PROJECT PAPER AMENDMENT

BARI REGIONAL STATION DEVELOPMENT
ISHURDI

Agricultural Research Project (388-0003)

Proposal and Recommendations
For AID/W Review

BANGLADESH
October, 1979

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1 TRANSACTION CODE: C (A ADD, C CHANGE, D DELETE)

PP

2 DOCUMENT CODE: 3

3 COUNTRY ENTITY

4 DOCUMENT REVISION NUMBER: 3

5 PROJECT NUMBER (7 digits): 388-0003

6 BUREAU OFFICE: A SYMBOL: ASIA; B CODE: 04

7 PROJECT TITLE (Maximum 40 characters): Agricultural Research

8 ESTIMATED FY OF PROJECT COMPLETION: FY 82

9. ESTIMATED DATE OF OBLIGATION: A INITIAL FY 76; B QUARTER 1 (Enter 1, 2, 3, or 4); C. FINAL FY 82

10 ESTIMATED COSTS ($000 OR EQUIVALENT $1 -)

A FUNDING SOURCE	FIRST FY B FX	FIRST FY C L C	FIRST FY D. TOTAL	LIFE OF PROJECT E FX	LIFE OF PROJECT F. L C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	2,311	2,533	4,844	5,161	3,231	8,392
GRANT	691	153	844	3,541	851	4,392
LOAN	1,620	2,380	4,000	1,620	2,380	4,000
OTHER U.S. 1						
OTHER U.S. 2						
HOST COUNTRY	-	3,480	3,480	-	8,469	8,469
OTHER DONORS						
TOTALS	2,311	6,013	8,324	5,161	11,700	16,861

11 PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C GRANT	PRIMARY TECH. CODE D LOAN	E. 1ST FY 76 F GRANT	E. 1ST FY 76 G LOAN	H. 2ND FY 77 GRANT	H. 2ND FY 77 J. LOAN	K. 3RD FY 78 L. GRANT	K. 3RD FY 78 M. LOAN
(1) FN	141	080	080	844	4,000	360	-	920.1	-
(2)									
(3)									
(4)									
TOTALS				844	4,000	360		920.1	

A APPROPRIATION	N. 4TH FY 79 O GRANT	N. 4TH FY 79 P LOAN	Q. 5TH FY 80 R GRANT	Q. 5TH FY 80 S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)	400	-	1,646.7	-	4,391.8	4,000
(2)						
(3)						
(4)						
TOTALS	400		1,646.7		4,391.8	4,000

12. IN-DEPTH EVALUATION SCHEDULED: MM 06 YY 82

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Frank B. Kimball

TITLE: Director, USAID/Bangladesh

DATE SIGNED: MM 10 DD 26 YY 79

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 11 DD 13 YY 79

AID 1330-4 (3-78)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A = Add; C = Change; D = Delete — [A] Amendment Number 2 — DOCUMENT CODE 3

2. COUNTRY/ENTITY: BANGLADESH

3. PROJECT NUMBER: 388-0003

4. BUREAU/OFFICE: ASIA [04]

5. PROJECT TITLE (maximum 40 characters): Agricultural Research

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 12 DD 31 YY 82

7. ESTIMATED DATE OF OBLIGATION (Under "B" below, enter 1, 2, 3, or 4)
A. Initial FY 76 B. Quarter 2 C. Final FY 80

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 76 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(691)	(153)	(846)	(3023.2)	(1200.8)	(4224)
(Loan)	(1620)	(2380)	(4000)	(1620)	(2380)	(4000)
Other U.S. 1.						
Other U.S. 2.						
Host Country	--	2099	2099	--	7624	7624
Other Donor(s)						
TOTALS $	2311	4632	6943	4643.2	11204.8	15848

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) FN	141	080	080	2524*	4000	832.2*	--	4224	4000
(2)									
(3)									
(4)									
TOTALS				2524*	4000	832.2*	--	4224	4000

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code							
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

Under Project Paper Amendments Nos. 1 and 2 for which funds under this action will be used, to establish an ongoing research capability, in such forms as a Vertebrate Pest Division of the Bangladesh Agricultural Research Institute and the expansion and development of the Regional Agricultural Research Station at Ishurdi, Bangladesh.

14. SCHEDULED EVALUATIONS: Interim MM 08 YY 80 / MM 01 YY 81 — Final MM 06 YY 82

15. SOURCE/ORIGIN OF GOODS AND SERVICES: [ ] 000 [X] 941 [X] Local [ ] Other (Specify)

16. AMENDMENT NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment)

BEST AVAILABLE COPY

*$2,524,000 Obligation to date
832,200 Amount approved this action
867,800 Funds previously approved but not obligated
$4,224,000 Life of Project

$ 832,200
867,800
$1700,000 Amount to be obligated FY 80

17. APPROVED BY — Signature: John H. Sullivan 2/12/80 — Title: AA/ASIA — Date Signed MM DD YY

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY

AID 1350-4 (8-79)

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

(AMENDMENT NO. 2)

BANGLADESH

Agricultural Research Project
Project No. 388-0003

Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, the Agricultural Research Project (Project No. 388-0003) for Bangladesh was authorized on December 23, 1975. It approved a total level of A.I.D. funding for the Project of $6.561 Million ($4 Million in Loan funds; $2.561 in Grant funds). It was amended on January 9, 1978 to provide a new total level of A.I.D. funding of $7,391,800 ($4 Million in Loan funds and $3,391,800 in Grant funds of which $830,800 was provided for the Vertebrate Pest Research Component of the Project). That authorization, as amended, is hereby amended as follows:

a. An amount of not to exceed $832,200 in Grant funds is authorized for a Regional Agricultural Research Station Component of the Project; these funds will be used to expand and develop the station located at Ishurdi, Bangladesh.

b. The total level of funding for the Project is not to exceed $8,224,000 ($4,000,000 in Loan funds and $4,224,000 in Grant funds, including the $832,200 in Grant funds authorized above), through FY 1982.

The authorization cited above, as previously amended, remains in force except as hereby amended.

Clearances:	Date	Initial
D. Brennan, Asia/PD	2/8/80	(draft)
T. Arndt, Asia/TR	2/8/80	(draft)
R. Halligan, Asia/DP	2/11/80	(draft)
J. Dudik-Gayoso, Asia/BI	2/12/80	(draft)
H. Morris, GC/Asia	2/13/80	Hmm
F. Schieck, DAA/Asia	2/15/80	Fjs

Signature

Assistant Administrator
Bureau for Asia

2/19/80
Date

GC/Asia:AdeGraffenried:2/13/80

BARI Ishurdi Regional Station Development Component:
Agricultural Research Project

TABLE OF CONTENTS

Part I. Project Summary and Recommendations

A. Recommendations

1. That the existing Agricultural Research Project (388-0003) be amended to include additional funds for the expansion and development of the Bangladesh Agricultural Research Institute's Regional Station at Ishurdi.

