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BANGLADESH AGRICULTURAL RESEARCH PROJECT PHASE-II

# PLANNING MONITORING AND EVALUATION OF AGRICULTURAL RESEARCH

সদস্য-পরিচালক (পরিকল্পনা ও মূল্যায়ন)
বাংলাদেশ কৃষি গবেষণা কাউন্সিল
নিউ এয়ারপোর্ট রোড, খামারবাড়ি
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BANGLADESH AGRICULTURAL RESEARCH COUNCIL
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PHASE-II

# PLANNING, MONITORING AND EVALUATION OF AGRICULTURAL RESEARCH

A Consultancy Report

by

Guy B. Baird

Winrock International

BANGLADESH AGRICULTURAL RESEARCH COUNCIL

WINROCK INTERNATIONAL

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TABLE OF CONTENTS

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The author appreciates the guidance given by Dr. Ekramul Ahsan, Chairman-in-Charge, BARC, in determining priorities within the overall terms of reference for the consultancy. He was accompanied on all visits to the institutes by an officer from the Planning and Evaluation Division. Thanks are due to Mr. Quddus, Member-Director, for making the necessary arrangements, and to Dr. N. Alam and Mr. Iqbal for assisting in the visits.

Personnel at the institutes visited were generous with their time and helpful. Special mention is made of the effective arrangements for discussions at the Forestry Research Institute (FRI) and at the Sugarcane Research and Training Institute (SRTI). The author is grateful that BRRI made it possible for him to be present for the annual review and planning of the research program for the boro rice crop.

Dr. Avtar Kaul, in response to a request from the Chairman-in-Charge, had already made considerable progress in arrangements for obtaining basic planning information from the institutes. His effective involvement in the discussion at SRTI, and collaboration in general, greatly facilitated the author's assignment.

Finally, the author benefited from discussions with personnel in the USAID Mission, and with Mr. Walter Kock of the World Bank.

# EXECUTIVE SUMMARY

BARC has initiated a revision of the National Agricultural Research Plan for the Third Five Year Plan period. A vital part of this exercise is the development of five-year research plans (master plans) by the institutes and other organizations comprising the national agricultural research system. The author (consultant) was primarily concerned in helping some of these institutes to accelerate development of the plans. Secondarily, he looked into the monitoring and evaluation of research by BARC and the institutes.

Prior to visiting the institutes, the author familiarized himself with planning in BARC, with particular attention to the role of the Planning and Evaluation Division. In this exercise he had the opportunity to review a substantial number of recent documents dealing with research planning, monitoring and evaluation with respect to BARC and to the institutes.

BARC

First, in considering planning and determination of research priorities in BARC, clearly considerable progress has been made. Nonetheless serious problems remain, the most fundamental of which is a lack of authority by BARC to fulfill its mandate. Many, if not most, institutes respond primarily to their ministries which in turn, deal with the Planning Commission. BARC does not have the opportunity to adequately review and approve the major research programs of the institutes. This problem can be overcome only by government action enabling BARC to carry out its mandate.

The role of Member-Directors and the Planning Division could be strengthened through opportunities for their staff to become more familiar with program planning methodology. Currently BARC is limited in its ability to assist institutes with master plans. Serious attention needs to be given to standardization and institutionalization of guidelines/outlines for research program formulation.

In order to strengthen the planning function of BARC, it is recommended that:

1. Standardized, simple procedures and proformas be developed for research proposals that basically can concomitantly meet the needs of institutes, BARC, ministries and the Planning Commission.

2. The mandate and functions of the Planning and Evaluation Division be clarified/developed. As seen by the author, this division should be basically service-oriented, providing support for the substantial planning responsibilities of the Chairman and of the Member-Directors and staff of the other divisions.

3. Arrangements be made for a qualified planning specialist to assist BARC to carry out its planning functions. He should be located in the Planning and Evaluation Division to assist BARC and the institutes over two to three annual planning, reviewing and reporting periods. In-service training would be one of his major responsibilities.

Institutes

Not surprisingly, the institutes vary widely in their experience and capability in planning. Most, however, experience difficulty when confronted with the need to state program objectives in terms of anticipated results, and to relate budget and staffing to priority research programs. In fact, several have not yet really articulated their research programs in clear terms. They still tend to present the programs in terms of the work of disciplinary-oriented divisions. This reflects organizational patterns of the institutes. It is not generally understood that both division and program planning, with associated budgeting and staffing, can be compatible and that both are important.

A revised master plan guideline was developed in consultation with two of the institutes visited by the author. It is an elaboration of guidelines previously sent by BARC to the institutes. While some institutes will benefit from the guidelines, clearly several will require further assistance. They will also need help in developing annual plans consistent with the master plan. The need for a resident planning specialist is reiterated.

Monitoring and Evaluation

By intent monitoring and evaluation were accorded second priority in the terms of reference of the consultant. This in no way reflects lack of recognition of the importance of monitoring and evaluation. Rather the urgency of moving ahead with the National Agricultural Research Plan, and the institute master plans, dictated the priority.

BARC is to be commended for its attention to evaluation. A valuable document, Evaluating Agricultural Research Programs, has just been published. It is the result of a regional workshop held in BARC in October 1984 under the auspices of BARC, ISNAR and IADS.

Some institutes, notably BARI and BRRI, have developed relatively effective procedures for monitoring and evaluation of research programs. As with planning, standardized guidelines would be useful.

Three measures are given for improvement. First, there is the need to recognize and act upon the fact that effective monitoring and evaluation are grounded in good program planning. Thus, the basic need is to improve program planning. To quote from the above-mentioned planning document, "The first role in evaluations is that the process begins when the program is designed by setting up clear, specific and verifiable indicators of achievements for that program".

A second step, flowing from improved planning, is improved reporting. Annual reports should be geared to program-oriented annual research plans.

There should be a quinquennial, comprehensive evaluation of research programs designed to make timely inputs into formulation of the Five Year Plans, national agricultural research plans, and institute five year plans. In this case, evaluation would be used as a management tool to facilitate long-range planning.

# I. INTRODUCTION

## A. Rationale and Terms of Reference

BARC has initiated a revision of the published National Agricultural Research Plan: 1984-1989 to cover the plan period 1985-1990. Basic to revision of this document are corresponding Five-Year plans from all of the institutes and other organizations comprising the national agricultural research system. BARC has developed draft guidelines for preparation of these "Master Plans" (see Appendix-1). Work has also been initiated to gather information at the institute level needed to classify and codify research in the country. In order to accelerate preparation of the master plans, BARC arranged for the assistance of a consultant.

The terms of reference for the consultant as modified by the Chairman-in-Charge of BARC are as follows:

1. He will work directly with the Member-Director (Planning and Evaluation) of BARC in defining a mechanism for effective linkages with agricultural research institutes.

2. Assist the constituent institutes in identification of priority research areas consistent with the National Agricultural Research Plan, and in preparation of institutes' Master Plans. In the latter, he will assist in preparation of standardized formats, components to be included in the Master Plan, information needed, and methodology in doing the work, including coordination.

3. Develop a monitoring system and simple and effective criteria and methodology for evaluation of research projects.

4. Prepare a comprehensive report and present a debriefing of activities and results of consultancy.
(Revised on 24/8/1985)

More effective means for linkages between BARC and the institutes are interpreted in terms of research planning and monitoring and evaluation. Particular attention is given to the role of the Division of Planning and Evaluation, keeping in mind, however, that other Member-Directors as well have primary and direct responsibilities for these functions. As requested by the Chairman-in-Charge, priority attention was given to research planning, specifically as related to assistance to the institutes in preparation of their Master Plans. Secondarily, consideration was directed to the monitoring and evaluation roles of BARC and the institutes.

