

SEP 10 1980

MEMORANDUM FOR THE ADMINISTRATOR

THRU : ES

FROM : AA/DS, Sander Levin *s/ Sandy*

SUBJECT: Executive Summary of the Proposed Collaborative Research Support Program on Beans and Cowpeas

This project consists of a long-term effort designed to bring together the research capabilities in participating universities, collaborating Title XII institutions including USDA and other federal research agencies, appropriate LDC institutions and international centers into a comprehensive and coordinated effort in research and training to generate and apply knowledge that can assist in alleviating principal constraints to improved production, marketing and utilization of beans and cowpeas in LDCs. It is based on the assumption that there are large areas of overlap between U.S. and developing country needs for research, marketing and utilization of these two crops. Substantial mutual advantages are expected to result from joint research program efforts which cut across national boundaries and different levels of agricultural development.

The project presented in this paper is responsive to the long-term nature of collaborative research authorized under Title XII. Although for programing purposes a five-year planning horizon is used, it is recognized that the type of research undertaking to be initiated in the Bean and Cowpea CRSP requires considerably more than five years to achieve many of their objectives. Nevertheless, this CRSP has been designed to begin to generate useful outputs in the short and medium term.

The project consists of part of the U.S. effort to address famine prevention and freedom from hunger in the developing countries of the world. The fundamental strategy is to establish collaborative research partnerships among researchers from host countries and U.S. institutions focused upon an array of production and utilization issues. Beans and Cowpeas are a staple in the diets of most of the people of Eastern and Western Africa, Latin America, and the Caribbean. The importance of these legumes lies in their role as major sources of affordable, high quality protein. In this project, special emphasis is placed on the needs and resources of the subsistence farm family, a major producer and consumer of beans and cowpeas and a social group highly susceptible to problems of poverty, hunger and malnutrition. Ten U.S. universities have been identified to work together on multidisciplinary teams in collaboration with host country nationals from 12 LDCs in addressing problems of the small subsistence farmers. The estimated cost of the total program during the first five years is \$21,054,601. Of this, the participating U.S. universities will contribute \$4,354,601, or as a minimum 25 percent of the total program less the management entity cost.

SEP 13 198

ACTION MEMORNDUM FOR THE ADMINISTRATOR

Thru: ES

Thru: AA/PPC, Alexander Shakow

From: AA/DS Sander Levin

Problem: Your approval is needed on the grant for a Collaborative Research Support Program (CRSP) on Beans and Cowpeas.

Background: The two crops selected for this CRSP, beans and cowpeas, are a major source of protein and a staple in the diets of most of the people of East and West Africa, Latin America, and the Caribbean. Special emphasis is placed on the needs and resources of the subsistence farm family, a major producer and consumer of beans and cowpeas and a social group highly susceptible to problems of poverty, hunger, and malnutrition. The small farmers' production of food staples, in particular the grain legumes, is not meeting the food needs of expanding populations in the LDCs. One of the major tasks of these farmers is to increase production of these crops, a task made particularly difficult by a variable complex of biological, physical, and socioeconomic constraints.

JRC, BIFAD, and A.I.D. gave high priority to Beans and Cowpeas Collaborative Research Support. A grant for the planning phase was awarded to Michigan State University (MSU). The Bean/Cowpea Planning Office of MSU undertook a thorough identification of LDC problem areas, interests, and capabilities and U.S. institutional interests and capabilities. Subsequently, potentials for meaningful research collaboration between the two were explored. The problems of prioritizing the major constraints and of deciding upon the specific research problem to be undertaken collaboratively in each country were solved objectively and openly often in ways unique to this CRSP. See Tab A, Appendix B for major decision criteria and persons participating in decision recommending groups. Some of the more critical points in the process included:

1. Receipt of response of A.I.D cables to USAID Missions requesting expressions of country interest which report the level of that interest as primary, secondary, or tertiary.