2. Grantee: The Bangladesh Government (BDG) implementing agency will be the Bangladesh Agricultural Research Institute (BARI) of the Ministry of Agriculture and Forests.

3. That grant funds for this amendment be provided as outlined below:

	($ 000)
a. Total Project Amendment Cost (AID plus BDG contribution)	1,325
b. AID Assistance	
Grant -	1,000

for the development and expansion of the BARI Regional Station at Ishurdi. The project will finance overall farm and station development including farm buildings, administrative laboratory complex and residential staff quarters; land leveling for research plot development; electrification and water distribution systems; roads, drainage and irrigation; and for farm machinery, laboratory equipment and furniture.

	($ 000)	
	FY 80	FY 81
c. Host Country Contribution:		
(i) Capital Budget	75	75
(ii) Operating and other costs	75	100
Total : $325=	150	175

B. Rationale for Developing Ishurdi Regional Station

The Bangladesh Agriculture Research Institute encompasses not only the central site at Joydevpur but also four regional stations, one in each of the four divisions of Bangladesh, and 19 substations scattered throughout the country which constitute a comprehensive network for agricultural research. These facilities cover the different climatic and soil zones in Bangladesh and provide BARI with the capability of doing research that will be relevant for all the different farming conditions in the country. While the Joydevpur facility is responsible for conducting the bulk of basic research and providing overall supervision and guidance to the nationwide research effort, the regional stations and substations are responsible for developing area specific crop varieties and to serve as the link between the research system and the extension service and local farmers. Within the BARI network, it is the regional stations which have direct contact with farmers through field days at the stations and field trials on local farms. They also work with local extension agents by means of short training courses at the stations and through informal contacts. Both the recently completed Master Plan for BARI and USAID planners foresee the need to greatly improve and expand the linkages between research and farmers and our Phase II Agricultural Research Project will directly address these problems.

Prior to that, however, the entire regional station network must be fully developed to provide the base for improved outreach programs. A World Bank project is developing three of the regional stations and since USAID provided some assistance to the Ishurdi station under our original project, the BDG has requested us to complete the work there. Given the importance of Ishurdi to the overall research system, and the proposed approach of our Phase II Project, the Mission has determined the project should be amended to accommodate the BDG request.

C. Description of the Project

1. The ongoing Agricultural Research Project is being amended to develop and strengthen the Regional Agricultural Station, Ishurdi to enable the station to improve its applied and adaptive research on non-rice food crops relevant to local conditions.

The agricultural sector goal of the Bangladesh Government is to achieve sustained growth in agricultural production. One of the key subsectors within agriculture is the development of a national agricultural research system capable of identifying priority research problems and producing cost effective solutions utilizable by policy-makers and farmers alike. This national research system should contribute significantly to the sector goal when interlocked with an effective outreach extension system disseminating research results to farmers and gathering feedback from them. The regional and substation network is an essential component of this national research system. It is at these sites that area-specific research is done, on farm trials are carried out, and the closest links with the extension service exist. These links will be developed and strengthened in the Phase II Ag Research Project. At this stage it is necessary to develop the four regional stations of BARI so that there will be a sound institutional research base on which to build an effective extension service.

AID is already involved with the development of the Ishurdi Regional Station. The existing Project provided an initial amount for construction of residential quarters. For full operation, the station requires additional construction of facilities for research and farm operations, residential units, and land development. A detailed budget is given in Table 2 on page 15.

2. Facility Construction

The ongoing project is financing 57 residential units for research staff at the station. Strengthening of the research station will require staff totalling 76 personnel by FY 82. To provide almost all staff with residences, an additional one unit of "A" type and six units of "C" type residential quarters will be constructed. See Table I for an explanation of housing type and justification for additional units.

The station does not have adequate office space for administrative personnel and the field laboratory facilities are primitive. A field laboratory/administration complex will be constructed.

The Ishurdi station will provide short term training and in-service refresher training for personnel of the Directorate of Agriculture (Extension and Management) on improved methods of cultivation and use of research findings for non-rice food crops similar to what BRRI provides for rice. It will also hold short (3 to 5 day) training sessions for farmers. In order to be able to provide these training programs, a training facility and hostel will be constructed. Extension and training activities are explained in more detail in Section I. E. Project Issues.

3. Commodities

The project will provide farm machinery and equipment for cropping and harvesting. To ensure adequate maintenance, basic workshop facilities and tools will be included.

The machinery and equipment are necessary to insure timely installation and maintenance of research trials. Mechanized farm machinery on research stations in developing countries is used solely for this purpose and not for the implementation of field trials.

Both USAID and BARI recognize that small farmers will not have this type of machinery available. However, we do not expect that this will prevent or hinder small farmers from adopting the improved varieties and farming techniques that will flow from the research system. Conducting research trials requires precision and timeliness which can only be achieved by the use of modern machinery, but that degree of precision is not necessary in farmers' fields. Any new varieties which are developed by BARI must be capable of being cultivated on small plots using traditional farming methods.

Improving these traditional methods is a separate problem and is being addressed in a number of other projects. In one of these, USAID funded a consultant for three and a half years to assist in the development of BARC's Appropriate Agricultural Technology Cell (AATC). The AATC has primarily an information gathering and dissemination function, being responsible for finding out what is happening in the development of appropriate technologies and informing the relevant sections of the Ministry of Agriculture of these developments. At BARI the Agricultural Engineering Division is prepared to respond to specific requests from Scientific Officers to design and test equipment which will enhance the ability of small farmers to adopt improved farming practices. The Division is currently working to develop hand weeders.

Most discussions of Appropriate Technology assume that the subject refers only to some kind of mechanization, albeit low level and unsophisticated. The Director of BARI and Mission staff, however, prefer the broadest possible definition of appropriate technology, to include improved seeds, proper amount of fertilizer and irrigation, and improved methods and techniques that do not require any additional tools, as well as improved equipment and machinery. In this sense, almost all the results of research at BARI, which are passed on to the extension services, contribute to the development of appropriate technology.

Basic laboratory equipment appropriate for field research and office furniture will be provided under this project amendment. Laboratory equipment needed for the Ishurdi Station includes microscopes, glassware, seed testing equipment, moisture meters, seed incubators, chemicals, soil testing equipment, laboratory balance, PH meters, etc.

D. Summary Findings

The design, as proposed, is well suited to achieve the purpose of this project amendment. It has been carefully planned to make full and efficient use of available resources. The nature of the research approach is particularly well suited to the crop research needs of Bangladesh with a minimum ratio of research costs to actual gains for small farmers. Potential adverse environmental impacts of the project are judged to be none or minimal; and, the indirect effects are judged to have little or no adverse environmental impact. The financial plan is carefully designed and firm, and suited to the needs of the project. The plan appears adequate to achieve the required outputs and project purpose.

E. Project Issues

1. Will research findings be adequately disseminated to all farmers in the area?

Several donor activities are concentrating on improving the extension mechanisms within Bangladesh. In late 1978 an FAO team visited Bangladesh to review Agricultural Extension and submitted a report recommending significant changes in current FAO projects, as well as new projects, to strengthen the extension system. The World Bank is also involved in extension, supporting a BDG program to institute the training and visit system of extension in the northwest region of the country, and will thus tie in closely with the Ishurdi Station.

In the areas adjacent to the Ishurdi Station, the relationships between research and extension have greatly improved in the past five years. Various methods of exchange between scientists at the station and local farmers have developed. These include informal liaison with local extension service personnel, annual field days at the station during which local farmers have the opportunity to learn what is being done at the station, and field trials at the station which are observed/visited by neighboring farmers.

BARI as a whole is conducting other activities aimed at improving the linkages between the research institute and the extension system. All research results from the regional stations and substations are forwarded to BARI twice yearly where they are analyzed and written up as reports or papers. These reports are passed on to the extension service for dissemination. The extension service also produces leaflets on its own which are checked by BARI before distribution through the extension system. In addition, BARI periodically organizes workshops on specific crops, which extension agents and farmers are encouraged to attend.

Recently BARI has converted its Soil Fertility Institute into the On-Farm Testing Division which will serve as a direct, institutionalized link between farmers, extension agents, and BARI. The new Division will provide the basis for an extension/outreach program which the Mission will assist in the Phase II Project. (See Ag Research II (388-0051 PID.)

In sum, development of the regional stations and substations is an essential component of BARI's research system, specifically its outreach efforts. These stations will provide the area-specific research and local contacts necessary to make research results available to small farmers. Once the basic research system is fully operational AID will concentrate more on outreach and extension, as outlined in the Phase II PID.

2. Why should AID develop this station and not the World Bank?

The World Bank chose not to get involved with support for the Ishurdi Regional Station because AID was already providing funds for residential quarters. When the question arose, IDA funds were already committed for other areas of agricultural research. Therefore, it was agreed with the Bank and BARI that AID should support the development of the station.

Part II Project Background and Detailed Description

A. Background

Bangladesh is confronted with a food-population imbalance. The imbalance between food production and food consumption requirements has been accented by low production yields and the rapidly increasing food requirements of an exceedingly rapid growth in population. The major goal of the Bangladesh Government is foodgrain self-sufficiency by 1985/86. One of the major objectives USAID has chosen to support in assisting the BDG to meet its goal, is increasing foodgrain production. One of the main subsectors within agriculture which needs development, is a national agricultural research system capable of identifying priority problems and producing cost effective solutions utilizable by all farmers.

The 1981 Country Development Strategy Statement (CDSS) emphasizes the need for continued adaptive research related to improved technology. The USAID program will continue to support research for small farmer cropping systems, low cost nutritions crops and appropriate agricultural technology. Furthermore, the CDSS states that "...agriculture is the leading productive sector in Bangladesh. No other sector holds promise for achieving growth with an improvement in the living standards of the poor majority. Since virtually no new land will become available for cultivation, increased production means higher yields per acre. The adoption of high yielding variety foodgrain technology, while for purposes of maximizing employment and avoiding large-scale mechanization, is the only possible way to achieve an increase in yields per acre at a rate rapid enough to achieve foodgrain self-sufficiency."

At the request of the Planning Commission, AID fielded a team in early 1974 to assess the needs of agricultural research in Bangladesh. In summary, the team found that, except for rice, agricultural research was essentially inactive, fragmented among various ministries, uncoordinated and out of contact with relevant international research activities. The team also concluded that agricultural research on crops other than rice (other cereals, pulses, vegetables, oil seed crops etc.) should receive much more attention and should be the object of AID support.

The northwestern area of Bangladesh, in which the Ishurdi Regional Station is located, has soils and a climate well suited for crop diversity. With emphasis on adaptive research in this area, the BDG can begin to reach its goal of foodgrain self-sufficiency. One such example, is the increase in wheat acreage and per acre yields

in the northwest compared to the rest of the country in the past two to three years. The rapid expansion of wheat acreage resulted from an intensive program by BARI in which research scientists worked directly with farmers, to inform and support them in adapting a new crop. The result was an increase in wheat acreage from 250,000 acres to 700,000 acres and increases in average yield from .3 tons per acre to .75 tons per acre. The success of this program demonstrates that Bangladeshi farmers will readily accept agricultural innovation when necessary extension services are provided.

During 1974 and 1975, twelve man months of TDY assistance were financed by AID to develop the Agricultural Research Project and to develop a plan for reorganizing and strengthening the Agricultural Research Institute at Joydevpur and Ishurdi.

B. Progress Under the Original Project

The Agricultural Research Project (388-0003) forms the base for developing a non-rice crop research system for Bangladesh. AID loan funds are being used to develop the 430 acre central research complex at Joydevpur, and for residential quarters at the Ishurdi Regional Agricultural Research Station.

As noted in the previous two annual evaluations, following slow start-up the original project has been progressing on schedule. Construction at both Joydevpur and Ishurdi is expected to be completed by December 31, 1979. Training is on track with six Ph. D. candidates studying at different universities in the U.S. and one at Los Banos, the Philippines. Seven BARI scientists have completed short training courses and thirteen others are either in training or have firm call forward dates. Recently completed arrangements between BARI and Kasetsart and Chiang Mai Universities in Thailand have greatly facilitated the short-term training program. Only a small amount of training funds remains unsubobligated. Approximately half of the laboratory equipment and other commodities to be funded under the project has arrived and the final order for commodities is being prepared.

BDG commitment to the project has continued to be strong and it has provided necessary budgetary support to enable BARI to maintain its rapid pace of expansion over the last three years. In 1975-76 the BDG provided BARI with the Taka equivalent of $2,099,000. In 1978-79 it provided $5,200,000.

A major assumption during the development of the original project was that the extension service would expand and develop adequately so that research results from BARI would reach the small farmers. Both the BDG and USAID recognized that extension was essential to the achievement of purpose and goal level targets. While there is still room for great improvement in the extension service, considerable progress has been made over the last three years. The most significant and successful program during this period was the effort to expand wheat production, as noted above. While BARI scientists cannot become so actively involved in extension work for every crop, this nonetheless indicates the Institute's commitment to effective extension work.

Under the terms of their contract, the LIDS consulting team has drawn up a Master Plan for the development of BARI. The Plan provides a detailed review of the current situation and proposes a large number of recommendations for improving the BARI system. The Ministry of Agriculture has accepted the Master Plan as a basis for further development of BARI and has already acted on some of the recommendations.

