

**1983 ANNUAL REPORT**  
**External Review Panel**



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MICHIGAN STATE UNIVERSITY

**THE BEAN/COWPEA  
COLLABORATIVE RESEARCH  
SUPPORT PROGRAM (CRSP)**

1983 REPORT  
EXTERNAL REVIEW PANEL

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RESEARCH SUPPORT PROGRAM  
(CRSP)

MICHIGAN STATE UNIVERSITY



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EXTERNAL REVIEW PANEL MEMBERSHIP  
1983

<u>Name</u>	<u>Affiliation</u>
Dr. Clarence C. Gray, III (Chair)	Professor International Extension and International Studies Virginia Polytechnic Institute and State University (formerly of the Rockefeller Foundation)
Dr. Mel Blase	Professor Agricultural Economics University of Missouri-Columbia
Dr. Hugh Bunting	Professor Agricultural Development Overseas University of Reading
Dr. Luis H. Camacho	INTSOY Plant Breeder CIAT
Dr. Peter Hildebrand	Professor Food and Resource Economics Department Institute of Food and Agricultural Sciences University of Florida
Dr. Antonio M. Pinchinat	Tropical and Agricultural Research and Development Specialist IICA
Dr. Charlotte E. Roderuck	Director World Food Institute Iowa State University

For further information contact:

Bean/Cowpea CRSP  
200 Center for International Programs  
Michigan State University  
East Lansing, Michigan 48824-1035  
U.S.A.

Telephone: (517) 355-4693  
Telex: 810-251-0737  
MSU INT PRO ELSG

## ACKNOWLEDGEMENTS

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REPORT OF THE BEAN/COWPEA EXTERNAL REVIEW PANEL FOR 1983

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## GLOSSARY OF ACRONYMS

AI	Already Important
BIFAD	Board for International Food and Agricultural Development
BNF	Biological Nitrogen Fixation
BOD	Board of Directors
BTI	Boyce Thompson Institute
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical (International Center of Tropical Agriculture)
CNPAF	Centro Nacional de Pesquisa de Arroz e Feijão (National Center of Investigation for Rice and Beans)
CRSP	Collaborative Research Support Program
DR	Dominican Republic
E	Exceptional
EAP	Escuela Agrícola Panamericana (Pan-American Agricultural School)
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária (Brazilian Enterprise for Agricultural Investigations)
ERP	External Review Panel
HC	Host Country
HP	Highly Promising
HS	Highly Satisfactory
ICTA	Instituto de Ciencias y Tecnología Agrícola (Institute of Agricultural Science and Technology)
IITA	International Institute of Tropical Agriculture
INCAP	Instituto de Nutrición de Centroamerica y Panamá (Institute of Nutrition of Central America and Panama)
INIA	Instituto Nacional de Investigaciones Agrícolas (National Institute of Agricultural Investigations)
INIAP	Instituto Nacional de Investigaciones Agropecuarias (National Institute of Agricultural Investigations)
ISRA	Institut Senegalais de Recherches Agricoles (Senegalese Institute of Agricultural Research)
JCARD	Joint Committee for Agricultural Research and Development
L	Limited
LS	Less than Satisfactory
LTP	Long-Term Potential
MO	Management Office
NA	Not Applicable
PCCMCA	Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos Alimenticios (Central American Cooperative Program for the Improvement of Food Crops)
PI	Principal Investigator
PL	Potentially Limited
PU	Potentially Useful
PoI	Potentially Important
S	Satisfactory
SAFGRAD	Semiarid Food Grain Research and Development Project
SODECOTON	Cotton production cooperative in Cameroon
TC	Technical Committee
UA	Unacceptable
UPR	University of Puerto Rico
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WID	Women in Development
WW	Worldwide

## SUMMARY

This is the second annual evaluation of the Bean/Cowpea CRSP by the External Review Panel. Eighteen research and training collaborative projects on beans (twelve) and cowpeas (six) make up the CRSP. There are no free-standing projects in the US without HC partnerships. These projects involve nine US lead universities, one US research institute, and counterpart institutions/agencies in thirteen cooperating countries. The CRSP has been underway for three years, with its individual projects having been initiated for between one and two and one-half years. While some of the lead universities are responsible for only one project, five US universities have two projects each and one US university has three projects. Some of the projects enjoy the support of more than one US institution; in one such project there are five cooperating US universities. In addition, there are several individual researchers having assignments which cross projects. On both a formal and informal basis, projects test one another's materials and individuals act as advisors to one another, offering different disciplinary perspectives. These relationships are increasing, even cross-nationally, as a result of the successes of individual projects and the rotating involvement of project researchers on the Technical Committee (TC).

The 1983 external review process covered a period of four months and this year focused on ERP team visits to project sites in cooperating Host Countries. This process culminated in the ERP Annual Meeting, at which time discussion of the many reports and written communications generated the project evaluations and the assessment of the overall CRSP. Of the eighteen projects, nine were rated by the ERP to be satisfactory for continuation without major changes or adjustments. Five were judged satisfactory for continuation with a recommendation for identified changes or adjustments. Four were deemed less than satisfactory for continuation unless major deficiencies/weaknesses are corrected.

The ERP then considered the overall management of the CRSP. Despite the sizeable number of domestic and foreign institutions distributed in North, Central and South America (including the Caribbean) and in East, West and Southern Africa, the ERP felt that the MO, Board of Directors (BOD), TC and collaborating institutions have been able to provide satisfactory administrative and technical management for the individual CRSP projects. This is

particularly significant because it has been during a period of high personnel turnover in the MO. There are several exceptions, but operations of the CRSP projects overall have been carried out quite well. Given the number of projects and the diversity of activities and personalities in a cross-cultural, inter-governmental relationship, this is a surprising achievement worthy of special recognition.

A major challenge facing all nations--including donor nations--is that of mobilizing/developing resources and making satisfactory arrangements to use resources. As a unique, new member of the international agricultural research and development system, this CRSP arrangement shows considerable promise. It is a highly acceptable and effective modality for bringing the extensive resources of US centers of excellence to the support of food and agricultural development in low-income, food-deficit nations. In the short term, predictable benefits can accrue from the transfer and/or development of knowledge and materials under the CRSP arrangement. It is clear that this process is underway in the Bean/Cowpea CRSP and the direct benefits surely will exceed the costs. For the long term, the benefits are likely to be even more rewarding: the CRSP promotes and builds institutional and personal/professional relationships which will endure long after its demise. Such relationships, time after time, will continue to pay dividends, given the dynamic nature of agriculture and the need to draw continually on expertise wherever it exists.

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Figure 1. The Bean/Cowpea CRSP Organizational Chart

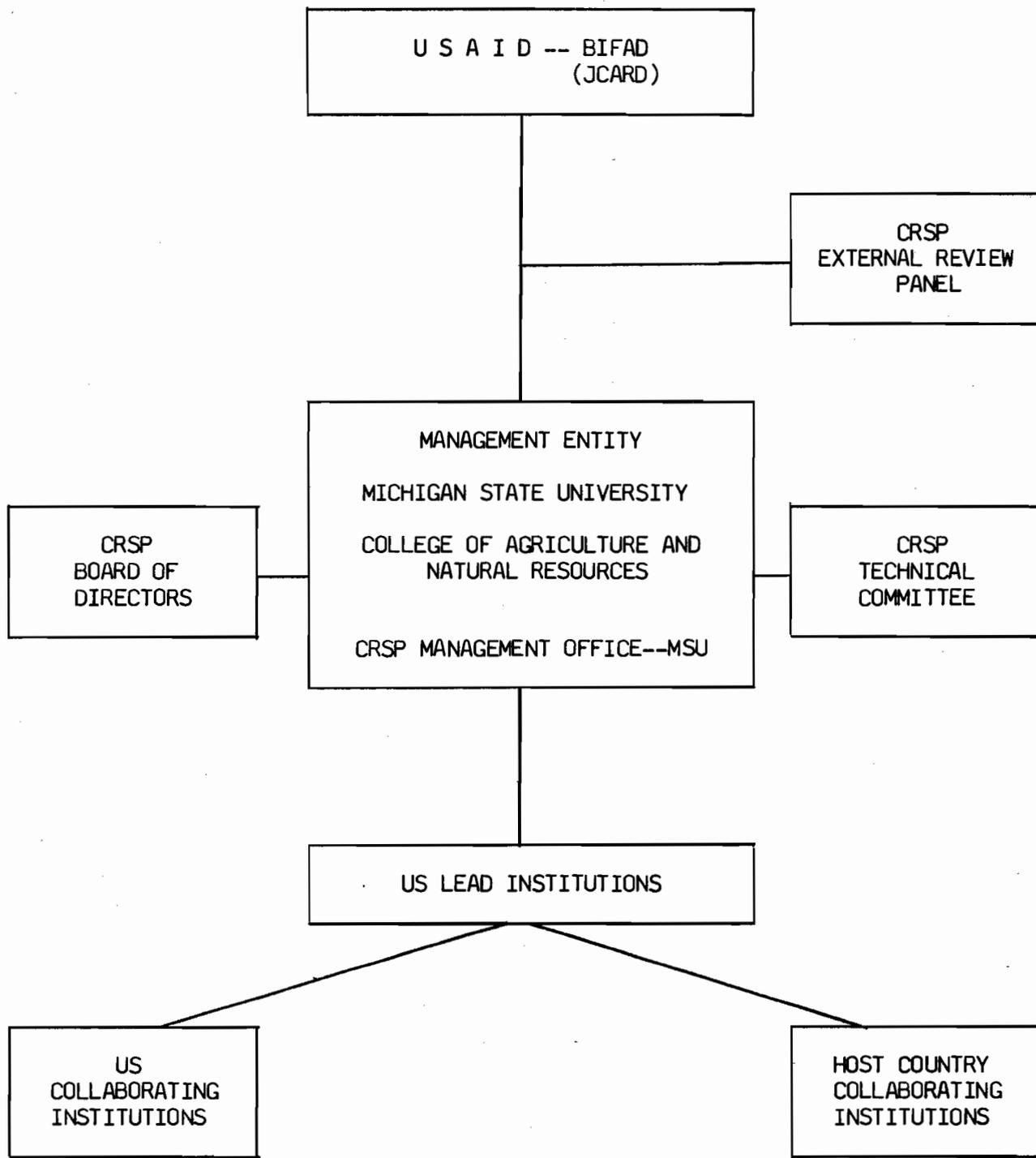
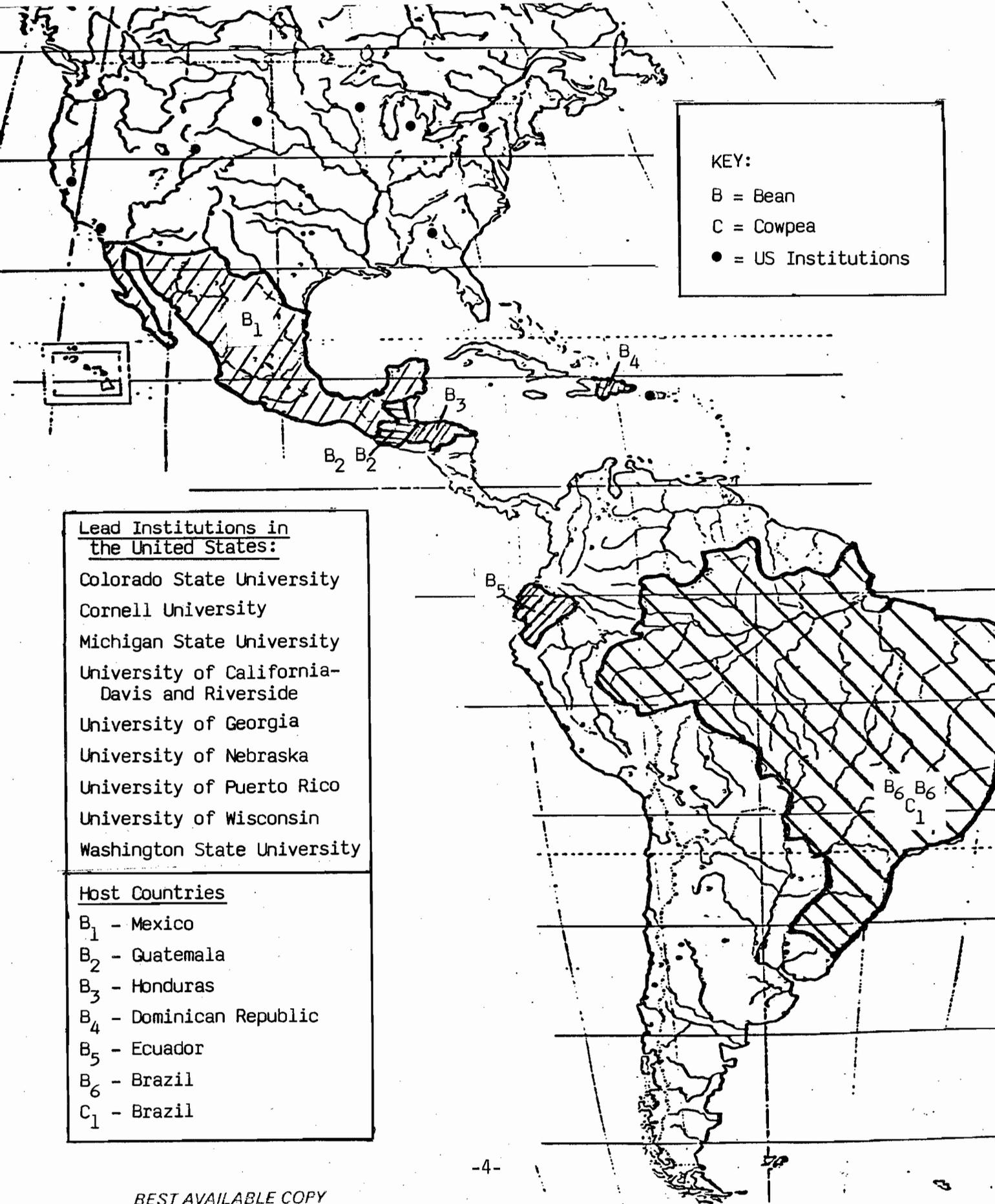