2. Attendance of the planning team at international grain legume workshops and professional meetings in Africa and Latin America where a good deal of interaction with potential collaborators contributed substantially to the program planning.

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3. Planning team visits to International Centers and regional and national programs to develop a more thorough sense of the state-of-the-art and some of the current research needs. Visits included trips to small farmers' fields, rural villages, homes, and markets.

4. Receipt of research proposals from U.S. research workers used in expressions of interest and preliminary indication of institutional areas of competence and available professional resources.

5. Attendance of planning team at various U.S. professional meetings where additional expressions of interest were received.

6. Peer review and evaluation of U.S. proposals by an international panel of experienced legume and social scientists. (See Tab A, Appendix C).

7. Convening of a group of non-U.S. legume and social scientists to prioritize constraints, suggest needed research and subsequently match this information with U.S. proposal topics. ( See Tab A, Appendix D).

8. Corresponding with identified potential LDC collaborators regarding research envisioned based on the information received up to that point in the process. (See Tab A, Appendix E).

9. Bringing together one planning officer and two U.S. potential collaborators with national program scientists in 12 countries in Latin America and Africa to work out, on site, draft research design outlines. (See Tab A, Appendix G).

The total program proposed by MSU was reviewed by JRC and BIFAD who then recommended approval to A.I.D. in June 1980.

In the planning of this program, the program manager and other technical members of DS/AGR worked very closely with the planning contractor, regional bureaus and JRC at all stages of the planning process. As a result of this close monitoring and coordination, each group involved had adequate opportunity for technical input.

The program plan has been reviewed by the Agency's Technical Program Committee for Agriculture (TPCA) and approved with the proviso that the Management Entity of the Bean/Cowpea CRSP set up an economic evaluative component which will establish. a)- a standardized socioeconomic evaluative framework for consumption - production studies, and b) assist on production research experimental design to insure data adequacy for economic analyses. This will be incorporated into the scope of work of the PIO/T.

The Assistant Administrators from all of the Regional Bureaus have indicated their clearance of the Action Memorandum by initialing this Action Memorandum and the Project Authorization Document attached, with the exception of the Asia Bureau Assistant Administrator. Asia has abstained from signing the document due to limited relevance of the problem area for Asia. (See Tab G.)

Program Goal: The goal is to increase production of beans and cowpeas in those countries where they are major food crops. This is to be done by developing and testing improved technologies and by enhancing the abilities of developing country scientists to solve problems related to bean and cowpea production and use. U.S. and developing country institutions and informational centers will be involved in the research and training. A substantial portion of the research will be done in the developing countries.

Proposed Program: The proposed program is composed of a set of integrated, long-term research projects with related training and technical service capabilities. Its first purpose is to organize and mobilize financial and human resources necessary for mounting a major, multi-institutional U.S.-LDC collaborative effort which in turn is expected to provide the knowledge base necessary to achieve significant advances in alleviating the principal constraints to improved production, marketing and utilization of beans and cowpeas in LDCs. A second purpose is to enhance the capabilities of appropriate LDC institutions to generate, adapt and apply improved technologies to local conditions.

Research activities cover a wide range of subject matter categories, all of which are responsive to the most urgent technical needs identified in the planning process as the principal constraints to improve bean and cowpea production and utilization in LDCs. Constraints and research needs were identified by extensive LDC surveys and analyzed by a panel of internationally recognized legume experts.

Specific problems will be addressed within constraint areas. In recognition of the impracticality of mounting and supporting large, comprehensive research thrusts in each of these constraint areas, the areas of proposed activities have been narrowed to the following problems:

1. Lack of generalized disease and pest resistance and/or effective biological control methods in field and in storage.
2. Low yields and low yield stability.
3. Plant sensitivity to environmental stress and lack of wide adaptation.
4. Inefficiency of nitrogen fixation in the field.
5. Hard seededness necessitating prolonged cooking time.
6. Lack of understanding of traditional farming systems, including pertinent socio-cultural issues and the role of women.
7. Difficulties in the digestibility of legume protein, for adults and especially small children.
8. Lack of improved practical processing and preserving methods to insure high quality foods from beans/cowpeas.
9. Lack of information on the comparative economic values of introduced technology versus traditional practices, e.g. financial, health and labor costs.
10. Limited indigenous professional competencies to address critical constraints.