While facilities at Joydevpur and the regional stations are still being developed, considerable research work is already underway. Besides the work with wheat, BARI scientists have developed a summer cabbage, new disease resistant varieties of tomatoes which can be grown during the monsoon, and two varieties of improved mustard. Since the beginning of the project approximately 300,000 acres of formerly fallow land are now under vegetable, pulse, and oilseed cultivation.

The project is providing 57 residential units for research staff at the Ishurdi Station. By the end of 1979, all of these units will be completed and staff for research operations will be expanded. In order to fully utilize the potential of this station for a more effective, regionally-based, adaptive research program, facilities have to be improved and expanded. Thus, the existing Agricultural Research Project is being amended to provided the necessary funds. As noted previously, the World Bank is funding the development of the other three regional stations.

C. Detailed Description

1. Introduction

The development of research stations and their subsequent management is taking on a new dimension in Bangladesh. The BDG's strategy is to reduce foodgrain imports and to attain foodgrain self-sufficiency by 1985. The Government's priorities lie in strengthening its institutional capabilities for developing appropriate technologies for boosting agricultural production.

The regional Agricultural Research Station at Ishurdi was established in the early fifties. The purpose of this research station is to undertake production-oriented adaptive research on non-rice food crops, and to give specialized attention to agricultural problems of the Northern Region.

The BDG has made the decision to fully develop and equip the Ishurdi Station, which requires a tremendous amount of work to get into first class condition. Since agricultural research activities must be based on a well-equipped farm, it was essential that emphasis be given to the development of the physical facilities of the station's farm and to establish priorities in their development. The project is being amended to develop the Ishurdi Station which will give the necessary support to the research functions of BARI.

Ishurdi Station Development of the Agricultural Research Project will include facilities construction and equipment for the station. A description of major activities is presented below.

2. Facility Construction

The grant will provide funds to construct the buildings and facilities necessary for the complete development of the Ishurdi Station. Similar buildings have already been designed for the central station at Joydevpur. Building designs and plans will be replicated from the architectural designs used for the original project as Joydevpur and Ishurdi. Funds will be provided for architectural and engineering services. There will be a cost involved with replication of plans from the original designs. These designs will have to be modified to construct buildings which are specific to size and shape for conditions which are applicable for the regional station.

In order to insure that buildings are properly located and the station is properly layed-out for short and long range development, a master plan and a site development plan are being prepared.

A detailed list of buildings and facilities to be constructed is presented at Table 2.

3. Commodities

A summary of estimated commodity costs is shown at Table 3 and Table 4. Major commodity items include land leveling equipment, tractors, cultivating and harvesting machinery, irrigation equipment, workshop equipment, laboratory equipment and supplies, chemicals, furniture and project vehicles.

4. Technical Assistance

The Ishurdi Station is part of the BARI system and the ongoing components of the project provide for technical assistance, thus no expatriate technical assistance will be funded under this amendment. While no full time consultants will be living at the Station, the contract with the International Agricultural Development Service (IADS) and the PASA with the Denver Wildlife Research Center (DWRC) will provide the necessary technical competencies. For example, the Farm Development Specialist under the IADS contract will be used to assist the BARI Project Director and engineers with the Master Plan, land leveling activities and with the installation of roads, the irrigation system and the drainage system. If necessary, the Station Development Specialist can be extended to provide additional assistance for completing the station development activities at the Ishurdi Station. This will be determined at a later date.

5. Project Inputs

a. U.S. Government

Based on the above project description, the following resources are required to achieve project purposes:

Schedule of Funds	FY 80	FY 81 ($ 000)	Total
Machinery, equipment & vehicles	140	-	140
Farm buildings	130	-	130
Residential quarters	100	-	100
Research/admin. complex	170	-	170
Farm site development	340	-	340
Laboratory equipment & furniture	100	-	100
Professional fees	20	-	20
	1,000	-	1,000
BDG contribution Capital Budget	75	75	150
Operating and other costs	75	100	175
Total :	1,150	175	1,325

The adequacy of present construction cost estimates is a subject which has been thoroughly scrutinized. The estimates presented are as current as we can obtain and are based on BDG calculations tempered by USAID engineering input. However, based on present construction activities of an identical nature under the existing project components, the cost estimates should be fairly reliable. Our intention is to reconfirm these estimates at the time contracts are awarded. After contracts are awarded, cost overruns will be the responsibility of BARI. This has been the standard procedure under the Loan Agreement and BARI has fulfilled their commitments.

b. Bangladesh Government

The BDG's contribution consists of the renovation of existing buildings and additional construction. The BDG will also meet the operating and maintenance costs of the regional station. The total BDG contribution is estimated to be $325,000 over two fiscal years.

c. Other Donors

(i) World Bank - The World Bank is providing U.S. $3,000,000 for the development of three BARI Regional Stations (Hathazari, Jamalpur and Jessore) and one sub-station (Ramgarh).

(ii) Swedish International Development Agency Winter Oil Seeds - BARI $250,000.

6. Outputs

The BARI Ishurdi Regional Station will be completely constructed and equipped by December, 1982. This includes the farm site development (drainage, roads, irrigation, land shaping, etc.); construction of farm buildings, residential quarters, and laboratory/administration complex; fencing and electrification and water distribution systems.

When the facilities are complete, the BARI Regional Station staff will be able to fully implement the overall objectives of crop research.

7. End of Project Status

It is anticipated that the following conditions will indicate that the project purpose has been achieved:

a) The Regional Station at Ishurdi will be a full functioning unit of the BARI research system;

b) Needs of small farmers being used as criteria for regionally-based research priorities;

c) Research results being disseminated through the agricultural extension service to farmers; and

d) Farmer problems being worked on and solved.

Table I

Residential Quarters

"A" Type - 1500 Sq. Ft. per family unit	=	One unit
"C" Type - 750 Sq. Ft. per family unit	=	Six units

Present housing units available by the end of 1979. (Not all are funded by AID).

"A" Type	=	1 unit
"B" Type	=	18 units
"C" Type	=	24 units
"D" Type	=	18 units
Old Quarters to be renovated	=	6 units
Total	=	67 units

BARI Staff staticned at the Ishurdi Regional Agricultural Research Station (Breakdown of each type of quarters required):

		In FY 1979	By FY 82
A Type =	Principal Scientific Officer (PSO)	1	2
B Type =	Senior Scientific Officer	5	9
	Scientific Officer	5	10
	Total B Type	10	19
C Type =	Fieldman	7	13
	Agr. Overseer	7	12
	Clerks	5	9
	Total C Type	19	34
D Type =	Peons/Darwans	12	14
	Drivers	5	7
	Total D Type	17	21
	Overall Total	47	76

Table 2

Ishurdi Station Development

Machinery, equipment and vehicles	$	140,000
Irrigation system		80,000
Pump engines and tubewells		30,000
Fencing		70,000
Buildings & Facilities		
Residential units		100,000
Chemical, fuel store and fertilizer building		35,000
Godown		35,000
Threshing floor (Enclosed)		25,000
Workshop-implement shed		35,000
Field laboratory-administration complex		110,000
Water distribution system and tank		60,000
Training facility and hostel		60,000
Farm site electrification		25,000
Roads and drainage		50,000
Land leveling and shaping		25,000
Laboratory equipment and furniture		100,000
Professional fees		20,000
	$	1,000,000

Table 3

Farm Machinery and Equipment	Units		Estimated Costs
A. Land Leveling Equipment			
1. Scraper (Eversman model 2SD)	1		
2. Rear Blade	1	$	10,000
3. Leveler (Eversman model 329)	2		
B. Tractors			
1. 75 HP - 4 wheel	1	$	25,000
2. 42 HP - 4 wheel	1		20,000
3. Power tiller - 10 HP	2		10,000

Table 3 (contd.)

