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**JOINT TRIPARTITE EVALUATION
OF
INSTITUTE OF POSTGRADUATE STUDIES IN AGRICULTURE PROJECT
IN BANGLADESH**

**A Project by the Government of Bangladesh
in Cooperation With
The Government of Japan and
The Government of the United States of America**

July 24, 1989

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OF
INSTITUTE OF POSTGRADUATE STUDIES IN AGRICULTURE PROJECT
IN BANGLADESH

Report of Review Team
July 24, 1989

This report presents the independent findings and recommendations of Evaluation team. It does not necessarily represent the official views of the Government of Bangladesh, the Government of Japan or the United States Agency for International Development.

Submitted to Relevant Agencies of:

the GOVERNMENT OF JAPAN,
the GOVERNMENT OF THE UNITED STATES, and
the GOVERNMENT OF BANGLADESH.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADP	Annual Development Plan
ADB	Asian Development Bank
AIT	Asian Institute of Technology, Bangkok
BADC	Bangladesh Agricultural Development Corporation
BAI	Bangladesh Agricultural Institute
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agricultural Research Institute
BIRRI	Bangladesh Rice Research Institute
BAU	Bangladesh Agricultural University
BCAS	Bangladesh College of Agricultural Science
BHAEP	Bangladesh Higher Agricultural Education Project
CDST	Customs Duty and Sales Tax
CERDI	Central Extension and Resource Development Institute
C/F(s)	Counterpart(s)
DAE	Department of Agricultural Extension
DG	Director General (BARI, BIRRI, BJRI)
DU	Dhaka University
ECNEC	Executive Committee of the National Economic Council
GAAP	Grant Assistance Project
GO	Government Order
GOB	Government of Bangladesh
GOJ	Government of Japan
IARI	Indian Agricultural Research Institute
IBA	Institute of Business Administration (Dhaka University)
IFSA	Institute of Postgraduate Studies in Agriculture
JICA	Japan International Cooperation Agency
MAF (MA)	Ministry of Agriculture (and Forests)
MOA	Ministry of Agriculture
MOE	Ministry of Education
MOP	Ministry of Planning
NBR	National Board of Revenue
OSU	Oregon State University
PC	Planning Commission
PEC	Project Evaluation Committee
PC ERD	Project Committee, External Resources Division
PKC	Patuakhali Krishi College
PM	Person Months
FP	Project Proforma
TAPP	Technical Assistance Project Proforma
R/D	Record of Discussion
SRDI	Soil Resources Development Institute
SKTI	Sugarcane Research and Training Institute
Tk	Bangladesh Taka
TSI	Tentative Schedule for Implementation
UGC	University Grants Commission
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government

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EXECUTIVE SUMMARY

I. Background

The Institute of Postgraduate Studies in Agriculture Project (hereinafter referred to as "the project") was launched on July 4, 1985, based on the Record of Discussions, for the purpose of strengthening postgraduate level education and research, thus contributing to the improvement of practical research activities in agriculture in Bangladesh. USAID joined in support of this project beginning April 1986.

With less than one year left before termination of the cooperation period of the project, the tripartite evaluation team was convened to conduct a joint comprehensive review and evaluation of the project. The team was composed of representatives from the Japan International Cooperation Agency (JICA), the United States Agency for International Development (USAID), and the Government of Bangladesh (GOB).

II. Objectives and Procedure of the Evaluation

A. Objectives of the Evaluation

1. To assess the overall performance and impact of the project to date and to project its likely performance through the end of the project period.
2. To recommend measures to be taken by the three governments concerned after the end of the project period.
3. To provide feedback of results to future cooperation project planning and implementation activities so that these future projects can be implemented more effectively.

B. Procedure for the Evaluation

The methodology employed in this evaluation included interviews with JICA executives, USAID executives, representatives of MOA, MOF, ERD of MOF, IC, IARC, BARI, BRRI, EAU, CERDI, Director and faculty members of IPISA, JICA experts, and USAID experts; visits to a number of facilities; and review of documents relating to the project.

III. Findings and Results

A. Project objectives are adequate but implementation of all activities has not yet been attained.

B. The total value of sophisticated equipment and machinery provided by the Japanese side to date totaled about 275,160 thousand yen. The total value of computers and journals provided by the USAID totaled about USD 180,000.

C. The experimental farm (7.8 ha), a greenhouse, two glass-houses, a gas powered generator, an agricultural machinery garage, a farm storage building, a threshing and drying floor, etc. were provided under the JICA program. Laboratory facilities were also remodeled, and equipment installed, including air conditioning equipment and distilled water machine under the JICA program.

D. No maintenance problems have been encountered except with some sophisticated equipment, such as the electron microscope and submergible pump.

E. Participant training to date, includes two officers and six faculty members who have been dispatched for C/P training courses and two faculty members who are candidates for Ph.D. training course in Japan. One faculty member has been accepted for C/P training and further one for doctoral training. On the U.S. side three Ph.D. candidates are in training and two more have been selected. Two short-term participant trainees are also currently in the U.S.

F. The total terms of nine Japanese long-term experts and 26 Japanese short-term experts dispatched in line with specialties described in the R/D totaled 246 PM. The terms of two U.S. long-term experts dispatched to date total 71 PM. A contact survey team (1984), a preliminary survey (1984), two detailed design surveys (1985 and 1989), an implementation survey (1985), a consultation survey (1986), and two technical guidance teams (1988) were dispatched under the JICA program. A design team (1985) and an internal evaluation team (1988) were dispatched under the USAID program.

G. Despite early constraints the equipment and facilities the research program has begun and has produced high quality results relevant to the needs of the nation.

H. The academic program, although presently through affiliation with BAU, has not achieved necessary flexibility for the expected higher quality postgraduate degrees. However, a higher quality of graduate has been produced.

I. The outreach program remains to be developed. A U.S. expert arrived in June 1989 to assist in further development of this program.

J. IFSA was delinked from BARI October 1988 and is now an autonomous institution under the MOA.

K. The relationship of IFSA to other educational research institution has been informal but productive.

L. Tripartite relationships are good and tripartite cooperation is successful and effective.

M. The sustainability of IPSA in terms of intended objectives, is as of now, questionable without continuing support of the GOB and external donor assistance.

IV. Conclusions

A. In spite of some obstacles, the project has been implemented successfully with diligent efforts by personnel concerned in the three countries.

B. For about four years, almost all equipment and facilities have been completed with the exception of some equipment and physical facilities.

C. The research and academic program has produced high quality results. The Outreach program has only commenced.

D. The administrative structure has been established and is now functioning under the MOA.

E. Tripartite cooperation is successful and has become effective in the implementation of this project.

V. Recommendations

A. After termination of the current project, the Phase II of the project should be implemented for the purpose of strengthening postgraduate level education and research, based on the favorable results from this phase of the project.

B. Indispensable needs to continue the Phase II of the project.

1. The establishment of the appropriate administrative structure and immediate recruitment of adequate IPSA faculty and staff by the GOB.

2. The immediate construction of laboratories for experimentation and appropriate library and residential quarters for IPSA faculty and staff.

3. The strengthening of the IPSA project support system for IPSA in Japan.

4. The continuation and strengthening of the successful and effective tripartite cooperation.

C. Cooperation in Phase II

1. The following aspects of cooperation in Phase II of the project appear to be needed.

a. The period of cooperation shall be for five years (1990-1995).

- b. Dispatch of several long-term experts, including team leader, coordinator, and subject matter experts, and dispatch of short-term experts, if necessary, under the JICA. Dispatch of several long-term experts and several short-term experts, if necessary, under the USAID cooperation.
- c. Provision of equipment and machinery from the Japanese side and provision of journals and books from the U.S.A. side.
- d. Counterpart training in Japan and in the U.S.A..

D. The Bangladesh side should take action to complete the following immediately:

- 1. Recruitment of faculty members and staff for IPSA;
- 2. Establishment of administrative structure of IPSA, especially the Ordinance/Act;
- 3. Attainment of academic flexibility and authority as soon as possible;
- 4. Establishment of a maintenance system for equipment and facilities; and
- 5. Early finalization of curriculum and syllabi.

E. Laboratories, library, and residential quarters which are indispensable for the development of IPSA should be constructed to strengthen Phase II of the project.

F. The team believes that the above suggestions for Phase II of the project will contribute to sustainability of IPSA. All these issues are dealt with in greater detail in various sections of this report.

PURPOSE AND SCOPE OF EVALUATION

I. The objectives of the evaluation are to:

- A. Assess the overall performance and impact of the project to date and to project its likely performance through the end of the project period.
- B. Recommend measures to be taken by the three Governments concerned after the end of the project period.
- C. Provide feedback of results to future cooperation project planning and implementation activities so that these future projects can be implemented more effectively.

II. Composition of the Evaluation Team

A tripartite evaluation team composed of representatives from the Japan, U.S.A., and Bangladesh sides will be organized to carry out the evaluation. The Tripartite Evaluation Team is composed of the following members:

The representation from Bangladesh will consist of two members, as follows: a member from Ministry of Agriculture and from the Planning Commission

The representation from Japan will consist of 4 members, as follows: A Team Leader from a University in Japan and members from the Universities of Kyushu and Saga, and a member from JICA.

The representation from the U.S.A. will consist of one member from a university in the U.S.A.

III. Relationship of the Evaluation Team to the Coordination Committee

The Tripartite Evaluation Team is independent of the Coordination Committee. However, a Coordination Committee meeting may be held to discuss the report to be prepared by the Evaluation Team.

I. GOALS AND OBJECTIVES OF INSTITUTE POSTGRADUATE STUDIES IN AGRICULTURE (IPSA)

A. Goals

It is the goal of IPSA to provide intellectual leadership in the technical fields supporting the economic development of Bangladesh through the country's most important sector: Agriculture. IPSA will provide research results, manpower (trained at the postgraduate level), and outreach programs designed to improve the economic well being of the farmer, and to speed up the rural development process. IPSA will proceed towards its goal not by producing large numbers of M.Sc. and Ph.D. graduates but by graduating a limited number of well and appropriately trained advanced degree holders and through focused research and outreach programs of modest size but of high relevance and quality.

B. Objectives

The immediate objective of the project is to "strengthen postgraduate level education and research, thus contributing to the improvement of the practical research system in Bangladesh" (see "Record of Discussions Between the Japanese Implementation Survey Team and the Authorities Concerned of the Government of Bangladesh," July 4, 1985). It is planned that IPSA will serve as a "Centre of Excellence" for postgraduate studies leading to Masters and Ph.D. degrees in all disciplines of crop science and including agricultural extension, agricultural economics, and social sciences (see "Project Proforma").

Sub-objectives deal with all aspects of developing a new multifaceted institution. Thus, construction of the physical infrastructure, acquisition of machinery, equipment, computers, and instruments, development of improved academic programs, improvement of library holdings, establishment of a research program, knowledge/technology transfer by the experts, and shaping of an administrative structure all are receiving attention.

II. EVOLUTION OF THE IPFA PROJECT

A. Background

In Bangladesh, agricultural research and extension organizations have undergone substantive changes in order to adapt to advances in science and technology and to meet the needs of the nation. The demand by these changing institutions for highly skilled technical manpower grew appreciably. Against this background, the Bangladesh College of Agricultural Sciences (BCAS) was established in early 1983 to produce B.S. level graduates with emphasis on preparation for postgraduate programs. To assist in the achievement of the objectives as envisioned at that time, the Government of Bangladesh (GOB) requested the Government of Japan (GOJ) to provide support in the establishment of a modern physical plant for the new BCAS. The GOJ concurred and, by 1983, the BCAS campus had been established with a contribution from the GOJ through the Japan International Cooperation Agency (JICA) of approximately USD 9 million. Before BCAS became functional, however, another agricultural college at Dumki, the Patuakhali Krishi College (FKC), commenced operation. With Bangladesh Agricultural University (BAU), the Bangladesh Agricultural Institute (BAI), and FKC now all offering undergraduate instructions and having the capacity to meet the annual demand for agricultural graduates, BCAS's role in providing additional needed capacity for undergraduate training significantly diminished.

B. Establishment of IPFA

Consequently, the idea was advanced that the BCAS's mission should continue to be one of meeting the demand of changing agricultural institutions for highly skilled technical manpower. While this was initially to be accomplished at the B.Sc. level, in light of new developments sketched out above, it was now proposed that IPFA fulfill this role at the postgraduate level. On October 3, 1983, a meeting was held which was attended by representatives of the Bangladesh Agricultural Research Institute (BARI), BAU, BAI, and the Ministry of Agriculture (MOA). At that meeting it was recommended that the BCAS be transformed into a postgraduate school and named the "Institute of Postgraduate Studies in Agriculture" (IPSA) with the charge to offer courses leading to Masters and Doctoral degrees in various disciplines in agriculture. It was also recommended that the undergraduate program be deleted. The revised organizational structure and objectives received approval of the highest authorities. Later on, BAU accorded affiliation to IPFA for imparting postgraduate education in such departments for which BARI and the Bangladesh Rice Research Institute (IRRI) were authorized earlier to provide thesis research supervision under the auspices of the BAU postgraduate program.

C. Present Status of IPFA

The core staff of IPFA together with senior scientists of BARI and IRRI comprise the faculty of IPFA. As of July 1, 1989, there

are 21 full-time teaching and research staff at IPSA. Six positions are filled at the associate professor level, fourteen at the assistant professor level, and one at the level of lecturer. Three professors from Kyushu University and one from Oregon State University are stationed at IPSA on a full time basis. Complementing this IFSA core faculty, there are over 50 senior scientists of BARI and BRRI who are from time to time actively involved in IFSA, on a part-time basis, in teaching and/or supervision of thesis research.

In March of 1989, IPSA admitted its fourth class of M.Sc. students. Sixty students have been admitted to this class. The students are pursuing M.Sc. (Ag) degrees in eight major disciplines, namely, agronomy, crop botany, entomology, extension education, genetics and plant breeding, horticulture, plant pathology, and soil science. The departments of statistics, agricultural economics, and rural sociology have not yet commenced to offer degree programs.

Curricula and syllabi pertaining to postgraduate studies in agriculture in Bangladesh are currently developed and determined by BAU. Accordingly, the Master's degree in agricultural science is a one year program, involving both theory and practicals.

Postgraduate studies in agriculture should be research oriented. In view of this, IPSA faculty devote a considerable portion of their time to various aspects of agricultural research. Each department has an articulated core research program with short- and long-term objectives.

IPSA owns about 80 ha of land. Physical facilities, including the classrooms and laboratories, administrative and library building, auditorium, workshop, medical center, cafeteria, student dormitories (with space for about 150 students) and some staff housing occupy about 15 ha. An experimental farm with modern equipment and a complete irrigation system is available for field experiments. There are also four teaching laboratories and several interdisciplinary laboratories for faculty research. Equipment, such as two electron microscopes, a gas chromatograph, a spectrophotograph, farm machinery, etc. is available for conducting the teaching and research programs. A computer centre, equipped with five microcomputers, is used by faculty, students, and the administrative and support staff. Development of a library, well stocked with relevant books and up-to-date journals, is underway.

D. Administrative and Donor Relationships

Until October, 1988, administrative responsibility for IPSA resided with BARI. Since then, IPSA is administratively responsible directly to the MOA. In academic matters, the Institute's activities are governed by the statutes and regulations of BAU. The institute has provision for a full-time director, who is assisted by an additional director, two deputy directors, and two assistant directors. Out of these the additional director and two deputy directors are not in position.

IPSA is a government organization and as such receives funds for its operation and developmental activities in the form of Annual Development Plan (ADP) allocations. Revenue expenditures, such as salaries of staff and costs of operation of the Institute's activities, are met from GOB funding. Developmental activities are largely funded through technical assistance by the Government of Japan (GOJ) and the U.S.A.

Development of the infrastructure and physical facilities at IPSA was largely funded by the GOJ under a grant assistance program. During the current phase of development (which formally commenced on July 4, 1985), the GOJ is providing technical assistance for the improvement of IPSA's research and academic programs by developing the experimental facilities. It also provides technical assistance through the dispatch of experts. Currently, three expatriate professors from Kyushu University and a coordinator (from JICA) are assisting IPSA in building academic programs with a strong research base. The GOJ has also committed scholarships for long- and short-term training at Kyushu University and Saga University. Funds are also available to provide the services of Japanese experts to IPSA on a short-term basis in agricultural fields and on various topics as needed. The GOJ technical assistance for the current phase (1985-90) is estimated at about USD 6 million. Thus, funds for both phases total approximately USD 15 million.

The United States Agency for International Development (USAID) participation in the IPSA Project began in mid-1986. USAID's technical assistance includes manpower development (providing five scholarships for Ph.D. level training for IPSA faculty and short-term training for the librarian and for institutional and academic management), assistance in the development of a library through the purchase of books and journals, establishing a computing capability through the acquisition of microcomputers and computer software, and provision of technical services for curriculum planning and the development of extension education. One long-term development specialist (curriculum planning) from Oregon State University has been at IPSA since July 1986. The extension specialist arrived June 25, 1989. The total budget for expert services, participant training, and commodities is approximately USD 2.3 million.

III. TRIPARTITE AND COOPERATIVE RELATIONSHIPS

The IPSA Project involves a joint effort supported by the GOJ, United States Government (USG) and the GOB. Reportedly the only existing project in which tripartite cooperation (as compared to tripartite parallel efforts) is practiced. It may be too early to make a complete assessment of this pioneering arrangement, but a preliminary assessment permits the conclusion that the tripartite cooperation is successful. This conclusion is based on the fact that there is evidence that the IPSA Project, as a result of tripartite cooperation, benefited in ways which it would not have benefited had there been only bipartite cooperation. This is due to budget limitations, various and differing institutional constraints facing donors, and comparative advantage amongst the donors.

Clearly, all projects, regardless of source of funding eventually face budget limitations. By pooling resources from the GOB and two donors in a fully integrated manner, the IPSA Project not only had more funds than if only one donor had been involved, but the funds are committed to a fully integrated program which enhances the effectiveness of the available funds with respect to development objectives.

Tripartite cooperation also made it possible to better cope with institutional constraints and to emphasize comparative advantage. Commodity procurement is a case in point. Import of machinery and equipment from Japan rather than the U.S.A. is more practical under the current institutional setting; but the situation is the reverse when it comes to books and journals (in English) and computer software.

As structured under the IPSA Project, there is considerable exchange with respect to management procedures and philosophy between all cooperating partners. The result is that ideas come from a rich and diverse cultural background, and indications are that this is of benefit to IPSA as it develops its own procedures and philosophy.

Tripartite cooperation will not solve all problems and remove all bottlenecks. Indeed, it may have its own unique drawbacks. For instance, tripartite cooperation, if it is to be successful, will require more discussion and more meetings than bipartite cooperation if concerns and views of all partners are to be taken into account adequately. However, in the case of the IPSA Project whatever drawbacks exist with tripartite cooperation, they appear to be easily outweighed by its advantages.

IV. INPUT SUPPORT ACTIVITIES

A. Commodity Procurement

1. Scientific Equipment and Machinery

One of the essential prerequisites for an effective teaching and research institution is to have the necessary instruments, equipment, machinery, and library. Therefore, one of the first and major steps of the project was to make available these essential commodities. IPSA has as a result secured a considerable amount of sophisticated equipment, including electron microscopes (both transmission and scanning type), gas chromatograph, atomic absorption spectrophotometer, high performance liquid chromatograph, portable photosynthesis system, binoculars connected with TV, fluorescent microscope, shaking culture apparatus, among others, and is in the process of procuring more through a technical assistance project under the GOJ. Equipment already procured has been allocated to the electron microscope laboratory, the microbiology laboratory, the physiology laboratory, the analytical laboratory, the chemistry laboratory, the physics laboratory, the advanced entomology laboratory, and the tissue culture laboratory according to research needs and for maximum utilization by the faculty. Some of this equipment is unique in Bangladesh and some equipment items are among only a few in Bangladesh. A micro computing capability, which exceeds in quantity and quality anything available at other agricultural education institutions, has also been established.

While equipment was allocated to subject matter laboratories, consumable items such as chemicals, photographic film, glassware and stationery are stored in an air-conditioned room which is managed with the support of the Japanese experts. The main purpose for this approach is to prevent these items from rapid deterioration due to high environmental temperature and humidity. Also, this approach simplifies the task of inventory control and replenishing, particularly in the case of consumable items which are not available in Bangladesh.

Farm machinery, such as two tractors, disk plow, tillers, and power sprayers are efficiently and effectively used on the IPSA experimental farm.

Selection of machinery and equipment to be provided by JICA or USAID takes place in close cooperation between the team Leader, the (U.S.) Curriculum Adviser, the Japanese experts, and IPSA faculty. In case of laboratory equipment, the Laboratory Committee plays an important role. Similarly, in the case of computers and computer software, the Computing Policy Committee provides leadership. In spite of this broadly based process the equipment selected was not always the most appropriate from the point of view of the maintenance capacity on the recipient side.

Clearance of equipment through customs, especially clearance of equipment needed on a timely basis by experts, was often significantly delayed due to difficulties in payment of CDST imposed on the equipment and/or increase in the number of banned items. Inevitably, the late arrival of the necessary equipment impeded effective implementation of research activities at IPSA, especially those of short-term experts whose period of stay in Bangladesh was very limited. Though an exceptional case, it should be mentioned that some equipment supplied for the technical cooperation between the Governments reached IPSA about three years after its arrival at the port of Chittagong.

2. Library

The major thrust in library development has been to develop a comprehensive and up-to-date collection of journals in the agricultural sciences. To a substantial degree this was accomplished through technical cooperation with USAID. At present, IPSA has an up-to-date collection of 69 international journal titles and 16 domestic titles. This collection of agricultural journals is currently the most comprehensive and up-to-date collection in Bangladesh.

The IPSA library now has a collection of approximately 2,500 books. A number of them have been acquired in recent years. Over 400 volumes were acquired through USAID technical cooperation. However, IPSA has also acquired books through other sources, such as direct purchase and through arrangements with the Asia Foundation.