Clearly these are not independent problems. They are both interdependent and universal. Based on LDC priorities and other information developed during the planning process, they are problems which are geographically widely dispersed. They were distilled from the broader constraint areas to give guidance to those U.S. and host country collaborating scientists who assisted in preparing research designs for this CRSP.

At its April 1980 meeting, the JRC approved the following institutions for major involvement in the Bean/Cowpea CRSP:

1. University of California; Davis and Riverside
2. Colorado State University
3. Cornell University
4. University of Georgia
5. Michigan State University
6. Mississippi State University
7. University of Nebraska
8. University of Puerto Rico
9. Washington State University
10. University of Wisconsin

These institutions represent a mix of universities having long supported programs in either beans or cowpeas, or both, with the personnel interested in and experienced in various aspects of producing and utilizing these crops. Individuals from these universities participated in the planning process and were the recent visitors to the developing country programs during which time the specific collaborative research designs were prepared. (Tab A, Appendix G).

At a Bean/Cowpea CRSP development meeting held April 28, 1980 in Chicago attended by two representatives from each of the ten approved U.S. universities and one representative each from A.I.D. and BIFAD, Michigan State University was unanimously selected as the institution to be recommended to JRC and BIFAD to serve as Management Entity for the Bean/Cowpea CRSP. At their June 1980 meetings the JRC and BIFAD approved Michigan State University as the Management Entity.

One aspect of the program strategy which is of critical importance to CRSP success is the development of collaborative research relationships between universities participating in the Bean/Cowpea CRSP, appropriate LDC institutions, closely associated international centers, and organizations such as STRC\* in Africa and CATIE\* in Latin America. It is important that these relationships be established and developed on a coordinated basis in order that there be no undue overlap, conflict, or duplication of effort among universities, missions and regional bureaus. This will be done as an integral part of the detailed research project and program planning undertaken under the direction of the Management Entity.

The Management Entity has submitted a bean/cowpea proposal (Tab F) which we find acceptable. The program proposal has been derived from the planning report of MSU (Tab A) as developed through discussions with the JRC and A.I.D. To supplement the proposal presented by the Management Entity, A.I.D. staff have prepared a program framework and strategy (Tab B), a social soundness analysis (Tab C), an economic analysis (Tab D), and an environmental threshold determination (Tab E).

\*STRC - Scientific and Technical Research Committee of the Organization for African Unity(OAU).

\*CATIE- Tropical Agricultural Research and Training Center, Turrialba, Costa Rica.

Program Outputs: One of the direct results to be expected from the CRSP is the development of an ongoing coordinated comprehensive multidisciplinary and multi-institutional research program. Further, this program will have made significant contributions to the knowledge base required to alleviate many of the principal constraints to improved bean and/or cowpea production, marketing and utilization in LDCs.

Training activities will result in improved capabilities of LDC personnel to carry out appropriate in-country research, training and extension work directly related to bean/cowpea production, marketing and utilization. These improved capabilities of LDC personnel will result in improved LDC institutional capabilities.

The technical services component is conceived as providing to requesting countries, bureaus and missions limited technical services for improving bean and cowpea research. These services would be used predominately to design the adaptation of research developed under the CRSP to site specific situations and assist LDC staff in establishing CRSP related programs in their home countries. Up to thirty person days annually of free consulting time could be provided under CRSP funding to any country (LDC institution or USAID) requesting assistance on problems related to the CRSP. Any consulting time in excess of that would be paid for by the mission, regional bureau or other donor. The missions and regional bureaus through DSB would request the Management Entity for these services. Where longer term technical services are required for project implementation, they will be procured under normal contracting procedures.