	Units	Estimated Cost*
C. Cultivating Equipment		
1. Plow	1	$ 4,000
2. Harrow	2	5,000
3. Fertilizer/seed drill	1	6,000
D. Harvesting Equipment		
1. Multicrop thresher	1	$ 5,000
2. Plot thresher	1	2,000
3. Seed cleaner	1	2,000
E. Other Equipment		
1. Power sprayers	2	$ 1,000
2. 2-wheel trailer	1	3,000
3. Spare parts	-	10,000
F. Workshop Equipment		
1. Small table lathe	1	
2. Drill press	1	
3. Grinder	1	
4. Small electric welder	1	$ 10,000
5. Hard drill (electric)	1	
6. Wrenches	-	
7. Hand tools	-	
G. Vehicles		
1. Pickup truck	1	$ 15,000
2. 4-wheel drive jeeptype vehicle	1	12,000

* Estimates based on prices paid for similar equipment in the original project with allowance made for inflation and latest manufacturer's catalogs.

Table 4

		Unit	Cost
A.	Laboratory Equipment		$ 70,000
1.	Microscopes	7	
2.	Grinding mill	1	
3.	Calculators	5	
4.	Balances and scales	4	
5.	Refrigerator	2	
6.	Moisture meter	2	
7.	Seed incubator	2	
8.	Small electronic oven	1	
9.	Dehumidifier	4	
10.	PH meter	1	
11.	Seed cleaner	1	
12.	Autoclave	1	
13.	Seed cabinets	4	
14.	Glass ware	-	
15.	Chemicals	-	
B.	Furniture		$ 30,000
		Total :	$ 100,000

Part III. Project Analyses

A. Technical Analysis Including Environmental Assessment

This analysis has already been completed under the original Project Paper. This section remains essentially unaffected by the addition of the Ishurdi Regional Station Development component.

1. Alternative Design

An alternative to the project design as proposed might be direct transfer to farmers of research results from the central station at Joydevpur. USAID and the World Bank have thoroughly analyzed the benefits of developing the national agricultural research system for Bangladesh. The development of this regional station, the three other regional stations and the crop/subject specific substations is essential to determining the specific problems of farmers in different geographic areas of the country.

2. Technical Analysis of the Ishurdi Regional Agricultural Station Development Component as Proposed

The nature and timing for the completion of the entire development of the Ishurdi Station appear suited to the achievement of project goals. AID is already committed to assisting the BDG with the reorganization, strengthening and development of the national agricultural research system. Because the initiative taken by AID in identifying priority needs for developing the system, the World Bank has decided to fully develop the other three BARI regional stations. USAID is already committed to the development of the Ishurdi Station through financial assistance for construction of 57 residential units. It is now essential that the station be fully developed in order that the Bangladeshi research scientists and technicians can fully utilize the results which are beginning to be generated by the improvement of the national system.

The project will strengthen the agricultural research system in Bangladesh by enabling BARI to better undertake applied, adaptive and adoptive research relevant to local conditions. By fully developing the regional station, a closer relationship with extension will be possible. The research results and support which will come from the regional station will provide the necessary linkage to the farmers in the area.

The facility design appears to be modest, functional and adequate for the anticipated needs of this particular regional station for the life of the project and well into the future. Commodities requested are based on those required for the efficient use of anticipated research activities.

In summary, the project design, as proposed appears well suited to achieve the purpose of this project amendment.

3. Environmental Assessment

The station has been in existence for twenty years in the same location. The amount of land connected with the station has decreased. Forty acres were given four years ago to the Agricultural Extension Training Institute. Old buildings and other facilities already exist. New and appropriate buildings and modern facilities, site development, landscaping, roads and walks in this area will improve rather than adversely affect the environmental quality of the area. The construction of the new residential units with improved water supply, sanitation and electrical service will offer positive advantages to BARI personnel.

No forest land will be destroyed since the site has been in existence for 20 years. Land leveling and improvement in water supply for irrigation and drainage will have positive impact at the site. The site is on flat gradient land and there will be no detrimental erosion caused by water. Improved drainage will minimize the chances of flooding areas adjacent to the station during the monsoon season. There is no requirement for removal and resettlement of farmers, since the site is on land already owned by the BDG.

The impact on the environment stimulated by the applied and adaptive research will be positive. Results of all research conducted are meant to increase production and intensify land usage. New crop varieties and improved cultural practices must be determined for local conditions whether the technique is locally developed or adaptive research on introduced methods.

Research results are beginning to identify new and improved varieties which are fertilizer responsive, therefore, the technology being extended will provide optimal application rates of fertilizer. Efficient use of fertilizer will in fact contribute to the optimal use of chemicals in soil and water. Adaptive research combined with appropriate technologies will increase the effective use of available organic compounds for plant nutrition. Genetic improvement through breeding will develop insect and disease resistant varieties, thus limiting the use of chemical pesticides.

B. Financial Analysis and Plan

1. Financial Rate of Return/Viability and Recurrent Budget Analysis of Implementing Agencies

Both of these analyses have been completed for the original Agricultural Research Project Paper (388-0003). They remain essentially unaffected by the addition of the development of the Ishurdi Regional Station.

2. Financial Plan/Budget Tables

The Financial Plan (See Table 5 for details) indicates that a total of $1,000,000 is required, of which $275,000 will be foreign exchange and $725,000 in local currency. The total AID grant of U.S. $1,000,000 is shown as a one-time obligation in fiscal year 1980. The BDG's contribution to the Project is U.S. $325,000 equivalent in local currency for fiscal years 1980 and 1981.

The BDG Five and Two Year Plans list general allocations for each ministry but do not provide detail to the extent that the BARI budget can be specifically identified. Therefore, the evaluation of the level of budgetary commitment of the BDG is based on the approved budget level for FY 1980 shown in the Plans which is adequate for the agencies implementing this project amendment.

The estimated costs for the Ishurdi Regional Station component of the Agricultural Research Project is $1,325,000 for the life of the project. This amount includes allowances for inflation. The portion of the costs borne by the BDG for this amendment is approximately 25%. The BDG is contributing almost 60% of the $14 million involved with the entire Project.

Estimates for FY 80 are based on current costs. In general, shipping charges are estimated at about 40 percent of the item cost, although more specific estimates are made for larger items.

Table 5: Financial Plan ($000)

Agricultural Research Project - Amendment - Amendment II

	FY 80		FY 81		BARI Regional Agricultural Station, Ishurdi
	L. C. $ Equivl.	FX US$	LC $ Equiv.	FX US$	TOTAL
Ishurdi Regional Agr. Station					
A. AID Project Costs					
Machinery, equipment & vehicles	-	140			140
Farm buildings	130	-			130
Residential Quarters	100	-			100
Research/Admin. complex	110	-			110
Training Facility & Hostel	60	-			60
Irrigation System	30	50			80
Tubewell/Pump Engine	15	15			30
Fencing	70	-			70
Station electrification	25	-			25
Water distribution/Tower	60	-			60
Roads & Drainage	50	-			50
Land Shaping & Leveling	25	-			25
Laboratory Equipment	-	70			70
Furniture	30	-			30
Professional Fees	20	-			20
Sub-Total :	725	275			1,000
B. BDG Project Costs:					
Capital Budget	75	-	75	-	150
Operating & Other Costs	75	-	100	-	175
Sub-Total :	150	-	175	-	325
TOTAL:	875	275	175	-	1,325

C. Social Analysis

The proposed changes in the scope of the project will not significantly alter the pattern of popular participation in the project. Nor will the benefit incidence be essentially different.

At the research station, the proposed construction should enhance the performance of the institution and directly benefit its research and problem-solving capabilities. The effect of the research facility itself upon farmers will remain the same as stated in the original Project Paper.

D. Economic Analysis

1. Payoffs to Agriculture Research

The importance of new technology cannot be overemphasized. This is particularly true in agriculture where expanded production and broad participation depend upon the availability of new seeds which can be profitably utilized by farmers. The experience with new rice seeds now needs to be replicated with wheat, other grains, oils, and vegetable varieties. Modern inputs such as irrigation and fertilizers, although vital, are not in themselves sufficient to ensure yield increases. The economic payoff of improved seed technology has been shown to be significant in terms of augmented crop production and expanded employment and can provide the basis for a growing agricultural sector. Agricultural research makes this possible. The old seeds do not ensure yield and employment increases.

The inherent time lags in the development of a domestic research capability should not deter this critical investment. Dr. Evenson of Yale University estimated in 1968 that the average lag time between the investment in a research institution and realization of delivered seed benefits is 6½ years. It requires a lead time of this magnitude to breed better seed, whether imported or domestic, and to ensure its multiplication and distribution to all farmers. Too often credit and other agricultural supplies are expanded ahead of adequate supplies of a profitable new technology, i.e. the seed itself.

This project is predicated upon an underlying realization that a relatively small investment in agricultural research in Bangladesh is needed now to capitalize upon the relatively larger investments in cooperatives, agricultural credit, and extension activities that are taking place. The AID sponsored Small Farmer Credit seminar held in Manila in 1973 made it clear that the availability of an acceptable seed technology must accompany the supply of other inputs.

2. Internal Rate of Return

An internal rate of return analysis for research would compare the present discounted costs of an agriculture research institute, and its extension system, with the present value of projected production benefits attributed to the new seed. The rate of return would also reflect the social benefits derived from employment creation on farms.

Future benefits and, therefore, the internal rate of return, are impossible to project with any degree of accuracy. Certainly a 15 percent rate of return should be attainable given basic assumptions with regard to output prices and the availability of other agricultural inputs. While such assumptions cannot be taken for granted, recent developments have been encouraging. The BDG has followed its highly successful rice procurement program of 1977/78 with an equally successful wheat procurement program in 1979, and by now appears committed to a policy of ensuring incentive prices to agricultural producers. On the input side, USAID's Fertilizer Distribution Improvement Project has contributed to a rapid increase in the (admittedly still low) level of fertilizer use by Bangladeshi farmers; and the Experimental Rural Finance Project is helping to bring low-priced institutional credit to sharecroppers and small farmers.

Despite present conditions in Bangladesh there is reason to be optimistic. It is worth noting some estimates from Kislev and Evenson regarding investment in agricultural research in LDCs. They have found that payoffs to investments in agricultural research are extremely high. They conclude that perhaps as much as three times as much growth is purchased per research dollar as compared to an equal investment in extension. They also point out that the amount and quality of seed technology transferred into a country is directly dependent on the quality of that country's research capability. A domestic seed research capacity is critical for technological adaption, for direct adoption in the past has been shown to fail.

3. Research on Other Food Crops

Within the agricultural sector of Bangladesh we recognize that certain areas of research have higher relative internal rates of return than others, with rice and jute leading the list. However, these areas are sufficiently covered by the Government and outside assistance. Non-rice food crop research offers an attractive supplementary area for investment. Fuller utilization of Bangladesh's land and labor resource base requires a wide diversification of the country's high yielding seed base. The country's yield and cropping intensity remain far below levels achieved in neighboring countries. New seeds, particularly for dry land crops, will make better use of the country's projected growth of fertilizer and irrigation coverage. The cropping intensity for the nation as a whole is estimated to be 149%. If the cropping intensity were increased to 200%, there would be an additional 10 million acres annually of productively utilized land requiring over four million man years of labor. The utilization of this land potential depends in large measure upon appropriate seed.

Research is now needed on wheat, edible oils, pulses, and vegetables so that the production and employment benefits of increased rice yields can be carried forward by a wide range of new seeds. Such a broader base insures better land use during the dry months, better use of scarce irrigation water, better nutrition, and a greater and more diversified flow of cash earnings than is presently provided by a dual crop culture of rice and jute.

Part IV. Implementation Arrangements

A. Analysis of the Recipient's and AID's Administrative Arrangements

1. Recipientand A.I.D.

A description of the BDG's policy toward agricultural research, the administrative status of the Bangladesh Agricultural Research Institute (BARI) and the administrative arrangements of BARI and AID for the Project have already been given in detail in the original Project Paper. As a component of the original Project, the development of the Ishurdi Regional Station will fall under the same administrative structure and arrangements.

BARI will handle the execution of civil works through its existing construction cell. The BARI construction cell was originally established for the supervision of the Project, and has been expanded to handle the World Bank construction activities at the other three regional stations and the Ramgarh sub-station. This cell will be further strengthened for this component of the project by the appointment of an assistant engineer and two sub-assistant engineers who will be supervised by the existing BARI superintending engineer (Project Director). The additional staff will be obtained from BDG's Public Works Department (PWD) on deputation or hired on a temporary contract basis. The Project Director will handle contract administration work and final work certification, while the assistant engineer will be responsible for materials, field supervision and final work. The assistant engineer and the two sub-assistant engineers will be located at the Regional Station to supervise civil works through local contractors. The land development work, the installation of an irrigation system, roads and drainage will be supervised by a BARI agricultural engineer, who will be posted at the station for the period of the development work. This procedure has worked very well in the past.

B. Implementation Plan

1. A timetable for implementation of this component of the Project is given below:

Activity	Target Date
Authorization	
Transmittal of Project Paper Amended	
Send to AID/W	October, 1979
AID/W Approval	December, 1979
Project Agreement Amendment Signed	January, 1980
Infrastructure	
Building Sites Identified	Near Completion
Contract Awarded for Architectural Services	January, 1980
Master and Building Plans Completed	February, 1980
Tendering for Construction	February, 1980
Construction Contracts Awarded	March, 1980
Land Development Begins	April, 1980
Facility Construction Begins	April, 1980
Facility Construction Completed	April, 1982
Commodities	
Major Equipment & Farm Machinery Ordered	September, 1980
Equipment and Supplies Received and Installed	April, 1982

2. Disbursement and Procurement

Construction costs and commodity procurement will be financed by AID from project funds as specified in an amendment to the Project Agreement. These procedures will be consistent with the ones being used for disbursement and procurement under the terms of the original Project Paper. Procedures for utilizing project funds are established under the terms of AID Agricultural Research Loan Agreement (388-T-006) and the Project Agreement.

Disbursements under this grant are expected to be accomplished by three methods: Letter of Commitment; Direct Reimbursement and modified Fixed Amount Reimbursement. Those methods are described in Implementation Letter No. 2 of AID Agricultural Research Loan (388-T-006). However, these procedures will be modified as necessary through project implementation letters.

3. Monitoring and Reporting Agreements

The Ishurdi Station amendment will be monitored directly by the USAID direct-hire project officer. As with the other project components, BARI will be required to submit quarterly progress reports to AID. All local construction activities will be reported regularly through monthly reports prepared by BARI through their project Director. It will also be monitored directly by the USAID engineers.

Procurement will be the responsibility of the BARI Assistant Director for Administration with assistance from the USAID project officer. All procurement undertaken will be of items approved by AID and purchased under AID procurement procedures. Commodities will be monitored directly by the USAID Commodity Logistics Branch, Office of the Controller.

C. Evaluation Plan

Routine PES evaluations will be conducted during the life of the project, i.e., February 1980 to December 1982. Those evaluations will be based on monitoring reports and actual inspections of the physical facility. The evaluations will determine if project inputs are being provided as planned, and if project outputs are being accomplished as planned. The routine evaluations will be used to recommend alterations of project inputs, if required, to achieve the project purpose. A special in-depth evaluation will be conducted upon completion of the project to determine achievement of the project purposes.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Agricultural Research 388-0003

Life of Project:
From FY 80 to FY 82
Total U.S. Funding 1,000,000
Date Prepared June, 1979

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1) Year round cropping of non-rice crops through full utilization of land when rice farming is not possible or economically feasible.	Measures of Goal Achievement: (A-2) By 1982: 1. One hundred thousand acres currently fallow in the northwest are brought under cultivation.	(A-3) 1. Statistical reports of Ministries of Planning and Agriculture. 2. BADC records of sales of improved seed varieties. 3. Crop cutting surveys.	Assumptions for achieving goal targets: (A-4) 1. Sufficient availability of fertilizer, seeds and pesticide to farmers. 2. Natural conditions provide sufficient moisture for growing crop.
Project Purpose: (B-1) To fully develop the BARI Regional Agricultural Research Station at Ishurdi in order to strengthen the agricultural research system specifically for the northwestern region of Bangladesh.	Conditions that will indicate purpose has been achieved: End-of-Project status: (B-2) By 1982: 1. Research results suitable to Bangladesh released to Agriculture Extension Service.	(B-3) 1. BARI publications. 2. BARI written communications to Extension Service. 3. Visual inspection of research activities.	Assumptions for achieving purpose: (B-4) 1. BARI staff have motivation to carry on relevant research 2. Farmers willing to participate in field trials.
Project Outputs: (C-1) 1. BARI Regional Agricultural Station at Ishurdi completely constructed and equipped by December, 1982. a. Land shapping and leveling completed. b. All buildings constructed.	Magnitude of Outputs: (C-2) 1. Approximately 130 acres completely leveled and layed out in experimental plots or for breeder seed multiplication.	(C-3) 1. Modified fixed amount reimbursable system for building construction. 2. USAID engineers monitoring reports.	Assumptions for achieving outputs: (C-4) 1. Scientific officers willing to coordinate on interdisciplinary efforts within BARI. 2. Farmers willing to accept research results and improve technologies to increase production.
Project Inputs: (D-1) 1. See Tables 2, 3 and 4 for details. 2. BARI budgetary allocation.	Implementation Target: Type and Quantity: (D-2) 1. U.S. $1,000,000 (AID Grant for overall Station development). 2. Taka equivalent $325,000 BDG contribution. 3. See implementation target pages.	(D-3) 1. USAID monthly and periodic reports 2. USAID engineering reports on construction activities. 3. Evaluation reports. 4. BDG budget.	Assumptions for providing inputs: (D-4) 1. Continued BDG commitment to project. 2. No undue difficulties in local procurement of construction services, materials or equipment.

AID 1020-25 (11-79)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:
From FY 80 to FY 82
Total U.S. Funding 1,000,000
Date Prepared: June 1979

PAGE 1

Project Title & Number: Agricultural Research 388-0003

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1)	Measures of Goal Achievement: (A-2)	(A-3)	Assumptions for achieving goal targets: (A-4)
	2. Six hundred thousand acres of HYV wheat under cultivation in the northwest. 3. One hundred thousand acres in pulses, legumes, maize and other nutritious crops under cultivation in the northwest. 4. Twenty-five thousand acres of improved oilseed crops under cultivation. 5. One hundred and fifty thousand acres under vegetable cultivation.		

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number Agricultural Research 388-0003

From FY 80 To FY 82
Total U.S. Funding 1,000,000
Date Prepared June-1979

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: (B 1)	Conditions that will indicate purpose has been achieved: End-of-Project status (B 2)	B 3	Assumptions for achieving purpose B 4
	2. Research underway being fully conducted by BARI staff at the Station. 3. Five farmer field trials conducted for each major crop. 4. Linkages established by Ishurdi Station within overall BARI system. 5. Linkage established with regional station and district extension system in northwest. 6. BDG allocation of necessary resources for Ishurdi Station beyond termination of project.	4. Field trial reports. 5. BDG Budget. 6. BARC evaluation of research findings.	

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Agricultural Research 388-0003

Life of Project
From FY 80 to FY 82
Total U.S. Funding 1,000,000
Date Prepared June 1979

PAGE 3

NARRATIVE SUMMARY Project Outputs (C-1)	OBJECTIVELY VERIFIABLE INDICATORS Magnitude of Outputs (C-2)	MEANS OF VERIFICATION (C-3)	IMPORTANT ASSUMPTIONS Assumptions for achieving outputs: (C-4
c. Electrification and water distribution systems completed and operational. d. All equipment purchased and received. 2. Cross-disciplinary research programs solving problems facing Bangladesh farmers by 1982. 3. Ishurdi Station becomes a full functioning unit of the BARI system. 4. Research results being disseminated through the extension service to farmers.	2. Facilities completed a. 7 Residential units b. 1 Chemical, fuel store, fertilizer building. c. 1 godown d. 1 threshing floor e. 1 workshop-implement shed. f. 1 field-laboratory administrative building g. 1 training facility and hostel h. fencing i. irrigation system j. water distribution system k. farm site electrification l. roads & drainage. 3. Commodities and equipment purchased a. farm machinery b. laboratory equipment c. vehicles d. pump & engine e. furniture.	3. Project Manager monitoring of Project. 4. BARI engineering staff reports on construction and station development. 5. Research reports of BARI. 6. IADS progress reports on agricultural research.	3. Natural or man-made disasters do not hamper construction. 4. Construction materials remain in adequate quantities and quality at reasonable price.

BARI Ishurdi Regional Agricultural Station Development

Initial Environment Examination:

Threshold Decision by Assistant Administrator/Mission Director

Approval: _____ Director

Disapproval: _____

Date: _____

A. Nature, Scope and Magnitude of Environmental Impacts

1. Description of Project

The project calls for a grant to the BDG Ministry of Agriculture and Forests for the physical development of the BARI Regional Agricultural Station at Ishurdi in Pabna District. The purpose of this component of the project is to fully develop and equip this regional station in order to develop an effective applied crop research unit in a regional setup.

The emphasis on the research activities from the regional station will be aimed at small farmers and problems relating to the specific geographic, climatic and topographical area. Emphasis will be placed on low-cost effective technologies which will result in better health due to improved diets and higher income for farm families within the target group.

2. Identification and Evaluation of Environmental Impacts

a. Direct Impacts

The direct impact of the research activities on the environment will be non-existent or minimal. The impact of the physical facility at Ishurdi, however, will be positive. Site development, landscaping, roads and drainage and irrigation in this area will improve rather than adversely affect the environmental quality of the area.

The BARI Regional Station at Ishurdi has been in existence for 20 years. The physical boundaries have been established and all of the land shaped and identified for plot development. No forest land will be destroyed since the site is already layed out for research activities. Land leveling and improvement in water supply for irrigation and improved drainage facilities will create a positive impact at the site. The site is on flat gradient land and there will be no erosion effects.

Improved drainage will minimize the danger of flooding during the monsoon season. There is no requirement for removal and resettlement of farmers, since the land is already owned by the BDG.

b. Indirect Impacts

The impact on the environment from the adaptive and applied research will be positive. Results of all research are meant to increase production and intensify land usage. New crop varieties and improved cultural practices will be determined for varied local conditions from techniques developed locally.

With agronomic research identifying different crop varieties which are fertilizer responsive, this will provide the necessary information for optimal application rates of fertilizer. Efficient use of fertilizer will, in fact, contribute to minimized use of chemicals in soil and water. Adaptive research combined with appropriate technologies will increase the effective use of available organic compounds for plant nutrition. Genetic improvement through plant breeding will develop insect and disease resistant varieties, thus limiting the use of chemical pesticides.

B. Recommendation for Environmental Action

A negative determination is recommended on the bases that:

(i) There is judged to be a minimal adverse environmental impact from the project activities;

(ii) the activities are parallel and in conformity with the objectives and plans of Directorate IX of the United States, "Man and the Biosphere"; and

(iii) that the approach of the project is consistent with the recommendations and philosophy of the Programmatic Environmental Impact Statement for AID activities in the area of pesticide use and crop protection.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas[1]	Impact Identification and Evaluation[2]
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources	N
c. Land clearing	N
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
_____	N
_____	
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological status	L
3. Ecological balance	N
4. Other factors	
_____	N
_____	

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

1. Air additives---------- N
2. Air pollution---------- N
3. Noise pollution---------- N
4. Other factors

_____ N

_____ ____

D. NATURAL RESOURCES

1. Diversion, altered use of water---------- N
2. Irreversible, inefficient commitments---------- N
3. Other factors

_____ N

_____ ____

E. CULTURAL

1. Altering physical symbols---------- N
2. Dilution of cultural traditions---------- N
3. Other factors

_____ N

_____ ____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns---------- M
2. Changes in population---------- N
3. Changes in cultural patterns---------- M
4. Other factors

_____ N

_____ ____

G. HEALTH

1. Changing a natural environment---------- N
2. Eliminating an ecosystem element---------- N
3. Other factors

_____ N

_____ ____

H. GENERAL

1. International impacts---------- N
2. Controversial impacts---------- N
3. Larger program impacts---------- N
4. Other factors

_____ N

_____

I. OTHER POSSIBLE IMPACTS (Not listed above)

_____ N

_____ ____

_____ ____

Total Project Grant Funds Detail

AID Project Cost	FY 76	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82	Total
1. BARI-BARC Agr. Research Component								
a. Technical Assistance	465	170	426	-	470	-	-	1,531
b. Local Support	15	40	51	47	-	-	-	153
c. Commodities	168	-	-	-	-	-	-	168
d. BARC Contract Research	70	30	122	-	-	-	-	222
e. Training	126	120	117	94	30	-	-	487
Sub-Total	844	360	716	141	500	-	-	2,561
2. Vertebrate Pest Component								
a. Technical Assistance (PASA)	-	-	76.3	113	100	100	81.1	470.4
b. Participant Training	-	-	6.1	38	27	27.6	5.3	104
c. Commodities	-	-	29	16	16	-	-	61
d. Other Costs	-	-	92.7	92	3.7	4	3	195.4
Sub-Total	-	-	204.1	259	146.7	131.6	89.4	830.8
3. BARI Regional Agr. Station, Ishurdi								
a. Machinery, equipment & Vehicles	-	-	-	-	140	-	-	140
b. Farm Buildings	-	-	-	-	130	-	-	130
c. Residential Quarters	-	-	-	-	100	-	-	100
d. Research/Admin. Complex	-	-	-	-	170	-	-	170
e. Farm Site Development	-	-	-	-	340	-	-	340
f. Laboratory Equip. & Furniture	-	-	-	-	100	-	-	100
g. Professional Fees	-	-	-	-	20	-	-	20
Sub-Total	-	-	-	-	1,000	-	-	1,000
TOTAL	844	360	920.1	400	1,646.7	131.6	89.4	4,391.8