Figure 2. Location of Collaborating Institutions in the United States and Collaborating Host Countries in Latin America.



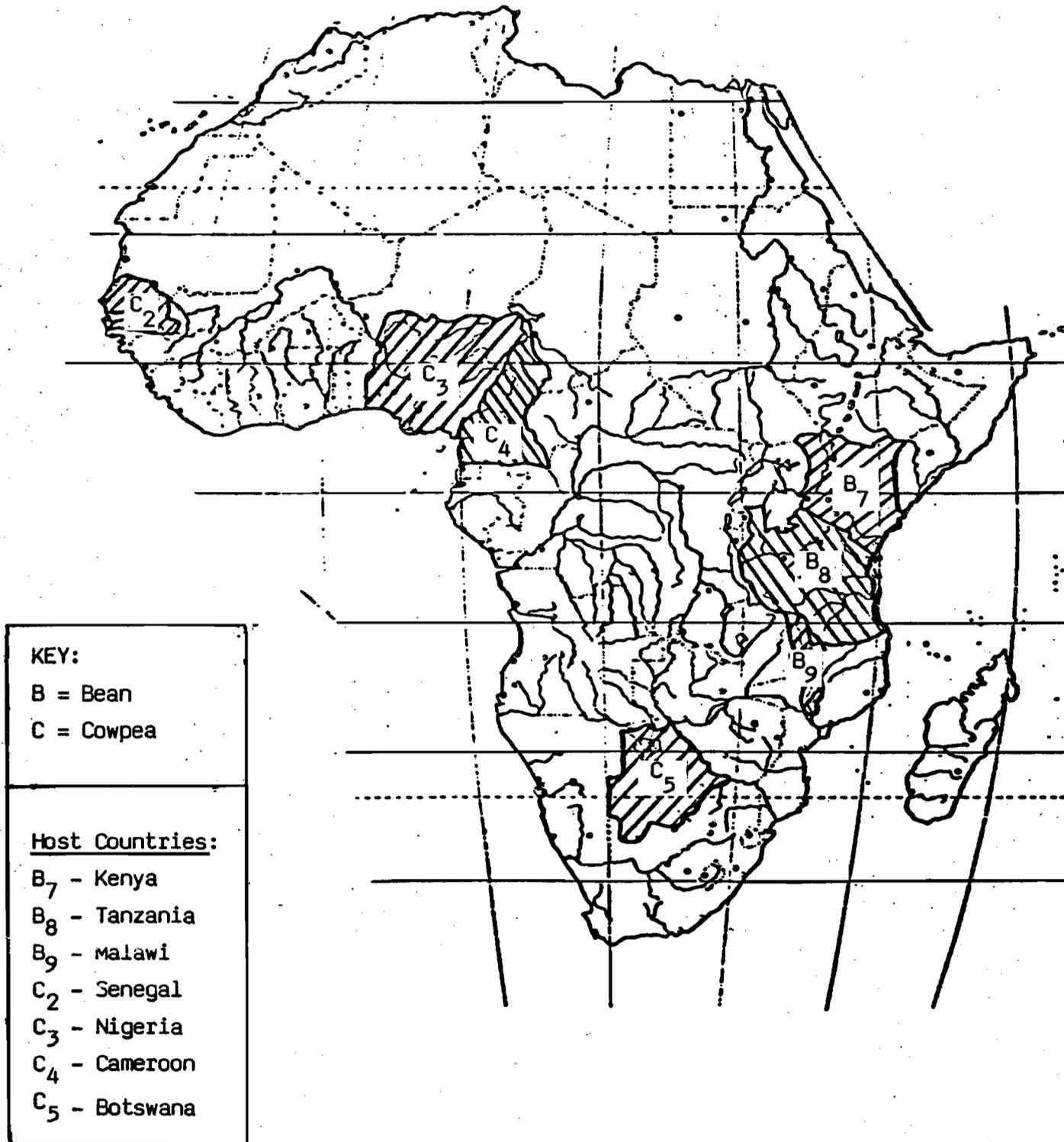
KEY:  
 B = Bean  
 C = Cowpea  
 ● = US Institutions

Lead Institutions in the United States:  
 Colorado State University  
 Cornell University  
 Michigan State University  
 University of California-Davis and Riverside  
 University of Georgia  
 University of Nebraska  
 University of Puerto Rico  
 University of Wisconsin  
 Washington State University

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Host Countries  
 B<sub>1</sub> - Mexico  
 B<sub>2</sub> - Guatemala  
 B<sub>3</sub> - Honduras  
 B<sub>4</sub> - Dominican Republic  
 B<sub>5</sub> - Ecuador  
 B<sub>6</sub> - Brazil  
 C<sub>1</sub> - Brazil

Figure 3. Location of Collaborating Host Countries in Africa.



BEAN/COWPEA CRSP PROJECT INSTITUTIONAL ROSTER

Host Country Institution

Lead US Institution

BOTSWANA

Ministry of Agriculture

Colorado State University

Development of Integrated Cowpea Production  
Systems in Semiarid Botswana

BRAZIL

Empresa Brasileira de Pesquisa  
Agropecuária (EMBRAPA)

Boyce Thompson Institute

Insect Pathogens in Cowpea Pest Management  
Systems for Developing Nations

BRAZIL

EMBRAPA

University of Wisconsin

Identification of Superior Bean-Rhizobia  
Combinations and Utilization in Cropping  
Systems Suitable for Small Farms in Brazil

BRAZIL

EMBRAPA

University of Wisconsin

Improved Techniques for Development of  
Multiple Disease Resistance in Phaseolus  
vulgaris L.

CAMEROON

L'Institut de Recherche  
Agronomique au Cameroun

University of Georgia

Pest Management Strategies for Optimizing  
Cowpea Yields in Cameroon

DOMINICAN REPUBLIC

Secretaría de Estado de Agricultura

University of Nebraska

Biology, Epidemiology, Genetics and  
Breeding for Resistance to Bacterial  
and Rust Pathogens of Beans (Phaseolus  
vulgaris L.)

DOMINICAN REPUBLIC  
Secretaría de Estado de Agricultura University of Puerto Rico

Improvement of Bean Production in the  
Dominican Republic through Breeding for  
Multiple Disease Resistance in the  
Preferred Standard Cultivars

ECUADOR  
Instituto Nacional de Investigaciones Agropecuarias (INIAP) Cornell University

Agronomic, Sociological and Genetic  
Aspects of Bean Yield and Adaptation

GUATEMALA  
Instituto de Ciencias y Tecnología Agrícola (ICTA) Cornell University

Agronomic, Sociological and Genetic  
Aspects of Bean Yield and Adaptation

HONDURAS  
Escuela Agrícola Panamericana (EAP) University of Puerto Rico

Improvement of Bean Production in  
Honduras through Breeding for Multiple  
Disease Resistance

INCAP  
Institute of Nutrition of Central America and Panama (INCAP) Washington State University

Improved Biological Utilization and  
Availability of Dry Beans

KENYA  
University of Nairobi, Kabete University of California, Davis

Improvement of Drought and Heat Tolerance  
of Disease Resistant Beans in Semiarid  
Regions of Kenya

MALAWI

Bunda College of Agriculture

Michigan State University

Genetic, Agronomic and Socio-Cultural  
Analysis of Diversity among Bean  
Land-Races in Malawi

MEXICO

Instituto Nacional de Investigaciones  
Agrícolas (INIA)

Michigan State University

Improving Resistance to Environmental  
Stress in Beans through Genetic Selection  
for Carbohydrate Partitioning and  
Efficiency of Biological Nitrogen Fixation

NIGERIA

Ibadan University  
University of Jos

Michigan State University

Medical Aspects of Feeding Cowpeas to  
Children

NIGERIA

University of Nigeria, Nsukka

University of Georgia

Appropriate Technology for Cowpea  
Preservation and Processing and a Study  
of Its Socio-Economic Impact on Rural  
Populations in Nigeria

SENEGAL

Institut Senegalais de  
Recherches Agricoles (ISRA)

University of California-  
Riverside

A Program to Develop Improved Cowpea  
Cultivars for Production and Utilization  
in Semiarid Zones

TANZANIA

University of Dar es Salaam, Morogoro

Washington State University

Breeding Beans for Disease and Insect  
Resistance and Determination of Economic  
Impact on Smallholder Farm Families

## THE 1983 REVIEW PROCESS

### Introduction

In 1982, the first annual external review of the Bean/Cowpea CRSP was held. It concentrated on evaluation of the CRSP from the perspective of CRSP activity in the United States. The members of the ERP traveled to lead institutions, visiting with individuals responsible for technical and administrative aspects of the projects. Following these trips, the Panel members came together for the first annual external review meeting. This meeting was held at Michigan State University. In attendance were personnel from each of the projects including some HC project scientists. Reports, presentations and discussions provided significant information for project evaluations.

In 1983, the ERP has focused on the HC perspective in carrying out the review with all project Host Countries visited by designated members of the ERP. Following these trips the ERP met together, as in the previous year, to compare notes and evaluate each project's progress. This year, however, project personnel did not attend although annual reports and other material were provided by them. Therefore, this ERP report, generated at the 1983 annual meeting, is based only on in-country reviews, annual reports, trip reports, minutes of various meetings, Principal Investigator (PI) responses to previous evaluations and other project information from the Management Office.

### In-Country Reviews

The in-country reviews were carried out between the end of August and early December, 1983. HC and USAID Mission personnel were notified of the impending reviews, sent preliminary outlines of the review issues and were asked to respond to suggested dates.

Because of internal travel difficulties within some of the countries and the infrequent airline service into and out of other countries, some project sites were visited for longer periods than others.

Prior to the trips, the Panel had agreed on an interview protocol of issues to be explored during the site reviews. Each review team's assessment followed this protocol. After each site review, a report of the assessment was then distributed to the other ERP members. These reports were also distributed to the projects' US PIs at the same time so that clarifications could be offered before the ERP Annual Meeting. These site review reports are on file at the MO. The interview protocol is included as Appendix A.

### ERP Annual Meeting

On January 9-11, 1984, the ERP met in Atlanta to discuss and compile their 1983 findings. Projects were presented to the group by the ERP reviewers who had visited the respective sites and had written the reports previously distributed. Subsequent discussions centered around these reports, PI responses to these reports previously circulated to them, the information presented in the Log Frames prepared by the PIs, Annual Reports, Trip Reports and other information provided by the MO. The MO representative and the AID/Washington Program Officer provided important perspectives and clarifications throughout these discussions.

In the consolidation process, effort was made to ensure consistency across projects in the application of evaluation criteria. These criteria provided a ready means for making comparisons. Final recommendation ratings were made at the conclusion of that process. A summary matrix displaying the ERP project evaluations was prepared. Following the ERP meeting this summary matrix was presented to the Technical Committee by Dr. Clarence Gray, III, Chairperson of the ERP. The summary matrix is included in this report at the end of the section Project Evaluation Profiles.

## PROJECT EVALUATION REPORTING METHODS

Following the ERP Annual Meeting, a draft report was prepared by the ERP Chairperson with assistance from the MO and distributed to the members for their changes and approval. A final draft was reviewed and approved by the Chairperson.

### Project Evaluation Scales

Each project was assessed in seven categories. These categories are related to the in-country review protocol agreed upon at the beginning of the process. The categories are as follows:

1. Administration of Project
  - 1.1 Host Country
  - 1.2 United States
  - 1.3 AID
  - 1.4 Interaction
2. Technical Personnel
  - 2.1 Host Country
  - 2.2 United States
  - 2.3 Collaboration
3. Project Progress
  - 3.1 Log Frame/Consistency of Objectives with Activities
  - 3.2 Achievement of Natural Science Objectives
  - 3.3 Achievement of Social Science Objectives
  - 3.4 Achievement of Training Objectives
  - 3.5 Publications/Information Dissemination
  - 3.6 Food and Nutritional Component
  - 3.7 Consideration of Women in Development (WID) Issues
  - 3.8 Application to Systems Used by Small Farmers
  - 3.9 Contribution to Development in the Host Country
4. Linkages
  - 4.1 Host Country
  - 4.2 AID Projects
  - 4.3 International
5. Overall Major Project Strengths/Deficiencies
  - AID Mission Involvement
  - Host Country and US Commitment
  - 5.1 Strengths
  - 5.2 Deficiencies

6. Response to Prior ERP Project Recommendations
7. Overall Recommendation Rating

The items within each of the seven categories were assessed using the scales presented below.

Overall Recommendation Rating:

General project performance was considered with each project receiving one of three recommendations: #1 continuation with no major changes, #2 continuation with some changes recommended, and #3 continuation only with identified major changes.

Five-Point Category Evaluation Scale (for items 1-3.8, 4 and 6):

Within a project each category was judged to be Exceptional (E), Highly Satisfactory (HS), Satisfactory (S), Less than Satisfactory (LS), and Unacceptable (UA). In some cases a specific criterion was not applicable and thus was rated Not Applicable (NA).

Contribution to Development in the Host Country (for item 3.9):

Evolving development potential was evaluated on the basis of Limited (L), Potentially Limited (PL), Potentially Important (PoI), Potentially Useful (PU), Already Important (AI), Highly Promising (HP), Long-Term Potential (LTP), and Beginning to Show Potential Worldwide Significance (WW).

Overall Major Project Strengths/Deficiencies (for item 5):

Brief descriptive statements included in texts of Project Evaluation Profiles.

## PROJECT EVALUATION PROFILE

BOTSWANA • COLORADO STATE UNIVERSITY (Initiated July 1982)  
deMooy

---

Development of Integrated Cowpea Production Systems in Semiarid Botswana

RECOMMENDATION RATING: 1

### REVIEW:

This is a dynamic project which has been fully accepted as a part of the national program of Botswana. The research and training components of the project are designed to develop information and human resources to meet the needs for higher grain production in the country. The linkages established with HC agencies, international and regional organizations are helping achieve the project's objective of improving farmer technology for higher cowpea production.

Although a HC PI has not yet been appointed, project activities are continuing on schedule with the support of an administrator designated temporary HC PI. The ERP was impressed that Botswana had made the necessary arrangements to fulfill its obligations under the CRSP despite its modest circumstances and a dearth of trained personnel. The steady, substantial progress made to date toward the accomplishment of objectives is an example of what is possible when there is a commitment by cooperating institutions and by capable Principal Investigators who find ways to carry out and find support for mutually developed plans.

Nonetheless, the long-term viability of the cowpea research program in Botswana may be threatened by the lack of qualified graduates to carry on research and development work. The training plan, which includes two M.S. students who recently began their programs, is crucial to the future of the cowpea project beyond the CRSP. Training initiatives need to be intensified and could include training of Botswanan students in agricultural colleges in other African countries. Further, the ERP was quite concerned over the lack of coordination with the USAID-supported Agricultural Technology Improvement Project headed by Dr. David Norman although collaboration with other groups has apparently been quite productive. The ERP was also concerned about the slow development of a social science component. The importance of the cowpea crop

and the magnitude of its production problems calls for interdisciplinary research assistance which is not yet available in the country from HC nationals. The project needs to gather information concerning the role of cowpeas in the agricultural systems in Botswana. This information should include traditional seed handling relative to ecology, animal production, etc. and the role of economic factors. Further, the areas of variety testing, variety improvement and recommendation require solid support from seed production programs which presently need to be strengthened.

A special direct bonus of the project has been the collecting and cataloguing of cowpea germ plasm. The collection consists of more than 400 local and 100 exotic lines. Accessions from this collection have been sent to IITA and USDA.

SUMMARY:

1. Administration of Project  
Host Country-HS  
United States-HS  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-LS  
United States-HS  
Collaboration-S
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-E  
Achievement of Social Science Objectives-LS  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-S  
Food and Nutritional Component-NA  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-E  
AID Projects-LS  
International-HS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-S

## PROJECT EVALUATION PROFILE

BRAZIL • BOYCE THOMPSON INSTITUTE (Initiated October 1981)  
Roberts

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### Insect Pathogens in Cowpea Pest Management Systems for Developing Nations

RECOMMENDATION RATING: 2

#### REVIEW:

This project has continued the impressive progress noted by the ERP in 1982. Both basic and applied studies are underway in Brazil and in the US, including several collaborative research activities in other Brazilian agencies. More than 100 fungal isolates have been identified and many have been evaluated in the laboratory for pathogenicity to certain insects. The socio-economic implications of implementing the biological research results at the small farmer level need to be assessed. Field use of the technology is being tested in small farm systems, however the practicality of such technology remains to be determined. Also the issue of the impact of such fungi on important beneficial predators should be thoroughly examined. This technology should be considered in the overall context of integrated pest management. A number of the isolates have been distributed to interested Brazilian, US and other scientists for possible use as insect control agents. Promising epizootiology studies are underway. They are expected to provide concepts and methods which can be applied to similar studies worldwide. In sum, the project is advancing technology for biological insect control in cowpea production. The technology developed to control cowpea insects in the field, the effective training in insect pathology at the non-degree level and the dawning efforts in international cooperation in microbiological insect control are clear strengths of this project. Eventually an Insect Pathology Resource Center may be established in Brazil.

The lack of a working research counterpart PI inhibits the full institutionalization of this project and undermines the researcher-to-researcher collaborative relationship goal of the CRSP.

Training under the project is proceeding satisfactorily and considerable interest in insect pathology is being generated in Brazil through both the training program and the various research and communication linkages. Although

women have been included in the non-degree training components of this project, women should be included in degree training as well. Training, information and materials are ready to be exchanged with other researchers beyond Brazil.

The impressive research progress to date has been achieved largely through the efforts of the US PI, the US resident scientist and the critical administrative support and facilities provided by Brazil. That the US personnel have operated for the most part without working counterparts suggests that the institutionalization of the project at this points suffers. A major concern is what will happen when the project leaves Brazil. The lack of a working counterpart PI is a serious weakness in need of early correction. For this reason, the project is considered to be satisfactory for continuation but with a major adjustment required. Recent reports indicate this deficiency may be in the process of being corrected.

SUMMARY:

1. Administration of Project  
Host Country-S  
United States-HS  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-LS  
United States-HS  
Collaboration-LS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-HS  
Achievement of Natural Science Objectives-E  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-S  
Publications/Information Dissemination-S  
Food and Nutritional Component-NA  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-PU
4. Linkages  
Host Country-S  
AID Projects-NA  
International-HS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-S

## PROJECT EVALUATION PROFILE

BRAZIL • UNIVERSITY OF WISCONSIN (Initiated February 1982)  
Bliss

---

### Identification of Superior Bean-Rhizobia Combinations and Utilization in Cropping Systems Suitable to Small Farms in Brazil

RECOMMENDATION RATING: 1

#### REVIEW:

The 1982 ERP report identified this project as one with considerable promise. Results in 1983 support this judgement. Breeding lines of black beans possessing potential for enhanced BNF (biological nitrogen fixation) and adapted to sub-tropical conditions are ready now for regional testing in Brazil. Breeding methods to facilitate transfer of characters favoring enhanced BNF into different types of standard cultivars are available for immediate use. Four highly efficient nitrogen fixing strains of Rhizobium phaseoli have been selected and, after further testing, may be available for use in one to two years. Initial field plot trials indicate that bean production costs can be reduced as much as thirty percent by using efficient nitrogen fixing strains of Rhizobium instead of using inorganic nitrogen fertilizer. The project should test if the more responsive lines work in different settings, giving attention to the stage of application and to competing organisms. The project might also consider issues having to do with commercial adaptation and uses of the technology, such as large-scale production procedures and shelf-life of the inoculum. Overall this project has achieved substantial research results in a relatively short period of time, results which are attributable to the US PI and the strong interest and support in Brazil.

The US team is completely integrated with the HC team and enjoys appreciation and support from the CNPAF administration. The work environment is favorable physically, technically and institutionally. EMBRAPA is very much interested in the project. The CNPAF administration considers the project a success story and is incorporating its results into the institution's plans for the future. Completion of the M.S. at Wisconsin by the HC PI will be added support both to the project and the established network that exists in Brazil.

While plans include additional training, post-graduate training needs to be increased. Women should be more directly involved in the project research and training, a weakness which is particularly glaring in light of other successes.

This project should repeat in Brazil and at other CRSP sites its highly successful BNF workshop that was held last summer at Wisconsin for HC students of CRSP projects studying in the US.

SUMMARY:

1. Administration of Project  
Host Country-HS  
United States-HS  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-LS  
United States-E  
Collaboration-HS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-HS  
Achievement of Natural Science Objectives-E  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-HS  
Food and Nutritional Component-NA  
Consideration of WID Issues-LS  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-E  
AID Projects-NA  
International-HS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-NA

## PROJECT EVALUATION PROFILE

BRAZIL • UNIVERSITY OF WISCONSIN (Initiated June 1982)  
Hagedorn

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### Improved Techniques for Development of Multiple Disease Resistance in Phaseolus vulgaris L.

RECOMMENDATION RATING: 3

REVIEW:

This project was late getting started and since initiation has made less than satisfactory progress in Brazil. The ERP judges the level of administrative interaction and scientific collaboration between the US and Brazilian researchers as loose and irregular and thus unacceptable. This circumstance has contributed to predictably disappointing progress toward the accomplishment of collaborative objectives in Brazil.

The US PI's limited communication and involvement in the project's administration in Brazil has contributed to slow progress in both research and training. In addition, there appear to be no women involved in the project in Brazil although the ERP does acknowledge the contribution of a female research associate in Wisconsin.

There seems to prevail serious doubt about the appropriateness of the research strategy applied to achieve the project's main goal. If the project in Brazil follows its present course of action, especially in trying to develop varieties instead of concentrating on developing improved methodology for research on multiple disease resistance in beans, its contribution to institution building at CNPAF may be insignificant.

In order for this project to be on firmer ground, four conditions need to be met. First, there needs to be a positive expression of interest in this project made by Brazil. Operationally this means the designation of a HC PI prepared to contribute directly to the research objectives of the project. Second, there needs to be a technical assessment of the relationship of the project to the overall program of CNPAF with attention to existing work on varietal development. Third, to achieve the objectives there needs to be an

assessment of the methodology, its appropriateness, and its likely effectiveness in Brazil. The issue of the establishment of selection pressure (massive epidemics) should be addressed. Fourth, a small group of disciplinary peers should be identified to assess the present research strategy.

In the judgement of the ERP, this project is less than satisfactory and is not recommended for continuation without correction of existing major deficiencies.

SUMMARY:

1. Administration of Project  
Host Country-S  
United States-LS  
AID-S  
Interaction-UA
2. Technical Personnel  
Host Country-LS  
United States-HS  
Collaboration-UA
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-LS  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-LS  
Publications/Information Dissemination-NA  
Food and Nutritional Component-NA  
Consideration of WID Issues-LS  
Application to Systems Used by Small Farmers-NA  
Contribution to Development in the Host Country-L
4. Linkages  
Host Country-S  
AID Projects-NA  
International-LS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-UA

## PROJECT EVALUATION PROFILE

CAMEROON • UNIVERSITY OF GEORGIA (Initiated September 1981)  
Chalfant

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### Pest Management Strategies for Optimizing Cowpea Yields in Cameroon

RECOMMENDATION RATING: 3

REVIEW:

As was identified in the 1982 ERP report, thorough institutionalization of this project remains a problem and raises a question as to its appropriateness as a "collaborative project." The ERP site review team that visited Cameroon in 1983 found the progress being made toward the achievement of research objectives highly satisfactory. The problems and goals are well chosen. However, the visit revealed clearly that the work was being carried out by the University of Georgia, mainly through the US PI and the expatriate researcher who has been employed by the University of Georgia to be the resident scientist in Cameroon. In the country the small team cooperates with other related research programs such as SAFGRAD and SODECOTON (an effective extension system for farmers). While the project appears to be accomplishing its technical objectives, the Host Country has been unable to provide a HC investigator and an institutional framework for the project. The dearth of trained persons in Cameroon is a probable reason for the lack of project counterpart personnel and the unsatisfactory arrangement for institutionalizing the project. Nevertheless and for whatever reason, this circumstance is a major deficiency which seems to preclude a collaborative program at this time. The ERP considered the importance of cowpeas in Cameroon, the satisfactory work underway and the imperative of conserving the cowpea germ plasm found in the country (Cameroon may well be a significant center of diversity of the crop and its wild relatives). For these reasons and the difficulty the nation has in conducting a collaborative program, the ERP after considerable discussion decided that a more appropriate model might be that of a straight USAID-supported technical assistance project which would release the CRSP for other settings where its comparative advantage would be better utilized. It was, in fact, noted during the ERP visit that the longer range hopes of USAID for research in Cameroon may be consistent with this project and may help to ensure the project's long-term impact.

An additional weakness is the lack of attention to the training of local participants, including women. The links with Boyce Thompson Institute are a strength but one which has to prove itself by results. CRSP concern for international collaboration requires that the existing team set itself to addressing these problems with the Cameroon administration. The ERP judged that this project is less than satisfactory for continuation unless a HC PI is provided by the Government of the Cameroon within an arrangement which will provide training for personnel and move toward the institutionalization of the research. In the US it is also apparent that some public relations work may be in order.

SUMMARY:

1. Administration of Project  
Host Country-LS  
United States-LS  
AID-S  
Interaction-LS
2. Technical Personnel  
Host Country-UA  
United States-HS  
Collaboration-LS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-HS  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-LS  
Publications/Information Dissemination-S  
Food and Nutritional Component-NA  
Consideration of WID Issues-LS  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-S  
AID Projects-S  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-UA

## PROJECT EVALUATION PROFILE

DOMINICAN REPUBLIC • UNIVERSITY OF NEBRASKA (Initiated June 1981)  
Coyne

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Biology, Epidemiology, Genetics and Breeding for Resistance to  
Bacterial and Rust Pathogens of Beans (Phaseolus vulgaris L.)

RECOMMENDATION RATING: 1

### REVIEW:

The research undertaken by the project is making an important contribution to fundamental knowledge on bacterial blight and rust especially in the tropics. Highly satisfactory progress continues in (a) screening bean germ plasm for resistance, (b) determining pathogenic variation, (c) clarifying inheritance of resistance, (d) improving research facilities, (e) promoting and facilitating WID concerns and (f) training graduate students/project personnel. Collaboration between US and Dominican Republic (DR) personnel is exceptional and is reflected in the progress being made in the DR: improved research facilities, new gene bank and laboratories, adequate field locations for extensive field trials and nurseries and an accelerated, highly effective breeding program. This collaborative effort (in conjunction with the Puerto Rican project in the DR) has produced (1) a resistant line for seed multiplication and release (Arroyo Loro) and (2) new sources of resistance to common blight and rust. The project has established mutually useful cooperative linkages with domestic and international bean improvement programs. In the DR, administration of the project at the institution level is somewhat loose, especially in personnel management. However, the project enjoys strong interest and encouragement from the government through the Department of Research of the Ministry of Agriculture and is technically integrated in the overall DR bean research program. Internationally, DR project personnel have developed effective cooperation with CIAT research personnel and have been active participants in regional meetings of the PCCMCA.

Cooperating well with its companion DR/University of Puerto Rico (UPR) project, the personnel at Nebraska have agreed to concentrate on character enhancement, the source of its major strength. UPR, on the other hand, will focus on cultivar development, making optimal use of their ecology which is much like that of the DR. The Nebraska work is particularly important because

there is so much to be researched in the genetics of disease inheritance especially relative to the different parts of the plant. The Nebraska team is a particularly strong group for this research. A review of travel suggests that it would be well to limit travel not directly related to the project, such as the numbers of persons who attend professional meetings. In addition, a comprehensive graduate training plan should be constructed which lays out (1) a broader array of disciplines which can contribute to the national bean research program and (2) opportunities for the professional advancement of DR women, an effort the ERP was pleased to find would be encouraged by the government.

The ERP found no serious weaknesses or deficiencies in this project and therefore judged it to be satisfactory for continuation without major changes/adjustments.

**SUMMARY:**

1. Administration of Project  
Host Country-S  
United States-HS  
AID-HS  
Interaction-HS
2. Technical Personnel  
Host Country-HS  
United States-HS  
Collaboration-E
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-S  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-HS  
Food and Nutritional Component-NA  
Consideration of WID Issues-HS  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-S  
AID Projects-NA  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-HS

## PROJECT EVALUATION PROFILE

DOMINICAN REPUBLIC • UNIVERSITY OF PUERTO RICO (Initiated June 1981)  
López-Rosa

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Improvement of Bean Production in the Dominican Republic through Breeding  
for Multiple Disease Resistance in the Preferred Standard Cultivars

RECOMMENDATION RATING: 1

### REVIEW:

The geographical proximity of the US and HC institutions to each other and the similarities between the two cultures is a significant strength in this project. In addition, the project builds on a high level of competence in both research teams as well as on the intensity and record of accomplishments of the breeding program at Puerto Rico. Concentration on the bean disease problem as the focus to improve bean production in the area is most appropriate. Not only should this effort help increase the availability of beans for consumption in the DR, but it will also help strengthen the Puerto Rican winter nurseries of the US bean industry and of the other CRSP projects.

The results of the research need wide dissemination especially information on the five new lines released by Freytag and the DR (Arroyo Loro). At the Arroyo Loro station there needs to be a full-time plant breeder who has attained a graduate degree at least at the M.S. level. The PIs should monitor the work closely to make sure the genetic advantages of the Pompadour lines are not lost.

This project and the project with the University of Nebraska have quite useful complementary features and together provide an unusually high and effective level of collaboration for bean improvement in the DR. As with the Nebraska project, this project is being carried out in a highly satisfactory fashion with few apparent weaknesses and with similar strengths, i.e., exceptional interaction between US and DR Principal Investigators and project personnel, adequate facilities and a highly effective bean breeding program which is an integral part of the DR national program. These commonalities underscore and highlight the commitment and support of the Dominican Republic and the capabilities and interest of their project personnel. However, at the institution level the administration of the project is somewhat loose, especially in personnel management. Additionally, while the project enjoys the

support of the government of the DR, the government policy of curtailing in-country travel of HC project personnel by imposing unfavorable restrictions on per diem payment is a problem to be addressed. There is a serious need for more training in plant breeding. Further, although there are many women involved in the project in the DR, training must open avenues for their advancement.

Communications among the project participants and other projects in the CRSP is extremely good. The ERP judged this project to be satisfactory for continuation without major changes/adjustments.

SUMMARY:

1. Administration of Project  
Host Country-S  
United States-HS  
AID-HS  
Interaction-E
2. Technical Personnel  
Host Country-HS  
United States-HS  
Collaboration-E
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-S  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-HS  
Food and Nutritional Component-NA  
Consideration of WID Issues-HS  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-AI
4. Linkages  
Host Country-S  
AID Projects-NA  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-HS

## PROJECT EVALUATION PROFILE

ECUADOR • CORNELL UNIVERSITY (Initiated September 1981)  
Wallace

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### Agronomic, Sociological and Genetic Aspects of Bean Yield and Adaptation

RECOMMENDATION RATING: 2

#### REVIEW:

The ERP team which visited Ecuador in November 1983 judged that this project "appears to have turned around," even though certain important components are lagging, e.g., training and the delay in getting Cornell-funded personnel (agronomist and sociologist) on site in Ecuador. The integrated, effectively functioning team at the working level is noteworthy. The momentum attained promises to continue as a result of (1) the preparation of the detailed plan of work and (2) the solution of administrative problems, especially the flow of funds. The strengths of the project are the commitment to the CRSP by Ecuador, the perseverance of Cornell and INIAP personnel and the congruence/complementarity of interests and objectives of Ecuador, Cornell and USAID, especially with regard to WID and social science/nutrition objectives. An especially desirable feature of this project has been the accomplishment of a highly useful survey of bean production in a representative area of Ecuador. The findings of this survey are providing guidance and priorities for the agronomic research component and offers much promise of making a contribution to efforts designed to meet the needs of small farmers.

The agronomic component of this project is now in a better position to move forward. Because this project has had a difficult history, the focus now needs to be on the future rather than the past. There needs to be clarification of who is the principal HC researcher in charge of the overall development of the research.

A more clearly stated set of success criteria by which the performance of the project ultimately can be judged is needed. For example, the project is moving into position to be able to ask such questions as "what will be the trade-offs with regard to increases in the marketable surplus of beans and the nutritional levels of the small farmers' families producing them?"

Other obstacles, e.g., the lack of a functioning bean seed distribution system for small farmers, need to be anticipated so that remedial action can be undertaken promptly. The ERP judged this project to be satisfactory for continuation with correction of weaknesses in (1) the project's Logical Framework, (2) the training component and (3) failure to have yet identified the technical personnel it has planned to place in Ecuador.

**SUMMARY:**

1. Administration of Project  
Host Country-S  
United States-S  
AID-HS  
Interaction-HS
2. Technical Personnel  
Host Country-S  
United States-S  
Collaboration-HS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-LS  
Achievement of Natural Science Objectives-S  
Achievement of Social Science Objectives-HS  
Achievement of Training Objectives-LS  
Publications/Information Dissemination-S  
Food and Nutritional Component-S  
Consideration of WID Issues-HS  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-HP
4. Linkages  
Host Country-HS  
AID Projects-S  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-HS

## PROJECT EVALUATION PROFILE

GUATEMALA • CORNELL UNIVERSITY (Initiated September 1981)  
Wallace

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Agronomic, Sociological and Genetic Aspects of Bean Yield and Adaptation

RECOMMENDATION RATING: 2

### REVIEW:

Effective collaboration between the US and Guatemalan PIs has resulted in highly satisfactory progress toward the accomplishment of the project's natural science objectives. To a considerable degree this has been due to the support of ICTA, the exceptionally good relationship between the US and HC PIs and their resourcefulness and determination to continue the research. The changed situation in the country has now permitted the work to go forward more expeditiously in a collaborative manner under the direction of the two highly competent Principal Investigators.

With regard to bean plant adaptation to temperature and daylength, the project results have been highly satisfactory and have worldwide significance. Research findings are ready for publication, which should be done in several languages.

By contrast, the progress with respect to sociological objectives is judged by the ERP to be unacceptable. While there may be a variety of explainable and extenuating circumstances for this situation, much confusion has been caused by project administrative difficulties, problems in making the socio-economic component operational and inconsistencies among project documents (e.g., Log Frame, objectives). The documents need to be rewritten to show more clearly the relationship of objectives to activities. Recent attention has been paid to personnel adjustments which should strengthen the socio-economic component, and major administrative difficulties seem to have been resolved. Linkages with in-country units which would further strengthen the efforts should be expanded. For example, the existing link between ICTA and INCAP can be strengthened to support greater collaboration between the existing CRSP projects in the conduct of the socio-economic studies.

Overall, the ERP judged this project to be satisfactory for continuation with a requirement for resolution of the social science component, i.e., implementation or attention to procedures for adjusting project objectives.

SUMMARY:

1. Administration of Project  
Host Country-HS  
United States-S  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-HS  
United States-HS/UA  
Collaboration-HS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-LS  
Achievement of Natural Science Objectives-E  
Achievement of Social Science Objectives-UA  
Achievement of Training Objectives-S  
Publications/Information Dissemination-S  
Food and Nutritional Component-LS  
Consideration of WID Issues-LS  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-WW
4. Linkages  
Host Country-S  
AID Projects-S  
International-HS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-S

## PROJECT EVALUATION PROFILE

HONDURAS • UNIVERSITY OF PUERTO RICO (Initiated March 1982)  
López-Rosa

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### Improvement of Bean Production in Honduras through Breeding for Multiple Disease Resistance

RECOMMENDATION RATING: 3

#### REVIEW:

While the project is located in an appropriate and reasonably safe setting and is presently receiving encouragement from the Ministry of Agriculture, it may have too many problems to justify its survival in its present form. Activities of this project are carried out in Honduras by a private organization, Escuela Agrícola Panamericana (EAP). The Honduran Ministry of Natural Resources has provided land for field trials and limited logistical and personnel support. To date, the work in Honduras has consisted of performance testing of existing bean varieties on experiment stations and farmers' fields and limited training of Honduran nationals. Some new bean cultivars/lines have been brought in for testing by the US PI. More visits to Honduras by him would encourage the development of greater professional collaboration.

High turnover in the Honduran PI and the lack of a satisfactory institutional arrangement for collaboration with UPR are weaknesses which have compromised seriously the value of the project. Without a permanently named HC PI, the project operates more like a bilateral technical assistance project than a collaborative research partnership. Graduate training has been a problem in this project and no one is apparently being groomed to step in as HC PI in the near future.

There is recognition that research personnel conducting variety trials in Honduras have been effective in spite of the lack of continuity from a permanent PI. Data have been obtained both on experiment stations and in farmers' fields. Diseases in selected sites in Honduras have been identified, but baseline data have not been collected beyond those from local farmers where trials have been conducted.

Because of the important Honduran ecology, the genetic material and the importance of beans in the country, other structures for maintenance of bean research in Honduras other than as a full-fledged CRSP project should be explored. For example, the US institution may wish to consider a subcontract to Honduras as part of its successful project in the DR to consolidate research and administration. Although linkages exist with the CRSP BNF project (Brazil/Wisconsin/Bliss), stronger linkages with INCAP as well as the Florida Farming Systems Support Program in Honduras would be appropriate.

For the reasons given, the ERP judged this project to be less than satisfactory for continuation unless the weaknesses cited are corrected.

SUMMARY:

1. Administration of Project  
Host Country-LS  
United States-S  
AID-S  
Interaction-LS
2. Technical Personnel  
Host Country-LS  
United States-S  
Collaboration-LS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-S  
Achievement of Social Science Objectives-LS  
Achievement of Training Objectives-S  
Publications/Information Dissemination-S  
Food and Nutritional Component-NA  
Consideration of WID Issues-UA  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-S  
AID Projects-S  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-S

## PROJECT EVALUATION PROFILE

INCAP • WASHINGTON STATE UNIVERSITY (Initiated November 1981)  
Swanson

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### Improved Biological Utilization and Availability of Dry Beans

RECOMMENDATION RATING: 1

REVIEW:

This project involves five US institutions and an established regional organization, INCAP, located in Guatemala. With the exception of the WID component, the INCAP work and US support were judged satisfactory by the site review team. Communications among the institutional components of this project have improved considerably. The HC and US PIs appear to have an excellent working relationship.

At INCAP the work is impressive with linkages to the Wisconsin/Bliss work on Phaseolin, the Guatemala/Cornell project and with IITA. Better linkages are needed with the extension service (DIGESA) in Guatemala and also with the Nigeria/Georgia CRSP project. Important socio-economic data have been collected and are being used in research decisions.

The team is developing standardized methods for evaluating bean quality. They are examining both storage on small farms and processing methods as well as the effects of various production practices. Attention should be given to graduate training including the involvement of women. At the professional level the record of involvement of women in this project is less than satisfactory.

A most difficult problem has been the cumbersome arrangement for the management of finances which has delayed transfer of funds to INCAP by the lack of timely accounting to Washington State. This is a serious problem in a project with so many institutional partners. This problem must be resolved so that INCAP, in the long run, is not penalized. This project has the potential to make very important contributions to many of the CRSP projects.

Regardless of the important work emanating from this project, when the full ERP met the consensus was that the review procedure and reports available did not provide an adequate basis to assess the contributions of the several US institutions, particularly the cost effectiveness of the arrangement. While

there is no definitive evidence of a problem, in the near future all the US campuses involved should be visited to assess their respective contributions. It is of concern that neither the Kansas State nor the University of Puerto Rico researchers have attended team meetings.

Given this situation, the ERP judgement is that this project is satisfactory for continuation without major change but that this judgement is tentative pending satisfactory assessment of the contributions of the several US institutions.

**SUMMARY:**

1. Administration of Project  
Host Country-S  
United States-S  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-E  
United States-HS  
Collaboration-S
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-S  
Achievement of Training Objectives-S  
Publications/Information Dissemination-S  
Food and Nutritional Component-HS  
Consideration of WID Issues-LS  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-S  
AID Projects-S  
International-HS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-HS

## PROJECT EVALUATION PROFILE

KENYA • UNIVERSITY OF CALIFORNIA, DAVIS (Initiated August 1981)  
Webster

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### Improvement of Drought and Heat Tolerance of Disease Resistant Beans in Semiarid Regions of Kenya

RECOMMENDATION RATING: 3

REVIEW:

The project is fully accepted by the Ministry of Agriculture and in the University of Nairobi. Its strengths are (1) in the technical contributions of project personnel; (2) in the systematic assembly and screening of populations of beans, teparies and bean-tepary crosses and derived materials--for adaptation to arid environments and for reaction to pests and diseases; and (3) in its productive and complementary associations with institutions in Kenya and beyond, particularly in the US and with the other CRSP projects in East Africa.

The crop physiological work has yet to be fully developed. When it is, it will need to concern itself at least as much with studies of the comparative morphology of growth, assimilation, nitrogen uptake, partition of dry matter and yield as with abscission.

The period during which the University of Nairobi was closed was a serious problem for the project. Re-establishment of a viable financial management structure must be attended to with all deliberate speed. More attention should be given to the systems in which beans are grown, the ways in which producers select the seeds they preserve for future seasons and how they store them. The project reports suggest that the work done to date in Kenya, as well as that planned for 1984, should be assessed to determine whether the results are or will be sufficiently proportionate to the funds allocated.

Several serious issues have been raised about this project: (1) the approaches being used to assess drought tolerance (this deserves review by the TC), (2) the level of project activities and accomplishments by the Host Country in relation to the level of financial support used (this also to be reviewed by the TC), and (3) the less than satisfactory management procedures of the project in Kenya for fiscal accounting to the University of California.

On the basis of these deficiencies, the ERP judges this project to be less than satisfactory for continuation without major attention to the issues cited above.

SUMMARY:

1. Administration of Project  
Host Country-UA  
United States-LS  
AID-S  
Interaction-LS
2. Technical Personnel  
Host Country-S  
United States-HS  
Collaboration-LS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-S  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-S  
Publications/Information Dissemination-S  
Food and Nutritional Component-NA  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PU
4. Linkages  
Host Country-S  
AID Projects-S  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-LS

## PROJECT EVALUATION PROFILE

MALAWI • MICHIGAN STATE UNIVERSITY (Initiated February 1982)  
Adams

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### Genetic, Agronomic and Socio-Cultural Analysis of Diversity among Bean Land-Races in Malawi

RECOMMENDATION RATING: 1

#### REVIEW:

This project is well integrated in the national program of Malawi and fits into the Department of Crop Production at Bunda College. The strengths of the project are in the problem itself--which has powerful intellectual as well as agricultural interest, in the drive and competence with which the work has been started and pursued, and in the strong support provided by Bunda College and the Ministry of Agriculture.

The agronomic component is just getting underway. It may be regarded as something of a weakness that the socio-cultural and the agricultural components are at this stage less fully articulated than they will need to be, but the project is in fact breaking ground which is new in detail; and to develop multidisciplinary cooperation into interdisciplinary thought and action for all participants takes time and is seldom easy. The WID component is quite prominent. More must be learned about the "whys" of behavior not just "that" particular things happen. Issues needing further attention include seed management and traditional agronomic practices.

The project is well designed and well run, but of concern is the limited number of HC personnel working on the project. This is a current weakness which the satisfactory training component should correct over time. The members of the HC and US research team have developed an impressive professional relationship which will reinforce the long-term potential of this project.

The ERP judged this project to be satisfactory for continuation without changes or adjustments.

SUMMARY:

1. Administration of Project  
Host Country-S  
United States-S  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-HS  
United States-HS  
Collaboration-HS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-HS  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-HS  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-S  
Food and Nutritional Component-S  
Consideration of WID Issues-HS  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-LTP
4. Linkages  
Host Country-HS  
AID Projects-S  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-NA

## PROJECT EVALUATION PROFILE

MEXICO • MICHIGAN STATE UNIVERSITY (Initiated March 1983)

Adams

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### Improving Resistance to Environmental Stress in Beans through Genetic Selection for Carbohydrate Partitioning and Efficiency of Biological Nitrogen Fixation

RECOMMENDATION RATING: 1

#### REVIEW:

This project is strongly linked into the national bean program (INIA) and receives proper administrative support from them. The fiscal management is simple and efficient. The activity in the HC received close scientific support from the US PI and is an especially good example of a CRSP project.

There is an excellent fit between the training and research objectives of the project and INIA in regard to the need to improve bean production in semi-arid zones through the development and application of relevant genetic technology. Concerned with breeding and the physiology of drought resistance and nitrogen fixation under limited moisture conditions, this project has moved forward rapidly and in impressive fashion during 1983. For example: (1) fifteen hundred bean genotypes have been screened preliminarily for drought tolerance in Mexico, (2) a series of some sixty crosses have been made among lines tolerant to drought and nitrogen stress, four crosses have been selected for detailed biometric genetic analysis for drought tolerance and its component factors, (3) estimates have been made of the numbers of rhizobial strains and the nitrogen-fixing capacity of host cultivars. These indicators of progress, in this relatively newly established project, reflect commitment and capacity of the Mexican and US PIs and their research colleagues and the strong support of their respective institutions.

The only weaknesses are (1) the lack of trained personnel at the Ph.D. level for the breeding and physiology research at Durango, (2) the lack of adequate laboratory and greenhouse facilities to supplement field plot research at Durango and (3) the limited involvement of HC women researchers.

Being new, the project has not had time to establish sufficient linkages with other HC agencies, but it is expected that such linkages will evolve for testing materials at various locations in the country, for seed distribution programs and for nutrition studies.

The ERP judged this project to be satisfactory for continuation without changes or adjustments.

SUMMARY:

1. Administration of Project  
Host Country-HS  
United States-HS  
AID-NA  
Interaction-HS
2. Technical Personnel  
Host Country-HS  
United States-HS  
Collaboration-HS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-S  
Publications/Information Dissemination-S  
Food and Nutritional Component-NA  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-S  
AID Projects-NA  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-NA

## PROJECT EVALUATION PROFILE

NIGERIA • MICHIGAN STATE UNIVERSITY (Initiated November 1981)  
Markakis

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### Medical Aspects of Feeding Cowpeas to Children

RECOMMENDATION RATING: 2

REVIEW:

Circumstances in Nigeria have not favored effective communication or collaboration between and among the US and Nigerian PIs and researchers involved in this project. In Nigeria, the PIs at Ibadan and Jos, two ecologically different regions of the country, have maintained satisfactory quality and pace of research against considerable odds. The lack of approval for a project vehicle for transportation has been an added major constraint to the research at Ibadan. On the basis of direct observations and a questionnaire administered to mothers, the physicians associated with the project (as well as mothers) are satisfied that the allegation of cowpeas in the diet causing diarrhea in some newly weaned infants is real; the reported incidence by researchers was seven percent in Ibadan and thirteen percent in Jos.

The project should continue along the lines developed: (1) extract all worthwhile data from surveys, (2) conduct feeding trials to test the reasonable hypothesis that the phenomenon exists (this should be documented within a year) and identify its apparent or approximate cause (by use of adequate controls, i.e., include both sensitive and non-sensitive children, assess effects of condiments, hulls, etc.) and (3) design further studies on use of cowpeas in rehabilitating under- and malnourished children. These studies are increasingly important because the current use of milk protein may have to be replaced as a result of the high-cost of importing milk into the country.

Insofar as project findings help to lessen discomfort and morbidity among infants, it will help to relieve in a small way the hardships of the rural and urban poor. The effects of the suggested later phase of rehabilitation studies could be considerable. In addition, new knowledge about cowpeas might conceivably contribute to an increase in the small US market for black-eyed peas. While improved from last year, there should be greater interaction among the US and HC teams. In the US, a pediatrician as advisor to the project would help guide that team.

The major weaknesses of the project are the lagging training component and unsatisfactory domestic and international linkages including those with other CRSP projects. Efforts must be continued to strengthen communication between Nigeria and the US with the US team taking greater initiative in reinforcing the collaborative relationship.

The ERP judged this project to be satisfactory for continuation with correction of the weaknesses identified.

SUMMARY:

1. Administration of Project  
Host Country-S  
United States-S  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-S  
United States-S  
Collaboration-LS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-S  
Achievement of Social Science Objectives-S  
Achievement of Training Objectives-S  
Publications/Information Dissemination-LS  
Food and Nutritional Component-S  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-UA  
AID Projects-NA  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-S

## PROJECT EVALUATION PROFILE

NIGERIA • UNIVERSITY OF GEORGIA (Initiated April 1981)  
McWatters

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Appropriate Technology for Cowpea Preservation and Processing and a  
Study of Its Socio-Economic Impact on Rural Populations in Nigeria

RECOMMENDATION RATING: 2

### REVIEW:

The activities of this project are appropriate to its goals and indeed to wider applications including crops other than cowpeas. The strengths of the project are (1) the strong personality of the HC PI (a two-sided coin in a project trying to be collaborative on the one hand, in a country with staggering communications problems requiring his competence and determination on the other), (2) the professional competence and enthusiasm of the US and HC team in general and (3) the strong support of the University of Nigeria at Nsukka. As with the other Nigeria project, this project suffers from a general paucity of communication between the US and Nigerian PIs. While all the parties are in place, the lack of joint decision-making and active collaboration must be counted as a weakness. Logistical difficulties in Nigeria add to the problem.

The ERP acknowledges that it is the attributes of the Nigerian PI and the competent team which have made for highly satisfactory progress in developing appropriate technology for cowpea preservation and processing in Nigeria. The project has developed "packages" of methods for dry dehulling and milling which can be offered to homemakers, village millers and milling industries. The sooner the work is put to the hard test of international publication, the better.

The sociological component has been generally less than satisfactory, even though social and nutritional surveys have been initiated. The project should plainly continue as should efforts to improve communications outside of Nsukka. The Georgia team should visit, perhaps one or two at a time, as often as they can. Short-term, specialized training at Georgia or elsewhere in the US should be provided; some additional collaboration may be appropriate in the nutritional evaluation of cowpea products and mixtures. Special attention should be given to building stronger links between the two Nigeria projects, especially between the two US teams.

The ERP judged this project to be satisfactory for continuation with correction of the weaknesses identified.

SUMMARY:

1. Administration of Project  
Host Country-HS  
United States-S  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-HS  
United States-HS  
Collaboration-LS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-LS  
Achievement of Training Objectives-S  
Publications/Information Dissemination-HS  
Food and Nutritional Component-HS  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-S  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-LS  
AID Projects-NA  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-S

## PROJECT EVALUATION PROFILE

SENEGAL • UNIVERSITY OF CALIFORNIA, RIVERSIDE (Initiated August 1981)  
Hall

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### A Program to Develop Improved Cowpea Cultivars for Production and Utilization in Semiarid Zones

RECOMMENDATION RATING: 1

#### REVIEW:

As with several others in the Bean/Cowpea CRSP, this project is a classic example of the handsome benefits which accrue from a CRSP project when the critical elements--collaborating US and HC PIs/researchers and supportive US and HC institutions--are in place and functioning harmoniously with the strong encouragement of the responsible HC government agencies. Collaboration between and among these elements in this project is exceptional.

The project is strongly institutionalized and receives full backing in Senegal. It is well managed in its administrative and financial operations. The project has assembled a very competent team of cowpea researchers in the US and Senegal and contributed to the upgrade of ISRA's professional capacity. Seven recent publications from Senegal suggest the extent to which the project has contributed to an advancement of cowpea research in Senegal.

Reported experimental results are consistent with the project's objectives of developing improved screening techniques for drought and heat resistance in cowpeas. Superior lines in this respect have been developed.

The area of rhizobiology needs to be strengthened in the research activities although various other possibilities for acquiring this capability should be explored. Project support for cowpea rhizobiology in Senegal may need to be reappraised in view of UNESCO's support for a microbiology research center (MIRCEN) in the country. Cooperation from the University of Arizona is weak, if not confusing, as the work there was expected to concentrate on developing good BNF field screening techniques that could later be used in Senegal with a minimum of high technology and supervision.

Graduate degree training, especially provided for women, is still limited and should be intensified to include training in the US. The plan to strengthen and expand on-farm research now, especially in the area of cropping systems

analysis and research is appropriate. Further collaboration with other CRSP projects and personnel would also be appropriate, such as the rhizobiology work of Bliss at Wisconsin, the biological insect control work of the Brazil/BTI/Roberts team and the entomological research of the Cameroon/Georgia/Chalfant team.

The ERP judged this project to be satisfactory for continuation without changes or adjustments.

SUMMARY:

1. Administration of Project  
Host Country-HS  
United States-HS  
AID-HS  
Interaction-HS
2. Technical Personnel  
Host Country-HS  
United States-HS  
Collaboration-E
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-HS  
Achievement of Social Science Objectives-NA  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-HS  
Food and Nutritional Component-NA  
Consideration of WID Issues-S  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-AI
4. Linkages  
Host Country-HS  
AID Projects-HS  
International-HS
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-NA

## PROJECT EVALUATION PROFILE

TANZANIA • WASHINGTON STATE UNIVERSITY (Initiated June 1981)  
Silbernagel

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### Breeding Beans for Disease and Insect Resistance and Determination of Economic Impact on Smallholder Farm Families

RECOMMENDATION RATING: 1

#### REVIEW:

The promise shown by this project in 1982 is evident clearly in 1983. About 90 percent of planned activities are in progress. A good start has been made on the evaluation of biologic variability of pathogens. The breeding program is progressing well with the expectation that useful interim materials will be identified in the next one to two years via cooperative national testing trials. Socio-economic information about small farmers has been acquired recently and will provide important preliminary baseline data against which to measure future effects of introduced changes. Subsequent work must reflect new initiatives, however, because the questionnaire method has not yet succeeded fully in describing the complex farming systems and priorities of the partly subsistence producers or the importance of bean production to them. Nor is there sufficient information about the bean market in Tanzania--volume, sources, preferred types, direction, mechanisms including storage, official and alternative prices and likely future trends, all of which determine the appropriate scope and scale of the crop research. The project's Logical Framework should be updated to include work now being planned to develop screening methods for drought tolerance and means to improve nutritional value of beans. Organization and physical facilities for managing and conserving genetic resource materials have yet to be developed. Nevertheless, the project is helping significantly to train undergraduates who are able to conduct projects in their final year under the CRSP umbrella.

The strengths of the project lie in (1) the correct selection of the topics, (2) the extent of cooperation between effective PIs at Prosser, WA, at Illinois and at Morogoro, (3) the general interest of the Department of Crop Science at Morogoro in the project, (4) the useful link with CIAT and (5) the obvious level of cooperation enjoyed between this project and the other bean projects in East Africa.

The main weakness lies in the absence, on the Tanzania side, of any single person who devotes more than twenty percent to the CRSP, leading the day-to-day work of the group. Other weaknesses are the poor linkages in Tanzania between the agricultural and social sciences. Physical facilities and organization for managing and conserving the genetic resource material need to be developed. Such arrangements/facilities will be required as the project progresses so as to get useful materials from the university into the seed industry and hands of producers. The disease studies should include comparative assessments of loss to pests and diseases.

The ERP judged this project to be satisfactory for continuation without changes or adjustments.

SUMMARY:

1. Administration of Project  
Host Country-S  
United States-HS  
AID-S  
Interaction-S
2. Technical Personnel  
Host Country-S  
United States-HS  
Collaboration-HS
3. Project Progress  
Log Frame/Consistency of Objectives with Activities-S  
Achievement of Natural Science Objectives-S  
Achievement of Social Science Objectives-HS  
Achievement of Training Objectives-HS  
Publications/Information Dissemination-S  
Food and Nutritional Component-S  
Consideration of WID Issues-HS  
Application to Systems Used by Small Farmers-HS  
Contribution to Development in the Host Country-PoI
4. Linkages  
Host Country-HS  
AID Projects-S  
International-S
5. Overall Major Project Strengths/Deficiencies  
See text above
6. Response to Prior ERP Project Recommendations-NA

SUMMARY 1983 EXTERNAL REVIEW PANEL EVALUATION PROFILES

	ADMINISTRATIVE				TECHNICAL			PROGRESS									LINKAGES			RESPONSE TO ERP		RATING*
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.1	4.2	4.3	6	7	
BOTSWANA	HS	HS	S	S	LS	HS	S	S	E	LS	HS	S	NA	S	HS	PoI	E	LS	HS	S	1	
BRAZIL/ROBERTS	S	HS	S	S	LS	HS	LS	HS	E	NA	S	S	NA	S	HS	PU	S	NA	HS	S	2	
BRAZIL/BLISS	HS	HS	S	S	LS	E	HS	HS	E	NA	HS	HS	NA	LS	S	PoI	E	NA	HS	NA	1	
BRAZIL/HAGEDORN	S	LS	S	UA	LS	HS	UA	S	LS	NA	LS	NA	NA	LS	NA	L	S	NA	LS	UA	3	
CAMEROON	LS	LS	S	LS	UA	HS	LS	HS	HS	NA	LS	S	NA	LS	S	PoI	S	S	S	UA	3	
DR/COYNE	S	HS	HS	HS	HS	HS	E	S	HS	S	HS	HS	NA	HS	S	PoI	S	NA	S	HS	1	
DR/LÓPEZ-ROSA	S	HS	HS	E	HS	HS	E	S	HS	S	HS	HS	NA	HS	HS	AI	S	NA	S	HS	1	
ECUADOR	S	S	HS	HS	S	S	HS	LS	S	HS	LS	S	S	HS	HS	HP	HS	S	S	HS	2	
GUATEMALA	HS	S	S	S	HS	HS/UA	HS	LS	E	UA	S	S	LS	LS	HS	WW	S	S	HS	S	2	
HONDURAS	LS	S	S	LS	LS	S	LS	S	S	LS	S	S	NA	UA	S	PoI	S	S	S	S	3	
INCAP	S	S	S	S	E	HS	S	S	HS	S	S	S	HS	LS	S	PoI	S	S	HS	HS	1	
KENYA	UA	LS	S	LS	S	HS	LS	S	S	NA	S	S	NA	S	S	PU	S	S	S	LS	3	
MALAWI	S	S	S	S	HS	HS	HS	HS	HS	HS	HS	S	S	HS	HS	LTP	HS	S	S	NA	1	
MEXICO	HS	HS	NA	HS	HS	HS	HS	S	HS	NA	S	S	NA	S	HS	PoI	S	NA	S	NA	1	
NIGERIA/MARKAKIS	S	S	S	S	S	S	LS	S	S	S	S	LS	S	S	S	PoI	UA	NA	S	S	2	
NIGERIA/MC WATTERS	HS	S	S	S	HS	HS	LS	S	HS	LS	S	HS	HS	S	S	PoI	LS	NA	S	S	2	
SENEGAL	HS	HS	HS	HS	HS	HS	E	S	HS	NA	HS	HS	NA	S	HS	AI	HS	HS	HS	NA	1	
TANZANIA	S	HS	S	S	S	HS	HS	S	S	HS	HS	S	S	HS	HS	PoI	HS	S	S	NA	1	

KEY:

E - Exceptional                      UA - Unacceptable                      PU - Potentially Useful                      LTP - Long-Term Potential  
 HS - Highly Satisfactory              NA - Not Applicable                      PoI - Potentially Important                  WW - Worldwide  
 S - Satisfactory                      L - Limited                                  AI - Already Important  
 LS - Less Than Satisfactory          PL - Potentially Limited                  HP - Highly Promising

\*See text of individual project profiles for clarification of additional issues considered in this evaluation.

## CRSP MANAGEMENT EVALUATION

### Finance

The ERP requested the CRSP MO to report what proportion of the funds issued from Washington (that is, excluding the contributions from the US institutions required to be a minimum of one-third and contributions from HCs) went to pay for work actually done rather than overhead, including HC training and equipment purchased for use in the Host Countries.

The MO reported that in FY 83 total direct costs were 62 percent of AID funds and total indirect costs were 38 percent (including costs of the MO, the ERP, the BOD, the TC and all project indirect costs). The ERP felt that the CRSP indirect cost figure was not out of line with indirect costs of individual institutions and the average AID negotiated rate.

In addition, it is a policy of this CRSP that a minimum of one-half of the projects' allocation of funds be spent in or directly on behalf of the Host Countries (including HC students studying in the US). The MO reported that for FY 83, of the 62 percent total direct costs indicated above, 54 percent was spent in or directly on behalf of Host Countries. The ERP was satisfied that the policy was being implemented.

Finally, the total cost of the CRSP was considered, including the HC contributions and the contributions of the US institutions. The MO reported that through FY 83 the US institutions contributed the equivalent of 59 percent of AID contributions to US project costs. This represents 37 percent of total US project costs, which included AID and US institution contributions together. HC institutions likewise matched the AID funds they received, reporting contributions of an additional 34 percent of AID contributions to Host Country project costs. The ERP was impressed with this level of commitment by the participating institutions.

### Administration

The MO has had almost a complete turnover of personnel in FY 83. While this has severely strained the office, the ERP agreed the MO has been very effective in keeping the CRSP process going and in maintaining support of the individual projects. The BOD and the TC, while not reviewed directly this year, gave evidence of their significant contributions at every appropriate point in the

CRSP management. Further, there is important evidence that the CRSP is getting stronger as a result of project PIs rotating through the CRSP Technical Committee.

### Recommendations

After considering the site reviews and other information provided, the ERP agreed that the MO should strengthen its efforts in the following areas:

1. An early warning system, appropriate to the model, needs to be set up so that MO identification of potential problems and better communication between US and HC PIs are facilitated.
2. An open line of communication among all the components of the CRSP should be maintained.
3. Attention should be directed to building a stronger sense of community within the CRSP across projects. This includes:
  - Research-sharing workshops;
  - Sharing publications;
  - Increasing the dissemination of CRSP information through publications which are made available to US and HC participants;
  - Adding publications listings to Pulse Beat, the newsletter of the CRSP;
  - Involving HC graduate students in more cross-project activities which will encourage them to continue working with the CRSP projects when they return home.
4. More open communication with the CGIAR system should be established. Existing cooperation with IARCs should be strengthened.

## PROGRAM EVALUATION

The ERP stepped back from its review of individual facets of the CRSP and discussed the Program as a whole from a more general perspective. The Panel confirmed that after three full years in existence, the Bean/Cowpea CRSP has proven itself as a very effective model for mobilizing HC and US resources in support of development. The ERP members in their travels found this CRSP a productive new initiative of a kind different from traditional foreign assistance and felt this model contributes considerably to food and agricultural development as well as to improvement of the US image abroad.

### The Role of the CRSP in International Agricultural Research and Development

Similar to the movement of several decades ago which began the establishment of a network of International Agricultural Research Centers (IARCs), CRSPs were introduced into an evolving international agricultural research and development system as a new and needed component. Their unique characteristics present a cost-effective model, a model that can perform a critical international role beyond the mandates (and capabilities) of the IARCs and other similar research organizations. Critical among the model's characteristics, as demonstrated by the Bean/Cowpea CRSP, are:

1. The tremendous size of the resource base including the professional expertise, the research facilities and the administrative support structure represented by the US Land-Grant system;
2. The diversity of professional disciplines available to be called upon as appropriate to contribute to the problem-solving efforts;
3. The working partnerships of committed colleagues rewarded for collaborating across national boundaries with other participating nations; and
4. The management structure whose sole function is the integration and coordination of all of the above components while maintaining a focus on overall program goals.

Thus, as a member of the new CRSPs initiative, the Bean/Cowpea CRSP complements and supplements IARCs and other public and private research organizations by broadening and deepening the overall research support base. It has shown itself to be a highly acceptable, interactive mode for technical assistance which brings the diverse, largely untapped resources of US centers of excellence into collaborative international research and training activities.

Through these efforts, the CRSP extends the worldwide network of institutions

and individuals cooperating in important bean and cowpea related research. More broadly over time, it helps fashion and strengthen enduring linkages throughout the international agricultural research and development system.

### Specific Contributions to Development

There is good evidence that:

1. The CRSP is a mechanism which supports better equity within research teams engaged in development activity. The model develops a pattern of interaction which is not hierarchical but collegial in nature, providing an important avenue for the active participation of HC professionals in the development process.
2. The CRSP provides one vehicle for the contribution to development of science and technology as a necessary but insufficient partner along with such factors as government pricing policy and extension. As such, the CRSP is an important component of the US bilateral assistance program contributing to the total AID effort to alleviate world hunger.
3. The CRSP has shown itself to be a rapid method of generating technology fitting the specific needs of Host Countries. It is an effective way to transfer and build greater capacity to generate new knowledge.
4. The CRSP is a catalyst for specific CRSP-related scientific work without which, in many countries, the work could not be done.
5. The CRSP is a catalyst for scientific activity beyond the purview of the CRSP itself as both the research and the professional relationships stimulate energy and initiatives that ripple farther than the original mandate.
6. The actual research, involving the collaboration of scientists cross-nationally, and the training of new professionals effectively supports the institution-building components of this CRSP. Both within the African and Latin American regions and across regional lines, professional networks are evolving which strengthen the institutional capacities of participating organizations.
7. The CRSP training resources effectively utilize a variety of training modes (degree/non-degree, formal/informal, domestic/international) directly geared and linked to the needs of the countries. Further, HC students have the opportunity to study in the US with US professors who are working on behalf of the students' own countries and frequently are working intermittently in these countries.

8. The CRSP has attracted a remarkable number of US and HC scientists. In the US it has strengthened interest and capability of US institutions to understand and participate in development.
9. The CRSP supports attention to the role of women in agriculture and the involvement of women in its projects. It has improved the attitude of male professionals toward working with professional women. Attention is being paid to efforts to advance women through the system.
10. The CRSP, in evolving a problem-solving network, has developed a community of US and HC scientists for scientific and technological development which should prove itself productive over the long term.

#### Specific Contributions to US Agriculture

1. Bean/Cowpea CRSP projects/activities are concentrated largely on producing superior bean and cowpea cultivars and supporting production technologies (e.g., enhanced N-fixation). Predictably, these cultivars and technologies will contribute directly and indirectly to the development of superior cultivars and production technologies for the United States.
2. An important related activity of most CRSP projects is the collecting, describing, cataloguing and conserving of bean and cowpea germ plasm. These irreplaceable genetic resources will become available over time to the United States and to other bean and cowpea growing nations and, therefore, will increase the range and diversity of genetic stocks available for improvement programs.
3. New resources and procedures for the control of pests and diseases in bean and cowpea production are emerging, i.e., insect pathogens, antiserum procedures to assess virus strains in transported plant material. These new technologies will not only support legume improvement programs in the US and other legume-producing countries, but they will also expedite the ability of nations to utilize one another's plant material in adaptation trials and improvement programs across national boundaries.
4. The Bean/Cowpea CRSP has a limited, but highly important, focus on improving the human nutritional characteristics of beans and cowpeas through breeding, processing and food science programs. This focus can be expected to have a salutary impact on bean/cowpea production research, as well as home and commercial processing which ultimately will contribute to United States industrial interests.

ERP Project Review Agenda  
1983 In-Country Project Review

1. USAID Mission Involvement
  - a. Mission understanding and backing of project objectives
  - b. Mission logistic, programmatic and financial support of project
  - c. Mission interests for project future
2. Administration of Project
  - a. Government level
  - b. Institutional level
  - c. Fiscal management
  - d. Measures in process or needed to correct problems
3. Personnel
  - a. Paid/unpaid
  - b. Adequate number and type
  - c. Involvement of women
  - d. Effectiveness
  - e. Measures in process or needed to correct problems
4. Equipment and Facilities
  - a. Availability--reason for unavailability
  - b. Adequacy--reason for inadequacy
  - c. Measures in process or needed to correct problems
5. Project Progress
  - a. Usefulness of team travel
  - b. Level of USA/HC team communication
  - c. Appropriateness of activities to goals
  - d. Achievement of research objectives--outcomes
  - e. Achievement of training objectives--outcomes
  - f. Expected schedule for specific project outputs
  - g. Attention to appropriate social science/food & nutrition issues including WID
  - h. Contribution to small farmer systems
  - i. Measures in process or needed to correct problems
6. Linkages with Host Country Agencies and Organizations Including Extension Food Science and Social Science Research Mechanisms
7. Summary
  - a. Specific project strengths
  - b. Specific project weaknesses
8. Reviewer Recommendations

5. The Bean/Cowpea CRSP helps to build and support effectively functioning international agricultural research networks. These networks are made up of individual professionals, many of whom will have studied together under CRSP sponsorship, as well as an array of research institutions which will have been strengthened through their CRSP involvement. Such global networks serve US agricultural interests and can frequently pay handsome dividends in unexpected ways over the long term.

#### Program Weaknesses

1. The CRSP collegial and financial activity may alter the balance of priorities within Host Countries, not in their own best interest.
2. Collaboration with other overseas development programs and agricultural research efforts is inadequate. Especially important is cooperation with other US bilateral efforts within the same Host Countries.
3. Economic analyses of production systems and the acquisition of baseline data are lagging behind biological research.
4. Linkages with other development agencies and institutions in the Host Countries such as extension are weak. Dissemination of research findings therefore is likely to be poor.
5. Some HC PIs are administrators rather than working researchers. While administrative support is critical to project success, having a PI who is an administrator inhibits the progress of the actual research, the building of professional collegial relationships among peers and the institutionalization of the project research at the operational level.

#### Overall Evaluation

Based upon clearly identified, substantial results achieved in the short period of three years and upon benefits expected to accrue over the long term, the ERP judged that the CRSP mode exhibits considerable promise as a cost-efficient, highly effective means of mobilizing and using resources of US centers of excellence in support of food and agricultural development in low-income, food-deficit nations. In addition, it has shown itself to be an important, unique contributor to the international agricultural research system.

Satisfactory performance in support of the eighteen projects and the overall CRSP goals by the MO, TC, BOD and collaborating institutions and individuals has been an achievement worthy of special recognition. In the concerted opinion of the ERP, the Bean/Cowpea CRSP as a whole is judged to be satisfactory for continuation with appropriate attention to the weaknesses identified.

## THE BEAN/COWPEA CRSP

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An international community of persons, institutions, agencies and governments committed to collectively strengthening health and nutrition in developing countries by improving the availability and utilization of beans and cowpeas.

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*For further information contact:*

Bean/Cowpea CRSP  
200 Center for International Programs  
Michigan State University  
East Lansing, Michigan 48824-1035  
U.S.A.

Telephone: (517) 355-4693  
Telex: 810-251-0737  
MSU INT PRO ELSC