Proposed Budget: The estimated cost of the total program during the first five years is \$21,054,601. Of this, the participating U.S. universities will contribute \$4,354,601, or as a minimum 25 percent of the total program less the management entity cost. A.I.D. plans to make an initial grant of \$715,000 to cover the A.I.D. portion of the costs during the first three months. It is our intention to roll forward both the planning and funding of the program annually.

BEAN AND COWPEA CRSP COSTS

<u>Year</u>	<u>Total Program</u>	<u>Non-Federal Contribution</u>	<u>A.I.D. Contribution</u>
1	\$3,489,166	\$689,166	\$2,800,000
2	\$3,772,435	\$772,435	\$3,000,000
3	\$4,166,667	\$866,667	\$3,300,000
4	\$4,553,000	\$953,000	\$3,600,000
5.	\$5,073,333	\$1,073,333	\$4,000,000
<u>TOTAL</u>	<u>\$21,054,601</u>	<u>\$4,354,601</u>	<u>\$16,700,000</u>

Recommendation: That you approve \$16,700,000 to finance a five-year CRSP on Beans and Cowpeas by signing the attached Project Authorization. Your approval of this action memorandum will constitute approval of the selected participating institutions and of the selected management entity.

Attachments:

- Project Authorization
- Tab A - Proposal
- Tab B - Framework and Strategy
- Tab C - Social Soundness
- Tab D - Economic Analysis
- Tab E - Environmental Threshold Determination
- Tab F - Proposal
- Tab G - Abstention and Clearances

Clearances:

AA/ASIA, A.A. Sullivan	(See memo, Tab G)	Dated: 9/12/80
AA/NE, A.D. White	(See Tab G)	Dated: 9/10/80
AA/AFR, G.T. Butcher	(See Tab G)	Dated: 9/10/80
AA/LA, F.W. Coy	(See Tab G)	Dated: 9/12/80
GC, R. Richstein		Dated: _____
GC, N. Holmes		Dated: _____
AAA/PPC/PDPR, J. Eriksson	<i>J.E.</i>	Dated: 9-22-80
BIFAD, E. Kiehl	(See Tab G)	Dated: 9/9/80
DAA/SER, J.F. Owens	(See Tab G)	Dated: 9/9/90
AA/LEG, G. Hawkins	(See Tab G)	Dated: 9/15/80

DS/AGR/AP:JMYohe:bw  
 09/02/80  
 Ext: 235-1497

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS PART I	1. TRANSACTION CODE <input checked="" type="checkbox"/> A A = ADD C = CHANGE D = DELETE	PAF 2. DOCUMENT CODE 5
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3. COUNTRY/ENTITY <u>DS/AGR/AP Program</u> Type G Collaborative Research Support	4. DOCUMENT REVISION NUMBER <input type="checkbox"/> Original
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5. PROJECT NUMBER (7 digits) <input type="checkbox"/> 931-1310 <input type="checkbox"/>	6. BUREAU/OFFICE A. SYMBOL <u>DSB</u> B. CODE <input type="checkbox"/> <input type="checkbox"/>	7. PROJECT TITLE (Maximum 40 characters) <input type="checkbox"/> CRSP-Beans and Cowpeas <input type="checkbox"/>
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8. PROJECT APPROVAL DECISION <input checked="" type="checkbox"/> X ACTION TAKEN A = APPROVED D = DISAPPROVED DE = DEAUTHORIZED	9. EST. PERIOD OF IMPLEMENTATION YRS. <input type="text" value="0"/> <input type="text" value="5"/> QTRS. <input type="text" value="0"/>
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10. APPROVED BUDGET AID APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>80</u>		H. 2ND FY <u>81</u>		K. 3RD FY <u>82</u>	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) ARDN	141 I	963	-	715	-	1,675	-	2,500	-
(2)									
(3)									
(4)									
TOTALS				715	-	1,675	-	2,500	-