Selection of books and journals (as well as development of library policies and procedures) is done by the Library Committee with input from interested faculty. The Committee recommendations are then forwarded to the Director for approval.

B. Physical Facilities

1. Facilities Construction and Remodeling

In the first phase, basic structures - such as an administration building, library, auditorium, faculty building, student laboratories, classrooms, workshop, student dormitories, cafeteria, medical center - were constructed under Japanese grant assistance. They were designed originally for use of undergraduate education programs. During the life of the current technical cooperation project, additional construction included conversion of some of the classrooms into faculty laboratories, building of a greenhouse, two nethouses, an agricultural machinery garage, a farm storage building for crops from experiments, and a threshing and drying floor.

Remodeling of the laboratories involved more than only "brick and mortar." To avoid damage to equipment, transformers and stabilizers were installed. In addition, a gas driven electricity generator was installed to provide a stable supply of electricity.

Each laboratory was equipped with air-conditioning to reduce humidity and dust collection. Distilled water machines were installed since distilled water is essential for experiments, especially for experiments which involve chemical analysis. Finally, the laboratories were organized according to subject matter so that common use of equipment is possible to a substantial extent and so as to minimize the danger of contamination. For example, contamination can be avoided by dedicating a laboratory entirely to microbiology.

2. Development of Land for Experimental Purposes

The major physical facilities development thrust in this phase of the project was, however, not in the construction of buildings but rather in the development of a modern experimental farm. IPFA was originally been endowed with approximately 150 acres of non-contiguous land. All of this land was virgin forest highland. However this land is interspersed with low ricelands, which are privately owned and serve as a major drainage system for the entire area. Twenty-one acres of privately owned land have been purchased, and substantial progress has been made in developing a functioning experiment farm containing 20 acres of experimental plots. A modern irrigation system, complete with a pump station and a water storage pond have been installed. A meteorological station has been operating for over one year. Culverts, internal approach roads, and a two-mile gas pipe line were constructed. A 6,000 foot barbed wire fencing around the experiment farm was erected. A series of drainage projects were completed on the existing fields. The installation of underground electrical wiring from the electrical substation to the machinery garage (in the farm complex) was also completed under the current Technical Cooperation Project.

A "land development meeting" is held each year to allocate land for experiments in the following seasons. While most of the experimental fields are used during the rainy season for growing green manure to improve soil quality and uniformity, many experiments have been conducted during the dry season.

The design for another 20 acres of experimental fields has already been completed, and construction is scheduled to begin in fall of this year.

C. Maintenance of Equipment and Facilities

Facilities and equipment at IPFA are relatively new; hence, normal wear and tear which comes with aging equipment has been minimal. Also, a considerable effort has been made to train users of facilities and equipment to operate equipment in a manner and in an environment which minimizes wear and tear. Some operators of equipment have also been trained to make minor repairs and adjustments. A gas-powered generator is regularly used to provide electricity for the operation of highly sophisticated equipment, such as the electron microscopes. Nevertheless, equipment will not always remain free of problems. In part, such problems will

arise from inevitable failure of parts due to normal wear and tear or flawed construction. Unfortunately, other failures or deterioration are due to careless operation or neglect of regular maintenance by the users. The need for regular maintenance of even relatively simple equipment (e.g., weekly cleaning of water distillers, keeping lenses of photographic equipment and microscopes clean, regular charging of batteries which are built into some of the equipment, periodic operation of the electron microscopes, etc.) must be reiterated again and again to researchers to assure proper care of equipment. This matter cannot be over-emphasized, as repairs or replacement are not only costly but often times also very difficult to accomplish due to absence of spare parts or expertise in Bangladesh. The issue of continued maintenance and development of a repair capability is, therefore, an important one and will be further discussed below.

D. Participant Training

Participant training activities undertaken under this project can be grouped into two categories, namely, long-term (degree) training overseas, and short-term training overseas.

As regards long-term training, two IFSA faculty members are currently in Japan for the purpose of pursuing doctoral degree programs; an additional three faculty members are in the U.S.A. for the same purpose. Further, one IFSA faculty member has been identified for doctoral studies in Japan, and two candidates have recently been selected for doctoral studies in the U.S.A. At the beginning of the project it was suggested that JICA propose to the MDE of the GOJ that at least one Ph.D. scholarship offer be reserved for any project type (activity) in Bangladesh, including IFSA. Such special reservation for Bangladesh was approved in 1988 and will be utilized beginning with 1989.

With respect to short-term participant training overseas, three faculty members have recently completed short-term training (lasting from nine to eleven months) in Japan. Three additional faculty members have begun their short-term training, two in March and one in June of 1989. One faculty member will go for training in November of 1989. The former project head and one officer also have received specialized training in Japan in 1986 and 1987, respectively. Additionally, one officer will be identified for short-term training in Japan, and one officer and the librarian have been identified for specialized short-term training in the U.S.A. All of the (three) latter individuals are expected to begin their training programs in summer or fall of 1989.

Following the separation of IFSA from BARI, the Director, IFSA, was authorized to chair the selection committee for identification of the candidates for participant training and further, was given authority to issue the Government Order (GO) for participant training. This delegation of authority to the Director greatly facilitated the procedure for selection of participant trainees. Nevertheless, many problems remain with respect to timely

selection of qualified candidates for participant training.

E. Provision of Experts

Selection of experts is based on IFSA needs, on the terms specified in the R/D and the USAID/OSU Contract, respectively, and upon the professional qualifications of available experts. The (Japanese) Team Leader and (U.S.) Curriculum Adviser work closely with Kyushu University and OSU in the initial recruitment of appropriate scientists. Candidates are then submitted to the IPSA Selection Committee. Based upon the Committee's recommendations, the Director makes his recommendations to the MOA Selection Committee. (Note: The MOA Selection Committee has recently been dissolved. Therefore, the procedure will be slightly different in the future. See below.)

In the master plan of the R/D for the project it is recommended that a minimum of two long-term Japanese experts from six fields were to be at IPSA at any one time for the purpose of transfer of knowledge and technology to CPs and to conduct the cooperative research. Further, short-term senior experts were to be dispatched from the corresponding fields shortly after the arrival of the long-term experts to develop jointly with the CPs and the long-term experts appropriate research programs. Unfortunately, readily available scientists at the Kyushu and Saga Universities to serve as long-term experts could not always be dispatched. The dispatch of senior experts was often delayed for more than a half a year. However, most of the experts completed their assignments successfully and contributed significantly to IPSA's research program. Their activities are summarized in a separate document (Annex 4 and Annex 5, Table 5.1).

A reflection upon the number and types of experts planned and dispatched suggests that the initial plan for dispatch of experts may have underestimated the needs, particularly the needs for long-term advisers. There are currently eight active departments at IPSA. Additional departments, namely, statistics, agricultural economics, and rural sociology are approved for implementation. Each of these departments is charged with responsibilities in (degree oriented) education, research, and outreach. To assist in the development of this rather extensive program, an average of only two long-term advisers was planned through JICA and one through USAID. There was no provision for long-term expertise for the establishment and continuing management of the experimental farm.

The recent abolition of the MOA Selection Committee is expected to lead to a more efficient and timely clearance of experts. However, this streamlining of the selection process may not solve all the problems which have plagued the project in the area of clearance of experts. This issue consumed an inordinate amount of time on the part of all parties concerned and resulted in significant delays in project implementation.

F. Provision of Teams

A number of review, technical guidance, and design teams have been dispatched. In the planning stage, the fundamental cooperation scheme for the project was worked out based on recommendations of preliminary surveys. During the implementation stage, necessary support and guidance to cope with major implementation problems were provided through the dispatch of teams. Thus, dispatch of teams has played an important role in the successful implementation of the project. A summary of the dispatch of teams to the IPFA Project is provided in Annex Tables 5.1 and 5.2.

As early as April, 1983, JICA sent a preliminary survey team for the BCAS Technical Cooperation Project. However, the BCAS Project was transformed into the IPFA Project by the GOB in late 1983. Accordingly, in April of 1984, the GOB requested GOJ cooperation in the IPFA Project instead of the BCAS Project. In response to this request, JICA dispatched a contact mission and a Preliminary Survey Team consecutively to carefully examine and evaluate the content of the changed request of the GOB and to study the possibility of cooperation from Japan. It was concluded that, under certain conditions, the project was feasible. Possible participation of USAID in this project was also discussed at this stage.

Since IPFA had no experimental farm at that time, a Detailed Design Team for experimental farm development was dispatched to Bangladesh, and further discussions about possible cooperation were held.

In April of 1985, USAID authorized an evaluation of the potential and alternative approaches for tripartite cooperation in the IPFA Project.

In July of 1985, an Implementation Survey Team was dispatched to Bangladesh from Japan to further exchange views on contents and ways of cooperation. The Record of Discussion (R/D) was signed on July 4, 1985. The signing of the R/D signaled the beginning of a five-year technical cooperation project between the GOB and the GOJ for the purpose of developing IPFA. Also at that time, notes were exchanged between JICA and USAID regarding potential future cooperation in the IPFA Project.

In September of 1986, a Consultation Survey Team was dispatched to develop definitive plans for implementation of the project. As a result of discussions by the team, a Tentative Schedule for Implementation (TSI) was agreed upon. This Team also endeavored to expedite the approval of the Project Proforma (PP).

Two and a half years after signing of the R/D, the Technical Guidance Team was dispatched to review progress and achievements and to discuss various issues regarding implementation of the project. The Team attended the Coordination Committee Meeting held in January of 1988. At that meeting, the basic policy for autonomy of IPFA was, among other issues, discussed and decided.

In February, 1988, USAID fielded a small evaluation team to assess and provide guidance to the USAID component of the tripartite cooperation effort in the IFSA Project.

In December of 1988, the Technical Guidance Team came for the second time to discuss and assist in the resolution of various issues. Before the team's arrival, IFSA was separated from BARI and a Management Committee for IFSA had been established in accordance with the decision made at the last Coordination Committee meeting mentioned above. While these events took place prior to the arrival of the Technical Guidance Team, its pending arrival undoubtedly contributed to their implementation at that particular time after action had been awaited for nearly one year (i.e., since the Coordination Committee meeting in January, 1988).

For further development of the experimental farm, a Detailed Design Team was dispatched to Bangladesh from Japan in February of 1989.

V. PROGRAM ACTIVITIES AND ACCOMPLISHMENTS

A. The Research Program

IFSA has an explicit charge to conduct basic and applied research. This research program is of particular importance as IPFA is a postgraduate institution and a high quality postgraduate training and education program cannot be established and maintained without significant research activity, both on the part of the faculty as well as the students. Accordingly, a substantial research effort is going on at IFSA.

The main research themes in each department are as follows (for more details see Separately Provided Documents):

Agricultural Extension Education

1. Rapid Rural Assessment (RRA) of constraints to agricultural development in selected villages
2. Effectiveness of alternative extension methods for removing constraints to agricultural development

Agronomy

1. Ecophysiological aspects of crop yield
2. Manipulation of soil and physical environment for increasing crop yield

Crop Botany

1. Varietal improvement of Katrol (Momordica dioica)
2. Varietal improvement of Fotal (Trichosanthes dioica)

Entomology

1. Ecological studies of cowpea borers and evaluation of yield loss of cowpea due to cowpea borers
2. Role of honey bee in seed production

Genetics and Plant Breeding

1. Screening of Bangladeshi rice varieties for endosperm storage protein by SDS-PAGE analysis
2. Treatment of rice varieties with MNU (N-Methyl-N-Nitroso-Urea)

Horticulture

1. Regional trials of lablab beans
2. Rainy season performance of 15 F1 tomatoes obtained by crossing wild and cultivated ones during the winter of 1989

Plant Pathology

1. Study of nematode parasites on rice, sugarcane and groundnut
2. Studies on Sclerotium spp.

Soil Science

1. Effects of different inoculum on the growth and nitrogen fixing ability of cowpea
2. Physical properties of soils of main upland crop areas in Bangladesh

Planning of research at IPSA is formalized to the extent that all research plans are discussed with and reviewed by a meeting of the IPSA Teachers' (Scientists') Council before experiments are commenced. Also, regular reviews of research findings are being instituted. These are attended by all IPSA faculty as well as by scientists from other research and educational institutions. The first such review was held in June of 1987. The next review was held in June, 1989. It is the intent to have annual research reviews thereafter.

Research results are also being disseminated to other scientists and extension teachers through publication and through presentations at professional meetings. A number of these publications and presentations are joint between Bangladesh and Japanese scientists, and indications are that an impact on the type and quality of agricultural research in Bangladesh has already been achieved.

In order to provide and enhance international dissemination of IPSA research results and to provide opportunity for international exposure to IPSA staff, travel grants for participation in professional meetings have been provided by JICA and USAID. A faculty member of the Agronomy Department was awarded such a grant and has attended the International Mungbean Seminar held in Bangkok in 1987.

JICA and USAID have provided a substantial amount of sophisticated equipment to IPSA for the conduct of high-level research work. Benefits from this equipment can only accrue if the equipment is properly used and properly maintained. Accordingly, training programs in the use and maintenance of the available equipment were implemented. Expatriates played an important role in the following training programs:

1. A course was held on the operation and use of the electron microscopes.
2. Several short-courses were held to train faculty in the use of various types of sophisticated laboratory equipment.
3. A substantial amount of one-to-one training in the use of specialized laboratory equipment has taken place.
4. Short-courses on the use of micro-computers were conducted, including five courses on Wordstar, two on Lotus, and one on MStat.

In addition to skills in the use of laboratory and field equipment, it is necessary that the scientist possess other skills in order to reach the full potential for high-level research. Among other things, this includes mastering of

1. approach to problem solving;
2. search for and reading of references;
3. design and implementation of experiments;
4. interpretation of results obtained;
5. development of conclusions; and
6. writing of research report and research paper.

This knowledge, to the extent the CPs did not already have it, was transferred through cooperative research with experts at IPBA (see Annex 4), at Kyushu University, at Saga University, at OSU, and at the University of Michigan. The major challenge to the experts is not to increase the quantity of research at IPBA, but it is rather to enhance its quality.

Research activity and performance has gradually increased but has still not reached the existing potential. The biggest obstacle to reaching this potential is shortage of faculty and shortage of their time allocated to research. At present, no more than three, in most cases only two, and in some cases only one faculty member is assigned to each department. As a result, the majority of faculty members' time is taken up with preparation and delivery of lectures and with administrative obligations. As a result, very little time remains for research. Moreover, most of the faculty do not reside on the IPBA campus. This means that they have to meet the busses for their respective residences at the end of the official office hours (2 p.m.), and very few faculty are, consequently, in a position to work beyond that time. This environment is far from conducive for implementation of an active and productive research program. To remove the major bottlenecks, recruitment of faculty and construction of faculty residences for IPBA faculty is essential.

While most experts were effective in their technology transfer activities, this was not always the case. Ineffective technology transfer occurred in the following cases:

1. Communication and mutual understanding of objectives between the experts and the counterparts were insufficient prior to dispatch of the expert;
2. There was a gap in research interests of the expert and the counterparts;
3. Knowledge and technology transfer was carried out with the aid of an interpreter whose knowledge of the subject matter was insufficient; and
4. Extremely short tenure (say about two weeks) of short-term experts was rather insufficient for transfer of technology

Many field experiments were carried out on the IPBA farm. The farm is equipped with a modern irrigation system and has a basic set of machinery and equipment. The existing modern irrigation system made it possible to grow crops without difficulty even during the dry season. However, due to lack of uniformity of the soil on the experimental farm, there were some difficulties in the assessment of the experimental results. Efforts to achieve greater uniformity of soil are continuing.

B. The Academic Program

i. General

As far as academic programs are concerned, IPSA remains under the jurisdiction of BAU. As an affiliated institution to BAU and given the way BAU views its affiliated institutions, IPSA has to date had literally no role to play in the shaping of the academic program. IPSA has virtually no voice in setting admissions standards and formation of the curriculum. IPSA is not allowed participation in the Academic Council, nor is it a regular member to various academic committees, such as the Board of Studies, the Examination Committee, etc. While students are taught and their thesis research is supervised at IPSA, they have to move to BAU for examinations, and these examinations are composed, administered and evaluated by professors from BAU exclusively. To date, all requests to BAU for flexibility in academic matters e.g., examination centre at IPSA, heightened admissions standards, more autonomy in admission, and changes in the curriculum are still under consideration.

The IPSA faculty, under the leadership of the IPSA Curriculum Committee, has developed a draft of a revised curriculum. It was informally submitted for review and comments to a number of individuals and institutions prior to April 1988. In April of 1988 it was formally submitted to BAU. In June of the same year a joint meeting of BAU and IPSA faculty was held, but no official response has been received. Informal response suggests that, on grounds other than academic soundness and quality, BAU does not appear to be inclined to grant IPSA permission to implement the proposed new program. This situation may be changing, as the Dean of the Faculty of Agriculture has invited IPSA to submit one hundred copies of the proposed curriculum to him for distribution to his faculty.

At the recommendation of the Coordination Committee (at its meeting on December 27, 1988), the curriculum proposed by the IPSA faculty has also been widely distributed for review and comments. These reviews are currently being received and will be analyzed and summarized as a basis for future action.

Similarly, at the request of the Management Committee, IPSA faculty is now working on the development of an Act, Statutes, and Ordinances for IPSA. A draft of an Act for IPSA is currently under discussion by the IPSA faculty. If and when the Act and associated Ordinances and Statutes will be approved in a form close to their present draft form, IPSA would have the opportunity to make significant progress in the development and improvement of its academic program.

According to the R/D, it is the responsibility of the Japanese experts to provide technical advise for the planning and implementation of research. In addition, responsibilities include rendering of advise for improvement of teaching and advising on

methods for student research and experimental activities. Unfortunately, the second set of responsibilities has to date been discharged in a very limited way, as the experts had little time left after pursuing their responsibilities in the area of advising on and cooperating in faculty research. Yet, there appears to be good potential for making contributions to improvement of teaching through preparation of up-to-date teaching materials.

2. Enrollment and Related Factors

To date IPFA has admitted four batches of students. The first group admitted included 87 students, the second 109, the third 160, and the most recently admitted group included 60 (see Table 5.3, Annex 5). The reduction of admissions to 60 students was a deliberate action. If IPFA is to develop into an Institute which provides well and relevantly trained agriculturalists at the postgraduate level, it will need to monitor a number of factors carefully. Two of these are the quality of students admitted as well as the number of students. Although IPFA has excellent facilities for postgraduate teaching and research, these facilities will lose their effectiveness if they become overloaded with too many students and researchers.

In view of the above, it has been decided that IPFA limit its annual intake of postgraduate students to 60. As soon as a Ph.D. program can be established (which may be as early as 1990) admission will be approximately 50 M.Sc. students, with the rest being Ph.D. students. Furthermore, of the total seats available, up to 40 will be reserved for qualified candidates who are in-service students. Accordingly, IPFA has recently admitted 60 M.Sc. students, of whom approximately 20 are in-service students (Annex 5, Table 5.3.).

From Annex 5, Tables 5.4, 5.5, and 5.6 it can be seen that the IPFA faculty is providing an increasing amount of teaching and thesis research supervision over time from within its own faculty. Whereas in earlier years a substantial amount of teaching and the majority of thesis supervision was done by off-campus scientists. Factors contributing to this trend are lower student numbers, more careful admissions planning with respect to availability of IPFA teachers and advisers, and increasing maturity of IPFA faculty. The result will be increased opportunity for quality control without eliminating the positive influence of participation of off-campus teachers and scientists in IPFA activities.

3. Scholarships and Assistantships

It is essential that IPFA strive to attract the most capable and dedicated students. One factor which will assist in accomplishing this is the availability of scholarships and assistantships. In fact, it is proposed that all students admitted to IPFA will be provided with a scholarship or assistantship through competitive selection.

For the batch of students who arrived in June of 1989, 10 scholarships specifically for IPSA are already available from USAID. Additional (approximately 25-35) scholarships can be provided through re-programming of GOB funds available to IPSA, albeit in lesser amounts of bursery. A few NCST fellowships and BARC/USAID scholarships are available on an open competition basis, tenable at any educational/research institutions. However, IPSA has some budget for general stipends for 100 students for 12 months each. If the student intake is limited to 60 (as per decision of the Coordination Committee), this fund could be re-programmed to create between 25-35 scholarships of 18 months duration (similar to the BARC/USAID scholarships in duration but not in amount and other benefits). Any remainder positions could be filled through creation of a requisite number of research assistantships. The Coordination Committee recommended that the Director prepare a budget to show that granting of additional scholarships and assistantships is feasible and to present such budget to the Management Committee for approval.

C. The Outreach Program

Of the three general functions, namely, postgraduate degree training, research, and outreach, which constitute IPSA's basic responsibilities, the latter of the three functions is to date least developed. While outreach activities in the sense of training other scientists in the use of some equipment, seminars with and for other scientists, professional conferences, and the like have taken place, an outreach program in the full sense of the word has not yet been developed.

At its present stage of development, IPSA has limited capability to implement an outreach program in a formal and well planned manner. The most serious bottleneck to implementation of a more extensive outreach program is shortage of faculty. After removal of this bottleneck, IPSA will be in a position to make more formal plans for implementation of an outreach program.

While a formal outreach program in the fullest sense of the word has not yet been developed, a number of outreach programs have, nevertheless, been taking place. For instance, in cooperation with BRRI and BARI, IPSA hosted the Annual Conference of the Bangladesh Society of Agronomy on June 3-4, 1989. The conference was organized under the leadership of IPSA faculty. Another conference, namely, the annual meeting of the Plant Breeding and Genetics Society of Bangladesh is being organized under the leadership of IPSA in cooperation with BARI and BRRI.

D. Status of Institution Development

The question of sustainability of IPSA will be addressed in three parts, namely (a) institutionalization, (b) funding, and (c) demand for its "products."

1. Institutionalization

The process of institutionalization is progressing well at IPSA. An institutional identity is developing, commonly accepted goals and policies are being articulated, a faculty governance system and administrative structure are evolving, etc. However, much remains to be done, not because progress to date has been insufficient but because the task at hand is immense. Important steps to be taken include the following:

- a. Immediate recruitment of qualified faculty and staff for all vacant posts at IPSA;
- b. Establishment of an administrative structure based on an Act, Ordinance, and Statutes suitable for an independent institution with responsibilities in agricultural research, postgraduate education, and outreach;
- c. Continuation of efforts to raise the research and teaching abilities of the faculty members;
- d. Establishment of formal and effective linkages with BARI, BIRRI, and other related institutions to improve teaching and research;
- e. Construction of residential housing to eliminate wasted travel time and to permit faculty and students to spend more time in laboratories, in the library, and in the experimental fields;
- f. Establishment of a maintenance and repair system for its scientific instruments, equipment, and machinery; and above all; and
- g. Development and implementation of a strong commitment by the GOB to permit and enable IPSA to develop into the kind of institution which it was intended to be come and for which it has the potential. Such commitment involves, among other things, allocation and protection of an adequate budget and support in the creation of an appropriate administrative structure.

It would probably incorrect to state that this institutionalization process could not be sustained without continuation of the technical cooperation project; but it would likely be difficult to sustain and perhaps the progress would be unacceptably slow. The insights, different perspectives, and independence of experienced expatriate experts will, therefore, continue to be desirable and necessary for at least another project period to assure sustainability.

2. Funding

For IPSA to develop into a sustainable effective centre of excellence there will have to be funding at levels which are not likely to be made available by the GOB. This is particularly true for construction, including the very essential residential quarters for faculty and staff. Therefore, project extension and also grant or other assistance for another project period (1990-95) are very necessary. Beyond that period, The GOB should be in a

position to provide sustainable funding for maintenance, operation, and replacement, although the difficulties of continuing funding of educational and research institutions in a developing country are not underestimated.

3. Demand for Agricultural Professionals

All indications are that the effective demand for university agricultural graduates at the bachelor's level is currently satisfied by existing institutions (see Eisgruber, Agricultural Manpower Needs Assessment). While this could change significantly if certain government policies are changed (e.g., requiring a B.Sc. for extension agents where now only a diploma is required), such changes are not likely to come about quickly.

At the masters level, demand and supply appear to be reasonably matched at present. With efforts by research institutes to upgrade their staff with relatively more postgraduate trained staff, with very few postgraduate trained staff in the extension service, with overseas training becoming increasingly expensive, and with M.Sc. enrollment at BAU at full capacity, the demand for M.Sc. graduates from IPFA is seen to be increasing. This is particularly true as IPFA expects to develop an academic program which will eliminate what the University Grants Commission has called the "mismatch between the need for agricultural research and field work and the currently available agricultural education and training."

During its entire history, Bangladesh higher agricultural education has produced very few professionals of Ph.D. level. While there are currently several dozen students registered in the Ph.D. program at BAU, this is not a new phenomenon and should not be interpreted to lead to large numbers of Ph.D. graduates. Students simply do not finish their programs due to lack of funding, lack of facilities, and lack of a well-defined program. Hence, this - for all practical purposes - no source of supply of Ph.D.'s to agricultural research and higher education in Bangladesh. This coupled with the need to have a relatively higher proportion of Ph.D.s at agricultural research and education institutions, assures sustainability of demand for IPFA graduates.

E. The Administrative Structure of IPFA

The development of the administrative structure has, in part, been shaped by decisions taken by the MOA. This was necessary in order to resolve important issues which are beyond the technical cooperation project level. To permit this interface between project level decision making and resolution of issues beyond that level, a Coordination Committee was established as per provision in the R/D. This Committee is composed of representatives of the GOB, JICA and USAID, and it is chaired by the Secretary of Agriculture.

Tripartite Meetings, chaired by the "project head" (previously

the D.G., BARI, now the Director, IPSA), address issues at the project level and are held at least before each Coordination Committee meeting.

As per a decision by the Coordination Committee, IPSA has been de-linked from BARI effective October 3, 1988, and is now an autonomous institution under the MOA and has its own Management Committee. This Management Committee, chaired by the Secretary of Agriculture, is to function in a manner similar to that of a syndicate or board of governors of universities. The Management Committee meets on a bi-monthly basis to make and review policy guidelines and to pass on all other aspects of IPSA. The first meeting of the Management Committee was held in December, 1988. The second meeting was held July 9, 1989. A functioning administrative structure for the growing Institute has evolved over the years.

The Team Leader (of the Technical Cooperation Team) is in close communication with the Director and/or Project Head and consults with him whenever necessary about various issues relating to the project implementation.

The granting of independent status of IPSA has provided some of the needed flexibilities to permit IPSA to move forward. At the same time, the need for the establishment of administrative structure, policy and operations guidelines has created additional demands on the administrative officers and faculty of IPSA. One example of the additional demands on time is the urgent need to develop an act, statutes and ordinances for IPSA. This process has been going on for several months and has been given time on a high priority basis, as many of the important activities and decisions hinge upon the existence of such validated documents. Another example is the necessity to determine, jointly with BARI, which of the faculty plan and can remain at IPSA and which ones plan and can return to BARI. This time consuming process, which is also of significant personal importance to the individuals, was completed in a timely manner several months ago.

F. IPSA Project Budget

The first phase of the project was started from 1980-81 for a period of five years, up to 1984-85 as BCAS. But the Japanese Grant in Aid assistance was made available from 1981-82 for a period of two years, e.g. 1981-82 and 1982-83. BCAS was then converted to IPSA through an administrative decision by MOA. The present phase was started from July 1985 for a period of five years (1985-86 to 1989-90).

Technical cooperation assistance from Japan for the present phase started from July 1985. USAID was formally involved in this program from April 1986. The following table indicates the approximate financial contribution made available by Japan, U.S.A., and GOB during both the first and second phases. However, this tripartite evaluation is concerned only with the contribution made under the Technical Assistance Programme during the current phase.

Table 1. Grant and technical assistance expenditures in support of BCAS and IFSA, 1980-81 to 1989-90.

Source	First phase 80-81 to 84-85 (Grant-in-aid assistance)	Second phase '85-86 to 89-90 (Technical cooper- ation assistance)	Total assistance, 1980-81 to 1989-90
Japan	1888.99 Tk* (2.0 Yen**)	1660.00 Tk (0.87 Yen)	3548.99 Tk (2.87 Yen)
U.S.A.	-----	755.20 Tk (2.36 USD***)	755.20 Tk (2.36 USD)
GOB****	713.13 Tk	1590.82 Tk	2303.95 Tk
Total	2602.12 Tk	4006.02 Tk	6606.44 Tk

* Taka in lakh

** Yen in billions

*** U.S. Dollars in millions

**** It should be noted that the allocation of GOB both for the first and second phase were shown per project provision but the releases were approximately 455.00 and 822.00, for the first and second phase, respectively.

VI. CONSTRAINTS TO ATTAINMENT OF PLANNED ACCOMPLISHMENTS

A. Academic Flexibility and Authority

Although IPISA has a significant research and a more limited outreach mandate, its major mandate is that of postgraduate training at the M.Sc. and Ph.D. level. This major mandate can, however, not be implemented unless IPISA is granted much more flexibility and authority in academic matters than it is now afforded with its affiliated status to BAU.

IPISA faculty have prepared a new curriculum which can be implemented quickly, provided permission to do so is granted. Until recently there has been little indication from BAU that such permission will be forthcoming anytime soon. More recently, some indications are that BAU might be willing to at least enter into discussion. This alternative is being pursued.

Even if such permission were to be forthcoming soon, the academic flexibility and authority needed for implementing an improved academic program has a much broader basis than only the curriculum. What is needed is the capability for self-determination in announcing programs, in setting admissions standards, in implementing a curriculum, in setting the examination structure and in administering examinations, and in certifying students for degrees. The IPISA faculty has developed a document which sets forth the nature of flexibilities needed in order to achieve its academic program goals.

The afore described authorization can be achieved in at least three ways. First, BAU may grant such authority within its statutes and ordinances. Second, IPISA may seek affiliation with a university which is willing to grant such authority. Third, IPISA may become an autonomous institution with its own Act, Statutes, and Ordinances.

Several areas continue to need attention with respect to the development of IPISA's academic program to international standards. Foremost amongst these is the finalization and implementation of a new curriculum. Other aspects include admissions standards and procedures, testing procedures, the role of research in the training process, etc.

One of the major determinants of how IPISA can proceed in this regard will depend on what the nature of the Act will eventually be and/or how much flexibility and independent authority BAU is willing to grant IPISA as long as IPISA is affiliated with BAU. Both alternatives will be pursued.

Faculty, administration, and expatriate advisers have spent a considerable amount of time in the development of an Act (and associated Ordinances and Statutes) for IPISA. This document is an essential document for future development of IPISA. Its development is no small matter, as it will have considerable impact on what IPISA will and will not be able to do in the

future. The task is complicated by the fact that IPSA is administratively responsible to the MOA, but is in academic issues reporting to the MOE (through BAU). Much remains to be done to clarify the many issues involved and to achieve ratification of appropriate documents whether an act, ordinance, statute.

B. Recruitment of Faculty and Staff

One of the most urgent issues for IPSA is immediate recruitment of both teaching and administrative staff. A large number of these positions continue to be vacant. Yet, considering the number of essential tasks to be accomplished along with the training needs of personnel (including overseas training), the need for more faculty and staff is all too obvious.

To put the magnitude of the problem into perspective, it should be pointed out that at present only about 25 percent of the administrative key posts, only 54 percent of the faculty positions are staffed. Only the Director post has been filled. Yet to be filled are one additional director and two deputy directors. As a whole, IPSA has filled one hundred eight out of two hundred seven sanctioned posts (or approximately 52 percent). Clearly, this understaffed situation is hampering the development of IPSA to its full potential despite the extraordinary efforts made by the presently existing IPSA faculty and staff. The Management Committee had given IPSA authority to fill all posts. The management committee at its July 9, 1989 meeting has taken this issue seriously and has again given direction to the Director of IPSA to fill all posts immediately.

C. Clearance of Experts

The IPSA technical cooperation project has encountered difficulties in clearing experts, both on the Japanese as well as the U.S.A. side. While this may be due to several factors, one bottleneck appears to be the fact that the technical capabilities and suitability of experts were in the past evaluated by two different selection committees. One of these selection committees was at IPSA, the other at the MOA level. It is clear that the two selection committees approached the selection process from different and sometimes conflicting reference and information levels. This caused difficulties, unnecessary efforts, frustration, and significant delays.

The recent dissolution of the MOA Selection Committee will definitely streamline and, therefore, shorten the clearance process, but is not likely to eliminate all problems. For instance, one of the reasons for delays, at least early in the project implementation stage, was that some positions were not shown in the Project Proforma. This is in particular true for the U.S. side, but not entirely so. For example, approval of Japanese expert was initially denied by the Government of Bangladesh, based on absence of that particular position in the PP, basically an internal GOB document. Yet, the K/D, a record of agreement

between the GOB and the GOJ clearly permits the dispatch of the type of expert proposed for the purpose of enabling or facilitating project implementation. To work out such discrepancies in documents is frustrating, time consuming, and detrimental to project implementation.

The team has been informed that the FP has been recommended by PC for approval by ECNEC. Efforts should be made to get the PP approved by the ECNEC at the earliest date.

Finally, the involvement of numerous ministries (a total of five) in the clearance process makes the process of approving experts enormously slow and complicated.

D. Lack of Residential Quarters for Staff

Of primary importance is the construction of an adequate number of residential quarters with ancillary facilities for IPSA staff and faculty.

A Grant Assistance proposal to develop these facilities has already been submitted to the GOJ and is now under active consideration for funding after April 1990. In case Japanese Grant Assistance does not become available, alternative measures need to be taken to make funds available from GOB sources or other donors, as this activity is considered crucial to making the Institute more effective.

The critical need for residential housing at IPSA is not disputed by anyone. Efforts towards identifying funds for the construction of the needed buildings have led to the clear conclusion that it is not likely that, in the near future, it will be possible to identify a single funding source. However, it may be possible to piece together funding to meet a large proportion of the needs from several sources. These sources are the GOB, Japanese Grant Aid and U.S. PL 480 funds. The GOB and Japanese Grant Aid are already being pursued. The possibility of U.S. PL 480 funds for construction of residential quarters at IPSA has only recently been identified.

E. Libraries, Laboratories and Other Facilities

Although the Institute is universally viewed as having well equipped laboratories, a modern experimental farm, and a library well stocked with up-to-date collection of journals, certain activities remain to be done and certain needs persist. Specifically, the experimental farm is lacking in some types of field equipment and machinery. The student laboratories are also under-equipped, and common and frequently used equipment should be procured for these laboratories. Current technical assistance does not cover these items, and they are also not allowed under the Japanese Grant Assistance. These items should, therefore, be considered for the next phase of technical cooperation.

Needless to say, an excellent library is important for postgraduate studies, but the present situation is unsuitable. To date, USAID has provided journals and books. IPSA has a plan to expand its journal and book collection with the strong cooperation of USAID and the Asian Foundation. IPSA already has one library but its floor does not have sufficient strength to support expansion. The library was originally designed as a smaller library for an agricultural college. Therefore, it is indispensable for further development of the research and academic program to construct an appropriate library structure.

Student research laboratories are also essential to postgraduate studies. At present, there are four laboratories in IPSA to serve eight IPSA departments. Two departments utilize together one laboratory on the subject matter basis. This arrangement is not suitable for postgraduate studies because it is not efficient, there is inadequate space and there is a danger of contamination. Therefore, it is indispensable for the further development of the academic program to construct an additional four laboratories for student research.

F. Maintenance of Equipment and Machinery

Although much has been done to assure continuously functioning equipment and machinery, much more needs to be done to prepare for the future. Complex and sophisticated equipment cannot, even with the best of care, be kept free of problems and free of breakdown. When breakdowns of sophisticated equipment occurs, neither the technical expertise nor necessary spare parts may be available. Indeed, spare parts may not even be imported under normal circumstances. Funds on the recipient side may also be lacking to pay either for repair services or parts. A minor problem is that sometimes English manuals for maintenance and repair of equipment are not available.

Maintenance of equipment as well as irrigation and drainage facilities on the experimental farm poses a somewhat different problem. Here, inadequately educated and trained labor as well as shortage of labor present a problem. However, availability of some of the necessary spare parts for farm equipment can not be neglected.

As already mentioned, maintenance has not been a major problem to date. However, unless steps are taken now to make provisions for maintenance and repairs in the future, a major problem will without question develop. A fundamental question arises also with respect to supply of equipment in the future. The Management Committee should determine whether a revised policy should be established which dictates that only equipment and instrumentation should be provided which can demonstrably be properly maintained and repaired by the recipient side.

Although maintenance of buildings, machinery, and scientific equipment has so far not been a serious problem for IPSA, it is most important that plans be made now for proper maintenance and

in particular proper repair facilities. This matter is under discussion by various Bangladeshi organizations as well as several donors. The possibility of establishing a centralized facility is, among other alternatives, being considered. However, there is no illusion regarding the difficulty of establishing and institutionalizing this most crucial facility.

G. Farm and Land Development

IPSA has about 46 acres of privately owned pocket lands (mainly low lands used for growing rice) within the proposed campus limits. These lands also serve as the main drainage channels for the campus and surrounding locality.

As long as there is privately owned pocket land within the IPBA campus, the following activities will continue to suffer viz.:

1. A security wall cannot be constructed and access of animals and private persons cannot be checked leaving open the protection of valuable government property (including highly sophisticated equipment) and on-going experiments.
2. Residential quarters and other construction/infrastructure development will be adversely affected.
3. An effective overall drainage system cannot be constructed.
4. A master plan of land/farm development for the entire campus which will include leveling, blocking, construction of internal roads and culverts, installation of drainage and irrigation systems for experimental areas, creation of a surface water reservoir for recycling irrigation water, etc., cannot be undertaken.

A proposal for acquisition of the pocket land was approved by the Land Ministry in 1985 but it now stands abated because the fund required (92.00 lakh taka) could not be placed with the local authorities within the specified time limit of one year.

However, IPSA authorities, under authorization from the Ministry, was able to procure by direct purchase nearly 30 acres of such land. The remainder needs to be brought under the control of IPSA immediately for reasons stated above.

Direct purchase efforts by IPSA have failed for the remaining land, leaving acquisition through government order as the only option open.

It has been almost nine years since ICAS/IPSA was established in the present location and the acquisition of these pocket lands is yet to be completed. Acquisition of these pocket lands is a prerequisite to any land development plan. IPSA itself envisions a total land/farm development plan for the entire campus (of approximately 200 acres, including the pocket lands) which

includes leveling, blocking, drainage, internal roads, irrigation system for the experimental areas, creation of a surface water reservoir, etc.

Functional structures essential for the development of IPSA to its full potential include a library, farm office, field laboratory, threshing-drying floors, etc. Other construction needed includes more greenhouses, glasshouses, nethouses, etc.

A security (boundary) wall needs to be constructed as soon as land acquisition is complete.

I. Custom Duty Exempt Status

Until October 3, 1988, IPSA enjoyed customs duty exempt status with respect to imported scientific equipment and spares, chemical reagents, etc. by virtue of the tax exempt status of BARI. This benefit is no longer available to IPSA. Tax exempt status such as is enjoyed by BARI is also available to other research and educational institutions, and it is believed that it will be made available to IPSA if proper application is made. Therefore, the MOA has been requested to petition the National Board of Revenue to grant IPSA tax exempt status with respect to import of scientific equipment, spares, reagents, and other such items as the case may be which are essential for the conduct of educational and research programs at IPSA.

VII. PROGRESS AND PLANNED ACTIVITIES OF IPBA

A. Progress to date

Although many accomplishments have already been mentioned and described in previous sections, they are presented below in very brief form in order to provide a readily available summary statement.

Accomplishments and progress to date include the following:

1. Commodity Purchases

- * A considerable amount of sophisticated equipment, including electron microscopes (both transmission and scanning type), gas chromatograph, atomic absorption spectrophotometer, high performance liquid chromatograph, portable photosynthesis system, binoculars connected with TV, fluorescent microscope, shaking culture apparatus, among others, has been secured. Additional equipment is in the process of being secured.
- * Laboratories have been established, and equipment has been allocated to the respective laboratories, where it is being used in ongoing research and educational programs.
- * A micro computing centre has been established and is in operation.
- * Farm machinery, such as two tractors, disk plow, tillers, and power sprayers, have been made available and are effectively used on the IPBA experimental farm.
- * A comprehensive and up-to-date collection of journals has been started. IPBA now has an up-to-date collection of 69 international journal titles and 16 domestic titles, which is currently the most comprehensive and most up-to-date collection in the agricultural sciences in Bangladesh.
- * A functioning administrative structure and a decision process have been established for making decisions regarding acquisition and use of machinery, equipment, computers, books, and journals.

2. Physical Facilities

- * In the first phase, basic structures, such as an administration building, library, auditorium, faculty building, student laboratories, classrooms, workshop, student dormitories, cafeteria, medical center, etc. were constructed under Japanese grant assistance. During the life of the current technical cooperation project, additional construction included conversion of some of the classrooms into faculty laboratories, building of a greenhouse, a nethouse, an

agricultural machinery garage, a farm storage building for crops from experiments, and a threshing and drying floor.

- * Twenty-one acres of privately owned land were purchased in preparation for the development of an experimental farm.
- * A modern experimental farm (20 acres) was developed. Development of the experimental farm included the installation of a modern irrigation system, a pump station, and a water storage pond. A meteorological station was established, and culverts, internal approach roads, a two-mile gas pipe line, and a 6,000 foot barbed wire fence were constructed.
- * The design for the development of an additional 20 acres of experimental field has been completed, and construction is scheduled to begin in fall of 1989.
- * An administrative structure has been established for allocating land to various scientists, experiments, and other uses.

3. Maintenance

- * Short-courses and numerous one-to-one training sessions were held to familiarize IPSA faculty with proper operation of machinery and equipment.

4. Participant Training

- * Three IPSA faculty members are in the U.S.A. and two additional faculty members are in Japan for doctoral training in their respective fields.
- * In addition to the above, two candidates have been identified to begin doctoral studies in the U.S.A. in September of 1989, and one has been identified to begin doctoral studies in Japan in October 1989 and one more will be selected in the near future.
- * Three IPSA faculty members are currently in Japan for post-doctoral training, three have already returned from post-doctoral training in Japan, and one additional faculty member is scheduled to commence post-doctoral training soon. The then former project head and one engineer have returned from short-term training in Japan and one farm manager will be identified soon. The IPSA librarian and the IPSA engineer have left in July 1989 left for short-term training in the U.S.A.

5. Dispatch of Experts

- * Nine Japanese long-term experts have served or are serving at IPSA for a total of 206 person months during the duration of the project.
- * Two U.S. long-term advisers have served or are serving at IPSA for a total of 71 person months during the duration of the project.
- * Twenty-six Japanese short-term advisers have to date served at IPSA for a total of 40 person months.

6. Dispatch of Teams

- * Eight Japanese preliminary survey, technical guidance, and/or design teams have worked with IPSA.
- * Two U.S. (design and evaluation) teams have provided input to the IPSA Project.

7. Research Program

- * Seven Departments have developed and articulated research programs. The eighth most recently established Department (Extension Education) is well along in the process of establishing its research program.
- * A process for research planning and research plan evaluation has been developed.
- * Through one-to-one training and as a result of the process of research plan evaluation and annual research reviews, the faculty's capability and rigor in conducting research has increased.
- * Knowledge/technology have been transferred from Japanese experts and contributed to enhanced research activities at IPSA.
- * An annual research review has been instituted.
- * The experimental farm was not ready for experiments until 1987, but has since been extensively used for various types of experiments.
- * Seventeen publications have been completed in an effort to disseminate the findings from the research program at IPSA. An additional 37 manuscripts have been submitted for publication. Two annual research reviews have been published.

* In order to provide and enhance international dissemination of IPISA research results and to provide opportunity for international exposure to IPISA staff, travel grants for participation in professional meetings have been instituted.

* Short-courses designed for professional improvement of IPISA were held on the following topics: Operation and use of the electron microscopes, operation and use of various types of laboratory equipment, use of micro computers.

8. Academic Program

* An improved curriculum, based on the course system, was developed and submitted formally to BAU for review and approval. Informal reviews from individuals in a wide range of agricultural disciplines were also collected. Preparations for a large scale review are nearly completed.

* Three batches of students have completed all of their studies at IPISA; the fourth batch of students was admitted in spring of 1989 and their classes began in June of 1989. Students from the first and second batch have taken their examinations and results are known. The third batch of students has taken final examinations in May 1989, but results are not yet known. All in all, a total of 40 IPISA students out of the first two batches have received M.Sc. degrees, and 128 students out of the third batch stood for examination in spring of 1989.

* A basic scholarship program is in place, and plans are under discussion for expansion of the scholarship program and the implementation of an assistantship program.

9. Outreach Program

* In cooperation with BARI and BRRI, IPISA hosted the Annual Conference of the Bangladesh Society of Agronomy in 1989.

* Scientists from BARI and BRRI are regularly invited to and participate in professional seminars conducted at IPISA either by IPISA faculty or by visiting scholars.

* Plans for a number of short-courses for in-service training are well underway.

10. Administrative Structure

* Numerous issues regarding the status and most appropriate functioning of IPISA were clarified with Ministries, the PC, BARI, BAU, and others.

* In October of 1989, IPISA became administratively autonomous under Ministry of Agriculture. A Management Committee was established to provide policy guidance to IPISA and to pass on other aspects of IPISA as may be appropriate.

- * An internal committee structure for the smooth functioning of IPSA was implemented and is functioning.

11. Relationship to Educational and Research Institutions

- * Regular shuttle bus service is provided to the BARI and BRRI campuses to facilitate interaction between the scientists there and the IPSA scientists.
- * Joint research work is being carried out on an informal basis with scientists from BARI, BRRI, BINA, SRDI, BARC, and SRTI.
- * The electron Microscopes have been used by scientists from Dhaka University, and request for their use have been received from an Indian University. Scientists from a number of organizations in Bangladesh have indicated interest in using some of the equipment, including micro-computers, available at IPSA and are encouraged to do so.
- * The procedures for utilizing part-time teachers and thesis supervisors from sister institutions are being formalized. An honorarium program for part-time teachers has already been implemented. At present, IPSA has made arrangements with 41 scientists from six sister institutions for part-time teaching and thesis supervision.

12. Tripartite Relationships

- * An effective structure for tripartite cooperation has been implemented. This tripartite cooperation had synergistic effects on the development of IPSA.

13. Impact to Date

IPSA was created by Bangladesh authorities in late 1984, a project to implement IPSA did not exist until July 1985, and de facto implementation did not begin for a number of months after that. Therefore, an assessment of the impact of IPSA to date may be somewhat premature. Nevertheless, IPSA has made some significant impacts. Most of these are either implicitly or explicitly stated above, but additional comments may be useful.

IPSA has, within a very short period of time, established a strong research capability. This is due to the recruitment of well qualified faculty, further training of that faculty, cooperation with scientists from elsewhere (including from abroad), and availability of excellent research facilities. With the use of these resources, IPSA faculty impacted on areas such as:

- * Identification (using the electron microscope) of a disease agent of sugarcane. This research was undertaken at the request of the SKII, as scientists elsewhere in Bangladesh were unable to identify the disease agent and

suggestions for treatment of the disease could, therefore, not be made.

- * Identification of early flowering beans with the potential for increasing farmer alternatives and incomes.
- * Screening of rice varieties for high proportions of digestible vs. indigestible protein with significant implications for nutrition of the Bangladesh population.

Although IPSA lacks flexibility and authority to proceed with improvements in academic programs, there is considerable evidence that IPSA has already made some impact in the training at the M.Sc. level:

- * The DG of one of the major research institutes indicated to the review team that IPSA graduates were better trained than those from BAU.
- * The ADB, after reviewing the IPSA program and some of its graduates, specified in one of its technical cooperation projects that the professionals to be trained under that project are to receive their M.Sc. training at IPSA.
- * Although the sample size is still small, there are preliminary indications that IPSA graduates do well in the M.Sc. examinations as well as in the civil service examinations.
- * The IPSA faculty has developed an improved curriculum. Although it has not yet received permission to implement this curriculum, it appears that the effort had the effect of increasing BAU interest and willingness to also consider the development of an improved, course based curriculum.

B. Planned Activities to End of Project

Research activities will be strengthened through the addition of additional staff, fuller utilization of existing and newly added facilities and equipment, and through research reviews, seminars, and more formal planning. Regular annual reviews are planned. Similarly, regular annual reports, based on the annual reviews, will be issued. Workshops on the design and conduct of experiments, interpretation of results, and writing of scientific papers and proposals are also planned.

IPSA is expected to continue its linkages with other educational and research institutions in Bangladesh and elsewhere. In addition, the development of more formal linkages are being considered. For example, payments of an honorarium to scientists from BARI and IIRRI and other institutions involved in IPSA's teaching program is being implemented. To date, services by these scientists to the IPSA teaching program were on a voluntary basis, thus

inviting sporadic performance. The arrangement being discussed will provide an incentive for the best scientists to participate in th IPSA program.

Other areas for opportunities for mutually beneficial linkages are in the area of research proposal review, joint research, and review of research paper. Outreach programs can be conducted jointly. And finalization and implementation of an improved curriculum clearly provide the potential if not need for considerable joint effort.

The de-linking of IFSA from BARI has necessitate some changes in administrative structure and procedures for IPSA, and some of these changes have been implemented. Also, administrative services (such as engineering capacity for construction and maintenance and administrative support for the Director's office) will have to be expanded. Furthermore, an Act, Ordinances and Statutes are currently under development. Depending upon the eventual specific nature of these instruments, additional changes in administrative structure will be called for. Some of these may be major. Every effort will be made to implement necessary changes with as soon as possible.

IFSA has an explicit mandate to conduct outreach programs. According to the Project Proforma, this includes programs for other scientists, extension agents, as well as area farmers. Because of the many pressing other issues in the early stages of development of IFSA, this dimension of IFSA's overall mandate has not received much attention. However, now that earlier issues are being resolved, research results are accumulating, equipment and expertise for using it are in place, and more faculty are becoming available, outreach program will receive higher priority in the future.

VIII. REQUIRED ACTIONS FOR SUSTAINABILITY OF THE IPSA PROJECT

A. General

It is generally accepted that establishment of a new research and educational institution requires a sustained technical cooperation effort of a duration of more than five years. Nevertheless, the issue of sustainability must be addressed now. In part, this is one of the roles the evaluation can play. Nevertheless, IPSA administration, faculty, and the IPSA Management Committee must pay increasing attention to this question.

It is only four years since the IPSA project started and, therefore, it's perhaps too early to make a full assessment of its potential sustainability. The team has noted that much progress has been made to date. However, at the present stage it seems that IPSA will need continued foreign assistance for its sustainability and growth in collaboration with the GOB.

B. Critical Need for Continuity of GOB Support

The support of the GOB in all matters of IPSA is essential for its sustainability.

Most important is that GOB provide sufficient budgetary resources to support fully the program of IPSA and that this funding is provided for in the ADP. Further, the release of funds should be made on a timely basis so that the agreed upon program at IPSA can move forward on schedule.

The team understands that the MOA as well as the PC are totally committed to this end. However, responsibilities assumed by each of the various ministries and government agencies should provide for follow up promptly on actions required. Regarding the academic matters of IPSA, we believe that the affiliation with BAU should continue at this stage. However, it is ideal and desirable if IPSA is granted by BAU the academic flexibility in the pattern of Institute of Business Administration (IBA) of the University of Dhaka.

IPSA should be granted by the relevant authority of the GOB the Customs Duty Exemption Status like the other academic and research institutions of the country.

The support of GOB to IPSA in line with the signed R/D should be implemented, especially in the matter of Duty Tax Exemption, which is essential for IPSA.

The actions needed for establishment of an Act/Ordinance for IPSA should be undertaken immediately in order to obtain a desirable framework for its smooth functioning.

C. Resolving Institutional Problems

The institutional problems of IPFA which have to be overcome for its sustainability are as follows:

1. Granting of academic flexibility of the desirable extent to be granted by BAU.
2. Approval of appropriate revised curriculum and syllabi for M.Sc. and Ph.D. programs.
3. Recruitment of appropriate teaching staff and other support staff to fill the large number of vacant posts as soon as possible.
4. The provision of necessary support of the IPFA counterpart personnel.
5. Improved clearance procedures for acceptance of the experts from Japan and U.S.A.
6. Appropriate nomination procedures and efficient clearance process for the counterpart trainees for education and training in Japan/U.S.A.
7. Provision of residential quarters for the teaching staff and the essential support staff. This is a critical need in order to attract highly qualified staff at IPFA.
8. Establishment of the appropriate library facilities, essential laboratories and other support facilities which are urgently required for effective functioning of the IPFA project.
9. Establishment of a system for continuous maintenance of equipment and machinery.

D. Improvement in Dispatch of Experts

It seems that there is some problem in the Japanese side in the matter of dispatching readily available long-term experts to IPFA from Kyushu and Saga Universities. However, this problem may be overcome by inviting cooperation from other universities in Japan.

In this connection, it is essential to establish a set of clear terms and conditions for this purpose.

E. Planned Project for PAU

It is expected that the U.S.A. is going to provide assistance to PAU and in this connection it is very much desired that mutual discussion and understanding should take place early on between the U.S.A. and Japan so that both PAU and IPFA can be developed to complement each other.

IX. GENERAL CONCLUSIONS AND RECOMMENDATIONS OF THE REVIEW TEAM

A. Suitability of Project Objectives

1. Conclusions

The team finds project objectives are suitable and pertinent to the development of IPSA. However the team finds that project objectives are recorded in three separate authorizing documents issued at different dates. The Record of Discussion, July 4, 1985 is an agreement which embodies relationships between the GOJ and GOB. The Contract (ANE-0027-C-00-6030-00), dated April 17, 1986 between USAID and DSU specified the relationship between the U.S. contractor and the IPSA project. It has been amended four times. Finally, the Project Proforma (PP) originally drafted in December, 1985 with revisions, January, 1986, May, 1988 and December 1988. Although the PP has the approval of the FCs as of this date, it has not yet received final approval of the Executive Committee of National Economic Council (ECNEC).

As noted earlier the IPSA project represents a shift in emphasis from earlier efforts to create the BCAS for undergraduate education to one of postgraduate education. Thus IPSA came into being by agreement on Oct. 9, 1983. This reorganization, therefore required extensive changes in facilities, equipment, programs of education, and in staffing needs.

Probably underestimated at the time was the tremendous effort and coordination required to accomplish this change from undergraduate to postgraduate training. The team wishes to emphasize that the intent of the shift in emphasis and the creation of IPSA was a noble, highly important step, but a difficult task.

It would have been expected that the three basic documents referred to earlier, would have given sufficient and clear lines of direction and support to the evolution of this new institution in all aspects. But this was not the case. In an operational sense this project therefore required the highly dedicated and committed efforts of the resident team leader, the U.S. advisor, and the Director to determine and collate the intent of the three authorizing documents. Only by their diligent efforts was it possible to bring about operational viability of the IPSA project.

2. Recommendations

It is recommended that the three governments together prepare a combined operational summary, or perhaps a Memorandum of Understanding which brings together in one document, based on the three separate authorizations, the relevant aspects of objectives, the support elements, etc. This is needed so that there is complete understanding and guidance for resident expert staff and local staff in carrying out project objectives.

B. Commodities

1. Conclusion

Sophisticated equipment which is suitable to postgraduate studies were provided. However, several of these items were requested without full consideration of the situation of local infrastructure in terms of maintaining the equipment in good order and and in provision of adequate budget allocation in Bangladesh. Timeliness was adequate. At present, it is difficult to say that all sophisticated equipment is being utilized at full potential by the faculty staff. However, high level and good research has been made possible through utilization of some of these items. A review of research abstracts suggests that the equipment provided a stimulus for good research.

2. Recommendation

IPSA has already been provided with most of the sophisticated equipment. However, some types of equipment including equipment for student laboratories and some farm machinery, may be needed to make IPSA more effective. In the process of selecting equipment more consultation is required among the concerned parties for proper assessment of suitability from the viewpoint of program need and maintenance. Furthermore, equipment should be selected on the basis of being practical and simple so that their maintenance is not a burden on the country. In the future, a partial solution to the maintenance problem is the local purchase of equipment, if available, especially when supply of spare parts and maintenance services are ensured.

C. Physical Facilities

1. Conclusions

Since commencement and within the budgetary limitation, essential physical facilities of IPSA have been developed. The experimental farm should be further developed and be utilized more effectively for practical research. In spite of great efforts, present physical facilities are not sufficient for the Institute in support of post graduate level training and research at the planned future level.

2. Recommendations

It is necessary for IPSA to construct additional laboratories, library and residential quarters to attain more development. Residential quarters are indispensable to enhance research and education activities at IPSA by reducing the considerable amount of time lost in commuting by staff for work at IPSA. It is recommended that provisions be made in the next phase of the IPSA project to construct these urgently needed facilities.

D. Maintenance

1. Conclusions

Because equipment and facilities are relatively new, there has not been a big problem of maintenance. Some of the equipment for example, electron microscopes and submerged pump have required special maintenance. But some scientific equipment is difficult to maintain and repair by IPFA itself. The present maintenance system of equipment and facilities at IPFA is not working very effectively.

2. Recommendations

It is necessary to consider the maintenance of each piece of equipment. It is critical that an effective maintenance system including daily maintenance and care by the staff and students be established immediately. The GOB should allocate a larger budget for maintenance of equipment and facilities at IPFA in the future. It recommended that full consideration be given to this aspect. And since this problem is of general nature in various agricultural research and education institutes in Bangladesh, it is recommended that BARC take the initiative to develop an appropriate solution to this issue immediately.

E. Participant Training

1. Conclusions

Short-term training is moving forward satisfactorily in topics strongly supportive of project objectives despite an earlier problem of delay in arrival of a participant in Japanese University. Long-term training has been effectively carried out for the purpose of pursuing doctoral degree programs.

2. Recommendations

It is recommended that improvements in the preparation and timely placement of participants to receive overseas training should be accomplished in order to progress in this program. Furthermore, the procedures essential to timely selection of qualified candidates for participant training should be improved.

F. Dispatch of Experts

1. Conclusions

The long-term and the short-term experts have been dispatched from Japan and the U.S.A. to IPFA for the purposes of transfer of technology to counterparts, for conduct of the cooperative research, and in the revision of curriculum. Most of the experts completed their assignments successfully and contributed significantly to IPFA's research and academic program. Unfortunately, due to shortage of readily available scientists at Kyushu and Saga Universities despite extraordinary efforts made by people

concerned at these universities, long-term experts could not always be dispatched, and the dispatch of senior experts was often delayed. Furthermore, some misfit did occur between dispatched experts and counterparts because of a shortage not only of faculty members but also because there was a lack of mutual communication.

2. Recommendations

It is recommended that a streamlining of the selection process be done to lead to a more efficient and timely clearance of experts. However, this may not solve all the problems which have plagued the project in the area of clearance of experts. The number of ministries and agencies involved in the approval process should be reduced and minimized.

The bottleneck in misfit of interest between experts and counterparts may be resolved through increased efforts by the Bangladesh and Japanese sides.

G. Dispatch of Teams

1. Conclusions

The number and quality of teams is adequate and they have been responsible for important roles at the respective stages of the project. Especially important during implementation of the project is dispatch of Technical Guidance Teams, as they encourage project activities to move forward through their participation in Coordination Committee meetings when teams visit Bangladesh. These teams also provide feedback to the respective donor organizations.

2. Recommendations

It is recommended that teams continue to be dispatched during the project period for the purpose of evaluation and guidance of experts on the project and for information to all parties involved in the project.

H. Research Program

1. Conclusions

JICA and USAID have provided a substantial amount of sophisticated equipment to IPFA for the conduct of high-level research work. The knowledge of operation and use of the equipment to reach the full potential for high-level research work has been transferred through cooperative research of expatriate experts and experts at IPFA. A substantial research effort is underway and overall institutional capacity has increased in research and linkages with other research institutions. Up to now limited linkages have developed with extension institutions.

All research plans are discussed with and reviewed by a meeting of the IPSA Teachers' Council. Also, research findings are regularly reviewed by all IPSA faculty as well as by scientists from other research and education institutions. Research results are being disseminated to other scientists and extension teachers through publication and also through presentation at professional meetings.

Much of the progress at IPSA to date reflected on the innovative approaches and skills provided by the Japanese and U.S.A. experts.

Research activity and performance has generally increased but still has not reached the existing potential. The largest obstacles to reaching this potential is the shortage of faculty, shortage of faculty time allocated to research, and limited experience in research work. Linkages in research and teaching with other institutions are needed and be strengthened. However, the constraints indicated in Section VI will continue to impede progress of the research program.

2. Recommendations

It is recommended that highest priority be given to filling vacant positions in the faculty. Further, the associated facilities and residential housing be accomplished as soon as possible. Other constraints listed in Section VI unvarying degree which impact the entire IPSA program are especially serious on the research potential of IPSA.

I. Academic Program

1. Conclusions

Obviously, the academic program suffers from the same set of constraints that has impacted on research and other programs at IPSA.

Noteworthy is the tremendous effort set forth by the IPSA faculty and the expert team in clarifying IPSA status and in obtaining freedom to develop as intended. They have prepared drafts of syllabi, curriculum and the proposed acts, Ordinance and other documents. These efforts have been waiting for response and for action from higher authority or collaborating institutions. Response to date has been limited mostly to continuing discussion. Meanwhile, IPSA, being in an affiliated status with BAU, has no scope to undertake innovative initiatives in matters of academic programs. It has followed, in general, the current procedures of BAU in respect to the M.Sc. degree, staff recruitment, etc., as freedom to function has not as yet been achieved by IPSA. IPSA by earlier agreements has a great need for assurance of flexibility in light of its special requirements in academic and administrative matters.

2. Recommendations

Because the academic program is central to success of IPSA, it is strongly recommended that a sustained effort to resolve issues so that some essential academic freedom is given immediately to IPSA, such as, adoption of revised curricula, holding of examinations at IPSA campus, and selection of students. These aspects are critical for IPSA now in its fourth year of existence.

J. Outreach Program

1. Conclusions

It has not been possible to fully develop an outreach capacity at IPSA. Up to now, most of the expert team and faculty effort was committed to developing the academic and research capacity. However, the output of trained staff and publications produced are positive factors in supporting an outreach program.

The recent arrival of the Extension Expert and the designated counterpart together can begin to give full attention to developing the IPSA outreach program. The team believes this is very timely now and that a viable program of outreach for IPSA can be designed, assuming that recommendations made earlier are followed up with dispatch.

It is deemed to be urgent that the proposed department of Economics and Rural Sociology be established. The team believes that the program of research and training of this department should be oriented strongly to the problems of the rural areas with emphasis on farm management and rural markets. When this is accomplished it will be highly supportive of the outreach program.

As the program of outreach is developed, careful attention should be paid to the various inter-institutional arrangements needed.

2. Recommendations

It is recommended that full support be given by the GOB to the outreach program. Further, that actions required, should be identified soon so that full advantage of the expatriate expert and his counterpart can be fully utilized in the short period of time available.

K. Administrative Structure and Budgetary Requirements

1. Conclusions

The team believes that administrative separation of IPSA from PARI has undoubtedly provided the necessary opportunity to IPSA to make itself more functional and move ahead. IPSA is now an autonomous institution administratively under the MOA. Further clarification is needed, however, in many administrative aspects. It is encouraging to note that a Management Committee has been

established in the MOA. It has begun to function and is now taking leadership for the affairs of IPSA. The Management Committee is now in a position to move forward the needed actions.

IPSA itself has several committees for its management. These committees are responsible for important roles, but have not always been effective. Because the PP has not been approved completely by the GOB, and therefore budgetary allocation by the GOB has not been smooth. In addition, there is a shortage of local funds by the GOB.

2. Recommendations

It is recommended that whatever action required, whether an Act, Statute and Ordinance or other arrangement needed to establish a suitable administrative structure for IPSA be followed up immediately. In this matter the Management Committee has a key role. Consideration may be given also to expand the Management Committee to include the Director General BRRI, a representative of the University Grants Commission, Director General, Department of Agricultural Extension, and finally an eminent agricultural scientist.

In addition, the PP should be approved by the GOB immediately to allocate enough budget for smooth implementation of the project.

L. IPSA and its Relationship to Educational and Research Institutions

1. Conclusions

The team concluded that up to now IPSA itself has not sufficiently achieved an institutional identity within the national educational and research system. The constraints in obtaining status are still being resolved in flexibility in academic program and its status as an autonomous or affiliated institution. Only recently have administrative lines, through the Management Committee been established. Prompt removal of the constraints noted in VI is required so that a viable status for IPSA can be attained. The blueprint of what IPSA is to become is only partially spelled out in the three authorizing documents. (see A above). Further elaboration and confirmation is now needed. The team believes that IPSA can become an innovative and productive partner in the higher education and research system in Bangladesh.

2. Recommendations

The team recommends that issues relating to clarification of the academic status of IPSA be resolved immediately so that IPSA can join collaboratively in building the essential relationship within the educational system.

It is further recognized that consideration be given for better integration of relationships to include the following actions:

- * The Director of IPISA become a member of the Academic Council of BAU
- * Other senior officers of IPISA be included in relevant committees of BAU
- * Faculty of BAU be represented on IPISA Committees

In addition to the above, it is recommended that formal linkages with other institutions be established, possibly through Memoranda of Understanding authorizing the Management Committee to appoint or arrange for their senior and other scientists as ex-officio professors at IPISA for thesis direction and other services.

M. Tripartite Relationships and Effectiveness

1. Conclusions

In the case of IPISA, tripartite cooperation has been successful with good relationships among GOB, IPISA staffs, Japanese, and U.S. experts. Tripartite cooperation has been effective because that form of collaboration can make it possible to better cope with institutional constraints. Tripartite relationship can also deal with budgetary limitations and can emphasize comparative advantage.

2. Recommendations

It is recommended that the present good tripartite relationships be continued and become more explicit during the project period. Tripartite cooperation is so important and effective that an effort should be made to see that it is continued.

N. Sustainability

1. Conclusions

As noted earlier, the team believes that considerable progress has been made in a short period of four years. Much of the institutional progress already made will not be sustained unless correction or elimination of constraints is achieved. These are noted in detail in VIII above.

2. Recommendations

In order to obtain a viable and sustainable institutional capability it is recommended that the Management Committee undertake intensive efforts through regular and frequent meetings to resolve those constraints that impinge on achievement of institutional sustainability. It is possible also that an oversight committee of high level representatives of the GOB Ministries and PC involved can give force to prompt executing of actions needed.

X. RECOMMENDATIONS FOR IMMEDIATE RESOLUTION AND ACTION

A. Items for Immediate Action by the Management Committee

The Team believes that most of the specific recommendations set forth in Section IX above can be accomplished within the present framework of IPISA. However, the team wishes to emphasize three for immediate attention.

1. Especially important now is that an accelerated effort be undertaken to fill vacancies at IPISA. Authorization has been given. Therefore, implementation steps should be undertaken by the Director, IPISA, as soon as possible.
2. The rationale for provision of residential housing has been emphasized in a number of sections in this report. Steps required for resolving this matter appear to be indicated and must be placed on the agenda of the Management Committee for action. The Management Committee should be able to push forward the process for resolution and for implementation.
3. Construction of more laboratories and an appropriate library is essential to strengthen the academic and research activities of IPISA.

B. Overall Issues for Immediate Resolution

The Team wishes to highlight again for special attention two significant issues already referred to in earlier sections which impact on the future of IPISA. If these are not resolved and action taken, the future sustainability of IPISA is questionable. They include the following:

- * The single most important issue is the clarification of the nature of academic status of IPISA and the degree of flexibility in academic programs that can be attained.
- * The relationships with BARI, BAU, BRRI, and CERDI with IPISA must be clarified and procedures for the accomplishment of these relationships must be established.

1. Flexibility in Academic Programs

The Team has learned through the review of available reports and in the discussions held during this evaluation that there is considerable lack of consensus among the various parties. Further, there appears to be some confusion concerning the intended role that IPISA is to perform in higher education in Agricultural Sciences in Bangladesh. As a result of this evaluation, the team now believes that IPISA has an important and critical role. IPISA already has considerable capacity and with effective linkages to BARI, BRRI and BAU, it can have a highly beneficial role in the system. IPISA should not continue on with uncertain status or with lack of academic program flexibility. Investments already made would thus be wasted. IPISA is on the threshold of

achieving its potential if these overriding constraints can be removed.

The Team has heard suggestions from several officials and has reviewed various proposals for achievement of IPSA's place in higher education and research in this country. Among these are the suggestions made in a report from the University Grants Commission in response to a request from Member (Agriculture) of the PC. This report of the University Grants Commission dated February 5, 1987 outlined the several options concerning IPSA autonomous status and also options for attaining flexibility for academic programming. The Team generally concurs with the observations and suggestions made in this report.

The Team favors affiliation with BAU provided that suitable flexibility for academic programs and appropriate institutional interrelationships, cooperation, and linkages are established. Recommended is an arrangement whereby IPSA is granted status within BAU similar to that of the Institute of Business Administration (IBA) within Dhaka University. If this option (which is one recommended by the UGC) is not possible on a timely basis, it is requested that another option, which is also spelled out in the report mentioned above, namely, affiliation with another university, be pursued aggressively, possibly on an interim basis. Still another alternative is that IPSA be granted full autonomy with university status and degree granting authority.

Finally, the team wishes to reaffirm its great concern in these matters for the future of IPSA. The Team suggests that these matters be made the highest priority on the agenda of the Management Committee.

2. Relationships with BARI, BRRI, CERDI, and Other Institution

The Team has noted the considerable degree of informal relationship between IPSA and the other institutions. Much of this has been in obtaining services of staff from BARI in training and in others in thesis direction.

There are many possibilities and options for building relationships, such as, sharing of professional talent, cooperative research projects, sharing in use of equipment, service of staff on various joint committees, etc. All of the arrangements between institutions should be on the basis of mutual benefit which ultimately would result in benefits to the entire higher education system. Many of these arrangements can be on informal basis, others should be made by formal agreements or authorization by the Management committee.

The Team requests that the Management Committee consider the nature of required relationships and that where needed formal documents or Memoranda of Understanding be prepared.

C. The Proposed Project at BAU

The Team recognizes that the matters relating to cooperation between GOJ and USAID may be beyond the specific Terms of Reference of the Tripartite Evaluation exercise. However, the team is of the opinion that the proposed project at BAU which may be supported by USAID should be designed and implemented in a manner which will be supportive to the objectives of IPSA. If properly designed, the potential BAU project can complement the program of IPSA.

Finally, the team believes that the Tripartite relationships, which were found to be highly useful in the IPSA project, be continued if possible, in the event that a new project is established.

D. Challenges for the Management Committee

The Team recognizes that many deliberations and actions would be required to accommodate the suggestions made in this report. The Management Committee must be involved in all aspects. Action to these matters will require the full attention of the Management Committee. Frequent meetings will be required especially concerning the high priority issues for action and for follow-up. Much of the future of IPSA rests in the hands of this committee.

E. Recommendations for Five Year Extension of IPSA Project (Phase II) for 1990-1995

Notwithstanding the problems observed and noted in earlier sections of this report the team recommends a five year extension of the IPSA project 1990-1995.

In making this recommendation the team believes that the progress noted at IPSA justifies this recommendation. Recent actions taken by the Management Committee provide a basis for confidence on part of the team. Furthermore, actions noted in this section are expected to be followed up in the remaining year of the current project. If these actions are accomplished during this year, the potential for sustainability of IPSA can be greatly enhanced. Therefore the team unanimously supports the extension of IPSA project for 1990-1995.

XI. LESSONS LEARNED

Several lessons have been learned that may be helpful to others involved in design and implementation of similar projects. This project was undertaken to strengthen the quality of postgraduate education through the establishment of a new training institution. This project required a major change in modes of operation, in higher levels of integration among existing institutions in the country which was to be accomplished within a new training institution. Issues of its status in the system of higher education in Bangladesh had not been clarified at the time of initiation of the new project. It remains clouded. Further, the introduction of a new training institution with specific missions was viewed in a highly competitive environment among other institutes as duplication and a further drain on already limited local resources.

A. Lesson One

Introduction of a new institution with a special mandate into an existing system cannot be expected to be accomplished in a short time span when there is a lack of concurrence and acceptance among existing institutions, and among the various authorizing bodies and ministries of the government. It is extremely difficult for external project implementation team to engage in these internal issues without distracting from their fundamental project assistance roles.

In the case of IFSA, the issue of status was clouded and remains so to this date. This fact reduced the effectiveness of the technical assistance team provided by GOJ and USAID. It resulted in a series of difficulties, frustration, a threat to morale, not only of the team, but also among colleagues at IFSA. These problems, no doubt, led to waste of time and resources.

B. Lesson Two

Productive contributions from two or more external donors in a single project require a high degree of interpersonal and professional relationship among technical support teams so that coordination and timely delivery of project elements is achieved. Project authorizations from respective donors and host country governments should provide for a jointly developed operational plan for guidance of all for efficient implementation.

In the case of IFSA, the project objectives and implementation details are recorded in three separate authorizing documents with different dates of authority, varying length and kind of project support, changes and amendments to the original basic authority. Further, the GOB FP which is presumed to have accomplished the synthesis of the donor authorization lacked full approval of the GOB. These factors placed an undue burden on the resident donor team and their Bangladeshi counterparts to sort out the various elements which had approval for timely implementation.

The above generalized lessons learned relating to problems of multi-donor support may have general applicability. However, despite difficulties noted in the project, the Evaluation team wishes to re-emphasize that the resident teams from the Japanese and U.S. side involved with IFSA were able, through diligent efforts, to move the program forward. It is to their credit and to their Bangladeshi colleagues that progress which has been evident and has been noted in this report.

ANNEX 1

INSTITUTE OF POSTGRADUATE STUDIES IN AGRICULTURE (IPSA) 1989 TRIPARTITE EVALUATION

I. OBJECTIVES OF THE EVALUATION

1. To assess the overall performance and impact of the project to date and to project its likely performance through the end of the project period.
2. To recommend measures to be taken by the three Governments concerned after the end of the project period.
3. Provide feedback of results to future cooperation project planning and implementation activities so that these future projects can be implemented more effectively.

II. BACKGROUND

In Bangladesh, agricultural research and extension organizations have undergone substantive changes in order to adapt to advances in science and technology and to meet the needs of the nation. The demand by these changing institutions for highly skilled technical manpower grew appreciably. Against this background, the Bangladesh College of Agricultural Sciences (BCAS) was established in early 1983 to produce B.S. level graduates with emphasis on preparation for postgraduate programs. To assist in the achievement of the objectives as envisioned at that time, the Government of Bangladesh (GOB) asked the Government of Japan (GOJ) to provide support in the establishment of a modern physical plant for the new BCAS. The GOJ concurred and, by 1983, the IPSA campus had been established with a contribution from the GOJ through the Japan International Cooperation Agency (JICA) of approximately US \$9 million. Before BCAS became functional, however, another agricultural college at Dumki, the Fatuakhali Krishi College (FKC), commenced operation. With Bangladesh Agricultural University (BAU), the Bangladesh Agricultural Institute (BAI), and FKC now all offering undergraduate instructions and having the capacity to meet the annual demand for agricultural graduates, BCAS's role in providing additional needed capacity for undergraduate training significantly diminished.

Consequently, the idea was advanced that the BCAS's mission should continue to be one of meeting the demand of changing agricultural institutions for highly skilled technical manpower. While this was initially to be accomplished at the B.Sc. level, in light of new developments sketched out above, it was now proposed that IPSA fulfill this role at the postgraduate level. On October 3, 1983, a meeting was held which was attended by

representatives of the Bangladesh Agricultural Research Institute (BARI), BAU, BAI, and the Ministry of Agriculture (MOA). At that meeting it was recommended that the BCAS be transformed into a postgraduate school and named the "Institute of Postgraduate Studies in Agriculture" (IPSA) with the charge to offer courses leading to Masters and Doctoral degrees in various disciplines in agriculture. It was also recommended that the undergraduate program be deleted. The revised organizational structure and objectives received approval of the highest authorities. Later on, BAU accorded affiliation to IPSA for imparting postgraduate education in such departments for which BARI and the Bangladesh Rice Research Institute (BRRI) were authorized earlier to provide thesis research supervision under the auspices of the BAU postgraduate program.

III. CURRENT STATUS

The core staff of IPSA together with senior scientists of BARI and BRRI comprise the faculty of IPSA. Currently, there are 21 full-time teaching and research staff at IPSA. Six positions are filled at the associate professor level, thirteen at the assistant professor level, and two at the level of lecturer. Three professors from Kyushu University and one from Oregon State University are stationed at IPSA on a full time basis. Complementing this IPSA core faculty, there are over 50 senior scientists of BARI and BRRI who are from time to time actively involved in IPSA, on a part-time basis, in teaching and supervision of thesis research.

In March of 1989, IPSA admitted its fourth class of M.Sc. students. Sixty (60) students have been admitted to this class. The students are pursuing M.Sc. (Ag) degrees in eight major disciplines, namely, agronomy, crop botany, entomology, extension education, genetics and plant breeding, horticulture, plant pathology, and soil science. The departments of statistics, agricultural economics, and rural sociology have not yet commenced to offer degree programs.

Curricula and syllabi pertaining to postgraduate studies in agriculture in Bangladesh are currently developed and determined by BAU. Accordingly, the Master's degree in agricultural science is a one year program, involving both theory and practicals.

Postgraduate studies in agriculture are research oriented. In view of this, IPSA faculty devote a certain portion of their time to various aspects of agricultural research. Each department has an articulated core research program with short and long term objectives.

IPSA owns about 80 ha of land. Physical facilities, including the classrooms and laboratories, administrative and library building,

auditorium, workshop, medical center, cafeteria, student dormitories (with space for about 150 students) and some staff housing occupy about 15 ha. An experimental farm with modern equipment and a complete irrigation system is available for field experiments. There are also four teaching laboratories and several interdisciplinary laboratories for faculty research. Equipment, such as two electron microscopes, a gas chromatograph, a spectrophotograph, farm machinery, etc. is available for conducting the teaching and research programs. A computer centre, equipped with five microcomputers, is used by faculty, students, and the administrative and support staff. Development of a library, well stocked with relevant books and up-to-date journals, is underway.

resided with BARI. Since then, IPFA is administratively responsible directly to the MOA. In academic matters, the Institute's activities are governed by the statutes and regulations of BAU. The institute has a full-time director, who is assisted by an associate director and two assistant directors.

IPFA is a government organization and as such receives funds for its operation and developmental activities in the form of ADP allocations. Revenue expenditures, such as salaries of staff and costs of operation of the Institute's activities, are met from GOB funding. Developmental activities are largely funded through technical assistance by the Government of Japan (GOJ) and the U.S.A. Development of the infrastructure and physical facilities at IPFA was largely funded by the GOJ under a grant assistance program. During the second phase of development (which formally commenced on July 4, 1985), the GOJ is providing technical assistance for the improvement of IPFA's academic program by developing the experimental facilities. It also provides technical assistance through the dispatch of experts. Currently, three expatriate professors from Kyushu University and a coordinator (from JICA) are assisting IPFA in building academic programs with a strong research base. The GOJ has also committed scholarships for long- and short-term training at Kyushu University. Funds are also available to provide the services of Japanese experts to IPFA on a short-term basis in agricultural fields and on various topics as needed. The GOJ technical assistance for the second phase (1985-90) is estimated at about USD 6 million. Thus, funds for both phases total approximately USD 15 million.

The United States Agency for International Development (USAID) participation in the IPFA Project began in mid-1986. USAID's technical assistance includes manpower development (providing five scholarships for Ph.D. level training for IPFA faculty and short-term training for the librarian and for institutional and academic management), assistance in the development of a library through the purchase of books and journals, establishing a computing capability through the acquisition of microcomputers and

computer software, and provision of technical services for curriculum planning and the development of extension education. One long term development specialist (curriculum planning) from Oregon State University has been at IPSA since July 1986. The extension specialist is scheduled for arrival in late June of 1989. The total budget for expert services, participant training, and commodities is approximately \$2.3 million.

IV. EVALUATION POLICY AND METHODOLOGY

1. Tripartite Evaluation

A tripartite evaluation team composed of representatives from the Japan, U.S.A., and Bangladesh sides will be organized to carry out the evaluation.

2. Composition of the Tripartite Evaluation Team

a. Bangladesh

The representation will consist of two members, as follows:

Member from Ministry of Agriculture
Member from Planning Commission

b. Japan

The representation will consist of 4-6 members, as follows:

Team Leader from a University in Japan
Member from Ministry of Education
Member from Ministry of Foreign Affairs
Member from Kyushu University
Member from Saga University
Member from JICA

c. U.S.A.

The representation will consist of one member as follows:

Member from a university in the U.S.A.

3. Relationship of the Evaluation Team to the Coordination Committee

The Tripartite Evaluation Team is independent of the Coordination Committee. However, a Coordination Committee meeting may be held to discuss the report to be prepared by the Evaluation Team.

4. Terms of Reference

The evaluation team will examine the following elements and issues with respect to their adequacy and effectiveness in the past and will make recommendations for improvement, where appropriate, for the future.

a. Suitability of project objectives: Review project objectives (see "Record of Discussion," dated July 4, 1985; "Project Proforma," dated December 1988; and "Contract ANE-0027-C-00-6030-00," dated April 17, 1986) with respect to their suitability in light of presently known developments.

b. Commodities: Assess relevance, suitability and timeliness of commodities delivered to or acquired by IPSA, and evaluate the extent to which scientific equipment, computers, library holdings, machinery etc. are used to improve research, teaching, outreach and administrative programs at IPSA.

c. Physical facilities: Assess relevance, suitability and timeliness of physical facilities constructed at IPSA under the technical cooperation, and evaluate the extent to which these facilities are used to support the project activities.

d. Maintenance: Examine the maintenance efforts under the existing infrastructure and identify problems as well as alternative solutions for maintenance and repair of structures, machinery, and equipment.

e. Participant training: Assess relevance and timeliness of participant training carried out under the Project.

f. Dispatch of experts: Review the quantity, quality, and suitability of experts dispatched by Japan and U.S.A., and assess their effectiveness in technology transfer.

g. Dispatch of teams: Review the quantity, quality, and suitability of teams dispatched by Japan and U.S.A., and assess their effectiveness in providing guidance and support to the Project.

h. Research program: Assess the research program at IPSA and examine its relevance and its relationship to other agricultural research institutions as well as its relationship to recent agricultural sector assessments (by the World Bank, the UNDP, USAID).

i. Academic program: Evaluate the quality of the academic program at IPSA. Review program improvement activities underway and their past or potential future impact on employability of its graduates, effectiveness of graduates in their respective careers, etc. Also evaluate the feasibility of introducing a course system at IPSA under a framework similar to that of the

Institute of Business Administration (IBA) of Dhaka University, and examine the need for academic flexibility required for IPSA to achieve its goals (ref. "Academic Flexibility Required by IPSA to Achieve Its Goals").

j. Outreach programs: Examine the outreach program at IPSA and evaluate its adequacy, relevance, and quality.

k. Administrative structure and budgetary requirements: Evaluate IPSA's administrative and committee structure as well as Project management structure with respect to their effectiveness in carrying out their various missions. Review GOB budget allocation and disbursement procedures in support of the project and address key problem areas. Assess the JICA and USAID procedures in support of the Project.

l. IPSA and its relationship to educational and research institutions: Review the educational and research system within which IPSA operates, identify constraints, and make recommendations for their removal. Assess the adequacy of existing inter-institutional linkages.

m. Tripartite relationships and effectiveness: Study the nature and effectiveness of tripartite cooperation.

n. Sustainability: Provide an assessment of the sustainability of the Project.

o. Other: The team may assess and make recommendations on any other and additional issues as it deems in the best interest of the evaluation and the Project.

5. Allocation of Responsibilities Within the Evaluation Team

The team leader will have overall leadership responsibility for the evaluation, but all team members will assist in the preparation and finalization of the report. All team members will have the opportunity and responsibility to participate in all aspects of the evaluation, as many of the evaluation tasks will overlap with various specialists on the team. However, in the interest of effectiveness and expediency certain evaluation tasks will be the primary responsibility designated to certain members of the evaluation team. In general, this division of responsibilities can be shown as follows:

Project activities concerned with:

To be evaluated by:

Japan portion and its
corresponding Bangladesh portion

Bangladesh and Japan

U.S.A. portion and its
corresponding Bangladesh portion

Bangladesh and U.S.A.

Portions unique to Japan
and U.S.A. relationships

Japan and U.S.A.

Common portion

Bangladesh, Japan,
and U.S.A.

More specific statements of responsibilities are provided in the following section.

6. Scope of Work for the Evaluation Team

A. Team leader (from a university in Japan)

With the assistance of all team members, the team leader has primary responsibility for the following tasks:

- a. Overall leadership for evaluation
- b. Assessment of the nature and suitability of the overall project plan
- c. Review of the current agricultural research/education system and IFSA's performance and potential role within the system
- d. Coordination of preparation of evaluation and recommendation report

B. Research Program

Primary responsibility for evaluation and recommendations for the research program will be with the Members from Kyushu, Saga University, and the MOA. Other team members may assist as appropriate.

Assessment of the research program will involve the following aspects:

- a. Assessment of the nature and suitability of initial project plan with particular emphasis on the nature and quality of the research program.

b. Description and evaluation of the nature and extent of cooperation from Japan (dispatch of Japanese experts, provision of machinery and equipment, training of Bangladesh personnel in Japan, dispatch of various survey teams, and other such activities)

c. Description of research activities and assessment of quality, quantity, and relevance of accomplishments with particular reference to project objectives

d. Identification and assessment of linkages to other research institutions

e. Suitability of laboratories, experiment farm, etc. for the Project and impact of these facilities and equipment on nature and quality of research at IFSA

f. Evaluation of the effectiveness of the technology transfer process

g. Assessment of the sustainability of the research program at IFSA

h. Recommendations for steps to be taken after the termination of the present cooperation period.

C. Academic Program

Primary responsibility for evaluation of the academic program will rest with the Members from the Japan Ministry of Education, from the US university, and from the MOA. Other team Members may assist as appropriate.

Assessment of the academic program will involve the following aspects:

a. Assessment of the nature and suitability of initial project plan with particular emphasis on the nature and quality of the academic program

b. Description and evaluation of the nature and extent of cooperation from Japan (dispatch of Japanese experts, provision of computers, books, and journals, training of Bangladesh personnel in the U.S.A., and other such activities)

c. Description of the academic program and assessment of quality, quantity, and relevance of accomplishments with particular reference to project objectives

d. Assessment of the quality and adequacy of the library, particularly with respect to its adequacy for postgraduate training

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e. Evaluation of the qualifications of the professors at IPFA

f. Addressing the quality of the participant training process and examine the key bottlenecks within the existing educational/administrative system in implementing this element of the Project

g. Assessing the faculty recruitment process with emphasis on current regulations and procedures that may tend to reduce effectiveness of recruitment and maintaining of quality faculty

h. Assessment of the adequacy of the scholarship program

i. Evaluating the quality of the IPFA graduates and review their job opportunities upon graduation

j. Assessment of the sustainability of the academic program at IPFA

k. Recommendations for steps to be taken after the termination of the present cooperation period

D. Institutional Development

Primary responsibility for evaluation of institutional development will rest with the Members from JICA/Tokyo, from the Planning Commission, and the Member from the US university. Other Members may assist as appropriate.

Assessment of institutional development will involve the following aspects:

a. Assessment of the nature and suitability of the initial project plan with particular emphasis on its effectiveness for institutional development of IPFA and evaluation of achievement of targets set in the initial plan

b. Description and evaluation of the nature and extent of cooperation from the GOB (provision of land, operational funds, faculty, clearance of experts, nomination of candidates for participant training, clearance of equipment, etc.)

c. Assessment of the institutional planning, budgeting and programming process (including GOB related concerns but also the performance of the Japanese and U.S.A. process) and evaluation of IPFA's infrastructure and its suitability for the achievement of goals and objectives

d. Review of adequacy of training and manpower development activities and plans for IPFA personnel

e. Evaluation of existing and potential alternative procedures for adequate and timely maintenance and repair of machinery and equipment.

f. Review of the extent and appropriateness of linkages of IPFA to other educational and research institutions in Bangladesh, in Japan, in the U.S.A., and elsewhere

g. Assessment of the sustainability of the institutional infrastructure and inter-institutional linkages of IPFA

h. Recommendations for steps to be taken after the termination of the present cooperation period

E. Cooperation Policies

Primary responsibility for the evaluation of cooperation policies will rest with the Members from the Japan Ministry of Foreign Affairs, from the Planning Commission, and from the US University. Other Members may assist as appropriate.

Assessment of cooperation policies will involve the following aspects:

a. Evaluation of the effectiveness and advantages and disadvantages of the tripartite relationship

b. Evaluation of the effectiveness and advantages and disadvantages of the Japan-U.S.A. partnership

c. Assessment of the linkage between grant assistance and technical cooperation

7. Schedule for Evaluation

The evaluation is scheduled to begin on or around July 8, 1989, and will be completed on or around July 26, 1989.

8. Reporting Schedule

The evaluation team will, prior to its departure from Bangladesh, prepare a final report for submission to the Governments of Bangladesh, Japan, and the U.S.A. The final report will be concurred in by all members of the evaluation team and will be signed by each team member.

ANNEX 2

SCHEDULE OF TRIPARTITE EVALUATION TEAM OF IPSA PROJECT

<u>Date/Time</u> 1989	<u>Description</u>	<u>Location</u>
July 8 (Sat) 17:50	Arrive in Dhaka by TG 323 (Japanese Team)	
July 9 (Sun) 7:30	Gather at Hotel (Lobby) (All Tripartite Evaluation Team Members)	Sonargaon Hotel Phone: 315001/ 315071
7:40	Leave hotel	
8:00	Meet Mr. M.A. Syed Secretary, Ministry of Agriculture	Bangladesh Secretariat Phone: 404273/406037
9:30	Meet Mr. Md. Nasim, Deputy Secretary, External Resources	Building No. 15. 1st Floor. Room No. 20.
10:45	Meet Mr. Norio Maturawa Resident Representative JICA Bangladesh Office	No. NW (C)-1. Road No. 62/63, Gulshan Phone: 604285/600062
11:00	Hold a Tripartite Evaluation Team Meeting at JICA Office (Reconfirm the Evaluation Policy including T/R and S/W	
13:00	Meet Dr. S. M. Hassanuz Zaman Member (Agriculture) Planning Commission. Ministry of Planning	Building No. 4. Ground Floor. Room No. 9. Sher-e-Bangla Nagar Phone: 318239/314942
14:15	Take lunch	Dhaka
15:30	Meet His Excellency Mr. Takeo Iguchi Ambassador of Japan, Dhaka	Plot No. 110/A. Road No. 27. Banani Phone: 608191/607001
17:00	Arrive at hotel	

July 10 (Mon.)		
7:50	Leave hotel	
8:00	Meet Dr. M. M. Rahman Executive Vice-Chairman Bangladesh Agricultural Research Council (BARC)	BARC Complex 1st Floor, Farmgate Phone: 314295
9:30	Meet the USAID Officials. Dhaka	USA Embassy. Baridhara. Dhaka Phone: 608170-5
11:30	Meet Dr. M.A. Mannan. DG Bangladesh Rice Research Institute (BRR)	Joydebpur, Gazipur Phone: 403098. 2168
12:30	Meet Dr. M.H. Mondal, DG. Bangladesh Agricultural Research Institute (BARI)	Joydebpur, Gazipur Phone: 401013. 2529
14:00	Take lunch at Institute of Postgraduate Studies in Agriculture (IPSA)	Salna, Gazipur Phone : 402127
15:00	Meet Dr. S.H. Khan, Director IPSA	Salna, Gazipur
16:00	Review the facilities of IPSA	
18:00	Arrive at hotel	
July 11 (Tue)		
7:30	Leave hotel	
10:30	Meet Dr. Md. Asadur Rahman Vice-Chancellor, Bangladesh Agricultural University (BAU)	BAU Campus. Mymensingh Phone: Off-4333 Res-4433
12:30	Visit Fisheries Research Institute	Mymensingh
14:00	Take lunch	BAU Campus
16:00	Have discussions at IPSA	Salna, Gazipur
18:00	Arrive at hotel	

July 12 (Wed)		
8:30	Leave Hotel	
9:30	Hold a Tripartite Team meeting and develop draft working outline of the Evaluation Report	Salna, Gazipur
12:00	Have discussion with faculty members of IFSA	
14:00	Take lunch at IFSA	
15:00	Have discussions on 'Working Paper for Review Team'	
18:00	Arrive at hotel	
July 13 (Thu.)	Local Eid Holiday	Dhaka
July 14 (Fri.)	Local Eid Holiday	Dhaka
July 15 (Sat.)	Local Eid Holiday	Dhaka
July 16 (Sun.)		
9:00	Hold a Tripartite Evaluation Team meeting and complete an Interim Report within the Team	Dhaka
12:00	Meet Mr. M.A. Munim, Honorable Minister for Agriculture	The Minister's Office Chamber 4th Floor, MOA
July 17 (Mon.)		
9:00	Have discussions with Japanese and USA experts	Dhaka
July 18 (Tue.)		
8:00	Leave hotel	
9:00	Review the facilities of BARI	Joydebpur, Gazipur
10:00	Review the facilities of BRRI	Joydebpur, Gazipur
11:00	Review the facilities of Central Extension Resources Development Institute (CERDI)	Joydebpur, Gazipur

14:00	Complete First Draft of Interim Report	Dhaka
July 19 (Wed)		
9:00	Prepare the Tripartite Evaluation Report on IFSA Project	Dhaka
14:00	Take Lunch	
17:00	Meet His Excellency. Mr. Takeo Iguchi Ambassador of Japan, Dhaka	Second Building, House No. CEN(A) 10 Road No. 96. Gulshan
July 20 (Thu)		
9:00	Prepare the Final Tripartite Evaluation Report on IFSA Project	Dhaka
11:00	Meet Dr. M. Furvis Deputy Director USAID Mission to Bangladesh	
July 21 (Fri) Holiday		
11:00	Hold Tripartite Evaluation Committee Meeting	Dhaka
July 22 (Sat)		
9:00	Distribute Draft Final copy of Report	
11:00	Hold a Tripartite Evaluation Team Meeting	Dhaka
July 23 (Sun)		
11:30	Hold Wrap-up Meeting with Secretary, Ministry of Agriculture on the report prepared by Tripartite Evaluation Mission	
July 24 (Mon)		
8:00	Complete and Sign the Tripartite Evaluation Report on IFSA Project Meet the people concerned with IFSA Project	Dhaka/Salna, Gazipur
July 25 (Tue)		
14:00	Leave Dhaka by 10 322 (Japanese Team)	

TRIPARTITE COOPERATION: THE CASE OF THE
INSTITUTE OF POSTGRADUATE STUDIES IN AGRICULTURE (IPSA),
BANGLADESH

L. M. Eisgruber, S. H. Khan, and Y. Yamada *

I. INTRODUCTION

Resources available for technical cooperation and development assistance have always been limited. However, the gap between the recognized need for development resources and availability of such resources has increased in recent years. This raises more than ever the question of how the limited resources available can be used most efficiently. One way for increased efficiency of resource use in technical cooperation may be through close cooperation by two or more donors in the same technical cooperation project. This may lead to more effective project implementation due to a larger resource base as well as due to the possibility for exploiting comparative advantages which may exist amongst the donors with respect to technical cooperation procedures and alternatives. Additionally, such cooperation amongst donors with the host country government may help avoid duplication of effort and foster better coordinated efforts.

Developments over the past several years at the geopolitical level also encourage tripartite cooperation. Incentives which derive from this perspective are particularly present in the case of Japan and the USA, where increased cooperation in bilateral trade and cooperation in technical assistance, among others, are viewed as contributions to mutual diplomatic and security interests. While these are primarily interests of donors, host countries do not wish to nor can they ignore these developments.

Loosely coordinated technical cooperation projects with two or more donors involved are not new. However, such coordination was generally informal, and coordination was the responsibility of the host country agency rather than the donor agencies. Such cooperation may be called parallel cooperation. In contrast to such parallel cooperation, the tripartite cooperation between the governments of Bangladesh, Japan, and the USA at the Institute of Postgraduate Studies in Agriculture (IPSA) may be called a fully integrated cooperation. The experience at IPSA with this tripartite cooperation will be described below. This will be followed by an attempt to isolate factors necessary for successful tripartite cooperation, some comments on possible drawbacks of tripartite cooperation, and an assessment of transferability of the experience at IPSA to other projects in Bangladesh or elsewhere.

* Professor, Oregon State University and Adviser, IPSA; Director, IPSA; and Professor Emeritus, Kyushu University and Team Leader, IPSA; respectively.

I. BACKGROUND

In Bangladesh, agricultural research and extension organizations have undergone substantive changes in order to adapt to advances in science and technology and to meet the needs of the nation. The demand by these changing institutions for highly skilled technical manpower grew appreciably. Against this background, the Bangladesh College of Agricultural Sciences (BCAS) was established in early 1983 to produce B.S. level graduates with emphasis on preparation for postgraduate programs. To assist in the achievement of the objectives as envisioned at that time, the Government of Bangladesh (GOB) asked the Government of Japan (GOJ) to provide support in the establishment of a modern physical plant for the new BCAS. The GOJ concurred and, by 1983, the IPSA campus had been established with a contribution from the GOJ through the Japan International Cooperation Agency (JICA) of approximately US \$9 million. Before BCAS became functional, however, another agricultural college at Dumki, the Patuakhali Krishi College (PKC), commenced operation. With the Bangladesh Agricultural University (BAU), the Bangladesh Agricultural Institute (BAI), and PKC now all offering undergraduate instructions and having the capacity to meet the annual demand for agricultural graduates, BCAS's role in providing additional needed capacity for undergraduate training significantly diminished.

Consequently, the idea was advanced that the BCAS's mission should continue to be one of meeting the demand of changing agricultural institutions for highly skilled technical manpower. While this was initially to be accomplished at the B.Sc. level, in light of new developments sketched out above it was now proposed that the BCAS fulfill this role at the postgraduate level. On October 3, 1983, a meeting was held which was attended by representatives of the Bangladesh Agricultural Research Institute (BARI), BAU, BAI, and the Ministry of Agriculture (MOA). At that meeting it was recommended that the BCAS be transformed into a postgraduate school and named the "Institute of Postgraduate Studies in Agriculture" (IPSA) with the charge to offer courses leading to Masters and Doctoral degrees in various disciplines in agriculture. It was also recommended that the undergraduate program be deleted. Later on, BAU accorded affiliation to IPSA for imparting postgraduate education in such departments for which the Bangladesh Agricultural Research Institute for teaching and thesis supervision at IPSA. (PARI) and the Bangladesh Rice Research Institute (BRRI) were authorized earlier to provide thesis research supervision under the auspices of the BAU postgraduate program. BARI and BRRI are located in close proximity to IPSA and initially provided significant scientist resources.

Revenue expenditures at IPSA, such as salaries of staff and costs of operation of the Institute's activities, are met from GOB funding. Developmental activities are largely funded through technical assistance by the Government of Japan (GOJ) and the

U.S.A. Development of the infrastructure and physical facilities at IPSA was largely funded by the GOJ under a grant assistance program. During the second phase of development (which formally commenced on July 4, 1985), the GOJ is providing technical assistance for the improvement of IPSA's academic program by developing the experimental facilities. It also provides technical assistance through the dispatch of experts. Currently, three expatriate professors from Kyushu University and a coordinator (from JICA) are assisting IPSA in building academic programs with a strong research base. The GOJ has also committed scholarships for long-term (doctoral) and short-term training at Kyushu University and Saga University. Funds are also available to provide the services of Japanese experts to IPSA on a short-term basis in agricultural fields and on various topics as needed. The GOJ technical assistance for the second phase (1985-90) is estimated at about USD 6 million. Thus, funds for both phases total approximately USD 15 million.

The United States Agency for International Development (USAID) participation in the IPSA Project began in mid-1986. This participation in the IPSA Project by USAID was carefully evaluated by the various parties involved, and formal planning of the nature of the involvement did not take place until after discussions between the Bangladesh Ministry of Planning, the Japanese Ministry of Foreign Affairs, JICA, and USAID, among others, were satisfactorily completed. The tripartite cooperation was not entered into lightly. The numerous discussions included, among others, a meeting by the USAID/Dhaka Mission Director with high level officials of the Ministry of Foreign Affairs in Tokyo.

USAID's technical assistance includes manpower development (providing five scholarships for Ph.D. level training for IPSA faculty and short-term training for the librarian and for institutional and academic management), assistance in the development of a library through the purchase of books and journals, establishing a computing capability through the acquisition of microcomputers and computer software, and provision of technical services for curriculum planning and the development of extension education. One long term development specialist (curriculum planning) from Oregon State University has been at IPSA since July 1986. The extension specialist is scheduled for arrival in late June of 1989. The total budget for expert services, participant training, and commodities is approximately \$2.3 million.

The immediate objective of the tripartite project is to "strengthen postgraduate level education and research, thus contributing to the improvement of the practical research system in Bangladesh" (see "Record of Discussions Between the Japanese Implementation Survey Team and the Authorities Concerned of the

Government of Bangladesh," July 4, 1985). It is planned that IPSA will serve as a "Centre of Excellence" for postgraduate studies leading to Masters and Ph.D. degrees in all disciplines of crop science and including agricultural extension, agricultural economics, and social sciences (see "Project Proforma").

Sub-objectives deal with all aspects of developing a new multi-faceted institution. Thus, construction of the physical infrastructure, acquisition of machinery, equipment, computers, and instruments, development of improved academic programs, improvement of library holdings, establishment of a research program, and shaping of an administrative structure all are receiving attention.

The current phase of the Project is about to complete its fourth year and will terminate in mid-1990. The Project has progressed more rapidly than planned in some aspects and is somewhat lagging in others. On the whole, however, the Project is viewed to have made good progress, and all three Governments have in principle agreed to continue the Project after the current phase terminates in 1990. The nature of the continuing phase is to be determined after a tripartite evaluation in July of 1989.

III. THE EXPERIENCE WITH TRIPARTITE COOPERATION

There is general consensus that the IPSA Project benefitted from tripartite cooperation in several ways. The most obvious benefit is the larger resource base available for the development of the Institute. This larger resource base extends to technical expertise, buildings and infrastructures, machinery and equipment, library materials, and participant training.

To look only at the overall resource base would overlook several of the important benefits gained from tripartite cooperation. One such benefit derives from the fact that various donors, in this case Japan and the USA, can provide certain types of technical cooperation more easily than other types. In the case of IPSA, for example, English language books and journals are more important than books and journals in Japanese, and the English language journals can more easily be provided through USAID than through JICA. On the other hand, repairs and maintenance of Japanese (right hand drive) vehicles are much more readily accomplished in Bangladesh than repairs and maintenance of American vehicles, and Japanese vehicles can more easily be procured by JICA than by USAID. Similarly, the comparative advantage of Kyushu and Saga University scientists with crops of the prevailing local climate suggests that the Japan side should have primary responsibility for research in this area; whereas in the social sciences, including extension, the US counterparts appear to have the comparative advantage. Numerous other examples could be cited, but those given suffice to illustrate the point.

Due to tripartite cooperation, participant training (including doctoral fellowships, post-doctoral fellowships, and short-term training) has taken place both in Japan and in the USA. As a result, IPSA faculty is receiving the benefit of experience in diverse circumstances. Such diverse experience contributes to a broadening of the outlook, both professional, cultural and political, of the faculty. This outlook will at least in part be passed on to the students. The presence of long- and short-term scientists and administrators from Japan and the USA serves to re-enforce the broadening of outlook of the faculty.

Related to the above is the development of strong linkages between IPSA and not only one, but two, universities in other countries, namely Kyushu University and Oregon State University. Indeed, as there is close cooperation between Kyushu University and Saga University, linkages are developing with that university as well. Furthermore, it should not be overlooked that as a result of tripartite cooperation in the IPSA Project, linkages are also developing between Kyushu University and Oregon State University.

The three cooperating partners bring with them diverse experiences with respect to administrative structures, academic programs, and approaches to research and outreach programs. This stimulates discussions with respect to the relative merits of various approaches and generally broadens the horizons of those involved in the discussions. There is a perceived decrease in an attitude which sees "my way" and "your way," as there are always at least "three ways."

The fact that two (donor) countries are involved increases the visibility of the Project within the Government of Bangladesh. While this can have certain drawbacks, this increased visibility has generally been in favor of the IPSA Project.

While not a direct Project impact, there is evidence that tripartite cooperation in the IPSA Project has contributed to a better understanding and increased cooperation between the Japanese and American Missions to Bangladesh. This should be of long-term benefit to all three countries.

IV. KEY FACTORS FOR SUCCESS

The first attempt at fully integrated tri-partite cooperation, namely the IPSA Project in Bangladesh, is generally considered to have been successful. A number of factors and circumstances can be identified which contributed to the success of this tripartite cooperation.

1. There was a clear and written identification amongst the donors as to who was the "junior partner" and who was the "senior partner." For reasons such as earlier presence, size of technical cooperation and grants budgets, number of expatriates, etc., it

was clear that in the IPSA Project Japan should be the senior partner. This was not left to chance, however, but was made a matter of record after discussion between JICA and USAID. Prior to implementation of tripartite cooperation, it was furthermore agreed upon that American advisers will not contact either Japanese or Bangladeshi officials on matters pertaining to the IPSA Project without prior clearance by the Japanese Team Leader.

2. There was (and is) only one technical cooperation team to the IPSA Project, and that team is the Japanese Technical Cooperation Team. The American advisers are part of the Japanese Technical Cooperation Team and are so in the fullest sense of the word. To assure that the American advisers are team members in the fullest sense of the word, a number of deliberate steps were taken. For example, periodic Japanese team meetings are conducted in English to permit full participation by the American advisers.

3. On major institute wide committees, be they academic or administrative committees, there is always tripartite representation. This tripartite representation assures not only that "all sides" are informed of major decisions made, but also provides a mechanism for preventing decisions which would embarrass one or the other side and which would subsequently have to be reversed because policies or procedure of one of the cooperating partners do not allow what the decision requires.

4. There was, from the very beginning, a clearly defined division of labor and responsibilities. For instance, it was clearly specified that the Japanese side had primary responsibility for participant training in the biological sciences and shares responsibility in short-term training in institutional management, whereas the American side had responsibility for participant training in the social sciences, library sciences, and shares responsibilities in institutional management. Similarly, provision of laboratory equipment was the responsibility of the Japanese, whereas the Americans had responsibility for computers, books, and journals. To be sure, it is not possible to plan a technical cooperation project in such a manner that all activities are either black or white, nor is it possible to foresee all activities that might have to be undertaken. However, to begin with a philosophy that primary responsibility for implementation activities belongs to one or the other party sets the stage for willingness to make or accept assignments when unforeseen situations arise. It also avoids wasteful rivalry and duplication.

5. There must be support from all three governments. In part, this support can be generated through institutionalization, and in part it must be cultivated and re-cultivated. In the case of the IPSA Project institutionalization was accomplished via the establishment of a Coordinating Committee which is chaired by the Secretary of Agriculture and which includes high-ranking officials of all three governments. However, establishment of such a committee is, by itself, not enough to maintain continued support by the governments. One of the ways to assure continued support

is successful implementation of the project. But even this is not sufficient unless this progress is communicated to the respective agencies and officials. This takes deliberate effort tailored to the particular circumstances and must be done in such a manner that each partner is given due credit.

6. There must be willingness to understand or at least to accept each others often very different administrative procedures and culturally conditioned differences in approach. While this is important in bipartite projects, it takes on added importance when three governments are involved, and it is necessary to be prepared for devoting additional time to the resolution of issues arising from "tripartite differences".

V. DRAWBACKS AND LESSONS LEARNED

Earlier it was stated that the general consensus is that tripartite cooperation in the IPSA Project was successful and beneficial to the development of IPSA. Some factors were then identified which were thought to have been essential for success. However, it would be misleading not to point out that tripartite cooperation does not come without cost and that in the IPSA Project some things could have been done better, at least in hindsight. Indeed, some of these issues have already been alluded to.

One of these issues deals with the need for allowing more time for discussion and resolution of issues. All parties involved will more often than not be dealing with two "other sides" rather than only with one "other side" as in the case of bipartite cooperation. As the IPSA Project is the first integrated tripartite cooperation project, certainly the first one between the three countries as well as the first between Japan and the USA, it is possible that as a result of the learning process that has taken place future tripartite projects will spend less time in meetings and deliberations. However, the opportunities for saving time would appear to be small, even for future projects.

Although the IPSA Project did not experience resistance from the host country government toward cooperation by two major donors (in fact, there is considerable government support for this cooperation), there is the potential for host country government resentment of the increased influence on project implementation which may in fact exist or may only be perceived to exist.

Procedures for agreeing to, providing and implementing technical assistance are different for host country governments and donor governments and are different from donor government to donor government. As has already been pointed out, this can have certain attractions, as these differences may provide for additional flexibility. However, these differences will also create conflicts, necessitate additional reports, etc. Once

again, as learning takes place on how to best structure tripartite cooperation, these bottlenecks may ease. But once again there appears to be little chance for significant change in the short-run. Thus, the need remains for recognizing at the time of project design that there will be occasions for compromise and conflict resolution during project implementation.

One of the lessons learned in the IPSA Project was that it is desirable to commence with the planning of tripartite efforts as early in the project design as possible. In the case of the IPSA Project, the American component was added after the Bangladeshi-Japanese planning effort was at an advanced stage. This situation, although not the only reason, contributed to the need for repeated rewriting of the Project Proforma (PP) and huge delays in its approval. All this is time consuming and withdraws energies and resources from the implementation process.

VI. TRANSFERABILITY OF THE IPSA EXPERIENCE

Is the IPSA experience merely a lucky coincidence, is its success due to unique circumstances, or does it provide some guidelines which can be transferred to other projects where tripartite cooperation is being considered for enhancing the effectiveness of project implementation or for making a project feasible in the first place?

It would appear that the IPSA experience does provide some guidelines which can be used to increase the probability of success in other tripartite projects. Needless to say, some of the guidelines are more easily transferable and reproducible than others. Guidelines such as explicitly deciding on the junior and senior partner, laying out the division of labor, establishment of a coordinating committee, etc. can be transferred relatively easily.

More difficult are the cultivation and re-cultivation of support from the three governments, as there is no one approach and different approaches are more effective at one time than at another. Thus, this requires timing and judgement on the part of the implementing team.

Even more difficult is establishment and maintenance of a team spirit and support of a common goal on the part of the team members from three different countries and cultures. Much depends on the skills, leadership capability, and unselfishness of the leadership of the project. While some things can be done to make the appropriate personal qualities available, they cannot be assured or guaranteed.

Finally, IPSA is a relatively small institution, its faculty and staff display the kind of enthusiasm and optimism which is frequently found in new institutions, and a large number of the people responsible for implementation of the project are highly trained (with doctoral degrees from a half dozen different

countries), are sensitive to cultural differences, and have mutual respect for each others professional competence. This combination of project characteristics cannot always be reproduced in other projects. Yet, while it cannot be said that the presence of these characteristics is essential for success, it is undoubtedly a significant contributor.

Overall, however, there is reason to believe that analysis of the experience with the IPSA Project permits the identification of factors which have contributed to success and that the IPSA experience provides some lessons which may improve the design and administration of future tripartite projects. Furthermore, it is judged that the "factors contributing to success" and the "lessons learned" are transferable to a significant albeit varying degree.

VII. CONCLUDING COMMENTS

Participants in the implementation of the IPSA Project and observers of the project alike generally agree that the fully integrated tripartite cooperation produced synergistic forces which resulted in a more successful project than would otherwise have been the case. This result by itself would speak in favor of pursuing other tripartite cooperation projects in the future. To look at the synergistic forces within the IPSA Project alone would, however, overlook what would appear to be spin-offs from tripartite cooperation effects. In Bangladesh, for instance, attention to the "tripartite experiment" at IPSA served as catalyst to foster a closer relationship between USAID and JICA to the point where joint development of a Country Development Strategy Statement is under consideration. Additionally, while by no means a foregone conclusion, there are discussions underway between JICA and USAID regarding the possibility of a second fully integrated GOB, GOJ, and USA cooperation project, this time with the US-side as the senior partner and the Japanese-side as the junior partner.

The above discussion is largely confined to tripartite cooperation with Japan and the USA as the donor countries. This is by necessity so, as the discussion is basically a case study of the IPSA Project. However, this should not be interpreted to mean that integrated tripartite cooperation must be restricted to these two donor countries. Other donor combinations (including multi-national organizations) are clearly possible. Furthermore, there is no reason to believe that donors must be from the "large donor" group. Indeed, the fact that experience in the JICA Project shows that identification of a "senior" and a "junior" partner is an essential factor for success suggests that donors from outside the "large donor" group can potentially play an important role in tripartite cooperation.

While the above analysis leads to a favorable conclusion with respect to tripartite cooperation, it should not be interpreted as a recommendation for an indiscriminate move to tripartite cooperation - be it with Japan or any other donor. Not all projects have the presence of key factors necessary for success as identified by the IPSA Project, nor do all projects need a larger resource base than can be provided by one donor. Further, there are "learning" costs to tripartite cooperation. This is true for the host country, for the donor countries and their implementing agencies (e.g., JICA, USAID), and the implementing contractors. Further, "lessons learned" in a tripartite project between say, the GOB, JICA, and USAID are not necessarily applicable for a tripartite cooperation between the GOB, the World Bank (WB) and USAID, as the WB has different procedures, policies, and comparative advantages than the GOJ.

Thus, the conclusion from an analysis of the experience with the IPSA Project is that tripartite cooperation, particularly with Japan and the USA as close parties, has a most useful role to play in future technical cooperation with developing countries. Not all projects will benefit from tripartite cooperation, however, and any attempt, fad, or policy to make tripartite cooperation a sine qua non condition would be ill conceived. The future successful tripartite project will be the one which draws on lessons learned and is carefully evaluated with respect to presence of factors essential for success. The experience with the IPSA Project offers some preliminary guidelines for this purpose.

ANNEX 4

ACTIVITIES OF JAPANESE EXPERTS

Dr. S. Samoto (Genetics and Plant Breeding: 3.10.1986-28.10.1986)

He stayed at IFSA for 1 month in Oct. 1986. He discussed with C/P and Dr. Yoshimura on the research program which was going on the Department of Genetics and Plant Breeding and gave advice to them. He also left an appropriate suggestion for the development of the Project. He gave a lecture titled "Briefing the Rice Cultivation in Japan" at the IFSA Seminar on Oct. 25, 1986.

Dr. S. Wakimoto (Plant Pathology: 21.12.1986-8.1.1987)

He stayed at IFSA for 3 weeks from Dec. 21, 1986. He discussed with C/P and Dr. Tsuno on the operation and maintenance of EM in connection with future research program in the Department of Plant Pathology. He recommended that Plant Pathology Department should have special interest on plant Virology under the present situation of Bangladesh. He also suggested that research on tomato virus disease would be very urgent. He also emphasized that the Laboratory of Plant Pathology, Kyushu University will keep close relationship with the Department of Plant Pathology, IFSA for increasing mutual research activity, here after. He gave a lecture titled "Use on EM in agricultural research, with special emphasis on Plant pathology" at the IFSA Seminar on Jan. 3, 1987.

Dr. W. Agata (Agronomy: 21.12.1986-8.1.1987)

He stayed at IFSA for 3 weeks from Dec. 21, 1986. He discussed with C/P and Dr. Matsunaga on the current and future status of Agronomy Department. He recommended that Agronomy Department should concentrate their study on plant-water relationship. Analytical study on photosynthesis, dry matter production and plant nutrition should be done to clear the plant-water relationship in crop cultivation. He gave a lecture titled "Importance of the research on photosynthesis for crop production" at IFSA seminar on Jan. 5, 1987.

Dr. A. Yoshimura (Genetics and Plant Breeding: 19.1.1986-17.3.1987)

He stayed at IFSA for one year and two months as a pioneer of Japanese experts and contributed very much for the establishment of IFSA laboratories with other Japanese experts. At the beginning of the cooperation, C/P were not so active to do the research on rice because rice was not included in the target crops which should be studied in IFSA. However, Dr. Yoshimura discussed with Director and also the department head of Plant

Breeding in BIRRI and got the agreement to study on Rice in IPSA. He left 500 genetic stocks of rice brought from Kyushu University. These stocks would be very useful for IPSA's future study and education. He carried out the following cooperation research work with C/P in the Department : (1) The Identification of Interchange Chromosomes in Near-isogenic Reciprocal Translocations. (2) Breeding New Genetic Markers with Indica Genetic Backgrounds of Rice. (3) Screening for Bacterial Blight Resistance in 1000M Lines of Rice Derived for Treatment of the

2

Fertilized Egg Cell with N-methyl-N-nitrosourea (Joint Program with Plant Breeding Div., BIRRI).

Dr. Y. Hirashima (Entomology: 7.4.1987-17.4.1987)

He stayed at IPSA for 10 days from April 7, 1987. He discussed with C/P and Dr. Ogata on the current and future status of Entomology Department. He recommended following research programs to advance entomological studies and methods of pest control.

1. Ecological and biological studies of major insect pests of useful crop other than rice, including their natural enemies.
2. Collection and preservation of insect specimens at IPSA as a standard insect collection of Bangladesh.
3. Biological studies of pollination and utilization of insect pollinators.

He gave a lecture titled "Some topics in applied entomology in Japan" at IPSA Seminar on April 11, 1987

Dr. N. Sako (Plant Pathology: 13.12.1987-29.12.1987)

He stayed at IPSA for 19 days from Dec. 13. During his stay at IPSA he had surveyed on the occurrence of diseases of some crops in the fields with C/P of Plant Pathology Department. He collected about 30 kinds of infected leaves as the samples to be tested. He observed that okra, papaya, chilli, capsicum, tomato and potato were severely affected with virus diseases. As the information on the occurrence of viruses and their affects on crop production seems to be scant and inadequate in this country, he emphasized the need for research to solve the virus-related disease problem. Following fundamental and applied research works were suggested by him.

1. Survey for virus-related diseases of crops.
2. Identification of causal viruses, their strains, and serotypes.
3. Distribution and epidemiology of actual economically important causal viruses.
4. Development of useful control measures for each crop.
5. Intensive breeding or selection program for resistant variety of crops.

He gave a lecture titled "Advanced Techniques for Identification of Plant Viruses" at the IPSA Seminar on Dec. 26, 1987.

Dr. Egashira (Soil Science: 14.1.1988-11.2.1988)

He stayed at IPSA for one month from 14, 1988. He focused his technology transfer to the C/P Mr. Farim on the measurement of fundamental soil physical and chemical properties. Soils were collected from IPSA farm and from Kalihati Upazila (Tangail District). Very high content of clay, very low content of organic matter and phosphorus and the high soil compactness may be potential factors to control the growth and root elongation of rabi crops in IPSA farm in the season. He advised to the C/P the following research as a future work:

Characterization of physical properties of soils collected at main upland-crop areas in relation to the crop growth and root elongation.

He also observed and identified the clay minerals in the above mentioned soils using EM with C/P. The clays separated from both soils were dominated by kaolinite.

He gave a lecture titled "Multivariate Analysis of Soil Analytical Data for Agricultural Lands in Nagasaki Prefecture" at the IPSA Seminar on Feb. 4, 1988.

Dr. K. Fujieda (Horticulture: 14.1.1988-11.2.1988)

He stayed at IPSA for one month from Jan. 14, 1988. Basic tissue culture technology for the purpose of horticultural breeding and production of seedling was transferred to the C/P (Dr. Quadir and Dr. Khaleque) as follows:

- (a) Propagation technique through adventitious organogenesis (onion)
- (b) Embryo culture technique and overculture technique (cucumber, mustard)
- (c) Regeneration technique of virus-free stock (rose)

He gave guidance to establish the micro-propagation technique using male sterile stock of local onion through induction of adventitious organogenesis. When this technique is established, it will be possible to produce F_1 cultivar with high efficiency. He also gave guidance to establish the breeding method of F_1 -hybrid and to improve the seed production technique of horticulture crop. He gave a lecture titled "Tissue Culture in Garden Crops" at the IPSA Seminar on Feb. 4, 1988.

Dr. K. Ogata (Entomology: 26.3.1987-24.3.1988)

He joined IPSA project on March 26, 1987 and completed his

job successfully and left on March 24, 1988. During his stay at IPSA he contributed very much to this project. Those are establishment of entomology laboratory, giving lectures on insect taxonomy, cooperation of research work and making a collection of insects. Among those contributions, his lecture on Taxonomy of insects and his collection of insects were appreciated very highly by the IPSA faculties.

Japanese experts have no responsibility to give lectures to student directly, but he was requested strongly by Dr. Alam to give a lecture on Taxonomy, because of the shortage of teacher in that area. Finally he agreed and completed 8 classes for IPSA Students on behalf of Dr. Alam. He collected more than 500 insects mainly at IPSA campus and Bhawal Forest area. He left his collection to the Entomology Department of IPSA. Those collection will be utilized for long time for research and education at the Institute. He cooperated with Dr. Alam on the studies of pollination and ecological studies of pest insects.

Dr. K. Tsuno (Plant Pathology: 1.5.1986-29.4.1988)

He completed his 2 years job very successfully and left on April 29, 1988. I expected Japanese experts to establish the first class laboratories in IPHA because this is the most important thing which should be carried out at the first stage of this project. They investigated and designated laboratories, selected the equipment and a lot of chemicals very carefully considering the circumstance of Bangladesh, and installed and adjusted them in each laboratories for research work. They completed this big task successfully and Dr. Tsuno took the leadership of it. After the installation of electron microscope and other equipment, he organized many workshops for IPHA faculties on the function and the operation method of these equipments. He succeeded to observe plant virus particles, microplasma, bacterium, fungus and nematode. He also observed the clay minerals in the soil of Tangail, Kudda and IPHA. These observations were carried out as a part of the cooperative research work with a researcher in Hungarian Research and Training Institute, and Dr. Tamaki and Mr. Farim. They have published two papers in the Bull. Inst. Trop. Agr., Kyushu University. Those are "Nematode Parasite of Hungarian" published for introduction of diseases to Bangladesh" and "Identification of Heteropores of Helicoverpa and Location of their females in host plants using scanning electron microscope".

Dr. H. Nakamura (Entomology: 1.5.1986-30.4.1988)

He completed his 2 years job very successfully and left on May 30, 1988. He also investigated and designated the laboratories, selected the equipment and chemicals very carefully considering the circumstance of Bangladesh, and installed and adjusted them

in each laboratories for research work. Then he organized many workshops for IPFA faculties on how to use these equipment. Besides the establishment of laboratories, he contributed to establish the meteorological station cooperating with Mr. Karim, Mr. Sifuddin and Mr. Miyashita. The weather data as being collected every day satisfactorily from Jan. 1, 1988. These date were immediately on the notice board and a monthly report was also distributed in IPFA. Annual Weathering Report in 1988 was issued by Mr. Karim. He organized many workshops for IPFA faculties on Gas chromatography, Atomic absorption spectrophotometry and chemical analysis of plant and soil. Symbiotic nitrogen fixation ability of leguminous plant has been measured in Soil Science Department and Agronomy Department. He carried out the cooperative research work with C/P of Agronomy Department. Those are "Dry Matter Production and Yield Performance of Summer and Winter Pulses in Bangladesh", "Wheat Cultivation in Tangail District of Bangladesh" and "Seasonal Distribution of Flowering and Pod Setting of Mungbean in Different Growth Seasons in Bangladesh".

The first and the second papers were published in J. Fac. Agr. Kyushu University. The last report was presented as a cooperative research work with Dr. Hamid and Mr. Hashem at the Second International Symposium on Mungbean which was held at Bangkok in November, 1987.

Dr. S. Kawaguchi (Soil Science: 14.7.1988-14.8.1988)

He stayed at IPFA only for one month from July 14, 1988, but he transferred the knowledge and technology of Soil Microbiology to C/P Dr. Haider. He studied with Dr. Haider on the fundamental soil chemical properties and the enumeration of soil microflora of the soil which was collected from the experimental field of "the effect of manuring on physico-chemical and microbial properties of soils". He also gave an excellent lecture on "Physiology and Biochemistry of Azolla-Anabaena symbiosis and its potential usage in rice cultivation", at the IPFA Seminar on August 10, 1988.

Dr. Egashira (Soil Science: 14.7.1988-13.9.1988)

Dr. Egashira's visit to IPFA was for the 2nd time and he stayed for 2 months. According to his idea as suggested during his former visit Mr. Karim collected soils from the uncultivated land of Gray Floodplain soil (Sonatola series), Deep Red Brown Terrace soil (Tejgaon series) and Shallow Red Brown Terrace soil (Salna series) because these are the soils in main upland-crop areas in Bangladesh. Selection of sampling sites and description of soil profiles were assisted by Mr. S.M. Scheed of SKDI.

He transferred the technique to Mr. Karim to measure the three-phase distribution and dispersion ratio which are the most important characters of soil physical properties. He also discussed with Mr. Karim on the assessment of the data obtained, especially to analyze the meaning of the result. Finally he proposed to the C/P Mr. Karim on the future works as follows:

Characterization of other soil types or soil services on main upland crop areas by the measurement of three-phase distribution and dispersion ratio; and variation of physical properties between rainy season and dry season.

Dr. S. Miyazaki (Horticulture: 4.8.1988-30.8.1988)

He stayed only for one month from August 4, 1988, but he transferred the tissue culture technique to the counterparts Drs. Quadir and Khaleque for the production of virus free plants (garlic, taro), production of polyploids (garlic, taro), embryo culture (kafrol) and mass propagation (rose). He also transferred the method of chromosome observation using taro. However, the technology transfer was not so smooth, as he used interpreters who were not familiar on those areas. Direct technology transfer is always preferable. He gave a lecture titled "Taro in Japan" at the IFSA Seminar on August 27, 1988.

Dr. N. Matsuyama (Plant Pathology: 2.10.1988-28.10.1988)

He stayed at IFSA only for one month from Oct. 2, 1988. He intended to study cooperatively with C/P Mr. Bhuiyan in the assignment titled "Isolation of Anti-fungal Substances from Tropical Plants". Unfortunately, the arrival of experimental equipment and chemicals was quite delayed by flood, but they carried out some parts of their schedule and succeeded in obtaining crude samples of anti-fungal substances from turmeric (*Curcuma longa*). Besides this research, he tried to transfer the operation method of analytical equipment and the clean bench technique. He also supervised Mr. Bhuiyan on his thesis which will be carried out in Ph.D. course in Japan. He gave a lecture titled "Recent Studies on Rice Plant Disease in Japan" at the IFSA Seminar on Oct. 24, 1988.

Dr. Y. Murahmi (Entomology: 2.10.1988-20.10.1988)

He stayed at IFSA only for one month, but he transferred the knowledge and technology on Entomology to C/P Dr. Alam. His research activity was mainly focused on the investigation of mango pests and their natural enemies. And he sorted the insect specimens collected by light trap, along with the C/P and a long term expert, Dr. Y. Ohara. It will be very useful for developing forecast and ecological studies of insects in IFSA.

He gave a lecture titled "Recent Studies on Biological Control of Pests in Japan" at the IPSA Seminar on Oct. 15, 1988.

Dr. S. Shiraishi (Horticulture: 2.10.1988-29.11.1988)

He stayed at IPSA for two months from Oct. 2. He transferred the technique to Dr. Hossain and Mr. Rahman on the chemical analysis of total and free acid, total and reduced sugar, total chlorophyll, B-carotene and ascorbic acid which are closely related to the quality of fruits. He used the following fruits: banana, papaya, Indian goose berry, citrus, European pear, pineapple, crab apple, grape, star fruit, olive, tamarind, chailta, chinnan, pomegranate, arecanut, coconut, wood apple, bilimbi, pomillo and jack fruit which were collected from BARI, BARS, ARS and bazars. In those procedures he trained them how to operate the equipment including spectrophotometer, how to calculate to get the contents of those materials from the data obtained and how to assess the results.

He gave a lecture titled "Fruit quality in Japan" at IPSA Seminar on November 20, 1988.

Dr. K. Tsuno (Plant Pathology: 27.11.1988-20.12.1988)

He visited IPSA after an interval of 7 months. This time he stayed at IPSA for only one month, but he carried out research works cooperatively with C/P Dr. Ismail and Mr. Bhuiyan. Those are (1) Ultrastructures of the Fungus Causing Rust on Broad bean in Bangladesh (2) Ultrastructures of Sclerotium of an Isolate of Sclerotium rolfsii common in Bangladesh.

He presented three research papers which have been carried out by using electron microscope, at the 3rd Conference of Bangladesh Phytopathological Society held at BAU on 8th to 9th December, 1988. Those presentation, perhaps, gave a scientific impact to the attendants at the conference.

Through those joint research efforts, the C/P have been skillfully executing the required sequence of tasks for electron microscope, such as preparation of sample, taking photos, development of film and printing. It is surely confirmed that C/P Dr. Ismail has acquired not only the technique but also the scientific view point in the field of applied Electron Microscopy and Plant Pathology.

He also tried to repair the transmission-type electron microscope which was out of order due to unidentified reasons, but could not improve it unfortunately.

Dr. S. Wada (Soil Science: 16.12.1988-14.2.1989)

He stayed at IPFA for two months from December 16, 1988. He transferred the knowledge and technology on Soil Science. He discussed with C/P Mr. Haider and Mr. Farim on the chemical properties of soil which should be definitely covered in microbiological and physical researches on soils and selected several items of chemical properties of soil to be analyzed.

Items of analysis are as follows:

1. Suspension pH (in water an 1N HCl)
2. Total organic carbon
3. Total nitrogen
4. Exchangeable cations (Na^+ , K^+ , Mg^{++} , Ca^{++} , NH_4^+ , Al^{+++})
5. Available phosphate
6. Available trace elements (Fe, Zn, Cu, Mo, Mn and B)

Technique to use a spectrophotometer and an atomic absorption spectrophotometer were practiced repeatedly.

He also suggested about instruments and chemicals needed for further chemical analysis.

Dr. Y. Kawamitsu (Agronomy: 16.12.1988-14.2.1989)

He stayed at IPFA for two months from December 16, 1988. He transferred the knowledge and technology on Agronomy to C/P Mr. Tajul, especially on the operation methods of equipment concerning photosynthesis. Those techniques are as follows:

1. Measurement of CO₂ assimilation by the Portable Photosynthesis System (Model 11 2200, EI COB).
2. Measurement of transpiration rate and stomatal conductance by the Steady State Porometer (Model 11 1200, EI COB).
3. Measurement of quantum flux density by the Quantum Sensor (Model 11-1700A/EI 1000, EI COB).
4. Measurement of leaf water potential by the Pressure Chamber (Model DE 2000, DAVE).
5. Measurement of stomatal frequency and length of the guard cell by the Light Microscope.

He used the specimen from the following studies which were carried out in the experiment of fertilizer.

1. Effects of water and nitrogen supply on the root growth and yield of corn.
2. Varietal differences of wheat on the growth and yield.
3. Effects of different proportion on the growth and the ability of nitrogen fixation of clover.

Dr. S. Kawaguchi (Soil Science: 23.4.1989-20.5.1989)

Dr. Kawaguchi's visit to IPFA was for the 2nd time and he stayed for one month from April 23, 1989. This time his technology transfer to C/P Dr. Haider has been focused on "The enzyme activities in relation to carbon, nitrogen, phosphorus and sulphur and sulphur transformation in the representative Bangladesh soils". Those are each horizon soils of two noncalcareous dark gray floodplain soils, two calcareous brown floodplain soils, and two brown hill soils. Dehydrogenase, β -glucosidase, urease, acid phosphatase, alkaline phosphatase and arylsulfatase were assayed. He explained the meaning of these enzyme activity and discussed the results obtained with C/P.

Dr. K. Ohno (Entomology: 10.3.1988-9.3.1989)

He joined at IPFA project on March 10, 1988 as the successor of Dr. Ogata. He worked with C/P Dr. Alam on the following studies.

1. Population dynamics of gall midge flies on mango.
2. Reproductive property of the stink bugs and their eggs parasitoids.
3. Evaluation of the information rates of borer on cowpea.
4. Daily collection of insect pest by light trap to forecast their abundance.

Besides those research work, they have recently examined and identified the gall makers on mango stem and bay-leaf respectively which are potentially dangerous pests. By the dissection under binocular connected with IV, dipteran larvae were found in a gall of mango stem. There are two kinds of gall of bay-leaf. It was found that blister type gall was caused by a homoptera and tumor type was caused by a mite. As mentioned above, they have already got very interesting and important results, but Dr. Ohno's one year assignment to IPFA is too short to accumulate and analyze the ecological data obtained from the laboratory and field. So, Director, IPFA requested to MOA and JICA that Dr. Ohno's assignment to IPFA be extended by one year more, and it was finally approved by the GOB and GOJ.

Dr. I. Miyajima (Horticulture: 22.1.1989-19.1.1990)

He joined IPFA project on Jan. 22, 1989 and installed the HPLC (High Performance Liquid Chromatograph) which was introduced recently and adjusted it for the analysis of organic acids. He started to analyze the organic acids in various tropical fruits such as star fruit, pepaya, and banana etc. with C/P Dr. I. Hossain. He also started to study on "The characteristic of photosensitive winged bean sown at various period" with C/P Dr. Chowdhury and Mr. Rahman.

Dr. K. Egashira (Soil Science: 23.4.1989-29.6.1989)

Dr. Egashira's visit to IFSA was for the 3rd time and he stayed for 2 months. He continued the work with C/P Mr. J.M.S. Karim as follows:

1. Soil water balance and rainfall reliability in Bangladesh using the data collected from Climate Division, Bangladesh Meteorological Department. Through those investigation they cleared the agricultural climatic characteristic of the main area in Bangladesh.

2. Physical properties of soils of six main upland-crop areas in Bangladesh. The selection of sampling sites and description of soil profiles were assisted by Mr. S.M. Saheed, Director, SRDI. They started to analyze bulk density, particle density and three-phase distribution.

3. Effects of long-term manuring on the physical properties of IFSA soil. To remedy the poor soil properties and to improve organic matter status of the IFSA soil, application of organic materials is one of the best practices. From this view point, the long-term manuring experiment was started on March 1988. Maize, rice and wheat were grown on the plots of five manuring and three levels of nitrogen treatments. Effects of manuring on the physical properties of the IFSA soil were recognized after one year cultivation, lower bulk density and solid phase, lower liquid phase, and higher gas phase; higher intake rate at the initial stage; lower dispersion ratio. Effects of manuring was, however, limited to the surface 0-5cm layer.

Dr. Egashira transferred the technology to C/P Mr. Karim through the cooperative research work.

Dr. S. Shiraishi (Horticulture: 11.6.1989-10.7.1989)

Dr. Shiraishi's visit to IFSA was for the 2nd time and he stayed for one month. He worked with C/P Dr. T. Hossain and Mr. Md. Rahman on the analysis of chemical composition of tropical fruits. They collected 16 cultivars of mango, 6 strains of Jackfruit, 5 strains of pineapple and 3 strains of Indian black berry, and analyzed the contents of acids, sugars, pigments and ascorbic acid in those fruits. He visited mango Research Station (BARI) at Chapainowabganj with Dr. Hossain and Citrus Research Station (BARI) at Akbarpur Sylhet with Mr. Rahman to exchange the scientific information with several horticulturists of respective stations.

He brought several virus free young shoots of grape from Japan and planted tentatively in the Wegner pots. Those will be transplanted in the orchard soon to observe the growth pattern of different grape varieties.

Dr. I. Marumoto (Soil Science: 16.6.1989-29.8.1989)

Dr. Marumoto joined IPFA project on June 16, 1989 and he will stay upto August 29, 1989. He discussed with C/P Dr. J. Haider and decided the cooperative research work on soil microbial biomass as follows:

1. Measurement method of soil microbial biomass using chloroform fumigation technique.
2. Estimation of microbial biomass in the soils with different crop productivity in IPFA and BRRI, Comilla Regional Farm.
3. Relationship between soil fertility and microbial biomass nitrogen.
4. Effect of application of organic matter on soil microbial biomass.

He visited BARI, BRRI, BAU, HINA, SRDI and DU to get information and to discuss with the scientists on the problems of soil in Bangladesh. He took soil samples from the field of IPFA and BRRI Regional Station, Comilla for the above mentioned research work. He brought an apparatus for measurement of soil microbial biomass and transferred the technique to use it to Dr. Haider. He will give a lecture on July 22, 1989, titled "Significance of Microbial Biomass in Soil Fertility and Crop Productivity".

ANNEX 3

TABLES

Annex Table 5.1. List Of Experts Dispatched As Of July 1, 1989

Designtn./ specialization	Name	Period	Months
JICA Experts			
Long-Term Experts			
Team leader	Dr. Yamada	Aug. 3, 1986-Jul. 31, 1989	36
Coordinator	Mr. Miyashita	Sep. 24, 1985-Sep. 25, 1988	36
Coordinator	Mr. Takasugi	Sep. 18, 1988-Sep. 15, 1990	24
Plant brdg.	Dr. Yoshimura	Jan. 19, 1986-Mar. 17, 1987	14
Plant path.	Dr. Tsuno	May 1, 1986-Apr. 29, 1988	24
Agronomy	Dr. Matsunaga	May 8, 1986-May 6, 1989	24
Entomology	Dr. Ogata	Mar. 26, 1987-Mar. 24, 1988	12
Entomology	Dr. Ohno	Mar. 10, 1988-Mar. 9, 1990	24
Horticulture	Dr. Miyajima	Jan. 22, 1989-Jan. 19, 1989	12
Sub-total			206
Short-Term Experts			
Plant nutrtn.	Dr. Yamada	Jan. 19, 1986-Jan. 28, 1986	0.3
Farm devipmt.	Mr. Matsunaga	Jan. 19, 1986-Jul. 15, 1986	6.0
Plant path.	Dr. Tsuno	Jan. 19, 1986-Feb. 18, 1986	1.0
Agronomy	Dr. Matsunaga	Jan. 19, 1986 Feb. 18, 1986	1.0
Plant brdg.	Dr. Samoto	Oct. 3, 1986-Oct. 28, 1986	0.9
Plant path.	Dr. Wakimoto	Dec. 21, 1986 Jan. 8, 1987	0.7
Agronomy	Dr. Ogata	Dec. 21, 1986- Jan. 8, 1987	0.7
Entomology	Dr. Hirashima	Apr. 7, 1987 Apr. 17, 1987	0.3
Plant path.	Dr. Sato	Dec. 15, 1987-Dec. 29, 1987	0.6
Soil science	Dr. Egashira	Jan. 14, 1988 Feb. 11, 1988	1.0
Horticulture	Dr. Fujieda	Jan. 14, 1988 Feb. 11, 1988	1.0
Soil science	Dr. Egashira	Jul. 14, 1988 Sep. 13, 1988	2.0
Soil science	Dr. Kawaguchi	Jul. 14, 1988 Aug. 14, 1988	1.0
Horticulture	Dr. Miyazaki	Aug. 4, 1988 Aug. 30, 1988	0.9
Electr. micr.	Mr. Ogino	Aug. 12, 1988 Aug. 23, 1988	0.4
Plant path.	Dr. Matsuyama	Oct. 2, 1988 Oct. 28, 1988	0.9
Entomology	Dr. Murakami	Oct. 2, 1988 Oct. 28, 1988	0.9
Horticulture	Dr. Shirashi	Oct. 2, 1988 Nov. 29, 1988	1.9
Plant path.	Dr. Tsuno	Nov. 27, 1988 Dec. 20, 1988	0.8
Soil science	Dr. Wada	Dec. 16, 1988 Feb. 14, 1989	2.0
Agronomy	Dr. Kawamoto	Dec. 16, 1988 Feb. 14, 1989	2.0
Nut. house	Mr. Nishikawa	Mar. 30, 1989 May. 16, 1989	2.5
(continued)			

Annex Table 5.1. (Continued)

Designtn./ specialization	Name	Period	Months
Soil science	Dr. Egashira	Apr.23,1989-Jun.29,1989	2.3
Soil science	Dr. Kawaguchi	Apr.23,1989-May.20,1989	0.9
Electr.micr.	Mr. Harasaki	May 29,1989-Jun. 3,1989	0.2
Horticulture	Dr. Shiraishi	Jun.11,1989-Jul. 9,1989	1.0
Soil science	Dr. Marumoto	Jun.16,1989-Aug.29,1989	2.5
Elect. wiring	Mr. Kori	Nov.23,1986-Dec. 5,1986	0.4
Electron mic.	Mr. Kamata	Dec. 9,1986-Dec.21,1986	0.4
Glass house	Mr. Nishikawa	Mar.17,1987-Apr.28,1987	1.4
Glass house	Mr. Saito	Mar.17,1987-Apr.28,1987	1.4
Electron mic.	Mr. Ishiyama	Aug.23,1987-Aug.30,1987	0.3

Sub-total 39.6

Total JICA 245.6

USAID Experts

Long-term experts

Curriculum adv.	Dr. Eisgruber	Jul.22,1986-June 30,1990	47
Extension adv.	Dr. Youngberg	Jun.25,1989-June 30,1991	24

Total USAID

Grand total 312.7

Annex Table 5.2. List of Teams Dispatched as of July 1, 1989

Name of Team	Date	Purpose
A. Japan		
Contact survey	October 1984	Study possibility of technical cooperation
Preliminary survey	November 1984	Study possibility of technical cooperation
Detailed design survey	Jan/Feb 1985	Detailed design for exp. field, etc.
Implementation survey	Jun/Jul 1985	Discussion and signing of R/D
Consultation survey	Sep/Oct 1986	Discussion and signing of TSI
Technical guidance	January 1988	Review of progress, discussion of plans
Technical guidance	December 1988	Review of progress. discussion of plans
Detailed design survey	Feb/Mar 1989	Detailed design for exp. field, etc.
B. U.S.A.		
Design	April 1985	Activity design
Internal evaluation	February 1988	Internal evaluation

5.3
 TABLE 3. Number of M.Sc. Students Admitted, Examined, and Graduated,
 by Department, 1982/83-1985/86 (Prepared in May of 1989)

Department	No. of students admitted 1982/83	No. of students examined 1982/83	No. of students graduated 1982/83	No. of students admitted 1983/84	No. of students examined 1983/84	No. of students graduated 1983/84	No. of students admitted 1984/85	No. of students examined 1984/85	No. of students admitted 1985/86
Agric. Ext. Education	-	-	-	-	-	-	-	-	4
Agronomy	30	13	8	32	17	3	39	28	14
Crop Botany	2	1	1	-	-	-	4	4	4
Entomology	6	-	-	10	7	-	16	10	10
Genetics and Plant Breeding	14	6	6	8	8	3	21	22	9
Horticulture	21	14	7	24	14	3	31	29	12
Plant Pathology	3	2	1	25	19	5	23	16	8
Soil Science	11	3	2	10	6	1	26	19	9
Totals	87	39	25	109	71	15	160	128	60

0 Preliminary

TABLE 4. Percent of Lectures Taught by IPSA Faculty and Others, by Department, 1982/83 - 1985/86 (Prepared in May of 1989)

Department and source of teachers	1982/83	Academic year -		
		1983/84	1984/85	1985/86 ^{1/}
- percent -				
Agric. Ext. Education				
a. IPSA faculty	n.a.	n.a.	n.a.	50
b. BARI scientists	n.a.	n.a.	n.a.	-
c. BIRRI scientists	n.a.	n.a.	n.a.	20
d. Others	n.a.	n.a.	n.a.	30
Agronomy				
a. IPSA faculty	n.av.	60	72	80
b. BARI scientists	n.av.	25	12	7
c. BIRRI scientists	n.av.	15	16	13
d. Others	n.av.	-	-	-
Crop Botany				
a. IPSA faculty	n.a.	n.a.	71	n.av.
b. BARI scientists	n.a.	n.a.	10	n.av.
c. BIRRI scientists	n.a.	n.a.	15	n.av.
d. Others *	n.a.	n.a.	4	n.av.
Entomology				
a. IPSA faculty	40	50	60	n.a.
b. BARI scientists	25	20	20	n.a.
c. BIRRI scientists	35	30	10	n.a.
d. Others **	-	-	10	n.a.
Genetics/Plant Breeding				
a. IPSA faculty	42	64	65	n.av.
b. BARI scientists	18	13	28	n.av.
c. BIRRI scientists	40	23	7	n.av.
d. Others	-	-	-	n.av.
Horticulture				
a. IPSA faculty	80	81	98	98
b. BARI scientists	18	19	2	2
c. BIRRI scientists	-	-	-	-
d. Others	-	-	-	-
Plant Pathology				
a. IPSA faculty	10	70	80	100
b. BARI scientists	70	10	10	-
c. BIRRI scientists	20	20	20	-
d. Others	-	-	-	-
Soil Science				
a. IPSA faculty	40	50	60	n.av.
b. BARI scientists	n.av.	n.av.	n.av.	n.av.
c. BIRRI scientists	n.av.	n.av.	n.av.	n.av.
d. Others	n.av.	n.av.	n.av.	n.av.

* CERDI

** Japanese expert

^{1/} Projected

n.a. = not applicable (department not yet established, no teachers, no students, etc.)

n.av. = information not available

Appendix Table 5.5. Number of Postgraduate Students Supervised, by Department and Source of Supervision, 1982/83-1985/86 1/ (Prepared in May of 1989)

Department and source of teachers	Academic year -			
	1982/83	1983/84	1984/85	1985/86 4/
Agric. Ext. Education				
a. IPFA faculty	n.a.	n.a.	n.a.	4
b. BARI scientists	n.a.	n.a.	n.a.	-
c. BRRI scientists	n.a.	n.a.	n.a.	-
d. Others	n.a.	n.a.	n.a.	-
Agronomy				
a. IPFA faculty	3	3	4	4
b. BARI scientists	-	7	21	6
c. BRRI scientists	-	4	10	4
d. Others	n.av.	3	3	-
Crop Botany				
a. IPFA faculty	n.a.	n.a.	-	n.av.
b. BARI scientists	n.a.	n.a.	-	n.av.
c. BRRI scientists	n.a.	n.a.	4	n.av.
d. Others	n.a.	n.a.	-	n.av.
Entomology				
a. IPFA faculty	2	2	3	n.a.
b. BARI scientists	2	4	6	n.a.
c. BRRI scientists	2	1	1	n.a.
d. Others 2/			1	n.a.
Genetics/Plant Breeding				
a. IPFA faculty	4	5	10	6
b. BARI scientists	2	3	9	5
c. BRRI scientists	0		2	3
d. Others				
Horticulture				
a. IPFA faculty	6	6	0	4
b. BARI scientists	11	14	17	8
c. BRRI scientists	1			
d. Others 3/	1	4	6	
Plant Pathology				
a. IPFA faculty		4	4	4
b. BARI scientists	4	15	15	1
c. BRRI scientists		6	4	3
d. Others				
Soil Science				
a. IPFA faculty	n.av.	n.av.	n.av.	n.av.
b. BARI scientists	n.av.	n.av.	n.av.	n.av.
c. BRRI scientists	n.av.	n.av.	n.av.	n.av.
d. Others	n.av.	n.av.	n.av.	n.av.

1/ Data presented here, except for the 1984/85 and 1985/86 data, are not complete for those in Table 4.

2/ BARI, 3/ BRRI seed bank, 4/ Unpublished

n.a. = not applicable

n.av. = information not available

Appendix Table 5.6. Average Number of Postgraduate Students Supervised per Supervisor, by Department and Source of Supervision, 1982/83-1985/86 (Prepared in May of 1989)

Department and source of teachers	Academic year -			
	1982/83	1983/84	1984/85	1985/86 1/
Agric. Ext. Education				
a. IPFA faculty	n.a.	n.a.	n.a.	4
b. BARI scientists	n.a.	n.a.	n.a.	-
c. BRRI scientists	n.a.	n.a.	n.a.	-
d. Others	n.a.	n.a.	n.a.	-
Agronomy				
a. IPFA faculty	3	3	4	2
b. BARI scientists	-	1	3	2
c. BRRI scientists	-	2	3	1
d. Others	-	3	3	-
Crop Botany				
a. IPFA faculty	n.a.	n.a.	-	n.av.
b. BARI scientists	n.a.	n.a.	-	n.av.
c. BRRI scientists	n.a.	n.a.	4	n.av.
d. Others *	n.a.	n.a.	-	n.av.
Entomology				
a. IPFA faculty	2	2	3	n.a.
b. BARI scientists	2	2	2	n.a.
c. BRRI scientists	2	1	1	n.a.
d. Others **	-	-	1	n.a.
Genetics/Plant Breeding				
a. IPFA faculty	1	3	2	3
b. BARI scientists	1	2	2	-
c. BRRI scientists	3	-	2	3
d. Others	-	-	-	-
Horticulture				
a. IPFA faculty	3	3	4	2
b. BARI scientists	2	2	3	3
c. BRRI scientists	1	-	-	-
d. Others	1	2	3	-
Plant Pathology				
a. IPFA faculty	-	2	2	4
b. BARI scientists	1	3	2	1
c. BRRI scientists	-	1	1	3
d. Others	-	-	-	-
Soil Science				
a. IPFA faculty	40	50	60	n.av.
b. BARI scientists	n.av.	n.av.	n.av.	n.av.
c. BRRI scientists	n.av.	n.av.	n.av.	n.av.
d. Others	n.av.	n.av.	n.av.	n.av.

1/ Projected

n.a. = not applicable (department not yet established, no teachers, no students, etc.)

n.av. = information not available

ANNEX 6
DOCUMENTS REVIEWED

1. Record of Discussion and Related Authorization Documents
 - a. The Record of Discussions (R/D)
 - b. Explanatory Notes on the R/D
 - c. Letters exchanged between JICA Dhaka Office and USAID.
 - d. Contract No. ANE 0027-C-00-630-00
2. Report of Prof. Bari, Chairman, University Grants Commission, report transmitted February 3, 1987
3. Minutes of the Project Evaluation Committee (PEC) Meetings dated: August 21, 1986; July 1987; and August 2, 1988.
4. Minutes of Coordination Committee Meetings, dated: January 27, 1986; January 9, 1988; and December 27, 1988
5. Summary Reports by JICA's Technical Guidance Teams dated: January 11, 1988; and December 28, 1988
6. Government Orders and Notifications: Government Order for Separation of IPSA from BARI; and Notification for Constituting Management Committee for IPSA
7. Minutes of the Management Committee Meetings, December 7, 1988
8. Revised Project Proforma (PP)
9. List of IPSA Personnel
10. Research Programs by Department
11. Abstracts of Research dated: June 1987, and June 1989
12. List of Publications, published to date, and of those submitted
13. List of Books and Journals Provided by USAID
14. List of Equipment and Materials Provided by JICA and USAID
15. List of Construction/ Minor Construction Works

16. Dispatch of Experts
 - a. Activities of Japanese Experts
 - b. Various Reports by JICA Experts (English reports only)
 - aa. Quarterly Reports by Long-Term Experts
 - bb. Final Reports by Long-Term Experts
 - cc. Summary Reports by Short-Term Experts
 - c. Titles of Seminars by JICA Experts
 - d. Monthly Reports by USAID Expert
17. Reports on Counterpart Training Including: JICA's Counterpart Training in Japan, Ph.D. Scholarships in Japan; and Final Reports by Counterparts
18. Report on Internal Review of USAID/OSU IPFA Project
19. Recommendations for the Revision of the M.Sc. Program at IPFA
20. Draft of Act for IPFA
21. Various Reports on Higher Agricultural Education in Bangladesh: Preliminary Reconnaissance Survey of the Bangladesh System of Higher Education in Agriculture and Agricultural Manpower Situation; Bangladesh Agricultural Manpower Needs Assessment; A Handbook of Information, BAU; Terminal Report by J. C. Gaines; Recommendations to the University Grants Commission of Bangladesh; and Proposed Bangladesh Higher Agricultural Education Project
22. General Plan (map of IPFA)
23. Report entitled "Academic Flexibility Needed by IPFA to Achieve its Goals"
24. Tripartite Cooperation: The Case of the Institute of Postgraduate Studies in Agriculture (IPSA), Bangladesh
25. Report on Project-Type Technical Cooperation by JICA