rapid screening techniques for multiple disease resistance; 10) genetic methods to incorporate higher levels of resistance to blight and reduce seed transmission of bacterial pathogens; 11) standardized methods for analyzing cooking responses of beans; 12) simultaneous innoculation against major bean diseases; and 13) improved guides in Spanish and English for farming systems research as well as for analyzing secondary data for farming systems research.

The 18 projects in the CRSP have stimulated a great number of linkages with other research systems in the countries where they are located, as well as internationally. Close ties between CRSP researchers and other research and extension personnel have developed within a number of countries, often through the medium of workshops initiated to share new research findings. These have sometimes included commodity research personnel from universities as well as from ministries. These new linkages strengthen national research networks.

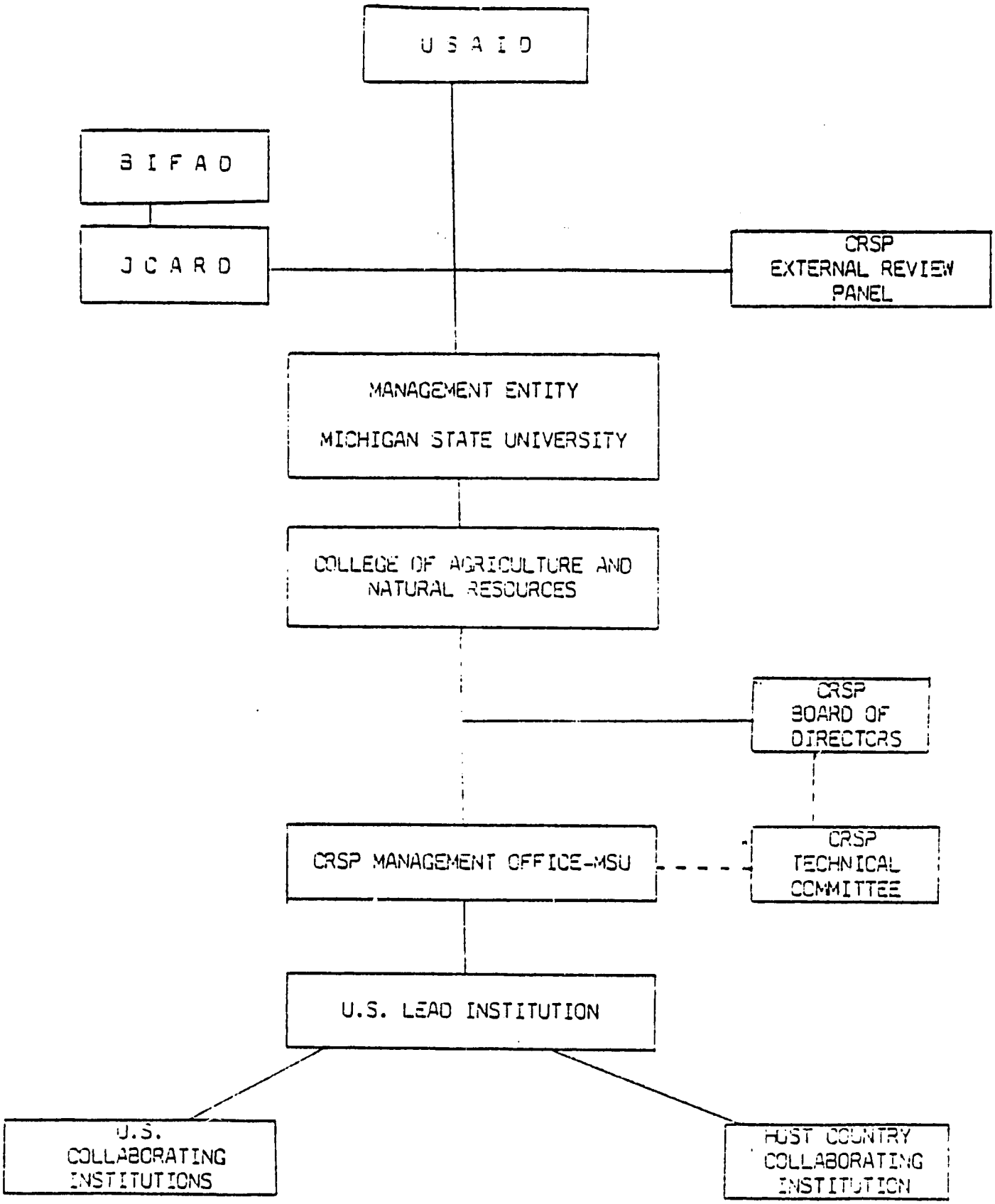
Strong interface has developed with the international research centers, particularly CIAT and IITA, for example, as germ plasm and expertise are shared. The CRSP may be especially effective in strengthening the international centers' links with national programs, as well as focusing attention at the centers on the production problems and needs of local farmers. CRSP scientists have expanded their network to include scientists from other countries who are doing research in host countries, as well. This observation is particularly noticed in Africa, where there is a long history of work by research scientists from European nations. Links with USDA are supported in a number of projects but particularly with the MITA station in Puerto Rico, and at Washington State University, Boyce Thompson Institute, and Michigan State University.

An impressive amount of training has been initiated through the CRSP research projects. This includes non-formal training in new methods, use of research equipment, and new techniques of analysis. A high proportion of participants receiving non-formal training have been women. Formal training includes short courses designed to teach new techniques and methods usually to ministry personnel, as well as, degree programs.

One of the main objectives of the CRSP research projects is to help strengthen national research institutions. This is accomplished through the development of improved research skills via training, acquiring new equipment and facilities to support research, and assignment of host country resources to the projects. In all these facets of institution building, impressive accomplishments are reflected in the relatively short time the projects have been in progress. The Prinicipal Investigators demonstrate an awareness of the need to develop strong permanent ties to the appropriate scientists and institutions to establish a lasting base for relevant research.

Best Available Document

~~Figure~~ 1. THE BEAN/COWPEA CRSP ORGANIZATIONAL CHART



FINANCIAL REVIEW

Excellent financial summaries by project and CRSP are available in the records and reports of the MO. Funding has been and will be flexible to allow for required changes project by project. Following is a summary by project showing FY-81, FY-82 allocations and spending and projected funding allocation through FY-85.

Table 1. Summary of FY-81 + FY-82 project financial history

Project	Initiated	FY 81 + 82 $1,000 Alloc.	FY 81 + 82 $1,000 Spent	FY 81 + 82 %	FY 81 + 82 Allocation as % of Total	5 Year Projected Total Budget $1,000	5 Year Projected Total Budget %
		%	%	%	%	$	%
Mexico/MSU	---	70.7	15.8	22.3	2.2	366	2.9
INCAP/WSU	6/81	326.1	222.9	68.4	10.2	1,174	9.5
Honduras/UPR	3/82	100.4	58.8	58.6	3.1	368	3.0
Guatemala/COR	8/81	187.1	83.3	44.5	5.8	662	5.3
Ecuador/COR	9/81	187.1	60.3	65.9	5.8	662	5.3
Brazil/UWI/H	5/82	91.5	34.9	38.1	2.9	536	4.3
Brazil/UWI/B	11/81	128.0	70.1	54.8	4.0	573	4.6
Brazil/BTI	9/81	175.4	156.3	89.1	5.5	620	5.0
Botswana/CSU	6/82	133.1	39.8	29.9	4.1	760	6.1
D. Republic/UPR	6/81	188.0	188.0	100.0	5.9	677	5.5
D. Republic/UNE	6/81	188.0	132.9	70.7	5.9	677	5.5
Senegal/UC-R	8/81	294.5	273.5	92.9	9.2	1,005	8.1
Cameroon/UGA	7/81	176.3	161.6	91.7	5.5	849	6.8
Nigeria/UGA	5/81	142.1	87.4	61.5	4.4	499	4.0
Nigeria/MSU	9/81	142.1	58.3	41.0	4.4	499	4.0
Kenya/UC-D	8/81	284.2	187.4	65.9	8.9	994	8.0
Tanzania/WSU	6/81	250.6	168.7	67.3	7.8	878	7.1
Malawi/MSU	3/82	138.5	131.6	95.0	4.3	627	5.0
		$3,203.9	$2,131.6	66.5	100.0	$12,425	100.0