A. APPROPRIATION	N. 4TH FY <u>83</u>		q. 5th&6th FY <u>84/85</u>		LIFE OF PROJECT		11. PROJECT FUNDING AUTHORIZED	
	O. GRANT	P. LOAN	K. GRANT	S. LOAN	T. GRANT	U. LOAN	1 = ENTER APPROPRIATE CODE(S) 1 = LIFE OF PROJECT 2 = INCREMENTAL LIFE OF PROJECT	A. GRANT B. LOAN
(1) ARDN	3,600	-	8,210	-	16,700	-		2 -
(2)								
(3)								
(4)								
TOTALS	3,600	-	8,210	-	16,700	-		C. FY PROJECT FUNDING AUTHORIZED THRU <input type="text" value="8"/> <input type="text" value="5"/>

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED (\$000)			13. FUNDS RESERVED FOR ALLOTMENT		
A. APPROPRIATION	B. ALLOTMENT REQUEST NO. _____		TYPED NAME (Chief, NR/PI/PM/PR)		
	C. GRANT	D. LOAN	SIGNATURE _____		
(1)			DATE _____		
(2)					
(3)					
(4)					
TOTALS					

14. SOURCE/ORIGIN OF GOODS AND SERVICES  000  941  LOCAL  OTHER \_\_\_\_\_

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED \_\_\_\_\_

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE
		MM DD YY		MM DD YY

PROJECT AUTHORIZATION

Name of Project: CRSP-Beans/Cowpeas

Number of Project: 931-1310

Number of Loan: N/A

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the CRSP-Beans/Cowpea Project for the Development Support Bureau, involving planned obligations of \$16,700,000 in grant funds over a five-year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs.

2. This project consists of a long-term effort designed to bring together the research capabilities in participating universities, collaborating Title XII institutions including USDA and other federal research agencies, appropriate LDC institutions and international centers into a comprehensive and coordinated effort in research and training to generate and apply knowledge that can assist in alleviating principal constraints to improved production, marketing and utilization of beans and cowpeas in LDCs. It is based on the assumption that there are large areas of overlap between U.S. and developing country needs for research, marketing and utilization of these two crops. Substantial mutual advantages are expected to result from joint research program efforts which cut across national boundaries and different levels of agricultural development.

The project presented in this paper is responsible to the long-term nature of collaborative research authorized under Title XII. Although for programing purposes a five-year planning horizon is used, it is recognized that the type of research undertaking to be initiated in the Bean and Cowpea CRSP require considerably more than five years to achieve many of their objectives. Nevertheless, this CRSP has been designed to begin to generate useful outputs in the short and medium term.

The project consists of part of the U.S. effort to address famine prevention and freedom from hunger in the developing countries of the world. The fundamental strategy is to establish collaborative research partnerships among researchers from host countries and U.S. institutions focused upon an array of production and utilization issues. Beans and Cowpeas are a staple in the diets of most of the people of Eastern and Western Africa, Latin America, and the Caribbean. The importance of these legumes lies in their role as major sources of affordable, high quality protein. In this project, special emphasis is placed on the needs and resources of the subsistence farm family, a major producer and consumer of beans and cowpeas and a social group highly susceptible to problems of poverty, hunger and malnutrition. Ten U.S. universities have been identified to work

together on multidisciplinary teams in collaboration with host country nationals from 12 LDCs in addressing problems of the small subsistence farmers.

3. The Project Agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

4.a. Source and Origin of Goods and Services (Grant):

Goods and services, except for ocean shipping, financed by A.I.D., under the project shall have their source and origin in the United States and cooperating countries except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

b. Reimbursement of Expenses:

Upon signing of the Grant by AID/CM/COD, A.I.D. may disburse (Grant) funds as reimbursement for eligible costs incurred on or after September 30, 1980, provided that evidence of such costs is furnished to A.I.D. in form and substance satisfactory to A.I.D.