B. Procedures

The author met with the Chairman-in-Charge, and with the Member-Director and staff (Planning and Evaluation) to discuss the terms of reference for the consultancy, and to work out arrangements for visits to selected institutes in relation to their master plans. The schedule of visits is attached as Appendix - 2. The author was accompanied on all visits by a staff member of the Planning and Evaluation Division.

Considerable time was spent with its individual staff members in order to gain an understanding of the mandate, role and activities of the Planning and Evaluation Division. Other members of BARC also were consulted in this regard.

Meetings were held with locally-based staff of the World Bank and the U.S. Agency for International Development, both of which strongly support agricultural research in Bangladesh, and thus are directly interested in more effective planning, monitoring and evaluation of this important activity.

The author was fortunate to be invited to participate in a meeting of the "Coordination Committee for IDA-II" which was held in BARC on 21 August 1985. Chaired by the Member-Director (Agricultural Engineering), it was attended by representatives from several research institutes as well as by the members of the World Bank project involved. Development of master plans by the institutes was an important item on the agenda.

Finally, numerous documents relevant to the assignment were reviewed; selected ones are listed in Appendix-3. Others not included in the list consisted principally of institute-level annual programs and reports.

This report is organized to first look at research planning and priorities in the context of BARC. Then attention is directed to these functions at the institute level. Finally, consideration is given to the research monitoring and evaluation function of BARC and the institutes, with particular attention to the importance of linking these activities to planning.

## II. RESEARCH PRIORITIES AND PLANNING - BARC

### A. Mandate

Planning, determination of priorities and coordination of research are major functions of BARC. To quote This is BARC "As the national coordinating agency for research on crops, forestry, soil, water, crop protection, agricultural engineering, livestock, fisheries, economics and social science, BARC identifies problems in various sectors of agriculture, determines priorities, and draws up long-term and short-term programs of research within the framework of the national policy on agriculture."

### B. Organization

The Member-Directors, under the Chairman, have responsibilities within specific fields or areas for identification of problem areas, setting priorities for research, and for monitoring and evaluating research programs. As understood, the Member-Directors are responsible for assisting the institutes in the preparation of master and annual research programs. Thereby, they are in a position to coordinate among the institutes work on common major problem areas (e.g., evaluation of improved rice varieties by BINA and BRRI).

Within BARC, the Planning and Evaluation Division, headed by a Member-Director, has specific responsibilities for these functions. Its actual role and possible means for improving its effectiveness will be discussed later.

BARC constituted a Program Planning and Review Board (PPRB) of leading agricultural scientists to review research programs and set priorities for allocation of resources. Its duties are specified as:

1. Annually update the National Agricultural Research Plan, review programs of the research institutions, and establish research priorities.

2. Recommend resource allocation, funding, personnel, and facility development for the national research network in agriculture.

3. Coordinate national agricultural research programs and assign specific program responsibilities to participating institutions to maximize productivity and minimize duplication.

4. Evaluate research achievements, including the economic impact of investment in agricultural research.

Coordinate external support provided for agricultural research and training.

As specified in This is BARC, members of the PPRB are: the Executive Vice-Chairman (now Chairman) of BARC, who serves as the Chairman: the Chief, Agriculture Division, Planning Commission; the Director (now Director-General), BRRI; Executive Director (now Director-General), BJRI; Director, Livestock Services; Coordinator, Committee for Advanced Studies and Research, Bangladesh Agricultural University; Director, INA; Director, SRTI; Director, FRI; Director, Fisheries; and Member-Directors, BARC.

C. Progress and Problems

BARC has made commendable progress in agricultural research planning and priorities. The National Agricultural Research Plan - 1979, keyed to the Second Five-Year Plan (SFYP), was succeeded by the National Agricultural Research Plan 1984-1989, relating to the Third Five-Year Plan (TFYP). And, as mentioned earlier, BARC is currently in the process of revising the NARP for the period 1985-1990.

In order to strengthen its capability in planning, BARC secured the assistance of a consultant in 1979, Dr. J. C. Madamba, whose report "Agricultural Planning in Bangladesh" is cited in Appendix-3. BARC also arranged for two important broadbased reviews of agricultural research in Bangladesh (Islam et al. 1979, and Moseman et al. 1980). The Islam report recommended the establishment of the PPRB. This body, inter alia, was to provide technical guidance for technical committees for each major commodity and for non-commodity areas. Recommendations were made for a uniform project structure as a basis for program planning, identification of priorities, budgeting and accounting.

Work is underway on a national manpower survey covering agricultural research in Bangladesh. This vital undertaking will be bolstered by a regional workshop on managing human resources in agricultural research, to be held in early 1986. It will be sponsored by BARC, ISNAR and Winrock International. A computerized data base for the manpower survey data has been designed (Johnson, 1985). This will be one of the key elements in effectively linking research planning of programs with needed manpower and funds.

As part of its support for funding of agricultural research, BARC has published the Manual for Contract Research: For Use of the Bangladesh Agricultural Research System (1984). It provides guidance to institutes for identification of priority project areas and for preparation of proposals. It also specifies how contract research projects are to be monitored and evaluated.

Recently BARC has made available useful draft guidelines to the institutes for preparation of their five-year master plans.

Further, in recognition of its national role in planning, BARC has a division, headed by a Member-Director, with responsibility for planning and evaluation. As noted later, however, while well-intentioned, establishment of this division has not yet resulted in the needed service within BARC nor to the institutes.

While progress has been made, many problems must be dealt with before BARC can fulfill its mandate as related to planning and priorities.

The most fundamental problem is BARC's lack of authority to carry out its planning and priority-setting mandate. In order for it to do this effectively, it must at least have authority to review and approve research plans and program proposals. Normally, organizations with national mandates comparable to that of BARC also have major funding power for research. Such power by BARC is largely limited to contract funded research, administration of funds under PL-480 supported research, and certain other projects supported by other countries or international institutions.

At present institutes present their proposals for projects to be included in the Five-Year Plans to the ministries to which they pertain and report. From there proposals go to the Planning Commission. BARC does not routinely receive a copy of such proposals for review and advice - in some cases it receives a list of these proposals. In fact, the present request by BARC to the institutes for master plans has received scant attention by some of them, and at best is seen as a largely unnecessary exercise. Compliance, sometimes reluctant, is associated with the hope by institutes of obtaining contract funding in some of their proposed projects.

Thus, in the view of the author, BARC is expected to do more in agricultural planning and coordination than is realistic under the present circumstances. The real solution is for the Council to be given the authority by government to carry out its mandate. It is understood that this basic issue may be under consideration. As an intermediate measure, the author was tempted to recommend that the PPRB should be taken more seriously. However, based on additional information, he concluded that this measure would not serve any useful purpose.

Even if BARC now had full authority from the government to carry out its mandate, it is not in a position to do so. It is handicapped by an inadequate number of staff experienced in research planning methodology. The author has gained the firm impression that training is needed for BARC personnel - both for planning at the national level and in the context of support to the institutes. Guidelines for such planning are not lacking (e.g., reports by Islam et al. and Moseman et al.); the lack seems to be in personnel with the knowledge of and experience in planning methodology.

Some institutes have expressed the feeling that BARC has not provided guidance in relation to research problems and priorities as reflected in the TFYP. This plan has not yet been issued in final form, so BARC is not in a position to give explicit guidance to the institutes. Nonetheless, BARC should be in a position to obtain from the ministries and the Planning Commission guidelines helpful in this regard. Institutes also need to recognize that plan guidelines are apt to be rather general for their particular research mandates (e.g., self-sufficiency in specific commodities, increase of production from "X" to "Y" tons, etc.). Thus institutes should not use lack of clear TFYP guidelines as an excuse to delay preparation of their master plans.

While the National Agricultural Research Plan 1984-89 is a marked improvement over its predecessor, it does not appear to be very useful to the institutes. In fact the author found a number of top echelon staff at the institutes to be quite unfamiliar with the publication. This raises the question of its utility to the institutes, and/or of BARC's success in using it as a management tool in guiding and coordinating research planning and priorities at the institute level. It is not adequate that the NARP be seen by the institutes as merely a guide for identification of contract research projects.

After already having been on assignment for several weeks, the author learned, through questioning, of a fairly recent meeting early this year in BARC which dealt solely or largely with the role and responsibilities at the Planning and Evaluation Division. Information made available dealt only with the work distribution of the division and areas of responsibility. The following activities were listed with one or more of the four professional staff (excluding the Member-Director) associated with each:

1. Preparation of project proposals (this is understood to include proposals for support by external agencies).

2. World Bank projects and progress reports, and evaluation in general.

3. BARC Annual Reports and Research Highlights, as well as non-government organization (NGO) activities.

4. Monitoring overall (priority for contract research).

5. PL-480 funded projects.

6. Miscellaneous.

As intimated above, the current professional staff of the division consists of the Member-Director, two Principal Scientific Officers, and two Senior Scientific Officers.

Several problems seem to be associated with the Planning and Evaluation Division. In the first place,the mandate, as reflected in the above-listed responsibilities, is not clear. Is this office to have a major role in planning, or at least in the facilitation of planning?. What are its relationships to the Chairman and the Member-Directors vis a vis planning and evaluation?

Finally, basic documents dealing with the planning, monitoring and evaluation of agricultural research in Bangladesh are not maintained by the division, nor can they be located easily elsewhere. Several useful studies on these subjects have been made, but limited use appears to have been made of them.

D. Measures for Strengthening Planning

The problem of a circumscribed authority for research planning and coordination is easily recognized, but the solution appears to be complex. However, something can be done to strengthen the capability of BARC staff to help institutes in development of their master and annual plans. Certainly one measure is to develop standard procedures oriented to provide adequate information required by the institute and BARC, but at the same time conscientiously designed to minimize what might be interesting, but otherwise unnecessary detail. More will be said later about tentative guidelines for preparation of institute five-year master plans.

The author is uncertain about the feasibility of a single standard proforma/outline or program/project structure that could serve the needs of the institutes, BARC, concerned ministries and the Planning Commission. The multi-purpose proforma currently used throughout the government for the proposal of projects for inclusion in national five-year plans is unsatisfactory for agricultural research. It is proposed that BARC explore the feasibility of a proposal proforma that could better meet the needs of the agricultural research system. The draft guideline issued by BARC to the institutes for preparation of master plans is an important step in that direction.

Experience needs to be gained by BARC staff in the utilization of such a basic project structure or proforma. Confidence is needed by the commodity and non-commodity divisions to work efficiently with the institutes on their master and annual plans. The author believes BARC needs to arrange for a qualified planning specialist for this task. The specialist should work with BARC and through BARC with the institutes, over two to three annual planning and programing cycles. He should conduct in-service training for BARC and institute staff, and probably be located in the Planning and Evaluation Division. One of his tasks would be to assist in developing a clear mandate for the division, and corresponding revised terms of reference for the Member-Director and his professional staff.

the division, and corresponding revised terms of reference for the Member-Director and his professional staff.

Keeping in mind the specified responsibilities of Member-Directors for commodity and non-commodity research priorities and planning, it is suggested that the Planning and Evaluation Division's planning responsibilities include :

1. Development of a standardized format methodology for preparation of national agricultural research plans, institute five-year master plans and annual plans.

2. Development and monitoring of annual calendars of BARC and institute planning activities.

3. Training of BARC and institute personnel in research planning methodology.

4. Development and maintenance of a computer-based data base needed for planning and determination of research priorities. This would include development of a comprehensive (but not excessively complicated) classification and codification of research linked to staff and budget.

5. Development and maintenance of a reference facility that would make all relevant planning documents readily available to those who need to use them. These documents include: national five-year plans, national agricultural research plans, institute five-year research and annual plans, and relevant reviews, consultancy reports, etc. Of course, as will be mentioned later, this division would also be expected to develop and maintain corresponding research review and evaluation documents.

Implicit from the above, the mandate of the Planning and Evaluation Division should reflect its service and support role at BARC. It does not have overall responsibility for the planning role there; that is one of the key functions of the Council. Member-Directors have explicit planning responsibilities related to their mandated commodity and non-commodity areas. The Planning and Evaluation Division should help these Member-Directors and their staff to do their planning more effectively.

How can the NARP be made more useful? Basically, it should identify critical problems amenable to research, set forth research priorities and the resources (staff and budget) required, with allocation by problem areas. While all of these elements are reflected in the NARP 1984-89, there is lack of clear association of priority research programs with necessary staff and budget.

Research problems and priorities are perceived differently by different groups. This is very effectively shown in the

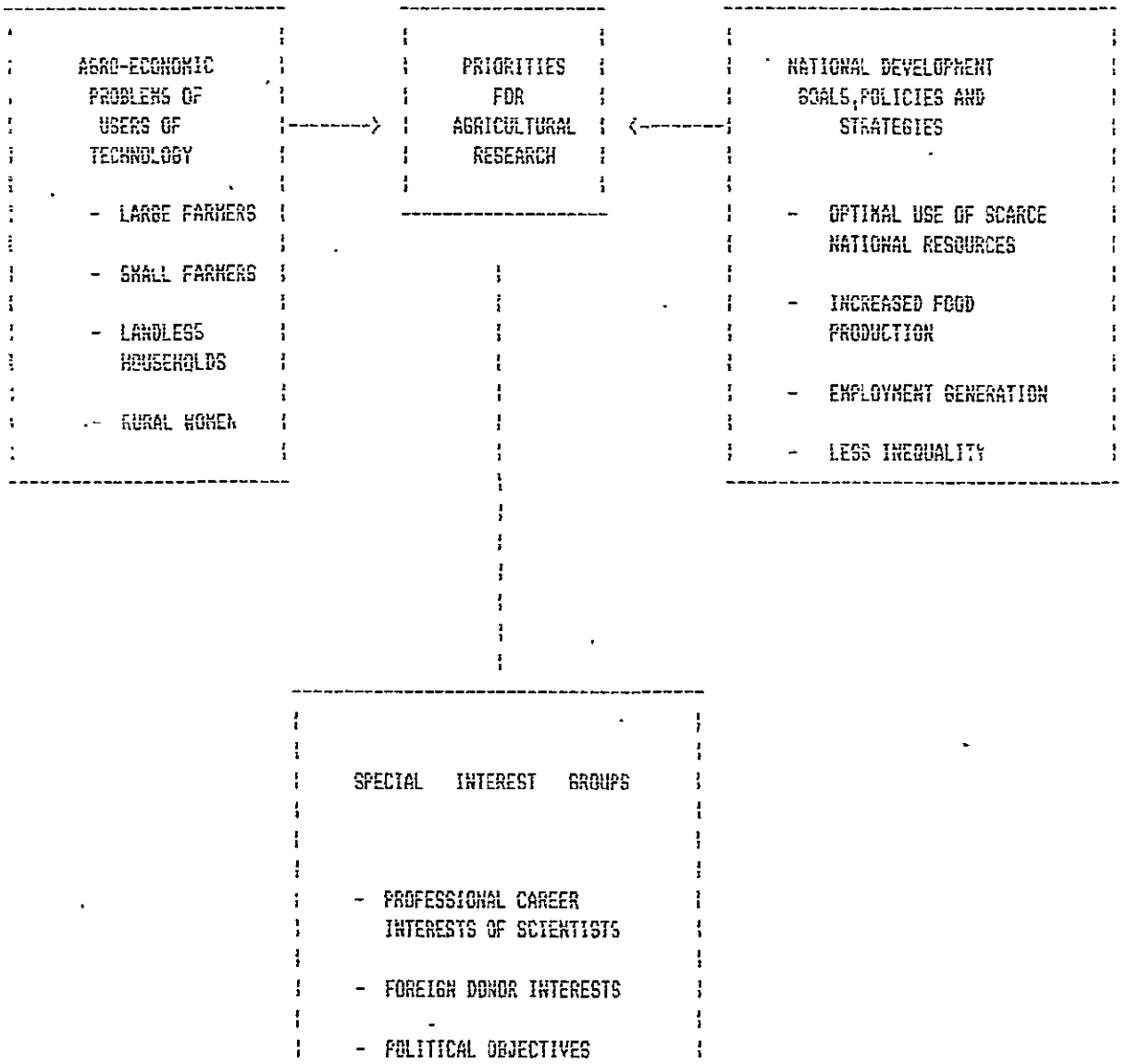
Moseman, et al. report (14) and is reproduced in Figure-1.

The agro-economic problems of users of technology constitute one of the two most important determinants of agricultural research priorities, i.e., problem of farmers and their families. The other important determinant is made up of national development goals, policies and strategies - i.e., the TFYP. And, another determinant is made up of special interest groups which may include professional career interests of scientists, foreign donor interests and political objectives. The challenge is to reach priorities as objectively as possible, keeping in mind these three determinants.

BARC can take measures to improve its ability to help identify priorities among important research problems. An excellent opportunity is afforded in terms of the institute master plans now under development. They should provide the basic information needed for an approximation of critical problems as perceived at the institute level (among commodities as in the case of BARI; within commodities as in BJRI, BRRI, FRI, etc.; and among stages, i.e. production and utilization as in BJRI and FRI). These draft master plans should permit the reader to relate staff and budget to the needed research on a problem basis.

A critical step, already started by BARC, is a classification and codification of research proposed by the institutes. Drs. Ekramul Ahsan and Avtar Kaul have prepared a card designed to accommodate the basic information, and have made considerable progress in identification of research at the project level.

FIGURE: 1 - DETERMINANTS OF AGRICULTURAL PRIORITIES




Source : Moseman, A.H. et al. Report of the Review Team, Bangladesh Agricultural Research System. July 18, 1980. Original Figure modified slightly for use in present report.

Ruttan (21), for purposes of resource allocation, calls for a classification of research: (a) by commodities; (b) by resource categories - e.g., soil and water, labor and management; (c) by stages or levels - e.g., post-harvest technology and markets; and (d) by disciplines. A tentative modified classification for agricultural research in Bangladesh is presented in Table-2.

By such a classification of research, coupled with manpower and budget allocations (actual and/or proposed), BARC would have a powerful management tool to assist in review and assessment of research priorities. It would enable BARC to work more constructively with the institutes and make the NARP to be a more meaningful document.

A companion approach to determination of commodity agricultural program priorities is described by Hesser in the IADS Report/1983 (8). It deals with agricultural research in Malawi and is synthesized in a two-way table, with commodities listed in the left column. Across the top are a series of criteria relating to national goals (e.g., growth, equity, food security, trade and nutrition), to commodity potential (e.g., market and resources), and to expected pay off (magnitude, probability and when). Commodities are ranked "high" "low" or "medium" for each factor, and then placed in priority groups (I, II, and III).

Thus, in concluding this section, the following recommendations are made to assist in strengthening the planning function of BARC:

1. Develop standardized, simple procedures and proformas for research proposals, that basically can meet needs of institutes, BARC, ministries and the Planning Commission (a tentative proforma will be discussed later).

2. Arrange for a qualified planning specialist to assist BARC to carry out its planning functions. He should be located in the Planning and Evaluation Division and assist BARC and the institutes over two to three annual planning and reporting periods. In-service training would be a major part of his responsibilities.

3. Clarify the mandate and function of the Planning and Evaluation Division. It is recommended that its work be of a service nature, supportive of the planning responsibilities of the Chairman and Member-Directors. Responsibilities should include: development of improved methodology for planning; preparation of annual calendars of planning activities and the monitoring of them; training of BARC and institute personnel in research planning methodology and determination of priorities; development and maintenance of a computer-based data base on ongoing and planned research, based on a classification and coding of research which is linked to associated manpower and budget; and development and

maintenance of a documentation facility to contain important reports on planning, review and evaluation of research in the national system.

TABLE - 2 : TENTATIVE CLASSIFICATION OF AGRICULTURAL RESEARCH

| Commodity | Discipline/Factor | Stage |
|---|---|---|
| A. Crops-Related | | |
| 1. Rice | 1. Breeding/Genetics | 1. Resource Assessment/Survey |
| 2. Wheat | 2. Agronomy | 2. Production |
| 3. Maize | 3. Soils | 3. Post-Harvest Technology/Processing |
| 4. Sorghum and Millets | 4. Water | 4. Marketing |
| 5. Pulses | 5. Entomology | 5. Consumption |
| 6. Oilseeds | 6. Pathology | 6. Other |
| 7. Potatoes | 7. Physiology | |
| 8. Other Roots and Tubers | 8. Engineering | |
| 9. Vegetables | 9. Human Nutrition | |
| 10. Fruits | 10. Economics/Sociology/Anthropology | |
| 11. Nuts | 11. Horticulture | |
| 12. Sugarcane | 12. Seed Technology | |
| 13. Jute | 13. Other | |
| 14. Cotton | | |
| 15. Tea | | |
| 16. Tobacco | | |
| 17. Timber and Forest products | | |
| 18. Fodder/Forage Crops | | |
| 19. Ornamentals | | |
| 20. Other | | |

| Commodity | Discipline/Factor | Stage |
|---|---|---|
| B. Animal-Related | | |
| 1. Cattle | 1. Breeding | 1. Return Assessment/Survey |
| 2. Buffalo | 2. Management | 2. Production |
| 3. Goats and Sheep | 3. Nutrition | 3. Post-Harvest/Technology/Processing |
| 4. Poultry | 4. Entomology | 4. Marketing |
| 5. Bees/Honey | 5. Pathology | 5. Consumption |
| 6. Silk | 6. Physiology | 6. Other |
| 7. Lac | 7. Engineering | |
| 8. Aquatic life (Inland/Riverine) | 8. Economics/Sociology/Anthropology | |
| 9. Aquatic life (Marine and Brackish) | 9. Biology | |
| 10. Wildlife | 10. Other | |
| 11. Other | | |

## III. PLANNING AND PRIORITY SETTING AT THE INSTITUTE LEVEL

### A. Mandates

There is a range in the nature of mandates of institutions comprising the Bangladesh agricultural research system. Institutes with the most straightforward mandates deal with only one crop (occasionally other related minor crops are also included). BRRI, BJRI, FRI, SRTI and BTRI are examples of the mono-commodity institutes. Among these, however, there is a considerable range of coverage of the commodities. BJRI and FRI have responsibility for both production and utilization research. Recently the mandate of SRTI was broadened to cover areas where sugarcane is grown for gur, in addition to its traditional mandate of catering to the cane producers in the mill zones.

BARI, BINA and BAU work with a wide range of commodities as well as with non-commodity problem areas. SRTI and BAU have training as well as research in their mandates.

Thus, institutes approach the matter of critical research problems and priorities from different perspectives. For some, problems and priorities are within a given commodity, and sometimes between the stages of research (e.g. production and utilization). For others, important decisions must be made among important distinct crops (e.g., wheat, oilseeds and pulses), as well as among crops grouped for convenience - e.g., priorities among different fruit crops and among different vegetable crop.

Oddly enough, at some institutes discussion about mandates reflected either uncertainties on the part of the staff, or simply that they had never given concentrated attention to this important subject.

### B. Organization

Basically institutes are organized along department or division lines, generally on a disciplinary basis. Some, notably BARI, have in addition organized on a problem basis. They have made commendable progress in reconciling these two types of important organizational patterns, recognizing their complementarity. It is important to organize for problem solving. It is also important, particularly from the standpoint of individual scientists, to organize on a disciplinary basis. It is professionally rewarding for an entomologist to feel that within an institute he is a part of the overall group of entomologists, as well as a part of a problem-oriented multidisciplinary team.

Other institutes, however, have had more limited success in marrying disciplinary/department and problem-oriented research or task forces. In BJRI, for example, organization of the Technology Wing reflects an attempt to do both. This is not the case with the Agriculture Wing. Perhaps the latter has been less successful in identifying critical problem areas, and in articulating the objectives and means of attaining them.

The author gained the impression that institutes either have no planning cells, or if so they are rather weak. There may be exceptions, however. Not all institutes were visited.

C. Progress and Problems in Planning

As reflected in their approaches to disciplinary as well as multidisciplinary problem-solving organization, there is a great disparity among institutes relative to their progress in planning.

The case of BARI merits consideration. In 1979, a consultant (Dr. R. L. Cushing) authored A Master Plan for the Bangladesh Agricultural Research Institute (5). The following set of recommendations was given, most of which have been adopted, at least to some degree:

1. Adopt a set of clearly stated objectives.

2. Research organized on the basis of multidisciplinary programs, but scientific integration of subject matter disciplines should be retained.

3. Must recognize differences and relationships among objectives, programs and functions.

4. Set a definition for a hierarchical set of elements that would constitute a multidisciplinary research program and a simple, useful system for designating or coding elements at each level.

5. A simple but formal procedure for proposing, drafting, reviewing and approving multidisciplinary programs.

6. A simple but formal procedure for the proposal, development and approval of projects and experiments within multidisciplinary programs.

7. A systematic procedure for establishing and reviewing program priorities.

In July 1985 an important two-day meeting was held at BARI "Review of past researches and development of future programs of BARI". The modified report will be used as a guideline for the preparation and review of research programs of the institute. As described, program development follows these lines, from top to bottom :

- Investigation
- Project Leader
- Program Leader
- Task Force Leader
- Director (Research)
- Control Program Review Committee.

The hierarchy of research levels is clear: from the experiment which is the responsibility of the Investigator, to the project, and to the program. The entire research activities of BARI have been grouped into 27 programs. In turn, each program is made up of several projects. Then, individual experiments are designed to address the objective of each project. The agreed upon procedure for yearly review and planning has been specified with respect to sequential steps, person responsible and deadline.

BRRI has seven inter-disciplinary program areas. The principal division (discipline) is the Program Performing Unit (PPU) and other divisions involved are referred to as Supporting Units (SU). A task force for each program area is responsible for the planning of the program, projects, plan and experiments. While BRRI has made commendable progress in rice research, there are ".... problems related to management and development of research priorities". This partial quotation is from the 1984 external review report (22).

Other institutes have received attention recently in matters including planning and priorities. Notable among these reports are two on the FRI - one on forest management and one on forest products, by Davidson (6) and Kennedy (11) respectively; one on the BJRI in 1985 by Poehlman (19); two on sugarcane research, one by Cushing in 1985 (3) and the other by Bull in 1984 (2). A very useful "National Fisheries Research Plan", dated September 1984 (17) can form a solid basis for development of a five-year master plan for fisheries research. A joint team currently is developing a plan for the proposed National Livestock Research Institute. Its report is due by the end of November 1985. There may be other equally useful studies on other institutes of which the author is unaware.

Perhaps implicit in the above, some institutes have not yet articulated a set of clearly stated objectives oriented toward fulfilment of the research mandate. Most have not seriously grappled with the need to organize on the basis of critical research programs, as a complement to the conventional discipline oriented organization. An associated problem is the seemingly widespread lack of understanding of the hierarchical set of elements that would constitute a multidisciplinary research program, and the pertaining projects and experiments.

The general purpose proposal proforma, used for proposal of projects for inclusion in the Five Year Plans, does not encourage clear definition of research problems, objectives stated in a way that expected results are understood, and linkage of staff and budget to research programs. As stated earlier, an attempt should be made to develop a more suitable proforma for agricultural research proposals: institute Five Year Master Plans and major components (programs) of the plan.

D. Institute Five-Year Master Plans

At a meeting in BARC on 18 May, 1985 attended by institute directors/representatives, institutes were requested to prepare master plans, making use of draft guidelines prepared by Mr. Walter Kock of the Dhaka office of the World Bank, and reviewed by BARC. A copy is included as Appendix-1. On 29 May, 1985 the Chairman-in-Charge sent a notice, along with the guidelines, to the institutes requesting them to prepare the master plans. At meetings of the "Coordination Committee for IDA-II" on 12 June and 21 August, institute representatives reported on the status of preparation of these plans.

In discussing the author's terms of reference, the Chairman-in-Charge emphasized the importance of assisting selected institutes with their master plans. A schedule was developed for visits to BJRI, BARI, FRI, SRTI and BRRI (Appendix-2).

This section of the report deals with the visits to the institutes, and discusses a revised version of the draft master plan guidelines that proved to be useful, particularly at FRI and SRTI.

The author found to his surprise that in general the leadership of the institutes seemed to have little or no background on the guidelines. Thus little or no work had been done towards development of the master plans. At FRI and SRTI work on these plans was being held in abeyance, pending assistance from BARC.

BINA is a striking exception. Its "Five-Year Research Programs 1985-1990" was completed in April 1985. In general, the presentation tended to follow the earlier-mentioned guidelines. Unfortunately this voluminous document (450 pages plus annexes) presents a seemingly confusing picture of research priority areas when considering the mandates and priority research programs of

other institutes. There is no indication of inter-institute consultation on and coordination of proposed work on common program/project areas. This situation presents a challenge to BARC. Research programs are presented by disciplinary divisions, thus it becomes impossible to meaningfully state program objectives in the context of priority research problems. Good budgeting and staff information is provided at the project level.

As institutes were visited by the author in the company of one of the staff members of the Planning and Evaluation Division, experience was gained which led us to a revised set of master plan guidelines (Appendix-4). Before discussing these guidelines a brief report will be made on the visits to the five institutes.

BJRI. On 8 September a full day was spent at the institute, with an initial meeting with the Director-General and principal scientific staff. Later sessions were held separately with the Agriculture and the Technology Wings and with the Seed Division. The draft guidelines provided by BARC either had not been received, or if received, been given little or no attention. Thus no impression was gained about problems encountered, help needed, etc. Work had not begun on the master plan in a substantive way. However, the Director-General stated that an initial version was expected in about two weeks. He cited lack of a planning cell to assist with the exercise. There was little evidence that the Agricultural Wing has identified critical production problems and their priorities. Useful guidance for more effective planning and determination of priorities was provided earlier this year in a consultant's report (19).

BARI. The visit to this institute, while informative in terms of its planning and evaluation procedures, revealed a circumscribed approach to the request for a master plan. Apparently a decision had been made to respond to BARC's request by merely identifying and describing the "gaps" in BARI's research program. While possibly useful in identification of contract research, such a response would fall far short of BARC's need for overall planning, prioritizing and coordination of research. The author learned later, however, that BARI had decided to prepare a broader-based master plan, and that a three member committee had been appointed to carry out that task. As described earlier, BARI has a relatively sophisticated mechanism for planning and evaluation, with clear identification of major objectives and critical problem areas (by commodities and non-commodity problems).

FRI. The Director and most of the staff appeared to be unaware of (or at least unfamiliar with) the draft guidelines for the master plan. Accordingly, no work had been done on the plan prior to the visit. However, in due course, we succeeded in reviewing the guidelines, and in consultation with the Director and his staff, the author prepared a modified version. This was left at FRI for use in preparation of the plan. Considerable time was spent talking about major researchable problem areas. Although two recent, highly useful and relevant consultancy

reports were available (4,11), limited use had been made of them in really focusing on problems, priorities and resources needed - staff and budget. Nevertheless, the author was impressed by the seriousness of the Director and staff, and believes that a creditable first draft plan will be prepared. This belief was strengthened by a later visit at BARC with the head of the management branch (October 7, 1985).

SRTI. The visit to SRTI, made by the author, Dr. Avtar Kaul and Dr. N. Alam, proved to be the most instructive and probably the most useful from the perspective of the institutes. While little work had been done on the plan prior to our arrival, there was a strong interest. Thus, there were about two and one half days of intensive work by the Director and his staff (with our full involvement) in discussion of the mandate, identification of major researchable problem areas, prioritization of these areas into two groups, and identification of projects (and in some cases, sub-projects). The modified guidelines prepared at FRI were used, later modifying them further, based on inputs by the SRTI staff. They are included as Appendix-4. These guidelines will be discussed in the next section. There is good reason to believe SRTI will prepare a master plan responsive to BARC's request.

BRRI. Almost two days were spent at this institute. The first day included a general review of BRRI planning, monitoring and evaluation procedures, which, comparatively speaking, are quite impressive. During the first day, subjects discussed included identification of important problem areas, determination of priorities and relating the budget to problems. Later, I learned that these management issues had been signaled in the report of the 1984 external review team as needing attention. The second day Dr. N. Alam and the author attended the meeting of the varietal development task force which reviewed the results of the last season and planned the Boro 1984 program. Effective interdisciplinary interaction was evident. It was learned that all divisions had prepared their respective parts of the master plan. A meeting had been scheduled by the Director-General for 5 October to finalize arrangements. The author left a copy of research draft guidelines with the heads of the divisions of plant breeding, pathology and entomology, inviting their comments.

## E. Improving Planning in the Institutes

There is much disparity among institutes in their experience in planning, and in development of improved planning procedures. Yet, even among the most advanced there are problems, e.g., at BRRI where the 1984 external evaluation team stated that their most serious problems are related to management and development of research priorities. It was pointed out that the "present research agenda suffers from overlap and from insufficient coordination". As perceived by the author, this situation is more serious at most of the other institutes.

The draft master plan guidelines sent by BARC to the institutes, as modified by the author, will be used to discuss how planning can be improved in the institutes. In turn better planning at the institute level will enable better national agricultural research plans.

Based on the draft guidelines, the following proforma (outline) was evolved. It appears to provide for the basic information needed by BARC for purposes of planning and coordination, and by the institutes as a basis for a more comprehensive master plan needed for internal use (e.g., with more details about individual projects and perhaps even experiments).

Suggested Master Plan Proforma

I. Mandate

II. Situation in Mandated Area

III. Proposed Research (by Program)

- A. Title
- B. Objective(s)
- C. Importance/Priority (Justification)
- D. Status of Technology/Knowledge
- E. Proposed Research Projects (Titles)
- F. Program Personnel
- G. Budget
- H. Organization and Management.

IV. Institute Organization and Staffing Pattern

V. Staff Training and Development

VI. Institute Budget.

Mandate. This would appear to be a straightforward matter, but at some institutes administration and senior scientists seemed to be ambivalent. Each institute should have an authoritative statement of its mandate, including specification of major objectives and functions.

Situation in the Mandated Area. This section should encapsulate achievements to date (particularly during the preceding Plan Period) as related to program-level research objectives. Major problem areas should be identified and listed that merit serious attention in the Five Year Plan. Thus the stage is set for identification of priority research programs (and projects) needed to address major researchable problems.

Proposed Research. Critical here is the need to identify research programs keyed to the major problems identified previously. A research program is generally multidisciplinary in nature, lending itself to a series of projects (probably also

sub-projects) and experiments. Extension and support activities, while important, should not be confused with research.

There should be an objective-oriented title for each research program. Avoid titles that cast problems in terms of activities, e.g. "The Study of some problem".

The objective may be largely a re-statement of the title. The expected results should be clearly understood. This has important implications for review and evaluation.

The justification (importance) should make clear why the proposer feels the program should be included in the master plan. The problem commonly confronting the institute administration is that of too many proposed programs in relation to current and likely-available staff, facilities and operating budget.

With few exceptions, proposed research programs build on an accumulation of knowledge and technology resulting from relevant research at the same institute, or elsewhere. There should be a clear, succinct statement of the status of technology. In particular, attention should be given to the most recent research results - those obtained during the immediately preceding plan period. Long, tenuous and tedious literature reviews should be avoided. Make clear the technology gap between the present status and the realization of the program objectives.

Each program will have a number of projects which should be listed by title only. But, as with the program, the titles should be cast in the form of objectives - of results expected. Clearly, at the institute level proposals are needed for individual projects, and in turn for experiments.

Staffing requirements should be specified for each research program - available and additional required for implementation.

The program budget should specify requirements by major line items.

Under organization and management information is needed as to where responsibility lies for program management - person/title of position and organization unit in the institute having primary responsibility. Specify other persons/units participating.

In completing the exercise on research programs, institutes in most cases will find that more programs have been proposed them can reasonably be expected to be carried out. This may be for lack of staff and/or funds. Thus, attention needs to be given to priorities among programs as well as within a program (among projects, and in turn among experiments). Regarding programs, it may be helpful for planning purposes to group them into, say, priorities one, two and three.

Institute Organization and Staffing Pattern. Institutes are requested to provide an organogram showing current organization, specifying any changes proposed during the Five Year Plan period. Also to be included is a two-way table showing scientific staff by division/discipline, and by research program. The programs can be shown in the left column, and the divisions/disciplines across the top as column headings. Problems are likely to be in specifying staff in relation to research problem area; it is conventional to list them by disciplinary unit (division/department). Yet, in many ways, the more useful categorization is by problem areas. Clearly this approach calls for showing the inter-disciplinary nature of the research program, and frequently will necessitate "dividing" a scientist among more than program. For example, a scientist may spend only 50% of his time on a given research program.

Staff Training and Development. Institute training needs for the plan period (academic, in-service, short-term visits, etc.) should be specified, using the two-way table format mentioned above.

Institute Budget. An overall projected budget should be presented for the period 1985-1990, by program area and by division/department. A hypothetical example is shown in Table-1, taken from from Cushing's recent consultancy report on sugarcane research in Bangladesh (3). Further to relating budget to program, the following statement was made by the 1984 BRRI external evaluation team : " The review recommends that BRRI start using the budget not only for accounting purposes but also as a tool in relating expenditures (past and planned) to declared areas of research priorities ."

As with staff, institutes are not accustomed to showing budget on a program basis. In budgeting by program, it is not necessary to have a high degree of detail, nor is it necessary that figures be precise - good estimations can serve for planning purposes.

In this part of the report, the author has described how institutes can improve their five-year master plans - for their own use, and as necessary inputs to BARC for improved national agricultural research plans. While some institutes will benefit from the guidelines provided by BARC, and as modified by the author, clearly several (if not most) will require further assistance. And, they will need assistance in developing the derivative annual plans. As concluded in the part of the report on planning in BARC, the author reiterates the recommendation that a research management specialist is needed in BARC to work with that organization and with the institutes in planning and planning methodology.

TABLE:1 - HYPOTHETICAL EXAMPLE OF HOW BOTH A PROGRAM-AREA BUDGET AND AN ADMINISTRATIVE BUDGET CAN BE COMBINED IN A SINGLE TABLE

| Program Area | Departments | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Breeding | Pathology | Agronomy & Soil | Physio. & Matr. | Entos. | Admin. | Supplies & Equip. | Fare | Total |
| Cane Breeding | 50,000 | 2,000 | - | - | 5,000 | 2,000 | 2,000 | 30,000 | 91,000 |
| Irrigation and Water Relations | - | - | 3,000 | 5,000 | - | 500 | 4,500 | 300 | 13,300 |
| Disease Control | 1,000 | 35,000 | - | - | 300 | 2,000 | 3,000 | 4,000 | 45,300 |
| Establishing Full Stand of Cane | 1,500 | 2,000 | 60,000 | 6,000 | 12,000 | 4,500 | 18,000 | 600 | 104,600 |
| Growth and Development | - | - | - | 17,000 | - | 1,100 | 3,500 | 9,000 | 30,600 |
| Fertilizer Dose-Response Relationship | - | - | 32,000 | 37,000 | - | 3,000 | 8,000 | 14,000 | 94,000 |
| T O T A L | 52,500 | 39,000 | 95,000 | 65,000 | 17,300 | 13,100 | 39,000 | 57,900 | 378,800 |

Source : Cushing, R.L. Agricultural Programme of the Bangladesh Rehabilitation and Intensification Project: A Review of Bangladesh Sugarcane Research and Application of Results (see Appendix-3 for reference). September 1985.

# IV. MONITORING AND EVALUATION

## A. Introduction

Based on guidance from the Chairman-in-Charge, and time constraints, the author devoted relatively little time to monitoring and evaluation procedures. As a result this section is correspondingly brief. Fortunately however, the subject of evaluating agricultural research programs received major attention last year in a three-day regional workshop held in BARC under the auspices of the Council, the International Service for National Agricultural Research (ISNAR), and the International Agricultural Development Service (IADS). The proceedings of this workshop are commended as a source of guidance for improving the monitoring and evaluation of agricultural research programs in Bangladesh.

At the outset, it may be useful to distinguish between monitoring and evaluation (15) :

- The purpose of monitoring an on-going program is to confirm that things are being implemented as planned. Bottlenecks can be identified before they cause too much damage. The focus is on the inputs-actions taken under the program. The work plan or program is the principal indicator against which monitoring may be carried out.

- The purpose of evaluating a completed program - or a particular phase of a program - is to find out whether it led to the expected results. The focus is on results or outputs.

In this section there will be an overview of the program and problems, both within BARC and at the institutes' level. Then consideration will be given to measures for improving monitoring and evaluation.

## B. Progress and Problems

BARC. As stated in "This is BARC" (23), the Council has monitoring and evaluation responsibilities. The PPRB was expected to " evaluate research achievements, including the economic impact of investment in research". Member-Directors are responsible for "....keeping abreast of the progress of research; for monitoring and evaluating research ".

BARC has given considerable attention to monitoring and evaluation. The " Manual for Contract Research " specifies procedures relative to contract research projects. As a result of BARC's interests, a very useful guideline, Evaluating Agricultural Research Programs, has just been published. It is based on the regional workshop held in BARC in

October 1984, as noted above. BARC monitors and assists in the evaluation of donor-supported projects, including the one supported by USAID designed to strengthen BARC. In the latter project, monitoring is made possible through quarterly and annual and financial reports. There are periodic internal and external evaluations.

The role of BARC in monitoring and evaluating research at the institute level deserves attention. Clearly the Council cannot be expected to closely follow and evaluate each individual research program. This is the responsibility of the institute with participation by BARC in such critical areas as annual reviews and programming. BARC, while not necessarily arranging them, should be involved in all major evaluations of research covering major research programs, commodities, non-commodity areas, and institute-wide activities.

Monitoring and evaluation responsibilities within BARC lie primarily with the Member-Director responsible for commodity groups or non-commodity problem areas. As pointed out by one Member-Director, the lack of provision for a Chief Scientific Officer (CSO) in each division is serious. It affects upward mobility of division staff, necessitating frequent addition of personnel from "outside". The Planning and Evaluation Division should have a facilitating / service role, corresponding to the one related to planning, as described earlier. It should be concerned with methodology, training in monitoring and evaluation, and development of a computerized data base to facilitate the work of the Member-Directors.

Currently, BARC is not in a position to exercise a strong role in monitoring and evaluation. As with planning, the key problems are rooted in the limited authority given to BARC to carry out its mandate, and the shortage of personnel experienced in evaluation methodology.

Institutes. Some institutes, notably BARI and BRRI, have developed relatively effective procedures for the monitoring and evaluation of research programs. They include annual reviews (evaluations) and periodic external reviews - every two years at BARI and every three years at BRRI. In general these institutes link their annual reports to problem-oriented annual research plans/programs, thereby greatly facilitating monitoring and evaluation.

It would be advantageous to work toward basically standardized procedures for monitoring and evaluation. The principal starting point is during the planning stage of research programs. As quoted for Murphy (15),"....the first rule in evaluations is that the process begins when the program is designed by setting up clear, specific and verifiable indicators of achievements for that program. " As pointed out by Murphy, this approach has two immediate benefits: (a) It forces program designers to express in clear and concrete terms what are the objectives of the program and what results are expected. (b)

It requires specifying how progress and achievements will be measured and therefore establishes the basis for monitoring procedures.

C. Measures for Improvement

Effective monitoring and evaluation are grounded in good program planning. Thus, the basic need in BARC, and at the institute level, is to improve program planning. This means planning based on major technological problems associated with agricultural developments (of a commodity or non-commodity nature). This approach has been discussed.

A second step, flowing from improved planning, is improved reporting. With few exceptions, annual reports prepared by the institutes give the reviewer little guidance regarding major research problems, and progress made during the year toward solution of the problems. Of course, problem-oriented annual reports cannot be expected if the institutes do not operate on the basis of problem-oriented annual programs.

There should be a comprehensive evaluation of research programs timed so that results can be utilized in formulation of the institute's new five-year (master) plans. Such evaluation would provide the program leader and the institute administration with a valuable tool for identification of a revised set of research program priorities to form the basis for the new five-year plan of the institute. In turn, these more highly focused institute plans would be reflected in a more meaningful and useful national agricultural research plan.

APPENDIX-1

Draft Guidelines
for the Preparation of

MASTER PLANS
for Agricultural Research Institutes
within the BARC System

Introduction

The preparation of Master Plans for the Agricultural Research Institutes constitutes a link in the chain of a more comprehensive planning exercise comprising the system as a whole. The objective of this exercise is threefold:

a) to link agricultural research planning to the development priorities of the country, as expressed in the Third Five Year Plan

b) to arrive at clearly defined research programs spelling out type and duration of the proposed research as well as expected results, and

c) to obtain a clearer idea about the justifiable costs of the research effort as a precondition for securing its funding from internal and external sources.

After preparation of the Draft NARP, the preparation of individual Master Plans is the second step, to be followed by a revised NARP summarizing the results of the Master Plans, as a third step. The fourth step will then be the preparation of a Recruitment and Training Plan for researchers. Carried out in this order, each step will build upon the results of the foregoing and feed its findings into the subsequent exercise.

Proposed Outline of 5 Year Master Plans

1. Mandate of the Institute

Describe briefly the mandate of the institute with regard to objective and functions.

2. Situation in the Target Sector serviced by the Institute

Describe achievements versus objectives in the sector to identify research needs and priority areas (in consultation with, and critical review of research priority areas mentioned in the Draft NARP document).

3. Research Priority Areas and Technology Assessment in Them

List the proposed research areas and identify for each priority area :

- the technology gap,
- the knowledge gap preventing achievement of improved technologies,
- the type of research needed to close this knowledge gap.

4. Proposed Research Program in Priority Areas

Go through the following steps when describing each proposed research program :

a) type of research to develop, or transfer technology

b) duration of research i) on station, ii) on farm

c) type of additional studies needed (on technology improvement, social, and economic aspects, etc.)

d) required staffing and expertise as compared to available staffing (this information will be summarized in proformas to be provided from the BARC Training Cell. These will provide the input for the overall Recruitement and Training Plan)

e) Expected Output

State briefly the expected results to be achieved (yield increase/stabilization, improved economics, etc.).

5. Identification of Contract Research

State which of the proposed research programs (or parts of it) should be financed from contract research (as opposed to regular research programs). The following criteria should be applied for identification as contract research :

- The program requires inter disciplinary, or inter-institute cooperation
- It does not fit into the regular research program, (as it may be of temporary nature, would require additional staffing, etc.)
- It would require external expertise available in other institutions, but not in the own institute.

Contract Research seen in this way will therefore not complicate research funding, but allow regular research programs to be kept lean and streamlined, thus easier to manage. Contract Research proposals should be limited to complementary research, requiring more consultation and coordination as laid down in separate procedures.

6. Data Collection, Processing, Retrieval and Reporting

Describe existing arrangements and justify proposed improvements to ensure that :

- Management has sufficient control over research activities
- Publications are issued on time, and
- Research results are made available to the Extension as well as the Research Community.

7. Costs

Costs should be grouped into
- Investment
- Staffing
- Operational

---

- Total

This statement identifies contract research costs as additional costs, to be funded from the Contract Research Fund and BARC.

8. Organization and Management

a) Proposed organogram with staffing

b) Description of responsibilities for the various programs

c) Linkages to other institutions and programs.

APPENDIX-C

SCHEDULE OF VISIT TO INSTITUTES

Guy B. Baird, BARC Consultant in Planning

| | | |
|---|---|---|
| 1. | B J R I | 8 September<br>(Begin at 09:00 with Director-General) |
| 2. | B A R I | 9 - 11 September<br>(Begin at 10:00 on 9th with Director-General) |
| 3. | F R I | 13 - 17 September<br>(Arrive by vehicle on 13th afternoon;<br>Meet Director at 10:00 on 14th;<br>Return on 17th by vehicle) |
| 4. | S R T I | 21 - 25 September<br>(Arrive by vehicle on 21st afternoon;<br>Meet Director at 09:00 on 22nd;<br>Return by vehicle on 25th) |
| 5. | B R R I | 28 - 30 September<br>(Begin at 10:00 on 28th with Director-General) |

APPENDIX-3

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APPENDIX-4

## SUGGESTED GUIDELINES FOR PREPARATION OF INSTITUTE MASTER PLAN FOR RESEARCH

### Introduction

The institute five-year master plan should be a document that clearly describes the research mandate, identifies the most important problems, and specifies and justifies research needed to resolve the problems. It should link research problems with requirements (staff, operating expenses, and non-recurring costs). It should be the basis for formulation of annual programs/plans and for monitoring and evaluation of progress and accomplishments. It is needed by BARC in the fulfilment of its role in coordination of the national agricultural research system (including preparation of National Agricultural Plans), by the ministries and the Planning Commission in the development of five-year plans, and in allocation of resources for implementation of the agricultural research component of the plans.

The following suggested proforma (outline) is designed to provide the basic information required by BARC. The institute will need more detailed information, particularly at the project and experiment level. This proforma focuses on the research addressing a problem generally requiring a multidisciplinary effort (e.g., the problem in sugarcane of an insufficient population of millable stalks - the problem may be agronomic in nature, related to genetic characteristics of the variety, or to insect or disease problems). A research project under this research program may be the control of important insect pests affecting the plant population. Then, of course, there are specific experiments needed to attain the objective of a given project.

Implicit in the proforma is the recognition that proposed research needs and interests may exceed staffing, facilities and funding levels that the institute can reasonably expect to obtain in the plan period. Thus recognition of priority among research programs must be reflected in the master plan.

### The Proforma

I. Mandate of institute in terms of objective(s) and functions

II. Situation in the mandated area. Describe briefly achievements as related to program-level research objectives. What are the problem areas meriting priority attention in the five-year plans? List by titles cast in the form of focused objectives.

III. Proposed Research

This should be dealt with by research program. The

following information should be provided for <u>each program</u>:

1. Title.

2. Objective(s). State in a manner that expected results are clearly understood.

3. Importance/Priority. Why is this of sufficient importance to be included in the Master Plan (Justification)?

4. Status of Technology. Where do research and technology results stand at this time (work already done at institute and elsewhere)? What is the technology gap to reach the program objective ? Emphasize current, relevant information.

5. Proposed research <u>projects</u>. List titles, casting them in the form of objectives - of results expected.

6. Program Personnel (Staffing). Provide information on available staff and on additional staff needed for implementation of the proposed program.

7. Budgeting Estimate. Provide program needs, by major budget categories, to carry out the work during the plan period. (Capital and revenue - specify staff cost estimate as well as other recurring costs).

8. Organization and Management. Where does responsibility lie for management of the program (person - by name, if possible, and title, and specifying division having primary responsibility)? What other divisions are participating ?

IV. Institute Organization and Staffing Pattern

Provide an organogram showing current organization, and specify any proposed changes during the TFYP. Provide a list of scientific staff/positions by divisional units, and by proposed research program (two-way table).

V. Staff Training and Development. Specify training needs (academic, in-service, short-term visits, etc.) in TFYP to achieve research objectives, and prepare for the next plan period. Present in two-way table by division/discipline and by research program.

VI. Institute Budget

Provide an overall projected budget for the period 1985-1990, using the major categories required by the Ministry/Planning Commission. Present in two-way table by division/discipline and by research program.