  
Douglas J. Bennet, Jr.  
Administrator

Date: September 26, 1980

Clearance:

DS/AGR, J. Walker	<u>JW</u>	Date: <u>16 Sept 80</u>
DS/AGR, D.R. Fiesler	<u>DF</u>	Date: <u>16/20/80</u>
DS/AGR, M. Mozynski	<u>MM</u>	Date: <u>7/16/80</u>
DS/PO, B. Chapnick	<u>BC</u>	Date: <u>9/16/80</u>
DAA/DS/FN, T. Babb	<u>TB</u>	Date: <u>9/16/80</u>
AA/DS, S. Levin		Date: <u>9/16/80</u>
AA/NE, A.D. White	(See TAB G)	Date: <u>9/10/80</u>
AA/AFR, G.T. Butcher	"	Date: <u>9/10/80</u>
AA/LAC, F.W. Coy	"	Date: <u>9/12/80</u>
GC, N. Holmen	<u>NH</u>	Date: <u>9/11/80</u>
AA/PPC, A. Shakow	<u>AS</u>	Date: <u>9/11/80</u>
BIFAD, E. Kiehl	(See TAB G)	Date: <u>9/9/80</u>

Drafter of Project Authorization:  
DS/AGR/AP AP Phone: bw 9/16/80 Ext: 235-1497

### Program Framework and Strategy

This program is a long-term effort designed to bring together the research capabilities of participating universities, collaborating Title XII institutions including USDA and other federal research agencies, appropriate LDC institutions and international centers into a comprehensive and coordinated effort in research and training to generate and apply knowledge that can assist in alleviating principal constraints to improved production, marketing and utilization of beans and cowpeas in LDCs. It is based on the assumption that there are large areas of overlap between U.S. and developing country needs for research, marketing and utilization of these two crops. Substantial mutual advantages are expected to result from joint research program efforts which cut across national boundaries and different levels of agricultural development.

The program presented in this paper is responsive to the long-term nature of collaborative research authorized under Title XII. Although for programming purposes a five year planning horizon is used, it is recognized that the type of research undertakings to be initiated in the Bean and Cowpea CRSP require considerably more than five years to achieve many of their objectives. Nevertheless, this CRSP has been designed to begin to generate useful outputs in the short and medium term.

a. Program Goal. The goal to which this program is to make a significant contribution is improvement in living conditions of small farm producers in LDCs and increased availability of low cost nutritious foodstuffs in the marketplace for the rural and urban poor in LDCs.

b. Program Purpose. The purpose of this program is to organize and mobilize financial and human resources necessary for mounting a major multi-institutional U.S.-LDC collaborative effort in research and training. This effort is expected to provide the knowledge base necessary to achieve significant advances in alleviating the principal constraints to improved production, marketing and utilization of beans and cowpeas in LDCs. (See Tab A, Appendix F, page 107-125 and tab A, page 31 for a list of

constraints.) A subpurpose is to improve the capabilities of appropriate LDC institutions to generate, adapt and apply improved knowledge to local conditions.

c. Program Beneficiaries. Ultimate program beneficiaries are producers and consumers of beans and cowpeas in LDCs. Producers are expected to benefit through improved production possibilities including reductions of the possibilities of crop failure and decreased costs per unit of production, resulting in improved subsistence and incomes. Consumers are expected to benefit through 1) more reliable supplies of these food grains at stable prices in the marketplace, and 2) availability of food grains that are more nutritious and with desirable taste, color and digestibility characteristics.

#### Program Strategy and Relationship to Constraints.

The strategy for achieving program purpose includes the following elements:

a. Join interested universities and LDC institutions together in comprehensive, multi-disciplinary, coordinated research effort attacking major constraints limiting improved and expanded bean and cowpea production, marketing and utilization in LDCs.

b. Provide training to LDC students and professionals through (1) formal academic training at U.S. universities with recognized capability in bean and cowpea research and training, (2) special programs of study, short courses, seminars, workshops and (3) on-the-job research experience in beans and cowpeas through graduate research assistantships in the U.S. and at collaborating LDC institutions, as well as LDC scientists participating in research activities with U.S. scientists collaboration both in the U.S. and at collaborating LDC institutions. This portion of the training program will expand the cadre of scientists working in these crops and provide them with experience with LDC problems and conditions. U.S. scientists will work also with LDC problems and in LDC locations and become effective in working with problems relevant to LDC conditions. Hence the cadre of U.S. research personnel will grow also.

c. Rely on joint funding by (1) U.S. institutions and A.I.D. for financing research activities that are designed to achieve mutually beneficial results; and (2) A.I.D. and LDC governments for financing mutually agreed research activities in LDC locations.

d. Provide technical services to LDCs, USAIDs and regional bureaus in (1) LDC problems identification, (2) project and program design and implementation, and (3) evaluation of results in bean/cowpea related development efforts.

e. Establish a jointly sponsored administrative entity (1) to receive and manage A.I.D. funds allocated to the program, and (2) to coordinate the various activities of all participating universities in the implementation of the program. This is expected to assure achievement of the synergistic effects described above, and to provide a convenient mechanism by which A.I.D. can interact in a meaningful way throughout program implementation.

Program content is based on the results of the planning process described in "Final Report for the Bean/Cowpea Collaborative Research Support Program," dated June 10, 1980. That process identified the principal constraints to improved bean/cowpea production, marketing and utilization in LDCs. These constraints are discussed on pages 17 and 18 of the Report. These have been accepted by the JRC for the final program development.

### Social Soundness

Beans and cowpeas, as a major source of protein, are a staple in the diets of most of the people of East and West Africa, Latin America and the Caribbean. For the millions of small farmers living in these regions, beans and cowpeas are the two most important legumes.

There are several characteristics which generally describe the small farming systems of these regions. Although there are few firm figures available, all informed estimates place the proportion of beans/cowpeas grown in mixed plantings with maize, sorghum, millet or other crops on small farms as a very large percentage (75 to 85 percent) of the whole of food legume production in the selected countries. Availability of water for irrigation, and the problems of irrigation management are often limiting factors in nearly all of these countries. For example, frequently the land is too steep, or available water is diverted to higher value crops, or it is too costly to bring water to the small farm sites. In addition, the small subsistence farmers cannot afford to or do not want to incur indebtedness for pesticides and fertilizers, nor do they wish to make substantial investments in machinery which for their needs and resources may turn out to be of questionable assistance.

Special emphasis is placed on the needs and resources of the subsistence farm family, a major producer and consumer of beans and cowpeas and a social group highly susceptible to problems of poverty, hunger and malnutrition. In most countries the large, production oriented, cash crop farms are generally located on the best lands with the most available water and the more favorable climatic patterns. Production on such farms is generally heavily oriented toward export. Thus, the production of food staples, in particular the grain legumes, is not meeting the food needs of expanding populations. To the small subsistence farmer, therefore, falls the major task of producing these crops, a task made particularly difficult by a variable complex of biological, physical and socio-economic constraints.

All over the developing world, much of the farm work is done by women. In parts of Africa, women select the seed stocks; they break up the soil, plant, weed, harvest, store and

market any surplus over family needs. They gather the fuel and carry the water needed for the long hours of cooking required for beans/cowpeas. Traditional bean/cowpea processing methods are limited and demand high investments of not only water and fuel, but time and labor as well.

Beans and cowpeas provide both protein and carbohydrates to diets of the farm family as well as the urban poor, and are the only reasonable alternative to animal protein which is too expensive for many to buy. It is particularly important that diets of such foods for the small and growing child be palatable and digestible, produce no undesirable side effects, and provide both sufficient calories and a balance of essential amino acids.

Family goals, family structure and the rural cultural characteristics of the subsistence farmer are little understood by western crop production scientists, yet consideration of such characteristics is crucial to the issues of appropriateness and ultimate acceptance of more productive farming practices.

The program goal and purpose of this CRSP are aimed squarely at poor rural and urban families that are major producers and consumers of beans/cowpeas in those LDCs where these are major food crops. The potential favorable social consequences of additional research must be taken into account in research design and implementation, or else large-farm technology is likely to be developed and result in lower market prices due to increased production in which small farmers do not participate. A comprehensive LDC problem oriented research program is envisioned for this bean/cowpea CRSP in the most effective way to assure relevance and to avoid possible negative consequences of attempts to apply inappropriate technologies.

Economic Analysis

This program has been designed as a cost effective means of implementing the Bean/Cowpea Collaborative Research Support Program. The principal reason for the favorable cost effectiveness of this program is its relationship to existing capabilities and activities. More specifically, an important criterion for the inclusion of many of the participating universities was the scope and depth of domestic research already underway by them in beans/cowpeas. Another important factor is the considerable experience that many of the universities have had in LDC related research, training and/or technical services. The principal of building upon existing strengths means that the activities to be undertaken under this program will not have to be initiated from the very beginning and can benefit from installed capacity and shared overhead costs. The CRSP will add a new dimension to ongoing bean/cowpea research which will provide a more effective and experienced LDC focus to already highly productive research programs in the participating universities.

Calculation of a benefit/cost ratio would be unrealistic for this program. Payoffs from research investments characteristically are unsuited probabalistic analysis. They are characterized more by uncertainty than risk. This can be illustrated by the projects concerning nitrogen fixation in cereal grains. Although preliminary evidence is quite encouraging, the principal investigations themselves cannot predict with accuracy when or even if a major break through will be achieved in this area. Hence, to estimate benefits on the basis of, for example, a 50-50 chance that widespread nitrogen fixation will be achieved over many agro-climatic conditions within the next year would be unrealistic and unwise.

The better approach for viewing benefits from research is the historical perspective accorded by similar investments in the past. Clearly, multi-million dollar research programs for these crops presently being carried out by the participating universities indicates that the legislators and administrators in their states have confidence in their research capacity. Export analyses of research investments in the past have quantified the benefits to be derived from agricultural research. For example, Lloyd Evans, TAC member, found in his analysis that research investments made in one international research center yielded a return of approximately 700 percent. Clearly not all research

investments will be that highly productive. However, the "track record" for agricultural research in the U.S. has been such that it justifies statements often made that it has been one of the principal engines of the agricultural development process making the U.S. agricultural sector the envy of the rest of the world.

ENVIRONMENTAL THRESHOLD DETERMINATION

TO: AA/DS, Sander Levin  
 THRU: DS/PO, Ken Milow  
 FROM: DAA/DS/FN, Tony Babb  
 SUBJECT: Environmental Threshold Decision

Project Title: Bean/Cowpea CRSP  
 Project #: 931-1310  
 Specific Activity:  
 Reference: Initial Environmental/Examination (IEE)  
 contained in PID for subject project  
 dated 8/31/78

On the basis of the Initial Environmental/Examination (IEE) referenced above and attached to this memorandum, I recommend that you make the following determination:

- X 1. The proposed agency action is not a major Federal action which will have a significant effect on the human environment.
- 2. The proposed agency action is a major Federal action which will have a significant effect on the human environment, and:
  - a. An Environmental Assessment is required; or
  - b. An Environmental Impact Statement is required.

The cost of and schedule for this requirement is fully described in the referenced document.

- 3. Our environmental examination is not complete. We will submit the analysis no later than \_\_\_\_\_ with our recommendation for an environmental threshold decision.

Approved: \_\_\_\_\_

Disapproved: \_\_\_\_\_

Date: \_\_\_\_\_

Clearance: