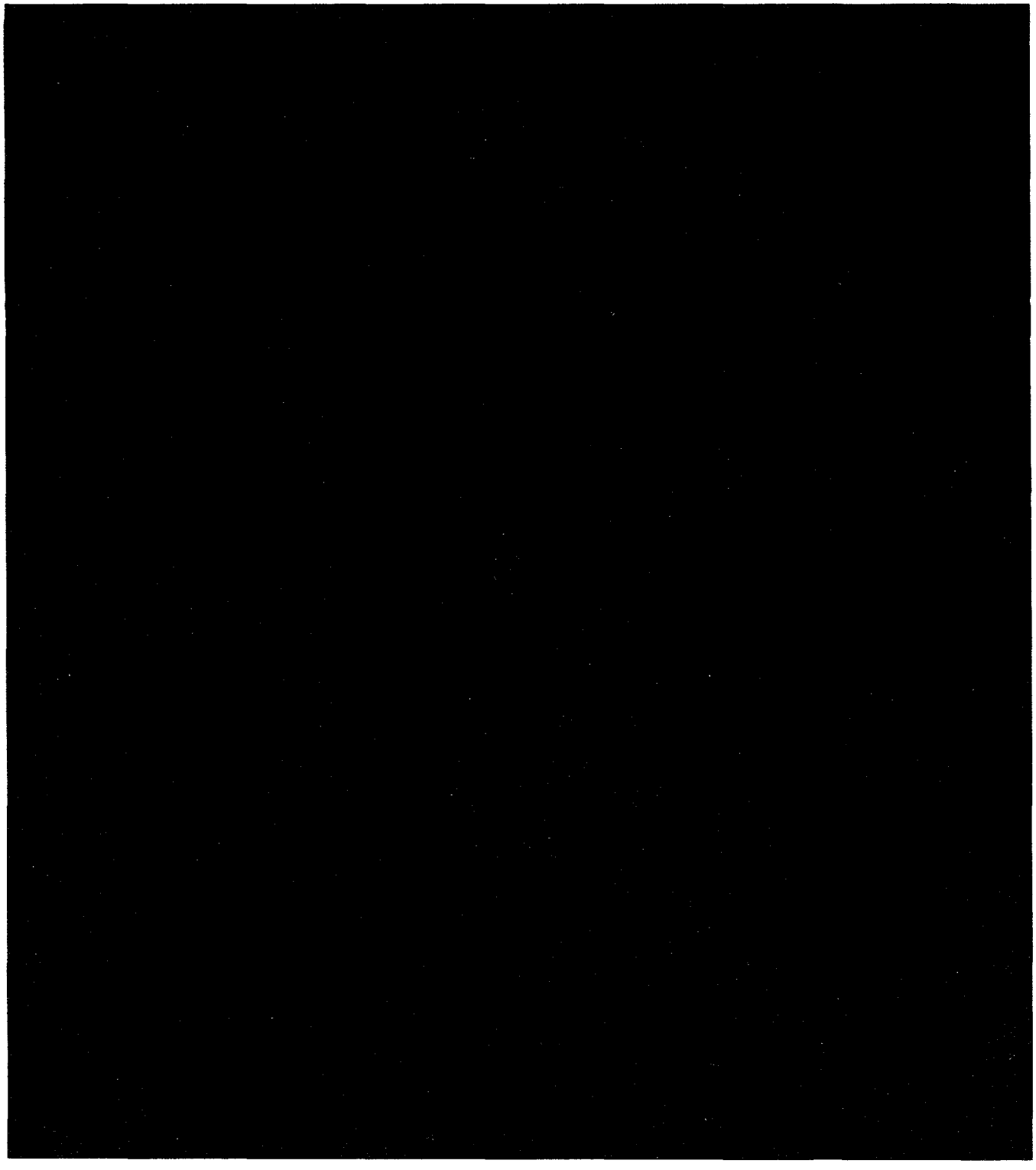
Second Review of the CGIAR



Consultative Group on International Agricultural Research

November 1981

INTRODUCTORY NOTE

At its annual meeting in November 1980, the Consultative Group on International Agricultural Research decided to undertake a comprehensive review of its strategy, policies and procedures similar to one undertaken in 1976. To conduct this second review, a special Review Committee was established. The Committee submitted the following Report to the Group in November 1981.

The Report and its recommendations were fully discussed at the annual meeting of the Group in November 1981, and a wide range of decisions were taken. A brief summary of the main points arising during the discussion and of the decisions taken is given in the pages immediately following as a preface to this reissue of the Report.

Report of the CGIAR Review Committee

Condensed Summary of Discussion of the Committee's Report November 11-13, 1981

1. The Group endorsed the general approach taken by the Review Committee, and approved its recommendations with exception noted below. It observed that the Committee's Report was concerned with fundamentals and with the design of mechanisms rather than with specific answers to operational questions. The Group decided that the Report's recommendations, as modified below, should be put into effect as rapidly as possible. Steps towards such full implementation would be an important concern of the Group's at its next and future meetings.

2. The Review Committee and the Study Team had carefully considered a wide range of alternative approaches in arriving at their recommendations. In reviewing the Report, the Group felt in general that the unique structure of the CGIAR system which had evolved had served well, and changes should be made only where essential. On the other hand, a number of members of the Group stressed that its activities had now reached such a scale as to make necessary both stronger management controls and greater involvement of members in policy issues. Hence, in the course of discussion, the Group's approach was to support recommendations for maintaining the Group's fundamental goals and for rationalizing and substantially strengthening the existing structure, rather than to propose radical change.

3. The following summary records the main features of the consensus on each recommendation. It should be read in conjunction with the Summary on pages vii-xx of the Review Committee Report, in which the recommendations are given in full. Where little or no comment is made on a particular recommendation, this is because the Group essentially endorsed it as written.

4. Chapters 1-4 contained no specific recommendations. Recognizing the value of these chapters as background to what follows, some members felt the need for more extensive examination of the impact of the CGIAR System on the production of food commodities in developing countries.

5. Chapter 5 dealt with principles for inclusion of activities in the system, and, by implication, principles for phasing out existing activities. The Group endorsed Recommendation 1, that the system should continue to concentrate mainly on food commodities, with the exceptions noted in the Report. The Group also supported the other parts of this Recommendation, for example on the importance of genetic resources, water management, and the value of the multi-disciplinary approach. The high priority for training in Recommendation 2 was strongly endorsed, including training and career development within centers. With respect to training women, it was noted that while a special effort was required to recruit women into the System, the recommendation should not be taken to mean that the training needs of women were any different from those of men.

6. Chapter 6 had four recommendations on modes of operation within the System. Recommendation 3, urging scrutiny of new expansions, and wider consideration of networks was endorsed. The Group supported the proposals in Recommendation 4 for better coordination among centers operating in the same region, although some felt that this was already in fact better than the Report seemed to imply. There was little dissent from Recommendations 5 and 6, dealing with strategic research, though some difficulty was noted in foreseeing centers' needs for this kind of work much in advance, and the practicality of lists of such topics was questioned. Possibilities for cooperation with the International Council of Scientific Unions (ICSU) were noted.

7. Chapter 7, dealing with Organization and Management, absorbed by far the greatest part of the Group's attention, since it included 13 recommendations. Supporting Recommendation 7, the Group stressed the importance of forward planning and the preparation of long-term plans and rolling five-year estimates by centers. In line with Recommendation 8, the CGIAR Secretariat was instructed to embark on the suggested study of budgets, cost-effectiveness and funding. Recommendation 9, concerned with reviews within the System, introduced the concept of "Commodity and Activity Reviews", which was accepted. Members noted the dangers of over-reviewing, although good central reviews could reduce the need for reviews by individual donors. Recommendation 10, on representation and participation in Centers Week, was supported. There was general agreement that the Group would probably need to meet more than once a year for the foreseeable future.

8. Following extensive discussion in which several alternatives were considered, the Group did not arrive at a consensus in support of Recommendation 11, proposing the establishment of a Budget Review Committee. Instead, the Group decided to continue to strengthen the procedures which had evolved. These comprise the development of multi-year plans by all centers, adoption by the Group of a rolling five-year indicative plan for the System as a whole, provision to centers annually of budget guidelines based on the five-year plan and estimates of future available funding, preparation by the centers annually (or biennially) of programs and budgets for review by the Technical Advisory Committee and the Secretariat and, after adjustments made as a result of that review, putting them to the Group for approval. The Group expressed interest in monitoring closely the further development of these procedures, which would be reconsidered after a reasonable time period.

9. The Group concurred with Recommendation 12, agreeing that the proposed management specialist in the CGIAR Secretariat might be complemented by consultants where required. The proposed additional scientific adviser could be a social scientist. Members supported Recommendation 13, providing for more input from TAC, and longer terms of service for its members. The duties of the Chairman of TAC were expected to occupy him almost full-time. There was also support for Recommendation 14, proposing a stronger public relations effort. Publication and materials for meetings were needed in languages other than English. Publications should emphasize actual and potential impact, and should serve to assist in fund raising.

10. While noting sensitivity of Center Boards' respecting their independence, the Group concurred with Recommendation 15 on the accountability of Boards to the Group and the need for consultation. There was general

agreement on the need for better communication between Boards and the other components of the CGIAR System. Recommendations 16 and 17 dealt with related matters, and were endorsed. Members supported the principles of the independence and objectivity of Board members outlined in Recommendation 16. Recognizing that the level of funding for an individual center was a policy question for the Group collectively, donor members reaffirmed the importance of not seeking individually to influence the policies of a center on recruitment or other matters through unexpected changes in their level of contribution.

11. Members shared the Committee's concern for the erosion of staff pensions and other benefits, reflected in Recommendation 18. There was consensus in support of a study of this question, with the details of how to proceed yet to be determined.

12. The Group supported the emphasis in Recommendation 19 on strengthening the role of women throughout its System, a policy consistent with that of most major national and international agencies.

13. Chapter 8 dealt with participation by developing countries in the Group's affairs, which most members agreed should be strengthened. The Review process, itself, had gone to great lengths to take account of the views of developing countries. Members selected by the FAO regional conferences as representatives of their regions stressed the difficulty of making that representation effective. FAO indicated its intention to increase efforts to assist them. A proposal was made for regional meetings of national research directors, with participation by international center directors. The difficulty of financing the costs of attendance by developing country representatives was noted, and it was recognized that means to overcome it should be explored.

14. Members supported Recommendation 21, to provide greater opportunities for scientists from developing countries, though the problems of reentry to national programs had to be recognized.

15. Chapter 9 was concerned with funding the system, and did not contain any explicit recommendations.

16. Chapter 10 covered future strategy and a Five-Year Indicative Plan. The assumptions behind the Plan were accepted for planning purposes, but the figures were felt to need some revision in light of the current availability of funds. Such a revision within the general framework of Recommendations 23 and 24 would be an important item of business for another meeting of the Group.

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

REPORT OF THE REVIEW COMMITTEE

SEPTEMBER 1981

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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September 22, 1981

TO: Members of the Consultative Group on International Agricultural Research (CGIAR)

The Consultative Group on International Agricultural Research has now become an established and significant part of worldwide efforts to improve agricultural production in the developing world. Although the resources it commands are very modest relative to these efforts as a whole, the CGIAR system has achieved much, attracts increasing attention, and generates high expectations.

The members of the Group have recognized the need to step back from time to time from the routine operations of the complex informal mechanism they have set up and to look at its strategy, policies, and procedures in a broader context. Consequently, they undertook a comprehensive Review in 1976, and a second one in 1981.

The task of carrying out this second review was given to a special Review Committee. The members of this Committee served in their individual capacities, and were chosen for their personal experience of the CGIAR system and its components and the problems the system was created to address. The membership of the Committee is given on pages 3-4 of the Report.

The Committee was served by a Study Team, chosen from outside the CGIAR system. Four consultants were engaged on a more-or-less full-time basis for various periods extending from December 1980 to July 1981, and three other consultants helped for shorter periods. They too are listed in the Report.

The Committee's Terms of Reference were laid down by the Consultative Group at its meeting in 1980, and are given in the Introduction to the Report.

The Review Committee accepts responsibility for its Report. In doing so, it recognizes its great debt to the Study Team. The Team was confronted with a highly complex task, under very severe time pressures. Each member of the Team brought great dedication, wide experience, unflagging energy and sound judgment to their work, and the Committee feels itself to have been served exceptionally well. The Committee would wish me to make special mention of the outstanding service of the Study Director, Dr. Michael Arnold, on whom the greatest burdens fell, and on whose advice the Committee and the Team have heavily relied.

On behalf of the Review Committee, I herewith transmit their Report to the Consultative Group. It will be considered by the Group at its forthcoming meeting in November.

Warren C. Baum

Chairman

SECOND REVIEW OF THE CGIAR SYSTEM

REPORT OF THE REVIEW COMMITTEE

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ACRONYMS AND DEFINITIONS

In discussing issues relating to the Consultative Group on International Agricultural Research (CGIAR) and the activities it supports, the Study Team encountered problems of communication and definition. Consequently, the acronyms used in this report are listed below and some of the less familiar terms are defined.

Acronyms Related to the CGIAR System

CIAT - Centro Internacional de Agricultura Tropical
CIMMYT - Centro Internacional de Mejoramiento de Maiz y Trigo
CIP - Centro Internacional de la Papa
FAO - Food and Agriculture Organization of the UN
IBPGR - International Board for Plant Genetic Resources
IBRD - International Bank for Reconstruction and Development

ICARDA - International Center for Agricultural Research in the Dry Areas
ICRISAT - International Crops Research Institute for the Semi-Arid Tropics
IFPRI - International Food Policy Research Institute
IITA - International Institute of Tropical Agriculture
ILCA - International Livestock Center for Africa
ILRAD - International Laboratory for Research on Animal Diseases
IRRI - International Rice Research Institute
ISNAR - International Service for National Agricultural Research
TAC - Technical Advisory Committee
UNDP - United Nations Development Programme
WARDA - West Africa Rice Development Association

Other Acronyms

ASCAD - Arab Center for the Study of Arid Zones and Dry Lands, Syria
ACLA - Asociacion Latino Americano de Ciencias Agricolas, Mexico
ATSAF - Arbeitsgruppe Tropische und Subtropische Agrarforschung, Germany
AUSTREC - The Australian Science, Technology and Research Corporation Program, Austria
BIFAD - Board for International Food and Agricultural Development, United States
CATIE - Centro Agronomico Tropical de Investigacion y Ensenanza, Costa Rica
GERDAT - Groupement d´ Etudes et de Recherches pour le Developpement et l´Agronomie Tropicale, France
ICA - Instituto Colombiano Agropecuario, Colombia
ICIPE - International Center of Insect Physiology and Ecology, Kenya
ICSU - International Council of Scientific Unions
IDRC - International Development Research Center, Canada
IFARD - International Federation for Agricultural Research in Developing Countries
IFDC - International Fertilizer Development Corporation, United States
IICA - Instituto Inter-Americano de Cooperacion para la Agricultura, Costa Rica
ODA - Overseas Development Administration, United Kingdom
ORSTOM - l´Office de la Recherche Scientifique et Technique d´ Outre-Mer, France
RAWOO - Raad voor Advies Wetenschappelijk Onderzoek Ontwikkelingssamenwerking, Holland
SAREC - Swedish Agency for Research Cooperation with Developing Countries Sweden
SEARCA - South East Asian Regional Center for Graduate Study and Research in Agriculture, Philippines
TIP - Tropical Products Institute, United Kingdom

Terms relating to the CGIAR System

The Co-sponsors. FAO, IBRD and UNDP 1

The CGIAR (Abbrev. The Group). As defined in Appendix II page 176, paragraphs 5-9) 2

Its service units. TAC and its Secretariat, the CGIAR Secretariat, and also, hypothetically, the Budget Review Committee (Chapter 7) 3

International Centres (Abbrev. Centre) IRRI, CIMMYT, CIAT, IITA, CIP, ICRISAT, ILRAD, ILCA, ICARDA 4

Other CGIAR Institutions. IBPGR, ISNAR, IFPRI, WARDA (in part) 5

The CGIAR System (Abbrev. System). 1, 2, 3, 4, and 5 collectively.

The CGIAR Institutions (Abbrev. Institutions). 4 and 5 collectively.

Components of the System. Any of 1 to 5.

Other terms

Collaborative research network. A research activity in which three or more research institutions collaborate following a commonly agreed methodology.

Collaborative research programme. A research programme developed jointly by a Centre and one other research institution on a commonly agreed subject and methodology.

Regional institution. An institution serving a geographical region, comprising a group of several countries.

Strategic research. Research that is designed for the solution of specific research problems (e.g. a technique for detecting dwarfing genes in wheat seedlings. Equivalent to "mission-oriented basic research".

Technical assistance. The provision of human resources, technologies or knowledge by an institution to a particular country in order to assist with its development.

SUMMARY

The summary given below includes the main conclusions and recommendations contained in the report. The sub-headings correspond with the chapter headings in the main body of the report, to which reference should be made for further explanation and more detailed conclusions. In the summary, the paragraphs and recommendations are numbered sequentially, irrespective of the chapter to which they relate.

Food Supply and International Research (Chapter 1.)

1. Aggregate figures suggest that during the last decade, technological development, and to a lesser extent expansion of agricultural land, have made possible substantial increases in food production in the developing countries. Owing to rapid population increases, however, only modest progress has been made towards meeting minimum food requirements. Problems of malnutrition remain locally severe in many developing countries.

2. These problems must be analyzed in relation to the structural limitations, such as distribution of income and constraints to trade, that characterize economic development. Although these limitations are unlikely to change significantly during the next decade, problems of malnutrition can be alleviated through internal increases in food supply.

3. Of the factors that could increase food supply, the greatest potential lies in increased land productivity through technical changes in order that existing agricultural land can be used more effectively and marginal land brought into production. Both are dependent on research and the application of improved technology.

4. In spite of considerable progress in the development of new technology, forward projections of food supply and demand indicate an ever widening gap, depending on the rate of population increase and the rate of increase in food supply. The second of these two considerations emphasizes the vital role of sustained effort in agricultural research at both the national and international levels.

5. Research leading to the development of appropriate technology can increase the productivity of resource-poor farmers, thus increasing their capacity to feed themselves. Similarly, new technology can contribute to an overall increase in food supply, thus augmenting the quantities of food marketed, with associated possibilities of decreases in price and increases in the real incomes of the rural and urban poor. The CGIAR System has already made impressive contributions to both of these aspects of food supply and there is clearly an urgent need for it to continue to do so in the future.

6. Contributions to international agricultural research by the CGIAR System include large programmes on the conservation and use of genetic resources of the major food crops as well as work on farming systems and the

biological, physical, sociological and economic factors limiting production. The impact of the new technology developed by the International Centres has been analyzed in detail only for rice and to a more limited extent for wheat. In 1978 it was estimated that the new varieties of rice and wheat were adding between $3 billion and $4 billion per annum to the value of production. These estimates illustrate the favourable cost-benefit ratios of investment in agricultural research, that are well-known. More recent work undertaken by the newer Centres is also starting to make significant contributions to increased production, and some of the work on cassava, maize, potatoes, broad beans, field beans, millet, sorghum and pastures has already been transferred into farmers' fields.

7. The CGIAR Institutions comprise only one element, although a very important one, in the world system of activities in agricultural research and development. Some countries, in part as a result of work sponsored by the CGIAR, have made important advances in their own capacity to produce food; others have lagged behind, creating new areas of malnutrition and even potential famine. Consequently, the balance of food supply and demand continually changes on a geographical basis and the problems and priorities in research also change. The CGIAR must continue to respond to changing requirements, but the imperative need for research on food production will continue and is likely to increase. Those who have so generously supported the System in the past must recognize that continued success will come only from sustained effort by first-class staff, committed to their tasks and assured of long-term support.

The First Review of the CGIAR (Chapter 2)

8. The inherent vitality of the CGIAR System is well-illustrated by its willingness to subject itself to periodic review. The first review, commissioned in 1976, presented 22 recommendations, all of which caused discussion and reappraisal although it has been difficult to assess precisely how far they were implemented. Nonetheless, there is no doubt that the Review helped to consolidate the work of the System and give greater cohesion to its components. The recommendations related to the donors, the service units and the Institutions, and the extent to which they were implemented reflects the judgements and responsiveness of those concerned.

9. We conclude that this observation illustrates the main characteristics of the System. The basis of collective action requires a strong feeling of consensus, not only among the members of the Group but also among the Boards of the Institutions and their members. Consequently effective implementation of policy is dependent on the mechanisms available for both arriving at a strong feeling of consensus and translating that consensus into action. This is the main inference we draw from the first review and we have kept it strongly in mind during the second.

The CGIAR System (Chapter 3)

10. When the CGIAR was founded, there was already a loose federation of four International Centres. It was assumed that as national programmes became stronger, the need for the Centres might be reduced and that they might eventually be converted into national or regional institutions. The consensus that is now emerging, however, is that the Centres should be encouraged to evolve towards a coherent System of Institutions designed to provide long-term support for national programmes, with a role extending at least until the end of the century.

11. Although some of the Institutions may change their roles, the future of the International Centres is seen as one of complementing national programmes, rather than dominating them or substituting for them. Indeed, the CGIAR System can be viewed as part of a wider system reaching across national boundaries to maintain linkages among the various elements comprising the world scientific community. Continuity of staffing and sustained financial support are essential if the System is to continue to make significant contributions to the complex process of development in the future.

12. The original purpose of the CGIAR was defined in terms of five main objectives which were in essence: to review the needs for international agricultural research and how they could best be met; to ensure complementarity between national and international research and to encourage exchange of information; to consider the financing of activities of high priority taking into account the need for continuity; to undertake a continuing review of priorities in order to respond to changing needs; and to suggest feasibility studies of specific proposals.

13. Although the original statement of objectives is still basically appropriate, its interpretation has changed with the evolution of the System. There is greater recognition that development is the ultimate purpose of supporting international agricultural research; that national research capabilities must be strengthened; and that continuity of funding is crucial for success of the work. There is also a common understanding that the work should be directed primarily towards increasing the food supply, taking due account of equity in the distribution of the benefits of research, the special needs of the resource-poor farmer, the nutritional requirements of the less advantaged groups and the need for stability in food supplies. Changes in emphasis are to be expected as the System evolves, but we do not consider that such changes make it necessary to revise the original statement of the Group's objectives.

14. The first few International Centres evolved out of programmes financed by the Ford and Rockefeller Foundations. The International Centre was a new concept that enabled resources to be concentrated into highly professional research institutions, governed by independent Boards of Trustees and free from the pressures of governmental policies. Because,

initially, there were only a few donors, and because many of the individuals both on the Boards and in the donor agencies knew each other personally, it was possible to adopt largely informal methods of making decisions and formulating policy. However, with the rapid expansion of the System, the greater heterogeneity of attitudes among the more numerous individuals now involved and the difficulties of allocating limited resources amongst competing demands, it has become necessary to define more precisely what the CGIAR System is and how it should operate in the future.

15. In our opinion it is essential for the continued success of the System that the Institutions supported by the CGIAR should continue to be viewed as international and autonomous; that priorities should continue to be determined and the Institutions governed mainly by individuals appointed for their personal, professional ability; that the Institutions should continue to be funded by donors who accept a long-term funding commitment but remain free to determine their support for programmes or Institutions as they see fit; and that the international character of the System should be preserved through the composition of the Boards, the nature of the Group and its service units, and the support of the co-sponsors.

16. We consider that this innovative concept of an international System that has evolved from the activities sponsored by the CGIAR, provides maximum opportunities for professionalism and long-term planning made possible by largely excluding short-term political considerations. It implies that the guiding principles for the management of the System should be established by participation and consensus and that donors should avoid trying to use the System to support activities or Institutions that are not consistent with its underlying philosophy.

The Place of the CGIAR System in the World Pattern of Related Activities (Chapter 4)

17. The original purpose of the International Centres was to generate new technology, mainly through applied research. The success of programmes of applied research is dependent on adequate supplies of the results of strategic research, which in turn draw on the results of basic research. Moreover, most new technology needs to be adjusted to suit local conditions through adaptive research.

18. Individuals in the developing countries have somewhat different perceptions of what the appropriate functions of the Centres should be. Those from countries with stronger national programmes tend to support the original concept of the International Centre, but recognize that future effectiveness will require a greater commitment to strategic research. Those from countries with weaker national programmes would wish the Centres to become more involved in adaptive research in direct support of their own national programmes.

19. In our opinion the Centres, which were designed to be effective research institutions and not agencies providing technical assistance, should concentrate on their research mandates. Research on global problems requires a long-term approach and can legitimately remain insulated from the pressures of governmental policies. On the other hand, programmes of technical assistance and the determination of priorities for adaptive research must be heavily influenced by governmental policies. If the International Centres assume responsibility for national programmes, pressures for their control through country representation on Boards and in the Group are likely to develop and the System will risk losing its non-political character. Moreover, the Centres have only a limited capacity for technical assistance to national programmes and should avoid undertaking tasks that may divert them from their main responsibilities and place undue stress on their management capabilities.

20. It is essential, however, that Centres collaborate with national programmes in order to develop widely applicable technology, to validate their findings and to foster the synergistic effects of bringing scientists together to work on common problems. Likewise national programmes can derive the greatest benefits from Centre activities by collaborative association with them. While endorsing the development of collaborative programmes, we consider that Centres must nonetheless exercise care in working out mutually acceptable procedures for collaboration allowing programmes, when appropriate, to come under the scrutiny of national co-ordinating committees in the individual countries.

21. In recognition that the ultimate success of the work of Centres is dependent on strong national programmes, the CGIAR has created ISNAR to help to strengthen national programmes, mainly through advice and establishing channels for technical assistance. Although ISNAR's modest resources will need to be used to help a limited number of countries whose needs are greatest, we consider that the contribution of the Centres to strengthening national programmes should be mainly through training, collaborative programmes and through giving advice to organizations that are engaged in technical assistance. In this connection, Centres should continue to explore the extent to which inter-governmental organizations that are already involved in assisting national programmes might be able to help them to establish appropriate linkages.

22. As the System has widened its activities, it has become desirable to monitor, in a more systematic manner, the results of basic research that are relevant to the mandates of the Centres. We consider that the System should continue to strengthen its ties with the international scientific community, not only to maintain the impetus of its own programmes, but also to help in raising enthusiasm to channel more scientific help from advanced institutions into those problems that are specific to the needs of increasing agricultural production in the developing countries.

Principles for the Inclusion of Activities in the System (Chapter 5)

23. Compared with national programmes of agricultural research in the developing countries, many of which are unavoidably diffuse, the International Centres can concentrate their resources on a relatively small number of well-defined problems. They can most effectively use this comparative advantage to complement and reinforce national programmes. It is also appropriate that the main effort of the Centres should be devoted to applied and strategic research, rather than to adaptive research or programmes of technical assistance to individual countries.

24. Historically, the Centres were created to work on the most important commodities as well as in the most important agro-ecological regions related to food production in the developing countries. Priorities were based on filling gaps defined by the importance of a problem and its coverage by existing research facilities. Nevertheless, consideration of the distribution of existing Centres shows that the CGIAR has now built up an institutional framework that is well placed with respect to all the major agro-ecological regions of the developing world.

25. The work of the traditional Centres, those that have mandates related to commodities or agro-ecological regions, is supplemented by the work of four specialized Institutions: IBPGR, IFPRI, ILRAD and ISNAR. All of these Institutions are fulfilling roles that are complementary to those of the traditional Centres. Their inclusion in the System is logical.

26. *Recommendation 1. We recommend that in future the work of the System should continue to concentrate on food commodities, but that non-food commodities should be included in the work of the IBPGR and ISNAR and, when appropriate, in programmes on farming systems. Within the commodity focus, the emphasis should be on a multi-disciplinary approach to the factors limiting productivity and the transfer of new technology. We regard continued prominence of work on genetic resources to be appropriate both because of the comparative advantage that the Centres have built up in this area and because of the benefits that can still be derived by the resource-poor farmer from genetic changes that are adequately backed by the results of research on related factors of production. (Paragraphs 5.29-5.31.)*

27. *We consider that, in general, applied research on the common factors limiting production should be built up within the multi-disciplinary approach and the commodity focus. Strategic research on the factors limiting production should continue to be developed partly by the Centres themselves and partly by collaboration or contract with other institutions. We consider that the CGIAR should be cautious in giving direct support to additional International Centres that focus on a single factor of productivity, unless there is no other way of doing the work. (Paragraphs 5.32-5.33.)*

28. *In order to concentrate the effort we consider that work on additional commodities should not be undertaken at the expense of reducing the*

effectiveness of the work currently in progress. As national programmes become stronger, it may be possible to phase out work on some of the existing commodities, thus releasing resources for other work. Concerning new activities for the System, we support the high priority given by TAC to work on the management of irrigation water. (Paragraphs 5.34-5.42.)

29. *Recommendation 2. We recommend that training should continue to receive a relatively large share of the System's resources and that the highest priority should be accorded to training research leaders and managers. Owing to the enormous need for personnel trained in agricultural research, we consider that greater emphasis should be given to ways of maximizing the multiplier effect of training activities. We further recommend that TAC should develop its studies of training to include the factors that limit the capacity of the System to contribute effectively to training trainers, research leaders and research managers. Further studies by TAC should also examine the special needs for training of women as scientists, both as potential members of the staff of the Institutions and as future research leaders in the developing countries. (Paragraphs 5.43-5.57.)*

Modes of Operation Within the System (Chapter 6)

30. Although the model of the International Centre, with its concentration of staff and facilities at headquarters, has been successful and there is widespread support for the continuation of existing Centres, we do not see a case for constructing additional Centres without first exploring the adequacy of alternative modes of operation. In general, the operation of research programmes in the System has moved significantly in the direction of collaboration with national institutions. A model in which many of the core activities are conducted in collaboration with national programmes deserves careful consideration for any future activity that may be undertaken by the Group.

31. *Recommendation 3. We recommend that, whenever possible, the existing institutional framework of the system should provide the basis for expanded activities funded by the Group, and that there should be careful scrutiny of proposals for major additions to the physical facilities of existing Centres, before approval is given. A logical extension of current trends in the evolution of the System is the further development of collaborative networks involving a Centre and national programmes in a common effort. We do not see networks as alternatives to Centres but as a means of both increasing the effectiveness of Centre programmes and of strengthening national capabilities. (Paragraphs 6.5-6.7, 6.15-6.22.)*

32. *Recommendation 4. We recommend that the mechanisms for coordinating the activities of different Centres operating in the same geographical region be examined by TAC in consultation with the Directors General. Appropriate guidelines should be agreed, particularly with respect to administrative arrangements and relationships with the beneficiary countries. Specific arrangements agreed between Centres should be recorded in writing. Copies should be filed with the CGIAR Secretariat in order to be available to donors. Operating procedures for regional activities should be included in the terms of reference of external reviews. (Paragraph 6.14.)*

33. Recommendation 5. *In order to maintain the high quality of the research effort, we recommend that Centres should continue to develop appropriate lines of strategic research both to support their own programmes in applied research and to foster active links with relevant basic and strategic research at other research institutions. We further recommend that Centres should continue to exploit such linkages through collaborative and contractual arrangements in order to extend their total effort in strategic research. (Paragraphs 6.23-6.27.)*

34. Recommendation 6. *In order that all concerned can maintain an awareness of the needs of the System in relation to basic and strategic research, we recommend that Centre Directors, with assistance from the CGIAR Secretariat, should prepare a list of research topics of high priority to their programmes. The list should be circulated widely among donors and research institutions and should be updated from time to time. We further suggest that this whole topic of collaboration with other research institutions would be a suitable subject for an open discussion during Centres Week. (Paragraphs 6.28-6.30.)*

Organization and Management (Chapter 7)

35. The most important issue relating to organization and management is to find ways of strengthening the Group's capability for making difficult decisions and for implementing policies without destroying the desirable features of the System as it functions at present. The attractive features of the System are frequently described as its informality, its relative lack of bureaucratic control and its ability to respond rapidly to changing requirements; but perhaps the real appeal has been the sheer professionalism that these characteristics have engendered. The Committee has therefore adopted the approach of recommending the minimum changes required to rectify any deficiencies, actual or projected, in the present administration mechanisms.

36. With the larger scale of operation of the System, the main concerns that have been expressed relate to a general need for better communications and for a feeling of greater involvement in the affairs of the System by all concerned. There is also concern that, in the more complex circumstances that now exist, the System has inadequate mechanisms for formulating sharply-focussed policies. Furthermore, recent shortfalls in funding have drawn attention to the need for more thorough planning and for improved methods of allocating resources among competing demands.

37. From a detailed analysis of the administrative requirements of the System, the Committee concludes that most of the concerns expressed could be resolved by strengthening the present service units, improving the existing administrative procedures and by holding longer and more frequent meetings of the Group. In addition the Committee considers that there is a need for a small Budget Review Committee to assist in the budgetary process and to make recommendations on the allocation of resources. The Committee reached this conclusion after giving careful consideration to a range of other suggestions

for administrative change. Our detailed recommendations for strengthening the administrative functions of the System include the main changes outlined in the following paragraphs.

38. Recommendation 7. *Owing to the increasing importance of accurate forward planning, we recommend that all the Institutions produce rolling five-year estimates of their financial requirements as part of their annual budget submissions on the basis of guidelines provided by the CGIAR. We also urge those Institutions that have not already done so to produce their long-term plans as a matter of urgency. (Paragraphs 7.20-7.21, 10.7.)*

39. Recommendation 8. *We recommend that the CGIAR Secretariat, assisted by consultants as necessary, should undertake a comprehensive review of the process of assembling estimates, evaluating competitive demands and deciding on the final allocation of resources. Possibilities for simplifying the arrangements for supplying funds should also be examined. These studies should take into account the need for simplification and standardization of budget documents; ways of encouraging cost-effective expenditure; the feasibility of achieving greater flexibility in funding than that currently available from the World Bank as "donor of last resort"; and methods of facilitating more accurate financial analysis, particularly with respect to extra-core funding. (Paragraphs 7.23-7.25.)*

40. Recommendation 9. *We recommend that, in addition to external financial audits, review procedures in the System should comprise the following elements:*

(a) Internal Reviews of the Institutions, commissioned by the Boards of Trustees.

(b) Management Reviews of the Institutions, commissioned by the CGIAR Secretariat.

(c) Commodity and Activity Reviews of the System, commissioned by TAC.

(d) External Reviews of the Institutions, commissioned by TAC, and

(e) Reviews of the System, commissioned by the CGIAR.

These mechanisms for review are largely consistent with those currently in use, but involve strengthening the procedures for reviewing the management of Institutions, for assessing the relevance of programmes and for co-ordinating common activities. The guiding principles of reviews should be to avoid duplication of effort, to use staff time as efficiently as possible, to produce recommendations for maintaining or improving the efficiency of the System, and thereby to give continued confidence to donors in the effectiveness of the System in fulfilling the purpose of the CGIAR. (Paragraphs 7.29-7.51.)

41. *Recommendation 10. We recommend that all components of the System should be represented at Centres Week and this important plenary meeting should be divided into sessions of the System and sessions of the Group. During sessions of the System, all of those invited, whether members of delegations or not, should be free to participate; during sessions of the Group, only members of the CGIAR would participate in decision-making except insofar as the Board Chairmen and the Directors General should be invited to submit items for the agenda and to participate in discussions arising from them. In order to allow adequate discussion of policy issues, we recommend that the Group should hold longer or more frequent meetings. (Paragraphs 7.54-7.63.)*

42. *Recommendation 11. We recommend that a Budget Review Committee be established to be chaired by the Chairman of TAC and consist of six additional members, two of whom would be current members of TAC appointed by its Chairman and four appointed by the Chairman of the Group to serve in their personal capacities. We propose that the Budget Review Committee, supported by the Secretariats of the CGIAR and TAC, would make recommendations on budgetary procedures, the formulation of guidelines and the allocation of resources. Its operation should be reconsidered after three years. (Paragraphs 7.76-7.84.)*

43. *Recommendation 12. We recommend that, in future, appointment of the Executive Secretary of the CGIAR should be preceded by wide consultation among members of the Group. In making the selection, the Chairman would be assisted and advised by a Search Committee. We further recommend that the staff of the Secretariat should be strengthened by the addition of another scientific adviser as well as a management specialist. Other responsibilities and the total complement of staff should be reviewed by the Executive Secretary and revised or supplemented accordingly, particularly with respect to work in communications and public relations. (Paragraphs 7.85-7.88.)*

44. *Recommendation 13. We recommend that continued attention be paid to maintaining the highest levels of expertise among staff of the TAC Secretariat and that the functioning of TAC be strengthened by appointing its Chairman to serve on a basis approaching that of full-time employment; by increasing the maximum length of service of TAC members to three two-year terms of office; and by making greater use of consultants and of the expertise of institutions such as IFPRI on relevant subjects. (Paragraphs 7.89-7.91.)*

45. *Recommendation 14. We support the recent introduction of a CGIAR newsletter and recommend that the Secretariat increase its activities in the general area of public relations, particularly with respect to the developing countries. In this connection, we consider that visits to officials in the developing countries should be made on a more systematic basis by members of the service units and should be supplemented by an occasional symposium. (Paragraphs 7.64-7.71.)*

46. *Recommendation 15. Concerning Boards of Trustees, we consider that a Board cannot escape the reality that it is ultimately dependent for its funding on the collective will of the CGIAR. It should therefore conduct its affairs as if it were accountable to the Group, even though its legal status makes no provision for such a relationship. To ignore this responsibility would be to force the Group in the direction of greater central authority. Consequently we recommend that the Boards and the Group develop mutually acceptable*

methods of consultation on important matters of policy, such as the appointment of Directors General, the term of office of Board members, the criteria for Board membership, and other matters relating to the structure and functioning of Boards in relation to their accountability to the CGIAR. (Paragraphs 7.94-7.100.)

47. *Recommendation 16. With the exception of host-country representatives, we recommend that members of Boards should be appointed in their personal capacities. In this connection, care must be taken to ensure that such individuals are not so strongly associated with a donor agency or the government of a particular country that they may be perceived as representatives of organizations rather than as projecting their own, professional views. If these conditions are not met, the objective nature of the System would be put in question and there would be mounting pressure to convert all of the Boards into representative bodies. These considerations apply to all nominees for Board membership except to those of WARDA, whose Governing Council comprises representatives of the countries from the region it serves. It is important for Boards to maintain wide expertise among their members, including not only knowledge of the problems of agricultural research and development but also experience in personnel and financial management of scientific institutions. As for all public bodies, the business of the Boards should be kept as open as possible and minutes made available to the Secretariats and interested donors. (Paragraphs 7.101-.108.)*

48. *Recommendation 17. In order that all Board members should be well-informed of their responsibilities, we recommend that the CGIAR Secretariat initiate a routine procedure designed to provide present and future Board members with information on their functions and responsibilities with respect to the Institutions, as well as on the organization and functioning of the System as a whole. (Paragraph 7.107.)*

49. *Recommendation 18. In relation to the need for the Institutions to continue to be able to attract and retain staff of the highest possible quality, we recommend that the CGIAR Secretariat should commission a study of social benefits in the System in order to investigate ways of safeguarding staff pensions in the face of continuing inflation. (Paragraphs 7.111-7.113.)*

50. *Recommendation 19. Owing to the important role of women in agriculture in many developing countries, we recommend that a strong effort should be mounted throughout the System in order to increase the participation of women as professional staff and to identify women qualified for membership of Boards of Trustees and other CGIAR bodies. (Paragraphs 7.114-.115.)*

Participation by Developing Countries (Chapter 8)

51. In order to preserve the international nature of the CGIAR System and to ensure that it can remain responsive to changing needs, it is essential that the developing countries should participate actively in appropriate ways in the affairs of the System. Currently, the developing countries participate in the Group as donors and as regional representatives selected through the FAO Regional Conferences. Half the members of TAC and approximately half the members of Boards of Trustees are from developing countries, although there is considerable variation among Boards. About one-third of the professional staff of the Institutions are from developing countries.

52. The Study Team's discussions with officials in the developing countries, as well as conclusions drawn from the three regional symposia that they attended, indicated that participation by individuals from the developing countries is of greatest benefit at the level of programme determination and as members of Boards of Trustees. There was also a desire to strengthen participation in the deliberations of the Group by arranging for the regional representatives to be better informed of CGIAR affairs and to ensure more consistent attendance at meetings.

53. *Recommendation 20. In order to increase the effectiveness of participation by developing countries in meetings of the Group we recommend that mechanisms be established to ensure that regional representatives are better informed about the CGIAR System; that efforts should be made to increase the continuity of service of these representatives; that FAO should consider providing greater opportunities at regional meetings for discussion of relevant topics; and that the CGIAR should ensure that funding is available to enable the representatives to attend plenary meetings. (Paras. 8.6-8.13.)*

54. While individuals from developing countries have served on Boards of Trustees with distinction, some consider that they were unable to exert an effective influence in the policies of the Institution, partly owing to lack of time and partly to a feeling of inadequate involvement. We consider that Boards should appoint as members from developing countries individuals who can devote adequate time to the affairs of the Institution and should continue to seek those who have the potential to assume posts such as the Chairmanship of the Programme Committee and of the Board itself.

55. *Recommendation 21. To enable staff from developing countries to gain first-hand experience of the work of the CGIAR Institutions we recommend that priority should be given to instituting more post-doctoral fellowships for individuals from the developing countries and that fixed-term appointments at Centres should be offered to staff in national programmes. In addition we consider that, when possible, a greater proportion of the senior management positions at the Institutions should be filled by individuals from the developing countries. (Paragraphs 8.17-8.18.)*

56. *Recommendation 22. Where Centres are involved in work that can affect, either directly or indirectly, the nature of technical change or the balance of research effort in a particular developing country, we recommend that the Centre should establish formal mechanisms through which its staff can obtain approval at the appropriate administrative level for the development of the proposed work. We further recommend that, when appropriate, Centres should assist countries to establish contact with donors in order that funds can be made available to the country for its participation in collaborative programmes with the Centre. (Paragraph 8.24.)*

Funding the System (Chapter 9)

57. In 1972, total expenditure on core activities was $19.5 million; in 1982 total financial requirements are expected to be about $177 million.

Although this apparently dramatic increase in funding is exaggerated by the effects of inflation, it averages 14.4% per annum in real terms, illustrating the remarkable success of the CGIAR in mobilizing funds. Nonetheless, in recent years a sharp reduction in the rate of growth has been forced on the System not only by the effects of inflation but also by strains on the economies of the industrialized countries.

58. In the light of these rapidly changing financial circumstances, it has become desirable to increase the predictability of funding for the System. We consider that there is a need for a greater degree of accuracy in forward planning at all levels. It is also essential to give the Institutions that feeling of security of their basic budgets that is so necessary for recruiting and retaining scientists of high quality.

59. The System is built on the free choice of donors for support of individual Institutions. Direct contact between donor and Institution provides the donor with first-hand knowledge of the work. The moderate degree of competition for funds among Institutions that these contacts are likely to generate is healthy for the System. We consider that the Directors General, the CGIAR Secretariat and the Chairman of the Group all have important roles to play in fund raising, which they should continue vigorously to fulfil.

60. The number of donors has increased from 16 in 1972 to 32 in 1981. Of these 32 donors, however, four contributed almost 50% of the total requirement. Although it may well prove possible to attract new donors into the Group, it is clear that it will be very difficult in the future to find donors whose contributions are comparable with those of the current major donors. Consequently the Group will remain heavily dependent for its continued support on the policies of a relatively small proportion of the total number of donors.

61. We consider that extra-core funding can be a valuable means of increasing the ability of Institutions to respond quickly to new opportunities. It is essential, however, that this type of funding should not be used to circumvent the allocative procedures established by the Group, nor to divert an Institution from its central mandate.

Future Strategy and the Five-Year Indicative Plan (Chapter 10)

62. The first five years of the CGIAR were ones of rapid expansion; the second were ones of consolidation and further growth, but on a declining scale; we see the third as one of limited growth of the individual Institutions, but marked by wider collaboration to increase the volume of research directed to the needs of the world food problem. The future strategy should be to encourage the productive trends already present in the System without making unattainable demands on the donors. The framework of the System is now firmly established; it must remain dynamic and have the courage to discontinue activities as well as to support new ones.

63. *Recommendation 23. We recommend that a rolling five-year plan should be an essential element in future planning of the operation of the System. It should not necessarily be regarded either as a floor or a ceiling for funding with respect to particular years, or to particular Institutions. A sound five-year plan requires accurate information on costs, programme priorities and capital requirements. Its preparation and revision should involve the Institutions, TAC, the Budget Review Committee, the CGIAR Secretariat and the donors in a continuing series of discussions. (Paragraphs 10.5-10.7.)*

64. *Recommendation 24. We recommend the adoption of the five-year plan presented in Table 10.1 (page 124). It provides for the effective operation of the System on the scale established or proposed, at a level of $187 million in 1983, rising to $204 million in 1984, expressed in constant 1982 dollars. It gives incentives to the Institutions to introduce some of the changes we have suggested and makes a modest provision for new activities. It reflects tight levels of funding and sound management, and takes into account the possibilities for reassessing internal priorities and reducing or phasing out certain programmes or activities. The Committee considers that future plans, like the one recommended, should not automatically contain provisions for growth, but should be related to specific elements of a comprehensive plan. (Paragraphs 10.8-10.24.)*

65. We consider that there are real dangers in constraining the funds available to the System too tightly. With inadequate funding the effectiveness of the work would rapidly be impaired. All the Institutions need to be in a position to respond to new ideas and to attract the ablest scientists. Furthermore, some of the programmes in crop improvement have to expand simply to maintain the advances already achieved.

66. Total investment in agricultural research in the developing countries is very small both in relation to the needs and in relation to investment in the industrialized countries. Because of the favourable cost-benefit ratios, we believe that there is a strong case for channelling into agricultural research a far greater proportion of the total funds currently devoted to international development. In the foreseeable future, problems of food production in developing countries, particularly those of the resource-poor farmer, will be solved only through the development and transfer of new technology. Massive investment is required in research and related activities of which those sponsored by the CGIAR form an essential component. Only with adequate resources can the System continue to play its vital role in helping to solve world problems of food supply and malnutrition.

INTRODUCTION

1. In 1976, the Consultative Group on International Agricultural Research commissioned an overall review of its procedures and policies to be undertaken by a special Review Committee. The Report of the Committee was adopted by the Group and published in 1977.

2. Since that time, there have been changes in the Group itself and in the environment in which it operates. Membership has expanded and new activities have been supported that are different in character from those of the original International Centres. The Group's resources and activities have grown to the point where they attract attention within aid organizations and give rise to questions of cost-effectiveness and accountability. Although the success of the CGIAR is widely acknowledged, its requirements for support now compete more strongly with those of other programmes for international development.

3. Accordingly, as it was approaching its tenth anniversary, the Group decided to commission a second review to be undertaken in 1981, following procedures similar to those adopted for the first review. Again, the review was entrusted to a special Review Committee whose members were selected by the Chairman of the Group on the basis of their personal experience and qualifications in relevant fields. They were drawn from among the donors, beneficiary countries, the CGIAR Institutions and the Technical Advisory Committee. The Chairman of TAC and representatives of the Co-sponsors attended meetings of the Committee as observers. The Review Committee, which was assisted by a Study Team of consultants, met on three occasions for periods of 3-4 days. The following Terms of Reference were provided by the Group and adopted by the Committee.

Terms of Reference of the Review Committee

4. The purpose of the Review to be conducted by the Review Committee is to examine the CGIAR System to recommend the strategy for the next decade and a plan for the years immediately ahead and to make recommendations respecting organization and procedures needed to implement the strategy effectively and assure efficient functioning. More specifically, the Committee will:

(a) Examine and, as necessary, reformulate for the Group's consideration its objectives, policies to be pursued, range of activities to be supported, and level of resources to be sought, testing these for relevance, timeliness, feasibility and promise in the light of the present and changing circumstances of the developing countries and the likely availability of resources. In this the Committee will consider:

(i) the place of the CGIAR system within the total agricultural research effort addressed to the developing countries comprising developing countries' national programs, regional programs, programs in the industrialized countries and in

(ii) the choice between supporting agricultural research selectively as needed to fill gaps as against embracing a fuller array of high quality

international research on food production, or agricultural production more generally, of prime importance to developing countries;

(iii) the dependence of the system's essentially applied research on knowledge developed by basic research and the need for parallel research on related importance of production.

(b) Develop for the period 1983-87 an indicative plan in terms of the expansion of present activities, the addition of new activities and the financial resources required.

(c) Examine the system's links and relations with the developing countries it is intended to serve and make recommendations for improvement. In this it will consider:

(i) the needs, views and aspirations of the developing countries;

(ii) the differences in national research capacity and likely trends in the future;

(iii) the range of services, including training, to be provided by the system;

(iv) the adequacy of links with the international centers;

(v) how to improve participation by the developing countries in the deliberations of the Group.

(d) Appraise the suitability of the system's structure, organization and governance for implementing the strategy for the next decade. The Committee will particularly consider:

(i) responsibility for policy formulation, planning, decision making, accountability, monitoring and control;

(ii) the adequacy of present organization and processes for exercising these functions, for maintaining the quality of research and for coordinating and rationalizing the responsibilities of the principal elements of the system -- the Group itself, the Cosponsors, the Centers and their Boards, TAC and its Secretariat and the Secretariat of the CGIAR;

(iii) whether basic structural reforms are needed and if so, what should they be;

(iv) if basic reforms are not required, what modifications, if any, to present arrangements are needed.

(e) Address the need for efficiency in the system's operations and use of resources, assess present arrangements and procedures and make recommendations for improvements. It will particularly consider:

(i) the process for establishing priorities in the use of manpower and financial resources by the system as a whole and its individual components;

(ii) the means of ensuring adherence to the priorities established;

(iii) the balance between a center's accountability to the Group for use of resources and the benefits of independence of operations;

(iv) mechanisms for balancing claims and available funding;

(v) whether for the conduct of CGIAR activities there are effective alternatives to the present typical international institute;

(vi) how to ensure that the scarce resource represented by the system's small cadre of scientists is used to maximum advantage;

(vii) the optimum size and likely productive life span of research institutions of the kind comprising the system.

5. In all the foregoing the Committee will concern itself with the Group and the system as a whole and not with individual institutes or programs.

6. The Committee will be served by a staff (the Study Team) which will work under the Committee's direction.

7. It will provide the Group with a report and recommendations in time for consideration by the Group at its meeting in the last quarter of 1981.

Members of the Review Committee

Mr. Warren C. Baum
Vice President, Projects Staff
World Bank
Chairman of the Committee

Dr. Eliseu Alves
President, EMBRAPA
Brazil

Mr. David E. Bell
Executive Vice President
The Ford Foundation

Dr. Nyle C. Brady
Director General
International Rice Research Institute

Dr. Dominic E. Iyamabo
Director of Agricultural Sciences
Federal Ministry of Science and Technology
Nigeria

Dr. Amir Muhammed
Chairman, Pakistan Agricultural Research Council

Dr. John L. Nickel
Director General
Centro Internacional de Agricultura Tropical

Dr. John A. Pino
Director, Agricultural Sciences
The Rockefeller Foundation

Dr. Robert K. Cunningham
Chief Natural Resources Adviser
Overseas Development Administration
United Kingdom

Dr. Lloyd T. Evans
Chief, CSIRO Division of Plant Industry
Australia - Member of TAC

Mr. Curtis Farrar
Component Coordinator
U.S. International Development Cooperation Agency

Professor Ola M. Heide
Rector, Agricultural University of Norway

Mr. James C. Ingram
Director, Australian Development Assistance Bureau
Australia

Dr. Richard L. Saywer
Director General
Centro Internacional de la Papa

Dr. Omond Solandt
Canada

Dr. M. S. Swaminathan
Member, Planning Commission
India

Dr. Werner Treitz
Head, Agriculture, Forestry, Fishery and Rural Development
Federal Ministry of Economic Cooperation
Federal Republic of Germany

Dr. Mohammed S. Zehni
Representative of Libya to FAO
Member of TAC

Positions of Committee members are those they held when agreeing to serve on the Committee in late 1980. Some have changed since. All members of the Review Committee attended all three meetings, except that Dr. Swaminathan was unable to attend the first, Dr. Muhammed the second, and Dr. Alves the third. Dr. Nickel was invited to join the Committee as from July 1, 1981.

Ex Officio Observers

Dr. Dieter Bommer
FAO

Mr. William Mashler
UNDP

Mr. Montague Yudelman
World Bank

Dr. Ralph Cummings
TAC Chairman

) Co-sponsors

Study Team

Dr. Michael H. Arnold
Study Director

Dr. Bryant Kearl

Dr. Martin Pineiro	)	
	)	Members
Dr. William Tossell	)	
Dr. John K. Coulter	)	
	)	
Dr. H. K. Jain	)	
	)	Consultants to the Study Team
Dr. Heino Messerschmidt	)	
	)	
Mr. Bernard Gladieux	)	

Mr. Andrew J. Hayman was Secretary to the Review Committee and Mr. William J. MacNally Secretary to the Study Team.

Work Programme of the Study Team

8. The Study Team's main Work Programme, which was set out in detail for consideration by the Review Committee, involved a total of approximately thirteen weeks, of which the first eight were devoted to preparation, travel and gathering information. After some preparatory work late in 1980, the whole Team began intensive work in mid-January 1981, ending with the preparation of a draft Report for consideration by the Review Committee on July 21-24, 1981. The Study Director was occupied on Review matters for additional periods both before and after the main programme of work.

9. The work programme was structured on the basis of: (a) main topics for study; (b) the universe from which views were to be sampled made up of "components" of the system (Centers, cosponsors, donors, Secretariats, TAC, Boards) and countries and regions of the developing world; and (c) the type of outcome to be expected from each study topic. Within this general framework, specific tasks and travel schedules were assigned to Team Members.

10. Although over 280 persons were interviewed, the severe limits on the Team's time precluded interviewing all interested parties, but all were invited to submit written comments and suggestions. Strong emphasis was given to canvassing views widely from beneficiaries or potential beneficiaries. In addition to the collective experience of Team members of developing countries, views were specifically canvassed in three countries in Latin America, five countries in Africa, three in the Middle East, and five in Asia. In addition, two regional seminars were organized specifically for the Review, attended by representatives of 17 countries of Africa, and 13 countries of Asia. Visits were made to 10 of the 13 CGIAR Institutions and, in addition, the Team visited 22 donors.

11. The individuals interviewed by the Team comprised the following:

Representatives of Co-sponsors	20
Center Chairmen	13
Center Directors	13
Center Senior Staff	62
Represenatives of donors	103
Representatives of Regional and Other Substantial Organizations	24
Officials of Developing Countries (in addition to Seminar Participants)	37

12. In outline, the intensive fieldwork period of the Team's programme was scheduled as follows:

January 19-23	Preparation
January 2 - February 6	CIMMYT, CIAT, Latin America
February 9 - 13	North American and European Donors
February 15 - 23	European Donors and organizations in Rome
February 24 - March 3	ILCA, TAC meeting, Ethiopia, IITA, WARDA, W. Africa, ILRAD, ICIPE, M. East, Regional Symposia
March 16 - April 17	North American donors, synthesis.

Structure of the Report

13. In this report we have attempted to identify the main issues that are relevant to the future success of the CGIAR System. We have analyzed various ways of preserving or enhancing the effectiveness of the Institutions it supports and have made recommendations accordingly.

14. Some of the issues we have discussed in the body of the report are complex and closely interrelated. Many of the sections cannot be interpreted accurately, therefore, without reference to the context in which they have been written. The connecting theme is one that relates to the nature and purpose of a research system that is truly international in character. Once this concept is established, the place of the System in the pattern of related world activities; the principles for including activities; modes of operation; organization and management; and participation by developing countries follow in a natural and reasonably coherent sequence. Consequently, we urge readers to follow the chapters in sequence. In the last two chapters we examine the problems of funding the System, outline its future strategy and formulate a five-year financial plan.

Chapter 1. FOOD SUPPLY AND INTERNATIONAL RESEARCH

1.1 The First Review of the CGIAR included consideration of problems of food production in the developing countries and described the contributions that research could make to their solution. These considerations are fundamental to the present review and give rise to three important questions. First, to what extent has the balance of food supply and demand changed during the last decade? Second, is there still as great a need for international research? Third, what contributions have been made by international agricultural research to the world problems of food supply?

1.2 In this chapter, we examine the broad implications of these questions, present examples of the basic data that illustrate the problems, indicate where research can play a part and describe briefly the types of contribution that the International Institutions have made. The figures we have used, and many of the analytical considerations derived from them, have been taken from papers prepared by FAO, IFPRI, IICA 1/ and the World Bank.

Food and Nutrition as a World Problem

1.3 Whereas famine, hunger and malnutrition have been common and dreaded conditions since the origins of mankind, their elimination was one of the great promises of the twentieth century. Nevertheless, in spite of some improvements obtained through increases in production, the effects of trade and the contributions of international aid, famines and malnutrition still affect a large proportion of the population of the developing world.

1.4 While discussing the role of international agricultural research, it is useful to distinguish between famines and malnutrition. Famines are acute but temporary conditions associated with wars and natural disasters. They have their greatest effect on agricultural societies that depend on food production for subsistence and are the major cause of loss of life through starvation. Malnutrition, on the other hand, is a chronic and persistent condition which may be associated with inadequate food consumption, specific deficiencies in the diet or with other health problems arising from such causes as inadequate and unsanitary water supplies. It is characteristically a problem of young children, partly because of uneven distribution of food consumption in the family.

1/ FAO: Agriculture Toward 2000, Rome, Nov. 1979
IFPRI: (a) P. Oram. Summary: Food, A Scenario for the 1980's, March 1981 (Preliminary Draft).
(b) Criteria and Approaches to the Analysis of Priorities for International Agricultural Research, February 1, 1978.
IICA: (a) Cohan, Hugo. Notas y Reflexiones Sobere el Problema de Alimentos de America Latina y El Caribe, Feb. 1981.
(b) Causes of Production Shortages and the Failure to Meet the Demand for Food in Latin America and the Caribbean. OAS/Sir K/11.8.1 CIES/AGRI/4, 6 Feb. 1981. San Jose, Costa Rica.

1.5 Malnutrition is closely related to levels of income, whether from wages or subsistence, and is frequently seasonal in nature. In agricultural societies, it occurs chiefly because of insufficient resources or low and uncertain levels of production. In the urban sector, it is attributable mainly to lack of opportunities for adequately paid employment.

1.6 Aggregate figures suggest that during the last decade, technological development, and to a lesser extent expansion of agricultural land, permitted substantial increases in food production (Table 1.1) and, in spite of rapid population increases, production grew faster than population in all regions of the world except Sub-Saharan Africa. Furthermore, consumption of food per capita increased in all the major regions of the world, over the period 1963/1975 (Table 1.2). However, this increase was small, especially in the Far East, and more recent data suggest that improvements may have been even smaller in South Asia and Africa.

Table 1.1. Food Production Indices in Various Regions of the World (1961/65 - 100)

	Total Production			Per Capita Production		
	1970	1975	1979	1970	1975	1979
World Total	123	135	147	107	108	110
Developing Countries						
Latin America and the Caribbean	129	152	173	107	110	113
Africa 1/	117	120	134	98	96	88
West Asia	122	154	168	102	110	108
South Asia	128	140	146	110	107	103
East Asia 2/	129	155	175	108	116	120

1/ Except for South Africa
2/ Except for Japan

Source: IICA: on the basis of Global Food Assessment, 1980. USDA Foreign Agricultural Economic Report No. 159.

1.7 Available figures do not allow estimates to be made of the relative importance of urban and rural malnutrition. 1/ Moreover, regional figures tend to hide variations in smaller areas. Regional and country disparities, especially in Asia and Africa, suggest that severity of malnutrition in some of these areas is considerably greater than the aggregate figures would indicate.

1/ CIAT has recently developed estimates for Latin America.
Source: CIAT - Trends in CIAT's Commodities, May 1981.

Table 1.2. Per Capita Food Consumption in Various World Regions

	Consumption (Calories)	
	1963	1975
Developed countries	3,161	3,347
Developing countries	2,111	2,179
Africa	2,139	2,180
Far East	1,990	2,023
Latin America	2,434	2,525
Near East	2,285	2,562

Source: Agriculture Toward 2000, FAO C79/24, July 1979.

Food Supply in Relation to Malnutrition

1.8 The occurrence of malnutrition must be analyzed within the framework of the structural conditions that characterize economic development. Because these conditions are unlikely to change in the next decade, it is the supply of food that constitutes the main area where policy and action may have practical implications. Four main elements are capable of improving the supply of food to the developing countries on a world basis: international trade; decreasing the use of grain for animal feed; incorporation of new land into agricultural production; and increases in the productivity of land (technological change). We must understand each before we can put into perspective the relative importance of international research.

1.9 International Trade. International trade could be important for the improvement of world food supply as it permits efficient use of the comparative advantages of different countries and regions. However, these potential economic advantages have to be balanced against the natural desire of developing countries to achieve a reasonable degree of self-sufficiency in food production. Moreover, meeting food shortage through international trade would require developing countries to have comparative advantages in the production of some other goods that can be traded for food, whereas some of the more serious problems of malnutrition occur in small and resource-poor countries, with little capacity for generating the hard currency needed for international trade.

1.10 These limitations are clearly illustrated by the figures related to food trade in recent years. Table 1.3 shows the considerable increase in international trade of the three principal cereals during the last decade. However, a more careful look at the figures shows that the main source of this increase in trade, in terms of the balance between exports and imports, has been production in the USA, the European Common Market and Oceania. Food exports from these regions have been channelled mainly to the centrally planned economies and to some of the oil-producing countries. Other data

provided by FAO show that the low-income developing countries as a group, have increased their cereal imports from a level of 13 million metric tons in 1961-65 to 18 million by 1978-79. Nevertheless, international trade in the major food grains represents a relatively small proportion of total production, ranging from about 2% in rice to about 15% in wheat, emphasizing the importance of local production.

1.11 Grain consumption for animal feed. The consumption of grain as animal feed has increased quite rapidly in recent years. This increase reflects the demand structure that results from the present distribution of incomes and patterns of consumption and is exemplified by the trend in the USSR. Consumption of grain for animal feed in the USSR rose from 92

Table 1.3. Net Exports (Exports minus Imports) of Wheat, Large Grains and Rice at the Beginning of the Seventies and Eighties (millions of metric tons)

	WHEAT		LARGE GRAINS		RICE	
	67/70-71/72	80/81	67/70-71/72	80/81	67/70-71/72	80/81
Developed countries	28.3	67.6	0.9	43.3	2.0	3.3
United States	17.4	39.4	20.2	70.9	1.7	2.8
Canada	11.7	12.5	3.2	2.2	-0.1	-0.1
European Common Market (9)	-3.5	6.2	-13.0	-9.3	-0.1	-0.2
Other Western European	-0.8	0.7	- 4.1	-8.3	0.0	-0.1
South Africa	-0.1	0.2	2.6	3.2	-0.1	-0.1
Japan	-4.7	-5.4	-10.3	-18.9	0.5	0.6
Oceania	8.3	14.0	2.3	3.5	0.1	0.4
Centrally Planned Economies	-3.6	-27.5	- 3.7	-25.6	0.7	0.3
Eastern Europe	-4.5	- 2.8	- 3.1	- 9.1	-0.3	-0.3
USSR	4.8	-12.7	- 0.5	-14.0	-0.3	-0.4
People's Republic of China	-3.9	-12.0	- 0.1	- 2.5	1.3	1.0
Developing countries	-22.8	-34.7	5.0	-11.2	-2.2	-2.2
Middle America 1/	- 0.8	- 2.1	-0.1	- 5.5	0.1	-0.3
Venezuela	- 0.7	- 0.9	-0.3	- 0.9	0.0	0.0
Brazil	- 1.8	- 4.7	-0.9	- 1.6	0.1	0.3
Argentina	1.6	4.6	6.8	9.8	0.1	0.1
Other South America	- 1.8	- 3.0	-1.2	- 0.9	0.1	0.1
North Africa/Middle East	- 7.8	-15.9	-1.2	- 5.4	0.1	-1.8
Central Africa	- 1.1	- 2.5	-0.1	- 0.4	-0.6	-1.7
East Africa	- 0.3	- 0.5	0.1	- 0.5	0.0	-0.2
South Asia	- 4.8	- 3.2	-0.1	0.0	-0.6	1.1
Southeast Asia	- 1.2	- 1.2	1.8	2.2	1.3	2.5
East Asia	- 4.1	- 5.3	-1.6	-8.0	-2.6	-2.3
Rest of world	- 1.3	- 1.6	-0.2	-0.3	-0.2	0.2

1/ Mexico, Central America, Panama and the Caribbean.

Source: IICA on the basis of World Agricultural Situation - USDA-WAS-23 October 1980.

million metric tons in 1970/71 to 180 million in 1980/81. Indeed, grain consumption by animals in the developed world, including the USSR, is larger than the total grain consumption in the developing world. Approximately 500 million metric tons, or more than one third of world cereal production, is fed to animals and the proportion is increasing. It might seem, therefore, that modification of world consumption patterns could dramatically affect food supplies and have a considerable effect on food intake in the developing world. Nevertheless, it is unlikely in the foreseeable future that less grain will be fed to animals and that more will become available for human consumption in the developing countries.

1.12 By far the greatest use of grain for animal feed occurs in the developed countries. Use in the more prosperous developing countries is increasing but the low income developing countries use less than 2% of the total supply for this purpose. Increasing use of cereals for animal feed, which reflects a universal desire for animal products in the human diet, stimulates demand and causes prices to rise in times of short supply, consequently making it more difficult for poor people to purchase food. Even in times of surplus and low prices, supplies are not automatically channelled to those who most need them, owing to inadequate purchasing power. There is no easily applied mechanism for shifting the supply of food from animal feed into human consumption, even in times of emergency.

1.13 Incorporation of new land into agricultural production. Incorporation of new land into agricultural production has been an important source of growth in food production in a number of countries in the developing world. Table 1.4 shows the sources of growth in crop production in the four regions of the world together with the intensity of cropping. The proportion of potentially arable land not yet incorporated into production is considerable, particularly in Africa and Latin America, and is associated with low population pressures. This land, however, is for the most part of low productivity, or has problems associated wih water availability, control of excess water or drainage. Most of it requires considerable investment before it can be used, the development of technology that will make its use more profitable and specific conservation practices to avoid its deterioration.

1.14 In the prevailing circumstances, it is unlikely that major contributions to the problems of imbalance in the world food supply will arise from increases in the area of land under cultivation. Moreover, new land suitable for cultivation is distributed very unevenly among the countries concerned, being particularly scarce in the Far East (Table 1.4). In all regions, limits to the incorporation of new land into arable production would soon be reached if due attention is to be given to the preservation of forests and the prevention of land degradation.

Table 1.4. Growth in Production and Crop Intensity in Groups of Developing Countries

	Average Annual Rates of Growth % 1961/65-1972/76			Crop Intensity 1/	
	Production	Area	Yield	1961/65	1972/76
AFRICA					
High growth 2/	3.3	0.9	2.4	42	48
Other	1.7	0.7	1.0	55	56
FAR EAST					
High growth 2/	3.8	1.2	2.6	77	78
Other	2.0	0.3	1.7	90	92
LATIN AMERICA AND THE CARIBBEAN					
High growth 2/	3.5	1.4	2.1	68	74
Other	1.7	2.2	-0.5	55	46
NEAR EAST					
High Growth 2/	3.5	0.5	3.0	52	59
Other	1.6	1.0	0.6	69	61

1/ Crop intensity: land surface harvested annually, expressed as a percentage of total land. Both harvested and arable land include perennial crops.

2/ High-growth countries maintained annual rates of agricultural production of 2.5% or more.

Source: Agriculture Toward 2000, FAO C79/24. Rome, July 1979. p.7.

1.15 Increases in land productivity (technical change). The major source of growth in agricultural production in the last decade has been a substantial increase in the productivity of land, to which the Institutions sponsored by the CGIAR have contributed in very significant ways. Increases in productivity have resulted from the greater yielding potential of new varieties of crops and from a greater intensity of cropping on a given area of land in a given time. Improved systems of production involving multiple cropping have been made possible largely by breeding early-maturing varieties that are relatively insensitive to day-length. Major developments in technology of these types reflect the results of research achieved both at the international and national levels.

1.16 Increases in productivity of the major crops in some of the developing regions of the world have been extensively documented elsewhere (FAO, Agriculture Toward 2000; CGIAR Integrative Report, 1980). Results show considerable increases in the yields of rice and wheat under irrigation or favourable rainfed conditions; good increases in the yield of maize and sorghum from commercial agriculture in temporate regions but little under sub-tropical highland or dryland conditions; but little progress in production of pulses, groundnuts and root-crops generally, although potatoes have shown great increases in production in developing countries in recent years. Development of livestock production has been variable but, in general, increases in production have been limited to temperate regions, except for poultry, production of which increased at a rate of about 7.5% per year in developing countries in the period from 1963 to 1975.

1.17 Production and demand projections. The aggregate results of these developments on production in the developing world, as well as the most likely projections for the next two decades, are recorded in the FAO publication, Agriculture Toward 2000. Table 1.5 shows past trends of agricultural production and demand for agricultural products and the most likely projected rates of growth. It can be seen that projected rates of growth in demand exceed rates of growth in production in two out of four regions of the world. Furthermore, Table 1.6 shows present net deficits and the projected increases in these deficits for the years 1990 and 2000, for cereals, the most important food source in the developing world. A similar picture is obtained for other major groups of food crops.

Table 1.5 Agricultural Production, Food Demand and Population - Annual Growth Rates and Productions

	Agri.Production		Demand		Population	
	1963*-75*	1980-2000	1963*-75*	1980-2000	1963*-75*	1980-2000
	.....	.....	percent per annum	.....	.....	.....
90 Countries	2.6	2.8	2.9	2.9	2.6	2.4
Africa	2.1	2.7	2.8	3.4	2.7	3.0
Far East	2.5	2.7	2.6	2.7	2.5	2.1
Latin America	2.9	3.0	3.2	2.9	2.8	2.6
Near East	3.2	2.8	3.8	3.2	2.6	2.6
Low Income 1/	3.2	2.6	2.3	2.7	2.4	2.3
Medium Income 2/	3.1	3.0	3.5	3.1	2.8	2.6

Source: Agriculture Toward 2000, FAO C79/24. Rome, July 1979.

Footnotes: *Five-Year Average centered around the indicated years.
1/ 40 countries.
2/ 59 countries.

Table 1.6 Net Cereal Balances 1/ and Self-Sufficiency Ratios for 90 Developing Countries

	Net Balances (million tons)				Self-Sufficiency Ratios (%)			
	1963*	1975*	1990	2000	1963*	1975*	1990	2000
90 Countries	-10.2	-32.4	-73	-132	96	92	88	83
Africa	-2.0	-6.9	-30	-48	95	86	63	56
Far East	-7.0	-14.4	-14	-26	95	93	95	93
Latin America	2.0	-2.0	-11	-23	104	97	91	87
Near East	-3.2	-9.1	-18	-35	91	84	78	67
Low Income 2/	-9.2	-18.7	-32	-55	94	91	90	86
Middle Income 3/	-1.0	-13.7	-40	-76	99	92	85	79
Cereal Deficit Countries Only	-22.8	-46.8	-114	-117	90	87	79	74

Source: Agriculture Toward 2000, FAO C79/24. Rome, July 1979.

Footnotes: *Five-Year Average centered around the indicated years.
1/ Net cereal balances estimated as production minus demand.
2/ 40 countries.
3/ 50 countries.

The Need for International Research

1.18 The data and discussion presented in the previous section indicate that in spite of past successes in increasing supply, major problems related to food production will remain; problems that are aggravated by annual fluctuations. They also show that the most important way of increasing and stabilizing food production in the developing countries is through improving land productivity and that this, in turn, is dependent on agricultural research and the transfer of technology.

1.19 Although technological change in agriculture can do nothing to solve the problems of famine caused by human action, it can sometimes contribute to solving the problems caused by natural catastrophes. The effects of droughts can be alleviated by irrigation from reserve supplies of water, for example, while flood control and the prevention of soil erosion can also play a part. But it is through improving the food intake of those segments of society that suffer from malnutrition that technological change can fulfil its most important and general role. Technology can increase the productivity of resource-poor farmers, thus increasing their capacity to feed themselves and generate additional income. Research and the derived technology can also contribute to increases in the overall production of the agricultural sector and thus augment the quantities of food marketed in the cities, with the possibility of decreases in the price of food and increases in the real incomes of the rural and urban poor. These are the potential contributions that research can make. They encompass both the resource-poor farmer and the low-income segments of society, thus emphasizing the duality of purpose of the research undertaken by the CGIAR System as well as the need for flexibility in the definition of its priorities.

1.20 Previous work by IFPRI and TAC indicates that, in general, research being undertaken by the CGIAR System has rightly attempted to solve the most urgent and pressing problems related to food production and that the major food crops in the developing world have been covered by its programmes. The contributions it has made and their impact on world food problems have already been impressive but, as populations continue to expand and non-renewable resources are used at an increasing rate, the need for research will increase and the problems to be solved will become more urgent.

THE VALUE AND IMPACT OF RESEARCH SPONSORED BY THE CGIAR

1.21 Total annual expenditure by the International Institutions on programmes supported by the CGIAR has increased from US$19.5 million in 1972 to a projected figure of about US$144.1 million in 1981 (for further details, see Chapter 9, Table 9.1). The magnitude of these resources, the time that has passed since the various activities were initiated and the consequences of adoption of some of the new technology, have caused some donors and the public at large to raise questions about the relative efficiency of the System as a whole, and the impact of the results it generates. These concerns are reflected in the Terms of Reference of the Review Committee and were emphasized to the Study Team during its meetings and discussions with donors.

1.22 In the limited time available for the Review it was not possible to analyze all of these problems adequately. Nevertheless, because the subjects are important and are closely related to the main objects of the Review, some general inferences have been drawn from studies developed by others.

1.23 The primary issue, as discussed by most of those concerned, has two parts. The first relates to the effectiveness of the System in generating new technology and the magnitude of the impact of this new technology on food production. The second refers to the impact of the technology on the distribution of incomes among different social sectors or, in more general terms, to the effects it has had on the well-being of the low income groups, particularly of the resource-poor farmer.

1.24 Before we synthesize the main results on the subject, we mention a few simple principles. First, technology is only one of the elements that determine agricultural production and productivity. Furthermore, the adoption of technology is the result of complex socio-economic and political processes where research and research institutions may have only a relatively small role. Consequently, the magnitude of the impact of new technology on production and productivity must be viewed within this larger framework of social and political phenomena.

1.25 Second, the impact of a specific technology on income distribution and the well-being of small farmers is only partly determined by its inherent characteristics (biological, mechanical, etc.); it is determined to a far greater extent by the institutional framework within which the productive

process takes place. Under different economic and institutional frameworks the same technologies will have different impacts on income distribution and on the well-being of the small, poor farmer. For example, technologies that rely on purchased inputs will benefit small farmers only in the presence of adequate production credit and supply services. To expect technology by itself to bring about the desired social transformation is to raise false expectations.

1.26 Nevertheless, an analysis of research and technical change must take these elements into consideration. All concerned need to take a balanced view and to make an effort to understand the impact of technical change within the wider framework of the socio-economic and political forces that both determine and are affected by it. It is with these ideas in mind that we outline some of the achievements of the International Centres.

Some Contributions to Research Made by the CGIAR Institutions

1.27 Conservation and exploitation of genetic resources. Genetic variation in crop plants can be generated in a number of different ways, but important sources of variation are contained in traditional varieties and their wild relatives. Areas of land that have been under cultivation for long periods of time are of particular interest, but as the old varieties are progressively replaced by a limited range of improved cultivars, and as the habitats of the wild relatives of crop plants are developed for farming or building, sources of genetic diversity are rapidly reduced.

1.28 The threat to these natural resources led to the creation in 1974, as part of the CGIAR System, of the International Board for Plant Genetic Resources (IBPGR). Besides organizing its own collection expeditions, the Board has worked out ways of evaluating and storing the material collected and has established computerized systems for the storage and retrieval of information. National collections, built up over the years, are now linked by an international network for gathering, maintaining, and distributing material and for collating information on it. Several International Centers are sharing in this effort and helping to improve techniques for storing germplasm.

1.29 More than half of the effort of those Centres working on crops goes into work related to the exploitation of genetic resources. Genetic material is passed to national programmes, to be adapted to their particular needs through further breeding, or to be released as improved cultivars after rigorous testing. Greater productivity continues to be an important goal, particularly for varieties grown under irrigation. Today, however, much more concern is given to the special varietal needs of resource-poor farmers. New cultivars designed for production under rainfed conditions must not only possess the potential for heavy yields, but must also be capable of withstanding periods of stress caused by uncertain patterns of weather. To harvest a reasonable crop in a poor year is as important as harvesting an outstanding one in a good year. Stability of yield is therefore a major aim of all breeding programmes.

1.30 Recent examples of increased production include irrigated rice in 20 Latin American countries where yields have increased by more than 50% since the introduction of new varieties developed jointly by IRRI and CIAT, while yields of upland rice in the same regions are increasing rapidly through use of the variety CICA 8. CIAT bean hybrids are already being produced in Bolivia and several Central American countries, while many countries are using other bean varieties distributed by CIAT. Thousands of hectares of improved pastures in Columbia and Brazil are based on new lines of grass selected by CIAT.

1.31 Each of the Centres now has extensive networks for testing breeding material. Up to 90 countries may be involved in these networks, often with several sites in each. Global testing is particularly valuable in permitting widespread screening for resistance to diseases and pests. Disease "hot spots" have been used to test breeding material so that it can be selected for broadly-based resistance.

1.32 Breeding for disease resistance features strongly in most of the crop improvement programmes. For example, cassava varieties produced by IITA with resistance to mosaic and bacterial wilt are now being grown in farmers' fields, while cowpea varieties with resistance to the major diseases are being widely tested in national programmes in Africa. ICRISAT has incorporated resistance to downy mildew into varieties of pearl millet which are being widely evaluated in India and the Sahelian zone of West Africa.

1.33 Breeding plants with tolerance to heat, drought, and other adverse climatic conditions is of obvious value to farmers who must operate in marginal areas. Among many examples that might be quoted, CIP has produced potato clones tolerant to temperatures as low as -4° C, while CIAT is working on forage varieties that are productive even on the acid, aluminium-saturated nutrient-deficient soils of the llanos in Colombia and the cerrado in Brazil.

1.34 Under many conditions seed-grown crops have advantages over those that are vegetatively reproduced. Moreover, production of seed is essential for progress to be made through plant breeding. CIP's development of technology for the use of seed instead of tubers for potato production could lead to major advances in the use of the potato as a highly nutritious food. Research at IITA has led to the production of seed in the yam, thus opening the path for genetic improvement in this important tropical crop.

1.35 Farming systems and the components of increased productivity. Although the older Centres devoted much of their original effort to irrigated agriculture, by far the greatest effort of the System is now devoted to the more difficult environmental conditions faced by the small, resource-poor farmer. IRRI, for example, has expanded its programmes on rainfed rice to the extent that only 40% of the effort is now devoted to irrigated rice.

1.36 The work on farming systems, including water and soil management in the humid, semi-humid, and semi-arid tropics, provides new insights into the interactions that occur in the complex production systems of the tropical world. It has also provided opportunities for mounting training programmes in the appropriate methodology. ICRISAT, for example, is concentrating

on ways of maximizing the use of rainfall in the semi-arid tropics. It is developing systems of land management, cropping patterns and water control. Furthermore, the work is backed by research that permits reasonable predictions to be made of the range of soil conditions and weather patterns to which the systems are applicable. Work at IITA is designed to ensure that more intensive cultivation will not do lasting harm to land areas that have traditionally been farmed with bush or grass fallow in rotation.

1.37 Studies at the village level by some Centres have looked at existing farming systems to see why farmers behave as they do and to indicate the possibilities for technological change as well as its limitations. IRRI has identified the main components of a yield gap of six tonnes per hectare between results obtained on the experiment station and those on farmers' fields. In a study of six countries in South and Southeast Asia, it has found that farmers have limited their use of new technologies in terms of the degree of water control that they can exercise, and with a sharp eye for the true profitability of alternative technologies in their own circumstances.

1.38 In many areas of the tropics, the resource-poor farmer is entirely dependent on natural sources of nitrogen for crop nutrition. In addition to work aimed at improving nitrogen fixation by leguminous crops, Centres such as ICRISAT are working with sorghum and millet to see if there are strains that can maintain yield levels with reduced inputs of nitrogen fertilizer the balance of this nutrient becoming available from free-living micro-organisms that fix atmospheric nitrogen. IRRI is collaborating with institutions in both developed and developing countries to study the nitrogen-fixing capacity of blue-green algae in flooded rice soils. In their work on leguminous crops. IITA is looking for soybean varieties, CIAT for strains of phaseolus beans, and ICRISAT for groundnuts that obtain more nitrogen from nodulating bacteria.

The Impact of New Technologies on Production and Productivity

1.39 The contribution of the System to improved cultivars with heavier yields and better pest and disease resistance has been very substantial. The impact of the research was reviewed in the 1978 Integrative Report of the CGIAR, which concentrated on the effects of the introduction of high-yielding varieties of rice and wheat. The Centres concerned, IRRI and CIMMYT, were the only ones that, at that time, had been in operation for over a decade.

1.40 The high-yielding varieties of wheat and rice were introduced in 1965-66. Twelve years later over one-third of the total area devoted to these cereals in the developing countries was being sown with high-yielding varieties. Of the total area sown, the proportion growing the new varieties varied from 62% for wheat in Asia to only 3% for rice in Africa. The uptake varied enormously from country to country; the new wheat varieties covered about 65% of the total areas of wheat in India and the new rice varieties 70% of the area in the Philippines. The output of rice and wheat has grown significantly during the past decade, at much higher rates than during the previous decade. In recent years production of maize, sorghum, millet and other coarse grains has also increased.

1.41 Because the new technology combines varieties with the potential for heavy yields, with adequate water and other inputs in an integrated package, it is difficult to isolate and compare the performance of the traditional varieties grown previously, usually with lower levels of inputs. The data show considerable variation over regions and time, but a sample of documented studies has shown that high-yielding rice technology typically yielded 40% more than the traditional varieties they replaced. For wheat the "average" increase seems to have been closer to 100%.

1.42 Even a modest increase in yield over a wide area represents a very large quantity of additional grain. In 1978 it was estimated that the new varieties had added $3 billion to $4 billion per annum to the value of production, illustrating the favourable cost-benefit characteristics of agricultural research that are now generally recognized.

1.43 The socio-economic impact of new technology has generated a great deal of discussion and the emotive aspects of the "Green Revolution" have received wide publicity. Most studies support the conclusion that neither farm size nor land tenure conditions per se has been a major impediment to the adoption of the new grain varieties, if the supply of needed inputs and agricultural services in general have been available to the small farm units and if appropriate pricing and marketing policies have been adopted.

1.44 The new varieties have led to a modest increase in direct labour use per hectare but the increased demand for labour appears to have had relatively little impact on agricultural wages. On the other hand, the lower income consumers who spend a high proportion of their total incomes on food have in general benefitted. The relative distribution of incomes among producers has not been affected except in those instances where small farms are associated with marginal agro-ecological conditions that make adoption of new varieties difficult. However, the absolute differences between larger and smaller farmers have widened owing to the unequal ownership of productive assets.

The Future

1.45 With its research and training programmes focussed mainly on those food commodities and farming systems that are directly related to the needs of the resource-poor farmer, the System is well placed to make future contributions to food production where they are most needed. Many of the food commodities of importance to the resource-poor farmer, such as sorghum, millet, pulses, yams and cassava are grown in complex production systems, emphasizing the importance of the work developed by the Centres on improved farming systems and their validation in farmers' fields. In these production systems, crops are often interplanted and harvested sequentially. Consequently, it will be more difficult in the future to quantify the impact of new technologies than it was for rice and wheat, both of which are invariably grown in pure stand and for which reasonably accurate estimates of production can be made. The difficulties of measurement are even greater in farming systems in which animal products as well as crops are important. These considerations not only illustrate the technical nature of some of the changes in research philosophy that the System has undergone but clearly indicate the complexity and importance of the problems it will face in the future.

1.46 Many millions of farmers and consumers have already benefitted from the technology that the CGIAR System has helped to develop. Not all farmers have benefitted equally, nor have all geographical regions. Emphasis can be placed on technologies that reduce dependence on purchased inputs, but there is no way of removing completely the need for such inputs. Appropriate political decisions and institutional infrastructure will be needed to achieve a more equitable sharing of the benefits of scientific research. At all times it will be important to recognize that the International Centres are only one element -- although a very important one -- in the total world system of activities in research and development.

1.47 Recognition of the importance of the present and potential role of the CGIAR System is widespread in both developed and developing countries. The practical results they are expected to provide in terms of improved technology are recognized as only a part of their contribution. Equally important are their contributions to the development of technical manpower through training and collaboration with national programmes, as well as the part they play in establishing stronger linkages and greater cooperative effort in the agricultural research community of the world as a whole.

1.48 For these reasons, a look into the future agricultural development of the world and the potential impact of the research sponsored by the CGIAR presents, we think, a complex and challenging picture. Some countries, in part as a result of CGIAR-sponsored research, have made important advances in their own capacity to produce food; others have lagged behind, creating new areas of malnutrition and potential famine. This process has given rise to pronounced shifts in the balance of food production and food demand among different geographical regions of the world. Consequently, research priorities and research problems continually change.

1.49 At the same time, the processes of agricultural modernization and consequent changes in population settlement, use of land, and demand for inputs, have generated a whole set of new problems which are very difficult to evaluate and even more difficult to solve. Nigeria, for example, is seeing new income from oil exports, rising industrialization, growth of a middle class, dramatic changes in the diets of urban families, and a sharp increase in imports of food. Other developing countries, such as Brazil, are faced with sharply rising costs of energy and consequent pressure to generate foreign exchange to meet the costs of agricultural inputs. In both examples, food policies and farming strategies are deeply affected by external forces that are hard to predict and usually impossible to control.

1.50 The CGIAR System must continue to analyze these problems as a means of guiding the activities it supports. The circumstances may change, the priorities may change but the imperative need for research on food production will continue and is likely to increase. Those who have so generously supported the System in the past must recognize that its past successes were built on the advances made in science and technology during the first sixty years of the present century. Moreover, the most important and relatively less difficult problems were selected as the first priorities.

1.51 It is possible, in the future, that the results of basic research will give rise to dramatic changes in technology. For the years ahead, however, successes in applied research, and the application of improved technology, will be achieved only by sustained and continuous effort. In the future, as in the past, success will depend on ensuring the supply of first-class, committed and enthusiastic staff and on maintaining the flow of funds that are vital for supporting their programmes and encouraging their efforts.

Chapter 2. THE FIRST REVIEW OF THE CGIAR

2.1 The evolution of the CGIAR System has been associated not only with major achievements in agricultural technology, but also with the development of an unusual method of organization and management. The inherent vitality of the System is well-illustrated by its willingness to subject itself to periodic review, based on an independent study by an external panel.

2.2 The first such review was commissioned in 1976, five years after the CGIAR was founded. The Report of the Review Committee presented twenty-two recommendations relating generally to the purpose, activities and organization of the System. All of the recommendations caused discussion and re-appraisal of existing procedures but, because they were concerned in different ways with different elements of the System, it has been difficult to assess precisely the extent to which they were implemented. Nonetheless, there is no doubt that the review helped to consolidate the work of the System and give greater cohesion to its components. More detailed comments on the implementation of the recommendations are contained in Table 2.1 and provide a useful background to our own analyses of the issues.

2.3 Five of the recommendations related to donors, and were concerned with problems of funding and the overall policy of the Group. In the absence of any formal procedures, these recommendations did not require a policy decision concerning action to be taken by the Group collectively, but compliance by donors individually that they would conform to an agreed pattern of action within the CGIAR. In general, these recommendations have been implemented but some problems remain with recommendation 22 (Table 2.1), concerning the early provision of funds in the fiscal year. There are still delays in the provision of some pledged funds causing severe and frequent cash-flow problems for some of the Institutions, and we urge donors to review their position in this respect.

2.4 Five recommendations related to the service units and could be regarded as specific instructions by the Group to them, concerning mainly operational, budgetary and review procedures. They have been implemented to the extent desirable having regard to changing circumstances and accumulated experience.

2.5 Only two recommendations represented decisions implying common action in the future. Of these, recommendation 14 relating to future reviews of the System, has been fully implemented, whereas recommendation 20, which provided for a Standby Committee to resolve problems of the allocation of resources, was adopted but the committee was not convened, because it was not considered necessary to do so (see paragraphs 7.26 and 7.27).

2.6 The remaining eleven recommendations related to the Institutions. Their adoption by the Group implied the acceptance of guidelines by the Boards of the Institutions and their Directors General concerning specific action to be taken or policies to be pursued. Of these, the most important for the future functioning of the Institutions were recommendations 12 and

13. The former related to the selection and appointment of Board members, on which action has been taken but further clarification is necessary (see paragraph 7.101 - 7.106). The latter concerned personnel policies at the Institutions, some of which have been resolved and others are under study. There will be a continuing need for review of personnel issues in the Institutions (see paragraph 7.40).

2.7 With the exception of those recommendations that related to specific action to be taken by the service units it is clear that responsiveness to the recommendations, although generally positive, has varied according to the judgements and responsiveness of those concerned. We conclude that this observation reflects the main management characteristics of the System and also two of its problems.

2.8 First, any recommendations that have a direct bearing on the Group's collective action are implemented only to the extent that each member is willing to do so. The basis of collective action requires a strong feeling of consensus that can only be achieved if there are adequate mechanisms for analyzing issues and arriving at generally acceptable policies. Second, similar considerations apply to recommendations affecting the Institutions, and the summary of implementation illustrates the way in which each Institution has exercised its own judgement as an autonomous body.

2.9 The System, as currently structured can operate effectively only by consensus, and most people concerned wish this feature to be preserved. Consequently the effective implementation of policy decisions by all the major components of the system is entirely dependent on the mechanisms available for both arriving at a strong feeling of consensus and translating that consensus into action. This is the inference we draw from the results of the first review and it provides a logical starting point for the second.

Table 2.1 Summary of the Implementation of the Recommendations of the First CGIAR Review

General	Action Taken/Comments
Recommendation 1: The need for sustained research effort to increase food availability in developing countries will continue and is likely to increase. Therefore, we recommend that the Consultative Group on International Agricultural Research proceed on the basis that it should continue to function for the foreseeable future (pp. 58-60).	This recommendation was implemented.
Recommendation 2: We recommend that the CGIAR should continue to endorse TAC's conclusion that the primary focus of the CGIAR should be to support research and technology development that can potentially increase food production in the food-deficit countries of the world. The research activities supported by the CGIAR are appropriately focused on food commodities which are widely consumed and collectively represent the majority of the food sources of the developing world and no major changes or additions are called for at this time (pp. 61-63).	Recommendation accepted.
Recommendation 3: We recommend that the next three years should be viewed by the CGIAR as a period of consolidation. During this period continued support should be provided for the current set of centers and related activities. We caution against undertaking initiatives requiring major financial commitments. TAC should continue during this period of consolidation to explore the need for new initiatives and changes in existing programs (pp. 61-74).	(a) No initiatives requiring major financial commitments were undertaken during the period 1977-79, although the system as a whole continued to grow at a near historical rate of 16% per annum in real terms principally due to the development of the newer centers—ICRISAT, IITA, ILCA and ICARDA. ISNAR was established in 1979, but with no major financial commitment before 1980. IFPRI was adopted for funding from 1980. (b) TAC continued to examine possible initiatives for support of research on various subjects including fertilizer, insect pests and water management. It made favorable recommendations on ISNAR and IFPRI, which were accepted by the Group, and on a proposal for vegetable research which was not.

Recommendation 4: In addition to the current practice of receiving reports from related activities such as IFDC, AVRDC and CGFPI, we recommend that the CGIAR support fora for information exchange among members of the Group, technical personnel from their agencies, centers, other aid agencies and national programs in developing countries. In this connection the CGIAR should consider two specific activities (1) commissioning papers as a basis for discussion of CGIAR issues of interest to donors and research beneficiaries, and (2) explicitly seeking to foster increased information exchange among CGIAR donors and related agencies about other activities in which they are jointly involved (pp. 61-63).

(a) The CGIAR held a forum on training in 1978. The documentation presented at the forum provided data on training which were not previously available.
(b) The CGIAR Secretariat has commissioined papers on cost-benefit analysis related to agricultural research (the Schuh-Tollini paper) and on the impact of international agricultural research which provided background for the 1978 Integrative Report.

(c) In 1978 TAC organized a "stripe" analysis of off-campus activities, including a compendium of such activities.

Center Issues

Recommendation 5: We recommend that all projects undertaken by a center be regarded as components of its total integrated program regardless of sources of funds and that the entire program be subject to the review procedure as outlined in this report (pp. 76-76).

Quinquennial review missions evaluate the entire programs of centers regardless of the sources of funds. Most program and budget submissions now indicate the relationship of special project activities to the core program. Funding for special projects remains outside all CGIAR financial planning. Because special projects by their nature are arranged on an ad hoc basis, and their timing is uncertain, centers have found difficulty in including full information on all projects under negotiation in their program and budget submissions.

Recommendation 6: We recommend that each center develop an objective set of criteria for program choice and periodically reassess the balance of its program with respect to: (1) research and technology development, (2) training, (3) cooperation with national programs and advanced research institutions, and (4) communication and exchange of information between center scientists and others in related fields (pp. 76-79).

Most centers are involved in a longer-range planning exercise, in which these questions are addressed. Planning is made both more necessary and more difficult under constrained financial conditions.

Recommendation 7: We recommend that centers continue to develop and strengthen their cooperation with national programs, insofar as this is essential to accomplish their research mandate. Beyond this centers should remain alert and responsive to additional opportunities for cooperation to the extent that extra-core funds are available, that these activities do not compromise or distort the central research mission of the center and that they are within the centers' capacity to staff and manage (pp. 79-84).	Cooperative programs have continued to expand rapidly. Special Project activities have increased at average annual rate of nearly 18% in real terms from 1972-81. TAC Quinquennial review missions have generally concluded that the Special Projects reviewed do not distort or compromise the core programs although they have encouraged the centers to exercise caution in responding to the many pressures for assistance, both from donors and client countries. As noted above, TAC has undertaken a review of center off-campus activities.
Recommendation 8: We recommend that all support to a center other than that provided through the CGIAR be classified as extra-core funding. Further, we recommend that these funds be used to supplement activities supported by core funds and/or to finance activities that the center may wish to undertake primarily to benefit a particular country (pp. 84-86).	Some centers use the classification extra core. Others still prefer to use the term Special Projects, but in general it means the same thing. It is generally true that Special Project funds are used to supplement core activities or to respond to a specific need related to the research program. Shortfalls in core funding may make Special Project funds more attractive.
Recommendation 9: We recommend that any proposal for a new project to be supported by extra-core funds should be forwarded by the center to TAC for review when (1) there is a question as to whether the purpose of the activity lies within the center's mandate, (2) acceptance has implications for future core support, (3) the proposed activity might put undue additional strain on center management, or (4) the extra-core funding is particularly large (pp. 84-86).	No Special Project proposals have been forwarded to TAC by the centers for prior review, except as part of the annual/ biennial review process.
Recommendation 10: We recommend that all centers develop more effective forward research program planning procedures and include as advisors international scientists with competence in the appropriate areas (pp. 88-89).	Most centers have initiated a longer-term planning process and some have already published the results in the form of long-term plans.

Inter-Center Relationships

Recommendation 11: We recommend that centers should be encouraged to collaborate wherever possible in executing their cooperative research activities with national programs when working in the same region or with the same commodity. The negotiation and administration of these linkages should be the responsibility of center directors and the respective boards of trustees. TAC or the CGIAR should serve only to advise and assist in reaching a solution in the case of disputes that cannot be resolved by the centers. Further, we recommend that agreements and arrangements between centers be formally recorded in writing and a copy of all such agreements be sent to the CGIAR Secretariat (pp. 89-90).

The number of inter-center collaborative programs has increased significantly. Arrangements betweeen centers have been handled by the centers themselves, usually informally. The Secretariat has not received any copies of the agreements. TAC recommended some shifting of resources among the centers currently engaged in work on upland rice.

Center Management

Recommendation 12: We recommend that each board of trustees define criteria and procedures for the selection and appointment of its own members and that these be made available to the CGIAR. Further, we recommend that each board of trustees broaden its membership by including, when appropriate and consistent with national laws, three members selected in conjunction with and ratified by the CGIAR (pp. 91-92).

(a) Several Boards of Trustees have developed or reviewed the criteria and procedures for selection of their members. However, except as these are spelt out in a center's charter, it has not been the general practice to supply the Group with this information.

(b) Only the four original centers and WARDA have no requirement in their charters to have CGIAR members on their boards. The original four are moving slowly to comply with the spirit of that recommendation, but only one has resolved to adopt a formal change.

Recommendation 13: Since quality of the staff is a central factor in the success of the program, we recommend that: (1) center directors advertise as widely and openly as possible in seeking candidates for staff positions, (2) every effort be made to maintain staff vitality, and (3) outposted staff receive the same sabbatical privileges as staff posted at headquarters regardless of source of funds supporting the scientist (pp. 92-94).

(a) Two Quinquennial Review missions — to CIP and ICRISAT — have recommended that vacancies should be more widely and openly advertised rather than relying on informal contacts in the scientific community. At least four centers have regularly advertised position vacancies.

(b) TAC Quinquennial Reviews have generally expressed satisfaction with the vitality and energy of the scientific staff.

(c) Practices vary regarding privileges of outposted staff. Some such staff are working on extra-core projects and are employed short-term. Others are working on activities which are part of the Centre's core programme and may therefore enjoy the same benefits as headquarters staff.

CGIAR Planning, Evaluation, Allocation Arrangement

A. Long-range Planning and Evaluation

Recommendation 14: We recommend that the CGIAR review its overall program and operation every three to five years. The CGIAR should appoint an ad hoc committee to conduct a review of the ubstantive program of the CGIAR as well as review those policies, procedures, and management mechanisms which require attention. TAC should provide a major input into this long-term forward look at the substantive program (pp. 96-98).

(a) The Second Review of the CGIAR system was begun in 1980 and the findings and recommendations will be considered by the Group as a whole in November 1981.

(b) The recent revision to the CGIAR Priorities Paper by TAC has provided a major input into the Second Review.

(c) TAC has conducted stripe reviews on farming systems and off-campus activities. It is also studying proposals for future stripe reviews.

Recommendation 15: We recommend continuation of the TAC quinquennial reviews for evaluation of scientific quality, scope and balance of current programs, and to evalute future plans, including explicit review of center proposals to continue projects of long standing. We also recommend that the TAC give greater emphasis to periodic, across center analysis of particular topics (stripe analysis) (pp. 96-98).

(a) TAC has continued Quinquennial review missions to assess the scientific quality and balance of center programs.

(b) TAC has conducted a stripe review on farming systems and is carrying out a review of outreach programs. It is also studying proposals for future stripe reviews.

B. Mechanism for Budget Planning and Development

Recommendation 16: We recommend that the concept of a desirable size range for centers be aopted. We further recommend that centers be asked to propose their desired size based on the number of senior scientists translated into financial terms. Until these plans are developed, we recommend that any proposed increase in senior staff numbers that would take centers above the size of the largest existing centers should be closely scrutinized (pp. 86-87 and 98-100).

Several Consultative Group members in 1976 expressed some reservations about this recommendation. While the Group in its five-year indicative planning has in effect adopted a policy of limiting the rate of growth of the established centers, this has not been based on proposals from the centers regarding staff size. Centers have generally opposed the idea that there is any particular optimum size.

Recommendation 17: We recommend that a biennial budget cycle be adopted for center and related activities. In addition, a further indicative plan for the two years beyond the biennium should be developed. These budgets and indicative plans to be developed by centers should be consistent with their proposed desired size (pp.98-100).

(a) A biennial budget cycle has been adopted for all centers except ICARDA, IFPRI, ILCA, ISNAR, and WARDA. While budgets over a 24-month period are desirable, inflation and funding constraints have made estimates for the second year unrealistic in practice.

(b) Some but not all centers have adopted indicative plans for the two years beyond the biennium. However, these have not been explicitly related to the concept of size.

(c) Beginning in 1979, the group has approved an explicit indicative financial plan for the System as a whole covering total core financial requirements for the next five years. This plan is revised and extended annually.

Recommendation 18: We recommend that the desired size and indicative plan proposals from centers be reviewed by TAC. TAC should make appropriate recommendations to the CGIAR, after the discussion of any proposed adjustments with the centers. The CGIAR-approved plans would then form the guidelines for the preparation of the centers' next biennial budget. Until this process is in operation, centers should recognize that proposals for budget increases will be reviewed very carefully in the spirit of our recommended period of consolidation (pp. 98-100).

As most centers are only now preparing a longer-term perspective (and the concept of desirable size was not considered entirely appropriate), no indicative plans have yet been submitted to TAC. However, TAC has completed a review of system-wide priorities.

Recommendation 19: We recommend that within the framework of the following guidelines, donor autonomy be preserved and that center budget results from the sum of independent donor decisions. The guidelines are: (1) donors be encouraged to increase the flexibility of their pledges, (2) doors be encouraged to continue support for a reasonable period of time to allow centers to produce research results, (3) donors be encouraged to precede any substantial reduction in support by two years' notice, (4) that donors agree to cooperate to assure that no center or other CGIAR-supported activity receives greater support than its budget request, including supplemental requests, and (5) donor(s) of last resort fund a center that is seriously underfunded, but if that situation continues for two or three years, the future of the center should be reviewed by the CGIAR (pp. 100-101).

(a) Donors have generally adopted a flexible attitude to their pledges and support. The general response of the donors is consistent with the Review Committee's recommendation. So far it has not been necessary to review the future of any center under conditions of the recommendation.

(b) Many donors have experienced difficulty in achieving the same rate of real growth as in the past. Difficult shortfalls have arisen due largely to accelerating inflation.

Recommendation 20: We recommend that a standby committee of the CGIAR be authorized. Its membership should include the Chairman of TAC and the Executive Secretary. We suggest the committee stand ready to advise on how the Group should deal with significant shortfalls in funding. The committee could also be activated by the CGIAR or the Chairman of the CGIAR for advice should other policy issues or circumstances arise (pp. 101-102).

The Group has authorized a standby committee to deal with significant shortfalls. Plans were made to convene such a committee to deal with a potential funding shortfall in 1980 and 1981, but it proved unnecessary. There are no plans to have a Standby Committee in 1982.

C. Budget Analysis and Management

Recommendation 21: We recommend that steps be taken to ensure closer coordination between the TAC and CGIAR Secretariats to enable them to jointly produce integrated program and budget analysis for the CGIAR. Certain additional points of organization and procedure should be agreed upon: (1) Adequate staff and financial resources must be provided for the work of each of the Secretariats. (2) The cosponsors should report to the Group at its July meeting on the budgets of the Secretariats for the coming year. If sufficient resources cannot be provided by them, donors should be asked to make additional funds available. (3) Each Secretariat should reognize that it reports only to the Group, through its respective Chairman. We further recommend that the cosponsors report to the Group at the forthcoming meeting (October 1976) whether they foresee any difficulty in meeting these considerations (pp. 102-103).

(a) From 1977, all commentaries on center programs and budgets have been produced jointly by the TAC and CG Secretariats. There have also been joint visits to centers, and coordinated work in several other areas, such as the review of off-campus activities.

(b) Thus far the three cosponsors have been able to provide adequate resources for the work of the Secretariats.

(c) In October 1976, the cosponsors reported to the CGIAR that they saw no difficulty in meeting these recommendations.

Recommendation 22: We recommend that donors be strongly encouraged to provide their pledged funds as early in the fiscal year as possible. Further, we recommend that the CGIAR Secretariat provide donors and centers with a time schedule of center budgetary needs and availability of donors' funds. If these two mechanisms do not solve the cash flow problem, we recommend that the World Bank explore alternative solutions (pp. 103-104).

(a) Donors have been encouraged to provide pledge funds as early in the fiscal year as possible, but cash flow problems persist.

(b) The World Bank created a facility in 1977 to help resolve temporary cash-flow problems through the first eight months of the year. Centers are beginning to make increasing use of this facility.

Chapter 3. THE CGIAR SYSTEM

3.1 The "CGIAR System" came into being in 1971 when the Consultative Group was formed to continue and extend the support of International Centres. The original Centres were created and funded jointly by the Ford and Rockefeller Foundations, based on ideas developed by F. F. Hill and J. G. Harrar. The essence of the Hill-Harrar philosophy was that the Centres should be independent, autonomous and highly efficient research institutes, generating urgently needed technology that would take too long to generate through national research programmes. The key to this philosophy was the time factor. It was recognized that research capabilities in the developing countries would grow and would increasingly contribute to the total research effort but, faced with the reality of the world food problem, it was essential to take immediate action, and to concentrate the effort in order to obtain quick results. It was also part of the philosophy that if, after 25 years or so, the national programmes became so strong that the Centres were no longer needed, then the investment would still have been worthwhile, and the Centres could be transformed into national or intergovernmental organizations.

3.2 When the Group was founded, therefore, a loose federation of four independent Institutions already existed. They had been designed to fill gaps in agricultural research for development but had been created with the recognition that they might be rendered superfluous through adequate contributions from strong national programmes. The Committee has considered whether this concept is still appropriate, either wholly or in part; whether there is a continuing need for International Centres and, if so, what their role should be during the next ten to twenty years. We have also considered the organizational implications of a more permanent and integrated system of international research institutions

3.3 In analyzing this subject, the Study Team gave particular attention to the views of organizations and individuals in the developing countries. Although there are different perceptions of what the Centres should do, no-one suggested that they should not have a significant and continuing role in the world pattern of activities in agricultural research and development. Even though some national research capabilities are rapidly becoming stronger, there is general recognition of a continuing need for the work of the Centres. Some of the more experienced scientists in the developing countries recognize the need most clearly. The problems are becoming more complex (see Chapters 1 & 5); there are the difficulties of the energy crisis, and a great deal of more demanding work has to be done, not only to break into new ground, but also to safeguard the levels of production already achieved.

3.4 The consensus that is emerging, therefore, is that the International Centres will be needed to support national programmes at least until the end of the century and that they should be encouraged to evolve towards a system of institutions with integrated aims. The Centres are seen as having the facilities for highly professional work that is relevant to the needs of the developing countries. They provide badly-needed back-up facilities for national programmes in many ways -- the release of germplasm, the

generation of new ideas, training programmes and links with more basic research -- to name but a few of those frequently cited. Their future role is seen as one of complementing national programmes, rather than dominating them or subtituting for them. IRRI's long range plan, with its emphasis on collaborative programmes, and CIP's strategy of collaboration in the development of programmes and the horizontal transfer of technology, are good examples of the ways in which center activities may progressively evolve.

3.5 Indeed, CGIAR Institutions should be viewed as part of a wider system, reaching across national boundaries to maintain linkages among the various elements of the world scientific community. They form part of the mechanism for communicating ideas, for converting the results of research into technology and for transferring that technology ultimately to the farmers' fields. The stronger institutions, whether national or international, constitute the nodes in a larger network of institutions, each contributing ideas and material to the network according to its ability, and taking from it according to its needs. The whole system is dynamic and the role of each institution will change as its own capabilities change and as the needs of developing countries change.

3.6 Although the need for the CGIAR System will remain, the Group may not wish to support indefinitely all of the present Institutions funded by it. Consistent with the original philosophy, some may indeed evolve into national institutions or become entirely supported on a regional basis, outside the CGIAR System. What is important is that continuity should be preserved and that the staff should see in the Institutions both the challenge and the rewards of long-term careers.

3.7 It is only through sustained financial support that the work of the System can contribute significantly to the complex processes of development. In becoming members of the Group, donors accept a long term responsibility in this respect. Many also have important roles to play in helping to extend the work of the System into development projects, through programmes of investment and technical assistance funded through bilateral agreements. The direct support they give to national programmes of agricultural research and development is complementary to their support of the System. In many instances, neither can function effectively without the other.

3.8 The Study Team's programme of travel, meetings and seminars in the developing countries left it with the strong impression that donors need have no doubts about the need for the work of the System and its relevance to problems of development. This is neither to say that the Team heard no criticisms nor that it saw no problems; but the criticisms and problems were secondary and arose mainly from the desire for a greater contribution from the System rather than from a feeling that the System is of doubtful value. This generally positive attitude towards the System must be kept in mind when reading the remainder of this report which, quite naturally, concentrates on the issues that need to be resolved, rather than on the programmes that are successful.

3.9 The concept of a coherent System, with a role extending at least until the end of the century, is very different from that of a collection of

independent institutions, each with a limited life. This revised concept of the CGIAR System has emerged almost unconsciously by common consent and its implications have not been thoroughly analyzed. Consequently, although the success of the System is widely acknowledged, the characteristics that have been associated with its success are not generally understood. Accordingly, we consider first, the nature and purpose of the CGIAR and then its relationships with the Institutions it supports. Clarification of these more philosophical issues will enable us, later in the Report, to focus on the more practical issues of the ways in which the System should operate and how it should be organized and managed.

THE CGIAR

3.10 The CGIAR is an informal association of countries, international organizations and private institutions with a common understanding that they will consult and agree on ways in which they will support international agricultural research. It has a Technical Advisory Committee and a Secretariat, both of which provide inputs into the decision-making process. It has no charter to provide a basis for a juridical existence and no strong centralized management. Funds are contributed on a purely voluntary basis. Policy decisions are arrived at without voting or other formal procedures, but by consensus, which implies support from a majority of the donors, including the principal ones. The goodwill that has been built up within the Group, based on confidence in its objectives and the quality of the work it supports, constitutes a powerful asset for mobilizing resources and enables the Group to conduct its affairs with a minimum of bureaucracy.

The Purpose of the CGIAR

3.11 The original purpose of the CGIAR was stated in section A of Annex III of the Summary of Proceedings of the first meeting of the CGIAR held in Washington, D. C., on 19 May 1971. Five objectives were listed and qualified by two footnotes, as follows.

"CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

Objectives, Composition and Organizational Structure

A. Objectives

1. The main objectives of the Consultative Group (assisted as necessary by its Technical Advisory Committee (TAC) described in Part C below) are:

(i) on the basis of a review of existing national, regional and international research activities, to examine the needs of developing countries for special effort in agricultural research at the international and regional levels in critical subject sectors unlikely otherwise to be adequately covered by existing research facilities, and to consider how these needs could be met; 1/

(ii) to attempt to ensure maximum complementarity of international and regional efforts with national efforts in financing and undertaking agricultural research in the future and to encourage full exchange of information among national, regional and international agricultural research centers;

(iii) to review the financial and other requirements of those international and regional research activities which the Group considers of high priority, and to consider the provision of finance for those activities, 2/ taking into account the need to ensure continuity of research over a substantial period;

(iv) to undertake a continuing review of priorities and research networks related to the needs of developing countries, to enable the Group to adjust its support policies to changing needs, and to achieve economy of effort; and

(v) to suggest feasibility studies of specific proposals to reach mutual agreement on how these studies should be undertaken and financed, and to exchange information on the results.

In all of the deliberations the Consultative Group and the Technical Advisory Committee, account will be taken not only of technical, but also of ecological, economic and social factors.

1/ Research is used in this document in a broad sense to include not only the development and testing of improved production technology, but also training and other activities designed to facilitate and speed effective and widespread use of improved technology.

2/ Final decisions on funding remain a responsibility of each member in connection with specific proposals."

3.12 Although this statement is still basically appropriate, its detailed implications have changed with the evolution of the system. Development as the ultimate purpose of support for international agricultural research and the need to strengthen national research capabilities are two goals that are now specifically acknowleded. At the present time, it is also clear that the system is concentrating its efforts on research related to food crops. There is increasing recognition of the need for continuity of research at the CGIAR institutions and consequently the crucial importance of continuity in funding. The "ecological, economic and social factors" referred to in the original statement of purpose continue to grow in importance as donor agencies give increasing attention to such issues as the nutritional requirements of less advantaged groups, equity in the distribution of the benefits of research, the

special needs of the resource-poor farmer, stability of food supplies and the role of women in development. Such changes of emphasis in the work sponsored by the Group are to be expected as the system evolves. Consequently, we do not consider it necessary to revise the original statement of the Group's objectives.

The Institutions and their Relationship to the CGIAR

3.13 The first few International centres evolved out of programmes financed and run by the Ford and Rockefeller Foundations under bilateral agreements of technical assistance with the host countries. The International Centre was essentially a new institutional concept that not only concentrated resources, but also sought to protect the research programmes from pressures that might otherwise have diverted them from their primary international mandates.

3.14 Accordingly the International Centres were established as autonomous, non-governmental institutions, each governed by an independent Board of Trustees. The Boards of Trustees included mainly individuals chosen on a personal basis for their professional ability, but also representatives of the host countries and of the Foundations as major donors, in order to give continuity to the programmes and to help to preserve the philosophy of the Centre approach. It was through this mechanism and the dedication and foresight of the individuals involved that the Centres developed into highly successful enterprises.

3.15 In the years following the formation of the CGIAR, the donors based their priorities on recommendations made to them by TAC, whose membership comprised individuals from the international scientific community, including those from developing countries. Because there were relatively few donors, because of the continuing role of the Foundations and because practically all the individuals, both on Centre Boards and in the Group, knew each other personally, the general philosophy and direction of the centres was easily preserved. The entirely informal processes of making decisions were appropriate and highly productive.

3.16 The Group must now take stock of its present position. The System has grown substantially; there are many new donors; the Institutions supported by the Group are more heterogeneous in their functions; Board members have changed; donor delegations have changed; and personal relationships amongst the much greater numbers of individuals concerned are by no means as close as they were during the early years of the Group's deliberations.

3.17 These considerations bring to the fore the basic issue of the relationship between autonomous institutions and a group of independent donors with no binding obligations. Moreover, donor policies within the Group are no longer homogeneous. Attitudes in the beneficiary countries have also changed and individuals in developing countries in general have become more aware and articulate regarding their own aspirations and their expectations from the CGIAR System. The equilibrium in international relations is also changing, as expressed, for example, in the North-South dialogue.

3.18 We think that there is general agreement in the System that the future success of the Institutions requires that they should continue to be seen as international but non-governmental institutions, autonomous in nature, and capable of the flexibility that this autonomy can generate. On the other hand, it is clear that the Institutions and their Boards must be responsive not only to the needs of the developing countries they serve, but also to the perceptions that the donors have of their role in meeting those needs. Failure to recognize these responsibilities would inevitably result in the disenchantment of the developing countries with the work of the Institutions and declining enthusiasm on the part of the donors to supply the funds they have been so willing to commit in the past.

3.19 This thinly drawn line between autonomy and dependency must be clearly understood in order that policy decisions may be taken in a manner that is consistent with the preservation of the character of the System. In this respect, two fundamental points must be kept in mind. First, the preservation of the autonomy of the Institutions requires restraint on the part of individual donors, particularly to avoid attempts to influence the policies of an Institution without regard to the agreed policies of the Group. Second, if the Group wishes to be seen as an international body, which continues to enjoy the goodwill of the international community, then it must be structured and organized in such a way that the interests of all concerned are taken into account. With all of these considerations in mind, we see three hypothetical structures within which the System could function.

(i) The Institutions could be viewed as the product and responsibility of the international community of nations as a whole. The nature of the Group would then change to become a governmental organization similar to those of the United Nations system.

(ii) The Institutions could be viewed as research organizations that not only work for, but are part of, the institutional framework in the developing countries. The Group would be seen as supporting the institutions as a way of helping the developing countries to evolve regional research institutions of their own. Funding by donors would be seen as an interim measure, decreasing with time, until the countries themselves funded the institutions on an intergovernmental basis.

(iii) The Institutions could be viewed as international, and non-governmental, by allowing priorities to be determined and the institutions to be controlled largely by individuals appointed for their personal, professional ability. The institutions would be funded through the Group on a long-term basis, by donors who would be free to continue or withdraw their support as they saw fit. The international character of the system would stem from the support of the

Co-sponsors as well as from the composition of the Group, the Boards and the Technical Advisory Committee.

We consider all three of these concepts in a little more detail, because each has somewhat different implications for the governance of the System.

3.20 There are many in the Group who do not favour the first structure because it would clearly lead to an organization based on strong central management, a voting system, and a political body as the ultimate authority. In other words, it would become a typical inter-governmental organization. We are confident that the conversion of the System into this type of organization has very little support.

3.21 The second structure may deserve greater consideration, because it is viewed by some as consistent with the original concept of the System. It clearly implies that Institutions supported initially by the CGIAR would progressively move towards becoming regional intergovernmental organizations with greater funding by developing countries. It would also probably introduce political considerations into the deliberations of Boards and hence lead to the instability of funding that has characterized regional institutions in the developing world. In addition, political considerations would also become more important in the policy decisions of the Group because budgetary decisions would be more closely associated with specific developing regions. The logical system of organization and management would stress the donor nature of the CGIAR and the dominance of developing country representation on the Boards. The donors would exercise the ultimate power of sanction through funding policies. Discussion and negotiation would be between the Group as donors and the Centre Boards as representatives of beneficiary countries.

3.22 The third structure attempts to reflect the spirit of the concept that has evolved within the CGIAR System. It is clear that to regard the Institutions as being capable of responding to the changing needs of the developing countries determined in a predominantly objective manner, is basically attractive to all. The concept also provides the greatest opportunities for professionalism in management and for long-term planning made possible by largely excluding short-term political considerations. Moreoever, it suggests certain types of action on which the institutions should concentrate their effort.

3.23 First, because of the relationship between the activities of Centres and those of national programmes (see paragraphs 4.11 to 4.16), there is a need for Centres to concentrate increasingly on applied and strategic research of relevance to broad agro-ecosystems. Second, it implies a need for the Centres to be viewed as part of an international system with long-term aims, rather than as potential regional institutions. Third, it implies that their Boards should be composed mainly of individuals appointed for their personal, professional ability. This would exclude both

representatives of donors *per se* as well as representatives of governments (except host countries - see paragraph 7.102), inter-governmental and non-governmental organizations.

3.24 The concept also implies that the guiding principles in the overall organization and management of the System should be established by participation and by consensus rather than by formal voting and that there should be no central authority arising by representation, elective office or delegation. The main role of the Co-sponsors in this structure is to continue to help to preserve the international status of the System as a whole. We see the donors as retaining the freedom to give their funds to the System in any way and to any extent that they wish, but bound by recognition of the long-term responsibilities they voluntarily accept in becoming members of the Group.

3.25 This structure, which attempts to capture the spirit of the CGIAR System is basically attractive to donors but imposes some limitations on them. Most donors are involved, outside the System, in bilateral programmes of technical assistance in support of national and regional institutions. Inclusion in the CGIAR System gives wider recognition to an institution. It brings its programmes under the scrutiny of TAC and makes the institution subject to independent review. To a considerable degree, recognition by the CGIAR obviates the need for donors themselves to monitor the effectiveness of the programmes they support and, for some donors, this is clearly an advantage. In our opinion, however, donors should exercise restraint in attempting to use the System to support activities unless they are clearly consistent with the underlying philosophy of the CGIAR. It is therefore important that there should be wide familiarity with the basic concepts that guide both the policies of the System and its operational functions.

Chapter 4. THE PLACE OF THE CGIAR SYSTEM IN THE WORLD PATTERN OF RELATED ACTIVITIES

4.1 The publicity given to the success of the older Centres has been a mixed blessing for the System. It has brought confidence and prestige, but it has also created problems and excessive expectations.

4.2 Because the System is perceived as successful, the Centres are at risk of being used by donors, international organizations, technical assistance agencies and even the developing countries themselves, for activities that they are not well-qualified to perform, for which they were not originally intended and which may divert them from their central mandates. Furthermore, there is constant pressure on centers to demonstrate success. While it behoves all concerned to respond as best they can to the need to demonstrate success, excessive pressure is undesirable in that it can divert the Centres from their proper tasks.

4.3 Excessive expectations are also undesirable in that they can lead to disillusionment. The problems now being tackled by the Centres are much more difficult than those faced initially, and they are being tackled against a smaller background of relevant knowledge. It is practically inevitable that further achievements by the System will be less dramatic. Consequently, everyone involved must develop a longer-term perspective and it is in this context that the specific role of the CGIAR System must be clarified.

Kinds of Research

4.4 Research leading to increases in agricultural production results from the integration of knowledge derived from many sources. The research components can be classified in a variety of ways and various terms have been used. Here, we use the following:

(i) basic research - that designed to generate new understanding (e.g. how the partitioning of assimilates is influenced by plant height),

(ii) strategic research - that designed for the solution of specific research problems (e.g. a technique for detecting dwarfing genes in wheat seedlings),

(iii) applied research - that designed to create new technology (e.g. breeding new varieties of dwarf wheat that can respond to high levels of nitrogen without lodging),

(iv) adaptive research - that designed to adjust technology to the specific needs of a particular set of environmental conditions (e.g. incorporating dwarf wheats into farming systems of the rainfed areas of the Pampean Region of Argentina).

4.5 It is generally agreed that the original purpose of an International Centre was to generate new technology, i.e. to concentrate on applied research. It is clear, however, that the generation of new technology requires an adequate supply of the results of strategic research, which in turn draws on the results of basic research.

4.6 If the correct function of the International Centres is to generate new technology, it follows that each developing country must at least develop its own capacity for adaptive research. It also follows that institutes other than the Centres themselves must supply the results of strategic and basic research. The place of regional research institutions, such as CATIE or ACSAD, in this model would be to substitute for weak national programmes by undertaking adaptive research for a whole region, and to reinforce national programmes by supplying new technology, not provided by the Centres.

4.7 A broad view of the evolution of the CGIAR System suggests that even if this were the original concept of the function of a Centre, it soon became deflected in two ways. First, in order to achieve success, Centres felt obliged to apply some of their resources to adaptive research either because of inadequate national capabilities, or because they could not make effective use of regional organizations. Second, owing to the lack of appropriate results from strategic research, Centres expanded, to a greater or lesser extent, their research capacities for tackling more basic problems. These competing tendencies have implications both for the management of the System and its place in the world pattern.

An Appropriate Role for the CGIAR System

4.8 It is clear that individuals in the developing countries have different perceptions of the functions of the Centres. In general, those from the more-developed countries support the original concept of International Centres as research institutes designed to generate new technology and promote its wide applicaton. At the same time, they recognize that the Centres will probably evolve towards greater involvement in strategic research. On the other hand, a number of representatives from the relatively less-developed countries, as well as those from countries too small to support strong capabilities in research, would like to see the main effort of the Centres directed towards the production of technology more readily applicable to their own conditions. Furthermore, they would like the Centres to develop technical assistance activities in their own countries that could easily over-extend the management capacity of centres and divert them from their main research programmes (see Appendix I).

4.9 It seems probable that the pressures on the Centres to respond to these different needs have led to some of the diversity in the ways in which they operate. But it is clear that they must not allow themselves to be pulled in too many different directions, otherwise their efforts will become too dispersed for significant achievement. In an attempt to resolve this issue further, we analyze four different aspects of it:

(i) the comparative advantage of Centres,

(ii) the relationships of Centres to the developing countries,

(iii) the relationships of Centres to organizations providing technical assistance and to inter-governmental organizations for regional research, and

(iv) the relationships between Centres and institutions involved in strategic and basic research.

Comparative Advantage of Centres

4.10 The existing Centres have invested considerable resources in laboratories and equipment. They have been staffed with well-qualified scientists and been given efficient organizational structures. They are designed to be effective research institutes. (For a fuller discussion of the comparative advantage of Centres, see Chapter 5.) Clearly they were not designed specifically for undertaking work as agencies for technical assistance, which would require a different composition of staff, different facilities allowing greater flexibility, and a different organization. If these were the only considerations, it is clear that the work of Centres should properly be confined to research, and closely related functions.

Relationships of Centres to the Developing Countries

4.11 It is recognized that international research requires long-term funding, must concentrate on well defined problems of high priority and must not be influenced by national policies that are unrelated to global needs. These principles are particularly appropriate for the International Centres, which were inaugurated specifically to help in alleviating problems of world hunger and poverty.

4.12 On the other hand, national policies inevitably affect decisions on programmes of technical assistance and on priorities for research. The sensitivity of government officials in the developing countries to the activities of International Centres in their countries was pointed out to the Study Team by many of their representatives. Our view is that in order to avoid misunderstandings and the criticism by some developing countries that arises from them, the CGIAR System must take these considerations more fully into account.

4.13 In this connection, the special relationship that international Centres enjoy with their host countries can present problems. While cooperating with them, centers must avoid identifying themselves too closely with the specific research problems of their host countries. At the same time, constructive working relations are essential, particularly with respect to the operation of quarantine regulations and other matters of mutual concern. Furthermore, it is particularly important for good relations with the host country that centres strike a reasonable balance between claiming success for their work, and recognizing the contribution made by the host country.

4.14 All developing countries can legitimately claim that they have a right to determine for themselves the degree of control they wish to exercise over off-campus work done by Centres in their own countries. This principle applies not only to technical assistance and adaptive research but also to any activity of a Centre that could have the effect of distorting national priorities. (The Study Team encountered several examples where a country had been requested to assist with experiments on a crop that was within a Centre's mandate, but had been rated as of low priority by the country concerned, in the framework of its own national programme.) With increasing involvement of Centres in national programmes there would be a corresponding increase in the desire of the countries concerned to control that involvement, leading eventually to a desire for country representation both on the Boards and in the Group.

4.15 Our approach to the analysis of problems of the scope and boundaries of Centre activities in relation to national programmes in the developing countries, goes beyond that presented in the 1977 Review, which did not discuss the mechanisms for research co-ordination that are already established in most developing countries. Rather than recommending guidelines for restricting collaboration with national programmes, we conclude that it is more profitable to examine the principles for successful co-operation in order to maximize the benefits both for the Centres and for the national programmes. Centres need to co-operate closely with national programmes in order to develop widely applicable technology, to validate their research findings and to foster the synergistic effects of bringing scientists together to work on common problems. Likewise national programmes can derive the greatest benefits from Centre activities by co-operative association with them. Even where national programmes are very weak, both the Centre and the country can benefit from the association. Because of the wide range of circumstances that exist in the developing countries, great care must be exercised by Centres in working out procedures for operating in individual countries. We consider that mistakes have been made in this respect. It is possible that some individual staff members of Centres have been reluctant to become involved in the official procedures of the country in which they work (research co-ordinating committees, etc.) owing to the fear that they might lose control over the work needed to support their own programmes. From the observations made by the Study Team and the discussions in which they were involved, however, the value of obtaining official support by participation in the appropriate national committee, far outweighs any negative considerations of this type. A good example was provided to the Team by the ILCA programmes in Mali, which are regularly discussed in the appropriate technical committee that functions under the National Committee for Agriculture. The advantages were described to the Team, quite independently, by the Centre and by the Mali representative at the Nairobi Symposium.

4.16 To summarize, the logic of maintaining an organizational structure that excludes country representation is valid only to the extent that the System does not allow itself to assume responsibility for work that could interfere with national priorities. It follows from this that the System must continue to monitor closely its involvement in national programmes and must ensure that its collaborative programmes come under the scrutiny of the appropriate national co-ordinating mechanism.

Relationships with Organizations Providing Technical Assistance and with Inter-governmental Organizations

4.17 In spite of the extent of the contributions of the many international and bilateral organizations involved in technical assistance, there is still a great demand from the developing countries for training and institution building as well as for four other types of service:

(i) advice on research functions and priorities;

(ii) implementation of specific research projects for which the country lacks competence;

(iii) the management of large-scale and complex programmes of agricultural research; and

(iv) long-term financial support.

4.18 Because International Centres depend on national programmes for their ultimate success, the CGIAR has created ISNAR to help strengthen national programmes. The work of ISNAR should help to remove from Centres some of the pressure to become similarly involved, but ISNAR's resources are modest and can be used only to help a limited number of countries whose needs are greatest. Although Centres profit greatly from close association with national programmes, their contribution to technical assistance should be mainly through the natural spin-off from collaborative programmes and by giving expert advice in areas of their own special competence, in ways that complement their main effort.

4.19 There has been considerable discussion of the relationship between International Centres and inter-governmental organizations that are concerned with technical assistance. These discussions have related mainly to the lack of formal and standard procedures for co-operation. Our analysis suggests that the real need for such procedures is not very great. Although Centres should be receptive to requests for scientific collaboration in the development of programmes of technical assistance, there does not seem to be any compelling reason for the development of definitive procedures for co-operation. We do not consider that there are necessarily any shortcomings in existing levels of collaboration, which probably reflect the real opportunities that exist rather than any structural deficiencies in the relationship. Nevertheless, inter-governmental organizations are familiar with the wide range of institutional arrangements for coordinating research activities at the international and national levels, and Centers should continue to explore the extent to which such organizations might be able to help in developing off-campus activities, and to relieve them of some of the administrative load of work of developing off-campus activities.

4.20 Most of the above considerations also apply to the relationships of Centres to bilateral and multilateral donors and programmes sponsored by them. Centres must exercise careful scrutiny of the arrangements they make for such programmes in order to avoid being visualized as executive agencies for such donors, or being diverted from their main responsibilities as specified in their mandates. For these reasons, and because of the implications

of special projects for the overall management of Centres (see Chapter 9), such arrangements should only be considered when they clearly are consistent with the mandate of the Centre.

4.21 In their relations with those inter-governmental research institutions that are mainly concerned with a regional mandate (e.g. CATIE) there would appear to be possibilities for Centres to contribute to adaptive research in ways that would free them from the constraints discussed above (paragraphs 4.12 to 4.14). Centers should, therefore, continue to explore avenues of cooperation that might be developed from closer relationships with such organizations.

Relationships with Institutions involved in Strategic and Basic Research

4.22 In the past, the International Centres have depended largely on the industrialized world for the basic knowledge required in the development of their programmes. Because of the large amounts of relevant knowledge available on commodities such as wheat and rice, it has not been necessary to build strong relationships between the Centres and advanced institutions involved in more basic research. Centres have been able to rely largely on the informal associations that arise through professional contacts among scientists.

4.23 As the System has widened its activities, however, it has become increasingly evident that there is a need to monitor, in a more systematic manner, the results of basic research that might be relevant to the mandates of the Centres, and to examine where deficiencies in the availability of knowledge are most likely to occur.

4.24 These new circumstances have arisen mainly because strategic research in the industrialized countries tends to be concentrated on those commodities that are important for their own economies. Consequently, the supply of new ideas and techniques specifically related to commodities such as tropical root crops, for example, could become a limiting factor in breaking important barriers to increased food production in the developing countries. Moreover, the need for expanded effort in basic and strategic research, to develop entirely new approaches to biological problems, is just as relevant in relation to problems facing the developing world as it is to those facing the industrialized countries.

4.25 There is an urgent need for cheap agricultural inputs in the developing countries, and it is essential to exploit any new opportunities that arise as quickly as possible. For example, it would appear that the scope for fixation of atmospheric nitrogen through the action of micro-organisms may be greater in the tropics than in temperate regions. It is, therefore, necessary for the System not only to keep in touch with developments in this area but also to encourage research workers in advanced national institutions to widen the scope of their work to include appropriate aspects of problems peculiar to low-income countries of the tropics. In later sections of this paper we shall develop these ideas further, both in relation to the extent that Centres themselves should become involved in strategic

research and the extent to which it might be possible to develop a wider network of research activities for the benefit of food production throughout the world.

4.26 To summarize, this analysis of the place of the System in the world pattern of related activities shows very clearly that its focus is, and should remain, on research. By this we do not mean research that is circumscribed within the narrow confines of the Centre campus, but research activities that cover a much wider field. First, the CGIAR Institutions must continue to work with national institutions to help in training technical personnel and to collaborate in the development of new technology, knowledge and ideas. Second, they must continue to make a contribution to technical assistance both through collaborative programmes and by co-operating with those organizations that have a special function in this area. Third, they should continue to strengthen their ties with the international scientific community, not only to maintain the impetus of their own programmes, but also to help in raising enthusiasm to channel more scientific help from advanced institutions into those problems that are specific to the needs of increasing agricultural production in the developing countries. If the System maintains and strengthens these complex inter-relationships, we are confident that it will remain strong, non-political and truly international.

Chapter 5. PRINCIPLES FOR THE INCLUSION OF ACTIVITIES IN THE SYSTEM

Approaches to Research

5.1 National programmes of agricultural research in developing countries are unavoidably diffuse. There is a wide range of problems to be solved and often great scarcity of manpower and resources with which to tackle them. Very few developing countries can afford to assemble specialized teams of research workers and provide them with the facilities to concentrate their resources on sharply focussed problems. The advantage of the International Centres is that they can concentrate their effort and, if they are to complement and reinforce national programmes, it is clearly important that they should.

5.2 We have already shown (Chapter 4) that the way in which most of the existing Centres have concentrated their resources makes them better fitted for applied and strategic research, than for adaptive research and technical assistance. We must now discuss the ways in which that comparative advantage can best be used.

5.3 There are broadly three ways in which international effort in agricultural research might be concentrated: on a particular commodity, on a particular limiting factor or on a particular agro-ecological region.

5.4 The first Centre to be created (IRRI) concentrated its effort on a single commodity (rice) within a narrowly-defined, agro-ecosystem. The work on wheat that was developed by CIMMYT from the Rockefeller programme in Mexico was also initially concerned with a single agro-ecosystem. Agronomic improvement of both crops was limited by the types of variety traditionally grown. Tall varieties not only have unfavourable grain to straw ratios, but also tend to lodge, causing loss of yield and difficulties with harvest. It was the development of short-strawed varieties that enabled improved packages of technology to be devised and transferred to farmers' fields.

5.5 Both the rice and wheat programmes could draw on an existing background of relevant knowledge. In both crops, dwarfing genes were available and had already been exploited in other countries. Moreover, it was relatively easy to assign very high priority to the two commodities concerned. They were both in short supply; they were urgently needed to alleviate hunger, and the development of new technology for increased production gave an impressive start to the work of International Centres. The only controversy that arose, and perhaps was not fully foreseen, was concerned with the impact of the new technologies in relation to the socio-economic structures of the countries that adopted them (see Chapter 1).

5.6 It is clear that it was part of the Hill-Harrar philosophy (Chapter 3) that it would be desirable to build up a global network of International Centres fulfilling roles similar to those of IRRI and CIMMYT, but contributing to the solution of other aspects of the world food problem. Clearly other urgent problems existed, but few could be defined as sharply as those

of rice and wheat. It has been suggested that each new Centre was instituted in response to a perceived urgent need, rather than in relation to a systematic, global plan of action. Indeed, the original statement of objectives implied that the Group should concentrate on filling gaps in areas of research that were not being adequately covered by other organizations. We can relate these concepts first to the historical development of the International Centres and other CGIAR Institutions, and then to what might be expected from a global strategy.

Historical Development of the Institutions

5.7 After IRRI and CIMMYT had been founded on narrowly-defined commodity approaches, subsequent Institutions had a range of different types of mandate. The next two, CIAT and IITA, had mandates based on broad agro-ecological considerations, as did ICRISAT and ILCA which were founded later; but CIP was cast in the original mould of a narrow commodity focus. Of the more recent Institutions, ILRAD, IBPGR and IFPRI have factor approaches, WARDA has a regional (geographical) approach and ICARDA an agro-ecological approach while ILRAD, IBPGR, IFPRI and ISNAR have been designed to fulfil rather different, though equally necessary functions.

5.8 We next ask: is there a pattern or underlying philosophy in this historical development? If so, was it just filling gaps? If not, could there have been a more integrated policy? Should there be one in the future?

5.9 During the Study Team's interviews and discussions it was frequently suggested that there were anomalies among the "commodity approach", the "agro-ecological approach" and the "regional approach". The Team was also asked to clarify the issue of research on common "factors" in relation both to the other approaches (mentioned above) as well as to the "multi-disciplinary" approach. In attempting to analyze these different approaches we shall show that some of the perceived "anomalies" are not anomalies at all, but arise as a natural consequence of the problems being tackled.

5.10 Part of the difficulty in analyzing the various approaches to agricultural research arises because, conceptually, it is possible to separate productivity into a series of components. With crop improvement, for example, we can distinguish a genetic and an environmental component. This conceptual separation is very useful in the development of methodology, but when applied to the practical task of increasing the productivity of crops or livestock, it can lead to confusion. To increase the genetic potential of a cow to produce more milk is of no value unless it has access to more water, more nutrients and is protected from diseases. To improve the genetic potential of pearl millet for increased yield is of no benefit if the crop is sown too late in the season to make use of available water and nutrients, or if soil management is so poor that most of the rainfall runs off the surface. Nonetheless, in agricultural development it has often been genetic improvement that has paved the way for technical change. The packages of technology that both IRRI and CYMMIT have developed have been built around the new short-strawed varieties, and there are many other similar examples in world agriculture where genetic improvement has been the main factor leading to the transfer of new technology for increased production.

5.11 We have noted before (paragraph 4.2 & 4.3) how the successes of IRRI and CIMMYT created pressures and problems in the System. Another example of a similar phenomenon is the fact that it is often stated that IRRI and CIMMYT have been successful because the packages of technology they have developed have been built around new crop varieties. Indeed some people interviewed by the Study Team had reservations about the relatively new agro-ecological approaches with their emphasis on farming systems, whether concerned primarily with crops or with animals. Their suggestion was that the System should devote its main effort to the exploitation of genetic resources in which the Centres are seen to have built up special competence. We must look at this suggestion in some detail.

Commodity versus Factor Research

5.12 The discussion on whether research stations should be focussed on a single commodity or on a single common factor, such as genetic resources, has arisen in many countries, both developed and developing, during the last half century. Research stations based on a single commodity have been tried, but many have changed their roles in response to various needs and pressures and widened their scope to include other commodities. Similarly, single factor research stations have been started both in the public and private sectors, but most have rapidly widened their scope into a range of related factors. A plant breeding institute can only remain strictly a plant breeding institute if it has easy access to all the knowledge of the other factors needed to breed a new variety that leads to increased production in the particular farming system for which it is intended. It is not unusual for a plant breeding institute to evolve in the direction of becoming a multi-disciplinary institute covering those extra disciplines to which it has no immediate access. While we understand the reasons that have led to the suggestion that the System should concentrate on the exploitation of genetic resources, we are sure that there is not, at the present time, adequate knowledge in the developing countries on the other factors of crop production that would be essential for a limited approach of this type to be effective.

5.13 We think that to identify the successes of IRRI and CIMMYT primarily with genetic improvement is misleading. A more generally applicable inference would be that IRRI and CIMMYT have been successful only because they correctly identified the most important limiting factors to increased productivity in rice and wheat respectively, and concentrated their resources accordingly.

5.14 Turning, for the moment, to those vast areas of the developing world that depend on rainfall for the growth of crops and forage, it is clear that productive research on crop or livestock production can be done only in the context of all the genetic and environmental factors that impinge on productivity. The factors limiting agricultural production in these areas are extremely complex and research programmes cannot be narrowly focussed if they are to make a worthwhile contribution. Progress has to be based on research that is truly multi-disciplinary (i.e. it includes both the natural and social sciences), involves itself with farming systems and relates to the agricultural potential of a particular agro-ecological region.

The Global Pattern

5.15 Against this general background, we now look at the global pattern of agricultural productivity as it relates to developing countries. The dominant factor affecting the establishment and growth of vegetation, on which all agricultural production depends, is the climate. Within the broad climatic regions of the world, all of the complex interacting factors of the environment that determine plant growth are integrated in the type of climax vegetation or ecosystem that can be supported. Thus, if we consider the four broad climatic zones of the tropics - humid, semi-humid, semi-arid and arid - we can visualize a sequence of corresponding ecosystems; from tropical rain-forest, through various kinds of woodland and shrubland to barren lands and deserts. Just as we can think of a sequence of natural ecosystems, so we can visualize a sequence of man-made agro-ecosystems; from tropical tree crops to arid rangelands, that integrate both the natural and man-made components of productivity. Within each broad agro-ecosystem, there is a multiplicity of more specialized farming systems which integrate not only the physical and biological components of the environment but the economic and sociological components as well.

5.16 Components of the multi-dimensional matrix to which these concepts give rise have been analyzed in detail in the TAC priorities paper. 1/ Here, we attempt to simplify the picture, in order to examine the distribution of effort of the Centres on a broad agro-ecological basis.

5.17 In the tropics, climatic zones, defined by the water balance, are further modified by altitude, so that we can recognize a further group of production systems within the cooler climatic zone of the "tropical highlands". The most significant man-made modification to the environment is imposed by his control of water for irrigation. Crop productivity in arid zones is entirely determined by irrigation. "Wet rice" cultivation is so extensive and important that we may regard it as an agro-ecosystem or agro-ecological zone in its own right. In the sub-tropics, temperature, in addition to water, becomes an important determinant of agricultural productivity. Those sub-tropical regions that are characterized by mild, wet winters and hot, dry summers are often referred to as "Mediterranean", although they are by no means confined geographically to the Mediterranean region.

5.18 Taking this very broad, and inevitably over-simplified, grouping of agro-ecological zones that are vitally important for agricultural production in the developing countries it is clear that there is now at least one International Centre dealing with the problems of each, not only with respect to crop production but also to the development of livestock and their products. This is not to imply, however, that the work of the System impinges on all the major commodities or production systems within each broad agro-ecological zone. It is neither possible nor desirable that it should. Nevertheless, there is already in place a sound framework from which the Centers radiate outwards in support of national programmes, which ultimately must adapt the Centre's findings to the needs of their own particular farming systems.

1/ TAC Review of Priorities for International Support to Agricultural Research, TAC Secretariat, March 1979.

Other Institutions supported by the CGIAR

5.19 We next consider the other four Institutions supported by the CGIAR: IBPGR, IFPRI, ILRAD and ISNAR, all of which have been created to support the work of the System in some more specialized way.

5.20 If one point of unanimity existed among all whom the Study Team interviewed, it was that the IBPGR performs a truly international task. It gives essential support not only to the CGIAR System, but also to many other agricultural research organizations in both the developed and developing countries.

5.21 The inclusion of IFPRI in the System is related to the better understanding that has evolved in recent years of the interdependence between technical changes in agriculture and socio-economic processes. These relationships are not limited to the existence of micro-economic barriers to the adoption of technology, but are concerned also with phenomena at the national and international levels. National food policies are influenced by changes in the patterns of world production, for example those caused by the energy crisis, as well as by such factors as the modernization of agricultural production.

5.22 These phenomena have an important bearing on priorities for research in the System and in individual Centres, particularly with respect to the types and quantities of inputs that farmers could use, and modifications that would be possible to farming systems. The relative importance of different commodities in a given agro-ecosystem may also change (as, for example, when maize becomes preferred to millet). Furthermore, it is necessary to understand not only the behaviour of farmers, but also those of policy-makers themselves as determinants of technical change.

5.23 Many of these problems are common to more than one Centre and there is a need for them to be analyzed from an international perspective. IFPRI was brought into the System to fulfil this function. It is well-suited to collaborate with the Centres by reinforcing the work they do on specific commodities and on particular agro-ecosystems and, in this connection, it is important that meetings and collaboration between IFPRI staff and economists at other CGIAR Institutions should be promoted.

5.24 ILRAD was established to develop methods of controlling trypanosomiasis and theileriosis. These two animal diseases are important in about 50 developing countries in Africa, South and Central America, the Middle East, the Indian sub-continent, and even China, Korea and Okinawa. They virtually exclude bovine animals from large areas of forested land in Africa, placing severe restrictions on land use and agricultural development in those areas.

5.25 Ruminant animals constitute the only means of converting the sparse vegetation of enormous areas of rangelands and steppes into human food. They

also allow the productive use of crop residues, provide manure as fuel or fertilizer for vast numbers of resource-poor farmers and also provide draft animals so crucial for many farming systems. To control the vectors of animal diseases is complicated and costly. Consequently, ILRAD is concentrating mainly on the development of immunological techniques which, if successful, could have an enormous impact both on livestock production and on the use of unproductive land.

5.26 ILRAD's work provides an example of strategic research at an effective level on an important factor of a problem that could not easily have been contracted to an existing institution. Owing to the vital role of livestock to the well-being of so many of the world's resource-poor farmers, nomadic people and transhumance societies, the development of this factor orientated research institution is entirely consistent with the purpose and aims of the CGIAR. Nevertheless in the context of the multi-disciplinary approach that we advocate, we clearly see a case for strengthening cooperation among ILRAD, ILCA and other institutions leading to the development of integrated programmes. For example, a comprehensive research programme for the control of Trypanosomiasis would extend well beyond the direct concerns of ILRAD and ILCA and would involve work on vaccines, the tsetse fly and Trypanotolerant animals. It would also require the integration of any new technology derived from these approaches into a range of livestock production systems.

5.27 The newest CGIAR Institution, ISNAR, has been created specifically to assist in strengthening national capabilities in agricultural research. It has a major role which complements the work of the other Institutions and is an essential part of the System.

ACTIVITIES TO BE SUPPORTED BY THE SYSTEM

5.28 We have now seen that there is a broad pattern within which the existing institutions are already operating. Next we must examine how the International Centres might maintain the necessary concentration of resources and continue to contribute significantly to increased food production, in a manner that is largely complementary to national programmes.

Food versus Non-food Commodities

5.29 During its extensive sampling of opinions, both among donors and in the developing countries, the Study Team found no disagreement with the principle that the CGIAR System should concentrate its effort on food commodities and other elements of farming systems necessary to increase food production, having due regard to equity in the distribution of income and to problems of nutrition. This altruistic purpose of the CGIAR is well-understood and universally supported. Even though there is an urgent need to support research on some industrial crops, such as cotton, that are vitally important for increasing the income of the resource-poor farmer, the consensus is that such work should be done outside the framework of the CGIAR. There is a general desire to keep the aims of the CGIAR free from the complications of

national policies that have so often tended to frustrate international initiatives aimed at supporting industrial crops. The Study Team noted, however, that three exceptions are commonly made to the general principle of supporting research on food production, with which the Committee agrees. They are:

(i) that the IBPGR should continue to work in a wider context than that of food crops alone,

(ii) that non-food crops should feature in work on farming systems, but only to the extent that appropriate technology in these crops is available from sources outside the System (e.g. national programmes or regional institutes.) and

(iii) that the work of ISNAR should take into account the total needs of strengthening the agricultural research capabilities of developing countries.

Commodities, Factors and the Multi-Disciplinary Approach

5.30 We suggest that no further commodities should be added to the activities currently supported by the Group until TAC is satisfied that all the present ones are adequately supported, or until such time as work on some of the present commodities can be phased out. We consider it essential that efforts should be concentrated on a multi-disciplinary approach and confined to work of high priority.

5.31 In the approach to research on crop production we see a continuing need for strong programmes in genetic resources but in the context of farming systems and with adequate support in the physical, biological and social sciences. We regard continued emphasis on genetic resources to be appropriate for several reasons. The Centres have clearly built up a comparative advantage in this area, new varieties still represent the most easily transferable technology at the farmer level; there is still great scope for both raising and stabilizing levels of production, through plants with more productive structures (improved harvest index), with greater resistance to hazards (pests, diseases, drought, etc.), that can more effectively benefit from improved agronomy, and that can exploit natural supplies of nitrogen through biological fixation. All of these aspects of plant breeding are important for improving the productivity of the resource-poor farmer.

5.32 In general, we consider that applied research on the common factors limiting crop production should be built up within the context of the commodity approach. For example, the overriding importance of soil-water relations in tropical environments is well known and Centres have already identified limiting factors in this general area. Many of their programmes relate to the need to manipulate the environment, either to make better use of water (e.g. the ICRISAT programme on small water-sheds) or to alleviate the harmful effects of too much water (e.g. IITA programme on minimum

tillage). Programmes of this type are essential as part of a multi-disciplinary approach to increasing crop productivity in rainfed agriculture and we entirely support them. We recognize that results of individual projects in such multi-disciplinary approaches will be directly applicable only to limited areas. Nevertheless, the principles and methodology are transferable. The package of technology is also transferable when adjusted to the specific needs of local environments through adaptive research by national programmes. The fact that the results will need more adaptive research in some localities than in others, though inevitable, should not cause the Centres to draw back from becoming involved in such factor research as is needed to support their crop improvement and farming systems programmes. It is in this general context that we see the great potential for developing collaborative networks with national programmes (paragraph 4.15) to help in the development of appropriate adaptive research.

5.33 We would see the requirements for strategic research on the common factors of production being built up partly within the multi-disciplinary approach to Centre programmes but mainly through collaborative and contractual arrangements with other institutions. The work of IRRI with IFDC on fertilizers for rice, and the CIAT programmes with TPI on post-harvest losses in cassava, provide good examples. We consider that the requirements for strategic research on common factors of production should be met in these ways whenever possible. We do not consider that the CGIAR should create new International Centres that focus on a single common factor of productivity, unless there is no other way of doing the work.

5.34 We would see more resources being made available for strengthening current research programmes through a gradual and selective withdrawal from programmes of lower priority. Moreover, we would see a continuing need to keep under review the present range of commodities with a view to reducing work on some of them as the relevant national programmes become stronger, so that other activities or commodities of higher priority could be added when appropriate. This has been, and clearly should remain, a function of the programme reviews mounted by TAC. We also recognize that the determination of priorities is a dynamic process, with the need for reassessment occurring more frequently than is sometimes predicted (the effect of the energy crisis, for example). We note that TAC has adopted a principle of continuous review of priorities, in response to this need. This policy of TAC has occasionally been questioned, but it is essential that TAC should maintain an awareness of changing needs and adjust its assessment of priorities accordingly.

New Activities

5.35 We have seen (Chapter 3) that the Centres were created in order to concentrate resources. In its priorities paper, TAC has re-emphasized this principle and has contrasted it with the operation of many national programmes which, as a result of internal political pressures, became dispersed too widely to be effective. Just as national research workers must resist this dilution of their programmes by these types of pressures, so the CGIAR must restrain the enthusiasm of its members to tackle every new proposal that catches their imagination.

5.36 Criteria for establishing priorities in international agricultural research have been analyzed by TAC. This chapter seeks to present in synoptic form, the principles that TAC has already enunciated in detail. TAC has listed a range of new activities and expanded programmes that could be taken on by the CGIAR, with the aims of increasing total food supply and of benefitting the most disadvantaged sections of the world community. Only the Group can decide what it wants to support and the scale of the funding it is prepared to provide; but there must be collective enthusiasm for any new undertaking.

5.37 The principle has been, and must surely remain, to support those activities that will benefit the greatest number in the most equitable manner. The most important food commodities are already being tackled. Nutrition and equity are already emphasized in the programmes. Other commodities are of lesser importance. Many of the so-called common factors of production are common only by name; they are very specific by nature. What then should be added next?

5.38 In spite of the implications of these assertions, there are still several aspects of tropical agriculture, vitally important to the developing countries, which meet the criteria outlined above and which the System is not yet tackling in a concentrated manner. Three of them are water management (in the broad sense), mechanization and the problems of energy. All of these aspects of productivity could be built into the existing framework of multi-disciplinary programmes and serve to strengthen rather than to dilute, them.

5.39 Water Management. Of the three, we strongly support greater effort in water management, particularly problems in the management of irrigation water, which TAC has already accorded high priority. The reasons for this high priority are well known and the details are given in the Priorities Paper. Reservations about more work on water management have concerned both the mechanisms for doing it and the location-specific nature of most of this type of work. We comment on mechanisms in Chapter 6.

5.40 Location-specificity, in some of its work, is a problem that the System already faces, and will face to an increasing extent as the problems become more complex. Indeed, in spite of claims to the contrary, very little work in agricultural research in the tropics does not have a location-specific component. As we have already seen, even though the technology may be location specific, elements of it will not be, nor will the principles of devising it. Adaptive research would be necessary at numerous other locations but, with the philosophy of collaboration, would be possible, and would not necessarily imply long delays in the wider application of the technology. Consequently, we recommend that the Group take active steps to initiate a new activity in water management.

5.41 Energy. Concerning problems of energy, we recognize the importance of all aspects of the energy crisis that impinge on agriculture in the developing countries, but we do not think that there is any specific aspect of energy per se that would be an appropriate activity for the CGIAR

System. In making a case for strengthening the multi-disciplinary approach to commodity research we have problems related to energy clearly in mind. (Genetic resistance to pests instead of using insecticides, more work related to the fixation of atmospheric nitrogen by naturally occuring micro-organisms, work on minimum tillage, etc.). As far as energy in the sense of traction power is concerned, the ILCA work on using cows instead of oxen is an excellent example of an innovation in this general area. Although the question of research on biomass for the production of alcohol and related products has been mentioned, we see this in the general context of non-food crops, as not being appropriate for the CGIAR.

5.42 Mechanization. As far as mechanization is concerned, we believe that Centres should continue to use in their programmes implements that are appropriate for wide adoption. They should be alert to developments in new machinery (for example, the recent importation by IRRI of small machines from China), but we do not see a place for major programmes in research and development of new machines within the System. In this we concur with the argument that, historically, the need for the development of new machinery has generally been met by manufacturers. When economic circumstances are favourable for the use of small machines, the inventiveness of a whole range of manufacturers, from the village blacksmith to the multinational corporation, is mobilized to respond to the farmer's needs by supplying appropriate machines at competitive prices. We suggest, therefore, that further work on mechanization by the System should be limited to testing new implements and machinery, including proto-types, in programmes on farming systems and crop improvement. The development of appropriate machinery should be undertaken primarily in cooperation with manufacturers.

TRAINING

5.43 From its inception, the CGIAR has attached great importance to training as a direct and effective way of strengthening national research capabilities. Currently, about 10% of total resources are devoted directly to training, and this figure takes no account of the numerous indirect contributions to training that arise from collaborative activities with the developing countries.

Training for Higher Degrees

5.44 The Study Team's discussions with government officials in developing countries on the role of Centres in strengthening national programmes, invariably led to their commenting on the need for greater training facilities for scientists and scientific leaders. They strongly supported the role of Centres in training, but wanted greater concentration on training research scientists rather than support staff and production specialists.

5.45 These comments are entirely consistent with our own perceptions of the general need for research leadership in many developing countries. This issue is one on which the System must have a clear policy, particularly

with respect to the role of ISNAR in helping to strengthen national programmes and to the precise role that it is reasonable and possible to expect from Centres. Clearly the need for research scientists and leaders exists on such a scale that the total contribution from Centres could only meet a small part of it.

5.46 Unfortunately the donor community, which supported training at the post-graduate level strongly during the 1960s and early 1970s, has markedly reduced its support during the last decade. Programmes for strengthening universities in developing countries have been reduced. Moreover, funding for higher-degree training in both the developing and industrialized countries has also been reduced.

5.47 It is clear that this issue extends well beyond the boundaries of work supported by the CGIAR, but it is producing pressures on the CGIAR Institutions to which they can only respond in a limited and variable manner. Nonetheless Centres are already making important contributions towards training research scientists and the question arises of whether more could be done, without putting too great a strain on their research capacities.

5.48 The extent to which CGIAR Institutions can contribute to a solution of this problem varies considerably. Some, such as IRRI, which collaborates with the University of the Philippines and CIP, which has a similar arrangement with the Universidad Agraria in Peru, can accommodate in their programmes more research students than those Institutions that are not situated close enough to a university for such collaborative arrangements to be workable. The Study Team was told that difficulties may arise even with the IRRI programme, when the number of students from the Philippines builds up to the extent that the University will less readily accept students from other countries.

In-service Training of Research Scientists

5.49 The second need is for research scientists in developing countries to acquire knowledge on new research methodology and specialized techniques, that are not available from institutions in their own countries. In this general area of training the CGIAR institutions have a clear advantage over most other institutions in the developing countries. This type of training requires a close working association between the trainee and staff members of the institution. There is consequently a severe limit on the number of such trainees that can be absorbed effectively at any given time.

5.50 If institutions strive to increase their involvement in this type of training, they face two problems. One relates to the extent that it is possible for a research worker to become involved in a training function without detracting significantly from his own research programme. The other is that there are very limited possibilities of substituting training personnel for the research worker in this particular function.

5.51 There is no doubt that all CGIAR institutions have an important role to play in assisting research scientists from developing countries to

keep in touch with new methodology. Equally there are considerable benefits to be derived from encouraging such scientists to participate in the work of the Institutions. There are problems both of communicating the possibilities and of explaining the limitations to the governments of developing countries. We suggest that two things need to be done:

(i) All CGIAR Institutions should continually review the number of in-service scientists that they can accommodate in their programmes.

(ii) The basis of in-service training in the System should be described in publications issued by the CGIAR, in which both the opportunities that exist and the limitations to numbers should be explained.

Training in Production Technology

5.52 The International Centres have, from the outset, maintained strong courses in the techniques of plant breeding and field experimentation, as well as in production technology. These courses vary among Centres and the trainees come from widely different backgrounds of experience and education. There is a big demand for this type of training. The only complaints the Study Team heard were mainly from countries in Africa. These complaints did not so much represent criticism of the courses as the fact that the trainees did not acquire a paper qualification. Consequently they could receive no official recognition, in the form of promotion or increased salary, for having attended a training course at a Centre. This is another topic that could perhaps be more fully explained in the appropriate literature.

5.53 Although there continues to be a great demand for these courses, we do not think that Centres should necessarily expand them. With some exceptions, such as in special programmes concerning methodology in work on farming systems, the Centres will not, in the long run, have a comparative advantage in this type of training. Primarily it is an area of training in which expanded capacity is needed in national and regional institutions, rather than at International Centres. If this comes about, perhaps encouraged by donors through technical assistance, there would be a case for Centres to withdraw gradually from training technologists. It might then be possible for greater resources to be made available for training research scientists which, in the future, will probably represent the greatest need.

Future Development of Training

5.54 As we have already implied, the term "training" in the System covers a range of activities. Our view is that although the Institutions are already making extremely valuable contributions to training young scientists, support staff and technologists, through thesis work and structured courses, even greater effort should be devoted to training, particularly to the in-service training of scientists with the potential to become research leaders and research managers.

5.55 Furthermore, owing to the scale on which training is needed, all trainees should, as far as possible, be drawn from among those who will themselves contribute to further training on return to their home countries. As much emphasis as possible should be placed on this principle of "training trainers" in order to capitalize on the potential multiplier effects. Where practicable, consideration should also be given to decentralizing some of the training courses in order to help with the language problems and to train a nucleus of staff simultaneously in one country or institution.

5.56 The greatest contribution the Institutions can make to the future manpower requirements of the developing countries is to provide training in research leadership and research management. In this respect, ISNAR should consider ways in which institutions additional to those supported by the CGIAR could assist. It is only through training in leadership, and training trainers, that the CGIAR Institutions can make significant contributions to the enormous manpower shortage that currently exists in many developing countries.

5.57 Because this subject of training is so important, we recommend that TAC should develop its studies of training to include the factors that limit the capacity of the System as a whole to contribute effectively to training trainers, research leaders and research managers. These studies should include not only those factors related to the physical and human resources at the Institutions, but also the budgetary implications. In this connection we note with concern that some Institutions have reduced their training programmes in response to financial stringency. Further studies by TAC should also examine the special needs for training women as scientists, both as potential members of staff for the Institutions and as future research leaders in the developing countries.

Chapter 6. MODES OF OPERATION WITHIN THE SYSTEM

6.1 In Chapter 5 we discussed the problems of raising the levels of agricultural production in the complex agro-ecosystems of the developing world. The problems are particularly difficult in rainfed areas, especially in the semi-arid tropics where crops and livestock are frequently subjected to stress. We mentioned the need at Centres for appropriate combinations of factor and commodity research at the strategic and applied levels. We also noted that collaborative research networks offer interesting possibilities for having a "multiplier effect" on the efforts of Centres, by contributing significantly to the requirements of research. In this section, we develop this theme in relation to modes of operation that the System might adopt in the future. We also discuss ways in which the world supply of knowledge from the results of basic and strategic research might be harnessed in support of the System.

Centres

6.2 The initial model of the International Centre involved a "critical mass" of scientists concentrating their effort on a single commodity and based at a headquarters unit requiring substantial investment in physical plant. All of the commodity Centres basically followed the original model, although with substantial variations. CIP, for example, kept its headquarters relatively small and organized several of its programmes in association with national research stations.

6.3 At first, most of the Centres concentrated their research effort at their headquarters. Links were built with national programmes through testing networks, training courses and information services. Progressively, some core research was established at other locations in order to expand the ecological basis for breeding programmes and for wider validation of the results obtained at the Centres. In recent years the System has seen major increases in outposted staff working closely with staff of national programmes, in core programmes and in technical assistance projects. Although concentration of physical plant and staff at each headquarters remains the basis of the Centre model, the operation of the research programmes has moved significantly in the direction of regional activities and closer association with national programmes.

6.4 The Study Team found general agreement that this model has been effective in providing excellent facilities for the high quality research that has established the reputation of the System. An important advantage of the model is that it allows close control of the scientists, facilities, equipment and supplies so necessary for the most efficient functioning of a research system, and for the other activities in which Centres are involved.

6.5 There was wide support for the Centre model as the basic framework for the CGIAR System in the future. At the same time many felt that the number of CGIAR Centres should not be increased substantially, and

indicated that they would be concerned if the policy of adding new Centres were continued as the primary means for adding new activities. One cause of this concern was that the large physical plant of a Centre automatically dictates a very large component of fixed costs in the budget. Consequently, in times of budget stringency, it is mainly the operational activities of the Centre that are likely to suffer. Another cause for concern was that the large physical plant at Centre headquarters lends a degree of permanence to research that is not in full harmony with the underlying concept of flexibility and the ability to respond to changing needs that has characterized the CGIAR System in the past.

6.6 We conclude that the standard Centre model has been a successful one and provides a firm foundation for future research and training programmes of the System. At the same time we conclude that new Centres on the original model should be added only after careful consideration of other possibilities. This is not to say that the basic concept of the Centre is no longer supported, but that variations of the basic concept should be kept in mind when planning new activities. We suggest that, even though some have questioned its general applicability, the model of CIP in which a large proportion of the core programme is conducted in collaboration with national programmes, is one that deserves careful consideration. The advantages of this type of model, and variations of it, are that it holds down capital and operating costs, maintains flexibility for adjusting the balance and location of programmes, and automatically provides a mechanism for building strong links with national programmes. We also conclude that the present Centres, with their excellent central facilities, provide a basis for expansion of activities in the System, if the concept of collaborative research networks is developed. We discuss this concept later.

6.7 It was suggested to the Study Team that the Group should exert greater influence on the growth of physical facilities in the System, both in relation to new Centres and to additional facilities at existing ones. Part of the argument is that extra facilities, even though they may be funded through special projects, nevertheless serve to increase future operating and maintenance costs to be funded from core budgets. There is strong support for strengthening current mechanisms whereby prior approval is obtained from the CGIAR for such additions, as well as for greater scrutiny of large items of plant funded from core budgets. These are issues that, in future, should be monitored by the proposed Budget Review Committee (paragraph 7.78).

Co-operation among Centres

6.8 In Chapter 3 we discussed the concept of a system of Institutions that has integrated aims. If indeed this is to be the future evolutionary direction of the System, there will be increasing interaction among Centres at the programme level. Accordingly, the Group through TAC might wish to give increasing emphasis to assessing new plans and reviewing existing programmes in a holistic manner, across all participants in a manner that has been started through the process of "stripe" analysis. It would follow that it would be necessary to ensure that there were adequate mechanisms for effective co-ordination of each commodity programme in the System as a whole, in a way that would be consistent with the autonomy of individual Institutions.

6.9 The mechanisms currently in use for programme integration across Centers fall generally into three categories. One arrangement is exemplified by research on cassava by CIAT and IITA, where the two Centres have reached an understanding on the division of their activities. Such an arrangement clarifies responsibilities, but requires a separate mechanism for co-ordination. It calls for the Centres involved to decide which Centre should take the lead in arranging joint sessions to exchange experiences and discuss future plans. In such circumstances the lead would logically fall to the Centre with the world mandate for the commodity.

6.10 The arrangement between IRRI and CIAT for rice research illustrates another model. Each Centre has its own programme and staff and, in addition, an IRRI staff member is outposted to CIAT in a liaison capacity to provide a bridge between the programmes of the two Centres. This builds in a substantial degree of informal co-ordination of the programmes.

6.11 The third model is illustrated by the ICRISAT arrangements with CIMMYT and ICARDA. An ICRISAT scientist is located at CIMMYT to operate a sorghum programme. CIMMYT provides the facilities but the activities are an integral part of the ICRISAT programme. This arrangement leads easily to full co-ordination of the sorghum programme between two Centres and allows the scientist easy access to assistance from his own headquarters. Here CIMMYT is, in effect, providing a sub-station for ICRISAT. A similar arrangement operates in the ICRISAT and ICARDA chickpea programmes where ICRISAT staff are located at ICARDA to participate in the programme. These arrangements provide not only an operational mechanism to do the research, but also a mechanism for programme co-ordination across Centres.

6.12 The choice of mechanisms and arrangements across Centres is the responsibility for the Centres and their Boards. Nevertheless, the CGIAR presumably would wish to encourage the Centres continually to refine their mechanisms for harmonizing activities in each commodity in order to maximize the use of resources. The First Review Committee recommended that formal agreements should be made when Centres establish co-operative arrangements and that copies should be filed with the CGIAR Secretariat in order to be available to donors. We support this recommendation but note that no agreement has, in fact, been filed with the Secretariat. This failure to implement a generally desirable recommendation illustrates a problem of the System to which we have already referred (Chapter 2). We therefore suggest that TAC, which has been active in promoting such written agreements, should specifically include scrutiny of these arrangements in the terms of reference of the appropriate external reviews (see paragraph 7.47).

National Programmes, Collaborative Programmes and Networks

6.13 We suggested earlier that Centres need to co-operate closely with national programmes in order to develop widely applicable technology, to validate their research findings and to foster the synergistic effects of bringing scientists together to work on common problems. We also suggested that collaborative research programmes and networks would appear to be ways of increasing the extent of research programmes without corresponding increases in costs. Greater involvement of national research establishments is a natural and desirable consequence of this approach.

6.14 With the increasing involvement of Centres in co-operative networks there will be an increasing number of staff from different Centres working in the same region. Although each Centre might wish to establish a separate administrative base for operating in a given region, it is unlikely that this would lead to the most cost-effective use of funds in the System as a whole. Independent operation by different Centres in collaborative programmes in the same countries can also lead to confusion as far as the beneficiary countries are concerned (see paragraph 8.19). We recommend that this whole question of the co-ordination of activities should be examined more thoroughly by TAC in consultation with the Directors General, and appropriate guidelines agreed.

Networks and Collaborative Research

6.15 The development of collaborative research programmes and networks as an organizational alternative to the concept of a large Centre has frequently been supported. We do not see networks as an alternative to Centres but rather as an organizational model compatible with and capable of enhancing the work of the standard Centre. Progressive addition of the network approach would seem to be a natural evolution of the Centre concept. It has several attractive features.

(i) Beneficiary countries are fully involved in programme planning and in setting priorities. The network encourages partnership between Centres and developing countries. It is, therefore, a model suited to assisting in the evolution of strong national programmes. When national programmes have reached a position of strength, such as in India and Brazil, the model is admirably suited to a continuing arrangement for collaborative research programmes drawing, through the Centres, on a wider range of scientific knowledge.

(ii) The network has a catalytic role in bringing together resources to focus systematically on an important research topic and thus establish a critical mass of scientific activity at relatively low marginal cost.

(iii) Flexibility is maintained in the use of resources in that programmes can be increased, reduced or terminated relatively easily.

(iv) The network provides a mechanism to link the research of Centres to that funded by the donors through other channels. It may strengthen the basis of requests from countries for bilateral funding, in that the resources would be used as part of a major integrated international research activity.

6.16 The network approach is not new. It has been used inside and outside the CGIAR System for many years. It can take many forms, from the very simple to the relatively complex. A simple application is illustrated by the CIMMYT international testing networks where participants from national programmes receive and evaluate set groups of genetic material. The IRRI farming systems programme is a network arrangement that involves national programmes more deeply. It includes only a limited number of countries but each country participates in the planning and management of its own part of the programme, and provides its own share of the resources; co-ordination and general assistance is provided by IRRI. This is clearly a core activity in that one goal is the development of transferable methodology. The programme is closely linked with national programmes and has attracted bilateral funding.

6.17 The CIP approach is another example of a successful network. In this instance the Centre chose, as basic policy, to create a relatively limited headquarters plant and site a large part of its core research programme at national research institutes. For example, one section of the core programme, supervised by a CIP scientist, is located at the ICA station in Colombia concerned with research on potatoes. Through an agreement with ICA, the CIP programme is carried out by ICA scientists using existing facilities on the national station and hence, can be fully integrated with the national programme.

6.18 The IBPGR concept illustrates another network variation. It comprises a central secretariat and policy board, with the scientific facilities located at Centres, at regional institutions and as an integral part of national programmes, in a collaborative network linked and serviced by IBPGR. Again, because of the national programme involvement, bilateral funds for construction of facilities have been available.

6.19 Although the network model that exploits the scientific knowledge of Centres has these attractive features, there are some problems. Management is difficult in that the scientists belong to independent organizations. Time and substantial funding are needed for communication and travel. Research progress may not be rapid and may be variable. Consequently, choice of the network approach may lengthen the time needed for meeting research goals, in comparison with a system where all the resources are under the control of one agency. In addition, the level of development of national programmes determines the kinds of activity that can be undertaken in that some activities may impose too heavy a burden on national resources.

6.20 The history of the network approach to agricultural research in the developing countries, while showing some outstanding successes, has also shown some failures. Success is related to the following criteria.

(i) The activity must be well-defined and sharply focussed.

(ii) Restriction of the network to a geographical region offers greater opportunities for defining a topic of common interest and eases problems of communication.

(iii) Arrangements for participation should be made formally at the level of the research institution, with clearance at government level as well.

(iv) Participating institutions should be involved as equal partners.

(v) Each institution should feel strongly that it will gain from the association in order to give enthusiastic support.

(vi) A participating institution must have, or be able to obtain from a donor, the resources needed for participation.

(vii) The lead institution that provides support and continuity for the network must have the research capacity to provide a strong scientific input. If all the institutions are weak scientifically, a network will not make them any stronger.

(viii) Sufficient funding must be available to bring the network participants together for planning and revising the programme, to provide an appropriate information service and to provide facilities for training.

(ix) The network leader must be committed to the concept of the network approach and have sufficient experience to develop a partnership relationship with scientists in national programmes. Similar considerations apply to outposted staff of the lead institution working in individual countries within the network.

6.21 Differences among countries in national programme strength must be kept in mind in developing networks. The simple types of international network, such as those concerned with evaluating genetic material, have been successful across all levels of national programme development because their demands are relatively uncomplicated. Even so, in order to participate, many national programmes require support in terms of operating funds and facilities. Research that is more demanding of facilities, operating funds and level of training of the scientists is not appropriate for a network unless the requirements we have described above can be met.

6.22 As national research capabilities increase in the developing countries, it will become possible for their scientists to participate in networks that are increasingly demanding of facilities and expertise, and include components of both applied and strategic research. We see the network approach as a logical extension of the organizational framework of the Centres. We suggest that this mechanism is not only appropriate for increasing the involvement of national scientists, but is also a mechanism that will allow the System to expand its research activities. Furthermore, it provides excellent opportunities for personnel development, that are so valuable for young scientists on small research stations.

Links with Institutions Involved in Strategic and Basic Research

6.23 We indicated in Chapter 4 that the dominant work of the Centres should be directed towards the generation of new technology. In making this assertion we recognized that new knowledge derived from strategic and basic research would be essential for maintaining progress. We now consider the avenues for assuring an adequate level of support in strategic research.

6.24 Centres already have a number of collaborative and contractual arrangements with advanced institutions for research in a range of topics. Several Centres have seen a need to become more involved in strategic research in the future and have indicated their intentions in this direction. Many of those consulted by the Study Team supported this trend.

6.25 One route that Centres could follow, and several are, would be to build their own capacity for strategic research, which has the advantage of maintaining full control and being less dependent on the collaborating institution. A second is that, in some instances, the research can be done more effectively at a Centre because of access to the material, sites and personnel required for a specific task. A third important advantage is that although nothing should divert a Centre from the development of new technology, it is essential to maintain a high level of scientific competence among its staff. This is more likely to occur in a research institution that is involved in doing at least some of its own strategic research. The Centres have aimed at maintaining a high level of scientific quality in their staff, a consideration that will become even more important as the level of scientific expertise in developing countries rises. Furthermore, a research unit with an active strategic research programme has a communication bridge to facilitate contact between Centre scientists and those in advanced research institutions.

6.26 Although it is therefore essential for Centres to be involved in strategic research, they cannot be expected to develop all the aspects required for a multi-disciplinary approach. Consequently it is important for Centres to maintain contacts with the appropriate range of advanced institutions. Such contacts are at present mainly with institutions in the industrialized countries, but increasingly they are being made with insitutions in the developing countries. Arranging for most of the strategic research by this means is not an easy task. It is time consuming with respect to identifying the scientists, orientating them to the needs of the programme and to making the necessary arrangements. These are the problems, but the

reward is access to a massive group of scientists and specialized scientific facilities.

6.27 A number of countries have special units (e.g. TPI, GERDAT), that have been available for many years to link with research institutions in developing countries. In recent years many countries have developed, or are in the process of developing, plans to provide much greater opportunities for their universities and research institutes to participate in research for developing countries. Examples include Australia (through AUSTREC), Canada (through IDRC), Germany (through ATSAF), the Netherlands (through RAWOO), Sweden (through SAREC), the United Kingdom (through ODA), and the United States (through BIFAD). They add up to a substantial potential for strategic research related to the work of the Centres.

6.28 Many of these programmes are relatively new and it is important that the System should not miss opportunities for exploiting the potential for strategic research that they offer. We suggest that it would be timely for the CGIAR to discuss with donors and Centres the desirability of a meeting to discuss ways of creating effective interaction between these new programmes and those of the Centres. In this connection, we recommend that the Institutions, with assistance from the CGIAR Secretariat, should compile a collective list of basic and strategic research topics of high priority to their programmes, which could be distributed widely in order to alert the world scientific community to their needs. The list should be circulated among donors and research institutions and should be updated from time to time. However, any specific arrangements for collaboration or contracting that resulted would be made directly between the Centre and the advanced research unit. There are many dfferent ways in which such arrangements could be made and several Centres already have considerable experience in making them.

6.29 Although it is important for the Centres to arrange for strategic research as required, it is equally important for them to have mechanisms to capitalize fully on the knowledge that already exists. Centre scientists, as part of the world scientific community, have access to information through all the standard sources, including the special information services that Centres operate. However, as front line international research institutions the Centres might consider taking extra steps to be sure that they are fully using those ideas in the scientific community that are not as yet in print.

6.30 This whole subject of linkages with advanced institutions would be a suitable topic for an open discussion at Centres Week, involving the Group, members of TAC and all observers.

Chapter 7. ORGANIZATION AND MANAGEMENT

7.1 In the absence of the CGIAR, the International Institutions would have to seek their own funding. Management would be entirely decentralized and each Board of Trustees would be responsible for its own policies. No central administration would be required and each Institution would expand or contract according to its ability to attract funds in competition with other Institutions.

7.2 It is primarily the principle of collective funding that requires the Group to make collective decisions and the Institutions to respond to its policies. As long as the supply of funds was increasing, existing programmes could be expanded and new activities added. There were few divisive issues. Collective decisions could be made more easily and the requests of the Institutions more readily satisfied.

7.3 As the System has evolved, however, the supply of funds has not kept pace with the demands. The issues have become more controversial, decisions more difficult and the Institutions less readily satisfied. The whole basis of organization and management has been exposed to question and concern. While there is general recognition of the need for change, there is equal reluctance to relinquish the successful procedures of the past. The attractive features of the System are freqently described as its informality, its relative lack of bureaucratic control and its ability to respond rapidly to changing requirements; but perhaps the real appeal has been the sheer professionalism that these characteristics have engendered.

The Present Basis of Organization and Management

7.4 A paper describing the present organization and management of the System, prepared by the CGIAR Secretariat, is given in Appendix II. Here, we summarize those points that are necessary for understanding the issues.

7.5 The Group attempts to arrive at decisions by consensus. Decisions are established at general meetings, held either once or twice a year. The Group is served by a Technical Advisory Committee (TAC) covering scientific matters, and by its own (CGIAR) Secretariat, covering mainly financial and policy matters. The TAC is served by a separate secretariat staffed by FAO personnel in Rome; the CGIAR Secretariat works in Washington under the umbrella of the World Bank which provides its staff.

7.6 In addition, there are many informal mechanisms for communicating among components of the System, all of which assist the process of arriving at a consensus. As well as all the personal contacts that are a feature of the System there are twice-yearly meetings of the Directors General, yearly meetings of the Chairmen of the Boards, various meetings of the Co-sponsors and donor groups as well as numerous ad hoc meetings and visits arranged by donors and institute staffs.

7.7 The present procedures for organization and management have worked well in the past and there is considerable reluctance to disturb them unless clear advantages can be predicted. The most general desires expressed by donors and others to the Study Team were for better communications and a related and widely expressed desire for greater involvement in the affairs of the System. There was a general expression of uneasiness that the System has inadequate mechanisms for making and enforcing difficult decisions or for formulating sharply focussed policies under the more complicated circumstances that now exist, and that there has been inadequate time at meetings of the Group to resolve complex issues of policy. Furthermore, members of TAC are unable, through lack of time, to fulfil the more demanding role that has devolved upon them; and the CGIAR Secretariat lacks the resources to develop new administrative functions and does not have the authority either to make decisions on difficult policy issues or to implement the policies of the Group with respect to the Institutions.

7.8 Another cause for concern, expressed in different ways and to various extents by donors is the need for greater accountability in the System. To these requirements must be added the requirement for action to be taken as a result of recommendations made by external reviews of Institutes and activities as well as by reviews of the System. When recommendations are made by these review panels or committees, who should ensure that appropriate action is taken or, if the recommendations are challenged, what are the mechanisms for appeal, arbitration and final resolution?

7.9 In addition to management considerations of these general kinds, there is a growing concern among developing countries that their views should be more fully represented in the System. These concerns are shared by the donors and other organizations. At the level of Group meetings, it is generally acknowledged that the present mechanism for representation by countries elected through the FAO regional meetings is unsatisfactory, a fact that is reflected in the irregular attendance by delegates. At the operational end of the System, there is a need tc strengthen and perhaps institutionalize the input of developing countries at the level of regional programmes and networks sponsored or co-ordinated by the Centres. Many countries already enjoy positive relationships with Centres in this respect, but there is great variation among the approaches that Centres adopt to the problem, some of which cause irritation to the countries concerned.

7.10 There are, therefore, three issues of overriding importance:

(i) How can the desirable features of the present System be preserved while strengthening management capabilities so that difficult decisions can be made and implemented?

(ii) How can all concerned participate more actively in the decision-making process and thereby develop a greater sense of involvement in the affairs of the System?

(iii) In what ways and to what extent can developing countries contribute to the work of the System in order to assist in achieving its purpose?

We consider the first two of these issues in the remainder of this chapter. The third is discussed in Chapter 8.

THE COMPONENTS OF CENTRAL MANAGEMENT

7.11 The present administrative structure includes the Co-sponsors, the CGIAR, the CGIAR Secretariat, TAC and the TAC Secretariat. In addition, there is provision for a Standby Committee (paragraphs 7.27 to 7.28). The Review Committee first considered various suggestions presented to it by the Study Team for strengthening the components of central management.

7.12 In discussing the need for the service units of the CGIAR to be strengthened the Committee reconsidered the question of merging the two Secretariats. This issue was fully investigated by the 1977 Review Committee. Its conclusion was that a merger would be difficult, would cause disruption to the present arrangements under which the Secretariats are sponsored by different agencies, and would have few worthwhile benefits that could not be achieved by a more integrated approach to the work of the two Secretariats. The present Committee was unable to identify any new factors that might lead to a different conclusion on this issue. It was considered preferable for the Group to proceed on the basis of the minimum change required to rectify any acknowledged deficiencies in the present administrative mechanisms.

7.13 Consequently, we now examine the extent to which the future administrative requirements of the System might be met using the present structure, but strengthening its components. We assume that it would be possible to strengthen the service units in ways that would provide for a greater amount of analytical work and more thorough planning. We also assume that increased capabilities of the service units would assist the Group in its deliberations, which could be further helped by longer, or more frequent meetings and thus give the members a greater sense of involvement in the affairs of the System.

7.14 Following these principles we consider first, the basic requirements of central administration (paragraph 7.15). We then analyze each requirement in relation to current procedures and suggest ways of improving them (paragraphs 7.16 to 7.71). Next we examine the extent to which the changes we propose would meet the requirements (paragraphs 7.72 to 7.77) and finally, we make specific recommendations on the changes to be made (paragraphs 7.78 to 7.115).

MANAGEMENT OF THE SYSTEM

7.15 Within the System, each Institution is controlled by a Board of Trustees whose responsibilities and importance will be discussed later. Here, we confine ourselves to the overall administrative requirements of the System, which may be summarized as follows:

(i) the determination of priorities in order that the Group may adjust the size and distribution of its support for programmes and activities;

(ii) financial planning and budgetting;

(iii) the annual allocation of resources;

(iv) monitoring, through appropriate review procedures, the quality and relevance of programmes, the efficiency of the Institutions and the overall operation of the System;

(v) the determination of policies and the approval of financial plans and budgets; and

(vi) fostering good communications among all components of the System and with the beneficiary countries.

In considering these functions, we keep in mind that strong, centralized management would not be consistent with the overall philosophy of the System (Chapter 3).

The Determination of Priorities

7.16 The determination of priorities is a primary responsibility of TAC. Given that the role and functions of TAC have been modified through the years, it might be useful to restate the nature of these functions by enumerating the principal ones. This enumeration draws from TAC's original mandate, the Report of the Bell Committee, the definition by TAC of its own role, and the recommendations of the First Review Committee. They can be restated as follows:

(i) To advise the Consultative Group on priorities in agricultural research related to the problems of the developing countries in both the technical and socio-economic fields based on a continuing review of existing national, regional and international research activities.

(ii) To review and recommend appropriate action regarding the technical component of major programme changes proposed by any Centre before they are formally incorporated into annual budgets.

(iii) To ensure that periodic external assessments are made of the scientific quality and effectiveness of the activities financed by the Group, and of the continuing need for these activities especially to ensure that they are not continued longer than necessary and that activities of lower priority are replaced by those of higher priority. (The Committee has proposed some modifications to the review procedures - see paragraphs 7.29 to 7.51).

(iv) To review the long-range research and training programmes of each Centre and to prepare on a continuing basis a long-range research plan for the system as a whole based on technical considerations and the needs of the developing countries.

(v) To encourage the creation of an international network of research institutions and the effective interchange of information among them.

(vi) To recommend to the Consultative Group feasibility studies designed to explore in depth how best to organize and conduct agricultural research on priority problems particularly those calling for further activities by the CGIAR System.

7.17 This list of the functions of TAC emphasizes its involvement in the scientific and technical issues of the System. Nevertheless, in recent years TAC has become involved in a number of functions related more to the management of the System than to the resolution of technical issues. The dominant view of donors, however, is that TAC should be primarily concerned with problems affecting agriculture in the developing countries and on the contributions that research could make to their solution.

7.18 TAC meets twice a year for a period of 8 to 9 days on each occasion, and the greater time required for three meetings would further restrict the range of individuals prepared to become members. At present one of the meetings is largely concerned with reviewing the programme and budget submissions of the Institutions. If TAC no longer had a detailed involvement in this function it could dedicate the time released to its other functions. Consequently it could once again schedule this meeting to take place in association with Centres' Week. At that time, TAC could meet the Directors General of the Institutions both collectively and individually, and could discuss projected programme changes for the ensuing year, as well as five-year and long-term

plans. TAC members could also make valuable contributions to the discussions on technical matters during Centers' Week. In connection with helping TAC members to become more familiar with the System, we endorse the recent practice of TAC in holding its meetings at individual Centres, on a rotational basis, as a valuable means of becoming more familiar with Centre activities.

7.19 The Committee supports the conclusion of the 1977 Review that members of TAC as a whole should not be involved in the details of the budgetary process. Clearly, however, TAC's assessments of priorities for programme changes, expansion of promising lines of work and initiating new activities must be fully taken into account. To this extent, TAC must be involved in the budgetary process, and it is therefore essential that the two Secretariats continue to work closely together. Their respective responsibilities with regard to the preparation of budget documents, such as commenaries, will need to be re-defined in detail (see paragraph 7.80). Furthermore, the Chairman of TAC will carry a heavy responsibility for maintaining liaison on priorities among all concerned.

Planning and Budgetting

7.20 A planning process based on facts and careful estimates is essential for the System so that all concerned can be fully informed of the goals and future plans of the Institutions. At the level of the Institution, the responsibility for both programme and budget planning resides with the Board, and the quality of programme and budget planning by the Boards is crucial for sound planning at the System level. A recommendation of the First Review (part of Recommendation 17) was that the Institutions should prepare biennial budgets, together with indicative plans for an additional two years, but this recommendation has not been fully implemented (see Chapter 2). Furthermore, not all of the Institutions have produced their long-term plans (see Recommendation 10 of the First Review). Consequently, the five-year plans for the System have been only partly based on the plans of the Institutions. Although the five-year indicative plans that have been prepared by the Secretariat since 1979 have been accepted by the Group, many donors have expressed reservations about them to the Study Team. In order to construct and maintain a more generally acceptable five-year plan for the System, we believe that a continuing interactive process is required in which the Boards, the Directors General, TAC, the CGIAR Secretariat and the Group all play a part.

7.21 The TAC priorities paper is an essential input into this process, but needs to be reinforced by long-term plans from each Institution as well as by rolling five-year financial projections, even though these will be of a very tentative nature owing to the uncertainties of price increases. We therefore urge those Institutions that have not already done so to produce their long-term plans as soon as possible. In order to bring the financial projections of the Institutions into line with the five-year indicative plan of the System, we recommend that the Institutions produce rolling five-year projections of their financial requirements as part of their annual budget submissions.

7.22 Among those affected, general concern was expressed to the Study Team about the budgetary process, particularly in relation to the allocation of resources during the first two years of shortfall (1980 and 1981). Such concern is always at the forefront of an organization that is experiencing shortfalls in funding for the first time. Consequently, although it is necessary for the System to respond to the perceived problem, it is important for it not to over-react. Time is needed for all concerned to adjust to the new circumstances.

7.23 A number of important changes have been made during the past two years so that the present arrangement (for 1982) has cleared many of the problems of the first year of shortfall. Nevertheless our opinion is that the system for assembling estimates, evaluating competitive demands and reaching final decisions on the allocation of resources, needs to be looked at comprehensively. It requires further modification to fit the changed fiscal environment and the needs of a much larger and changing System. Furthermore the mechanisms for supplying funds also need to be examined to see if they could be simplified or standardized in order to reduce the volume of work involved and to examine the extent to which cash-flow problems could be avoided as a result of modified procedures. These studies should be undertaken by the CGIAR Secretariat, with the help of an external consultant if necessary.

7.24 We suggest that the budget process should be based on the following principles:

(i) There should be full consultation with the Institutions and TAC in the development of the revised procedures.

(ii) Boards of Institutions should continue to be recognized as having responsibility for development of programme and budget proposals to be considered at the time of the annual allocation of funds. Institutions should cost their proposals for expansion of programmes and list the components in order of priority. Boards should be responsible for the final allocation of funds within the Institutions following the central decisions on the total budget allocation to each Institution, taking into account any decisions of the Group concerning elements of their programmes.

(iii) TAC should continue to assess any major proposals for programme changes made by the Institutions in relation to the five-year and long-term plans of the Institutions and of the System.

(iv) Recommendations to the Group on the annual allocation of resources should be based on an interactive process in which the Institutions and particularly their Directors General are fully involved.

7.25 In the comprehensive review of the budget process, consideration might be given to the following suggestions.

(i) The budget documents should be reviewed to simplify them as much as possible.

(ii) Although we do not subscribe to the principle of "zero-based" budgetting for scientific research, we think that the budget base for each Institution should be reviewed at the time of an external review. It is now fixed on an historical basis. A detailed review of the level of funding, in relation to the current programme requirements and stage of development of the Institution, would assist in determining an equitable and efficient distribution of resources.

(iii) Further standardization in the assignment of costs to programmes and to other categories of expenditure, and further refinement in the assignment of such items as capital to expenditure categories, would assist in financial analyses and decisions on the allocation of resources.

(iv) A policy of allowing a reasonable amount of unexpended funds to be carried over would ease the management problems of the Institutions and encourage cost-effective decisions on expenditure. Although the difficulties of such a procedure are recognized, it should nevertheless be explored.

(v) There is a need for greater flexibility in the allocation of at least a part of the funds pledged by donors in order that the functions of "the donor of last resort" (at present confined to the World Bank) can be more easily fulfilled. The reasons include the following:

(a) to fill gaps in the funding of an Institution in a more satisfactory manner than at present;

(b) to provide an adjustment period for an Institution that suddenly encounters a shortfall in funding owing to a change in policy of a donor or donors; accepting that such funding should not be used to support Institutions that persistently fail to attract donors;

(c) to allow greater flexibility in implementing new programmes advanced by Institutions and accorded high priority by TAC, and to assist in solving problems of cash flow.

Some donors expressed the opinion that it might be possible to allow part, or even all, of their donations to be used in these ways, and the possibilities are clearly worth exploring.

(vi) There is a need for greater precision in presenting information on extra-core funding in the budget proposals. The information should include the extent of the funding and the relation of the projects to the work of the Institution (i.e. whether they relate to core activities, specific commodity projects, technical assistance projects, training activities or some other project).

The Annual Allocation of Resources

7.26 The 1977 Review Committee considered that TAC should not be required to resolve issues arising as a result of shortfalls in funding. Instead, it proposed the formation of a Standby Committee (Recommendation 20, Chapter 2) to consist of members of the Group, the Chairman of TAC and the Executive Secretary of the CGIAR. It was to be convened when shortfalls in funding occurred and at other times when advice was required on specific policy issues. The principle of a Standby Committee was endorsed by the Group.

7.27 Although the members of a Standby Committee were nominated by the Chairman of the Group both in 1979 and 1980 and provisional dates of meetings were fixed, the Committee has never been convened because it appeared that the problems could be resolved in an acceptable manner without it. Suggestions for reductions in budgets have been made mainly by the CGIAR Secretariat and discussed by TAC and the Directors of the Institutions before being submitted as proposals to the Group. The principles adopted have been related to reductions in proposed programme expansion, adjustment to estimates of inflation, and deferment of staff appointments. In 1980, when the shortfall of pledged funds proved to be greater than had been expected, a final across-the-board cut was made. The possible need for this final cut had been explained during the earlier discussions. Nevertheless, dissatisfaction was expressed to the Study Team both by Directors General and by Chairmen of Boards on the procedures used for arriving at reductions in budget allocations prior to 1981. Some considered in retrospect that the Standby Committee should have been convened; others that a better mechanism was required. In the process, TAC was drawn more deeply into the review of budgets, contrary to the views expressed in the 1977 report.

7.28 With more detailed five-year plans and more general recognition of the position regarding the availability of resources (see Chapter 10), it is probable that some of the difficulties encountered in recent years could be avoided in the future. Experience at the meeting in July 1981, involving TAC, the Secretariats and the Directors General certainly supports this conclusion. Nevertheless, the annual allocation of resources requires judgements to be made and the questions remain of what criteria should be used and who should

make these inevitably controversial assessments. We discuss these questions more fully in a later section of this report (paragraphs 7.74 to 7.84).

Review Procedures

7.29 In the absence of strong centralized management, the System relies heavily on a range of review procedures, not only to monitor the quality of the work but also to test its relevance and to help in the formulation of policy. Valuable contributions to the review process are made by the internal reviews of the Institutions mounted by the Boards of Trustees. Nonetheless the need for independent review was recognized by the Group from the outset in the creation of its Technical Advisory Committee. Although TAC is part of the System, it is independent in the sense that it is not subject to the direct influence of the donors or of the beneficiary countries.

7.30 External reviews have traditionally been of two types: reviews of the Institutions commissioned by TAC, and reviews of the System commissioned by the CGIAR. In addition, some donors conduct their own external reviews.

7.31 As the Institutions have evolved towards more integrated activities, the requirements for external review have changed and are likely to continue to change in the future. These changing requirements were recognized by the 1977 Review Committee in the proposal to establish "Stripe Analyses". It was suggested that these analyses would be primarily for providing information and would be useful "in maintaining an overview of the System and also would provide a useful mechanism for Centres to compare their different programme components and learn from each other". In our opinion, the concept of Stripe Analyses should be extended to include a review of the work of the System on a major commodity or activity. Accordingly, we suggest that the term "Stripe Analysis" should be discontinued and replaced by "Commodity Review" or "Activity Review", as appropriate.

7.32 According to some donors, the greatest deficiency in the review process is the need for more penetrating reviews of the administration and management of the Institutions, particularly in relation to cost-effectiveness and accountability. The questions to be resolved are the extent to which management reviews should be combined with programme reviews, and whether they should be the responsibility of TAC or some other component of the System.

7.33 The requirement to examine management effectiveness has already been built into the terms of reference drawn up by TAC for external review panels. The thoroughness of these management reviews has varied widely, however, and in only one instance has the panel penetrated deeply into administrative procedures. What many donors would like to have included in the review process would be a thorough audit of management, organization and operating procedures in order to give greater "transparency" to the operation of the Institutions.

7.34 We therefore propose that, in addition to external financial audits, review procedures in the System should comprise the following elements:

(i) Internal Reviews of the Institutions, commissioned by the Boards of Trustees;

(ii) Management Reviews of the Institutions, commissioned by the CGIAR Secretariat;

(iii) Commodity and Activity Reviews of the System, commissioned by TAC;

(iv) External Reviews of the Institutions, commissioned by TAC, and

(v) Reviews of the System, commissioned by the CGIAR.

7.35 Internal reviews of the Institutions. Internal reviews of the Institutions are conducted annually and are the responsibility of each Director General and Board of Trustees. Although the form of these reviews may vary widely, they afford a valuable means of scrutinizing, on a regular basis, the planning and execution of the programmes on which the success of the System ultimately depends. Consequently, it is essential that they should be conducted in an atmosphere that will allow maximum opportunity for critical analysis and frank discussion.

7.36 Having regard to the need for efficiency in the use of staff time, it is common for a Board's Programme Committee and advisers to participate in the review. We consider that this practice is entirely appropriate for an internal review. For the same reason, there might well be occasions when it would be appropriate for members of TAC and its Secretariat, as well as members of the CGIAR Secretariat to be invited to be present, in order to give them a greater background of knowledge for their own work. The attendance of such individuals might not invariably be appropriate, however, and should always be subject to the invitation of the Institution. Furthermore, it would not be appropriate for donors to be present either as participants in the review or as observers. Their presence would create a different environment for the review and might inhibit mutual criticism by staff members, which can be such a valuable feature of internal reviews.

7.37 Management Reviews. With growing pressures on the availability of funds, the donors have been increasingly concerned that all funds should be used as effectively as possible. Furthermore, as individual donors have contributed progressively larger amounts to the System, questions of accountability have arisen. Although financial audits of the Institutions may be regarded as part of the process of external review, they do not provide an adequate assurance to donors that funds are being used efficiently in relation to the purposes for which they have been allocated. Additional mechanisms are therefore required.

7.38 The Institutions have been able to seek expert advice on financial and budgetary problems through the CGIAR Secretariat, a service that was augmented in 1980 by the appointment of a financial officer to its staff. In our view, the CGIAR Secretariat should be in a position to offer similar help and advice to the Institutions on administrative and management matters. Accordingly, we consider that a senior management specialist should be appointed to the staff of the Secretariat to fulfil this function. The Study Team found considerable support for these ideas among Controllers and senior administrative staff at the Institutions. Advice on administrative matters would normally be by request from the Institution and should be regarded as a consultancy service offered by the Secretariat, rather than as an "Inspector General" function. Nevertheless, in exceptional circumstances, the Secretariat might have to play a more active role in exercising this function.

7.39 We further suggest that future external reviews of Institutions should include a management audit to be commissioned by the CGIAR Secretariat and to be conducted sometimes by the proposed staff member, sometimes by an external consultant and, where necessary, by a combination of both. For an effective management audit, we consider that a minimum period of six weeks would be required, of which the final two weeks would be combined with the normal external review (paragraph 7.46). The findings and recommendations of the management consultant would be discussed by the review panel and incorporated into its report.

7.40 For each review, details of the requirements of the management audit should be worked out jointly by the management specialist, the CGIAR Secretariat and TAC but, in many instances its main functions would be:

(i) to appraise the organizational structure of the Institution in relation to control and co-ordination at the senior management level; the control exercised by supervisors at successive levels in the management structure; lines of authority and communication; delegation of authority; clarity of duties and responsibilities;

(ii) to review the suitability of the organizational structure in relation to programme requirements;

(iii) to review the principal operating procedures and supporting services including financial accounting, budgeting, expenditure control, procurement methods, and contracting; to identify opportunities for simplification or uniformity, the application of mechanical or automatic equipment, where appropriate, and other improvements in operating procedures;

(iv) to examine the standards of personnel use and to suggest methods for increasing staff productivity, where necessary;

(v) to review personnel policies and practices as to their adequacy and suitability, including recruit-

ment and promotion standards, the employment of women (see paragraphs 7.114 to 7.115), compensation levels, fringe benefits, retirement systems and work rules; to analyze personnel policies for their effectiveness in maintaining a corps of competent personnel with high morale, and to propose measures for improving personnel management, as necessary; and

(vi) to recommend or confirm optimum levels of manpower and equipment by programme or function, consistent with programme needs and available resources.

We consider that if more thorough reviews of the management of Institutions were conducted along these lines, it would then not be necessary for donors to mount their own reviews. This would help to relieve the Institutions from the burden of reviews by concentrating the main work into a single period.

7.41 Commodity and activity reviews. Reviews that focus on a single commodity or activity could supplement external reviews of the Institutions in several ways. As we have seen (paragraph 7.31), they would provide opportunities for reviewing, more completely, programmes that have common elements in the work of two or more Institutions. Moreover, they could examine the mechanisms for co-ordinating work in the same region, both administratively and scientifically (see paragraph 6.12). In addition, they could play a significant part in reviewing programme relevance and could provide a better basis for planning the level of support to be accorded to a particular commodity or activity within the System as a whole.

7.42 Some donors consider that external reviews of Institutions should now be as much concerned with the relevance of programmes and their future direction, as with the quality of the work currently in progress. In our opinion, however, to attempt to meet both needs adequately is not always possible. For example, a reasonable assessment of the quality of a breeding programme in pearl millet could be made by any plant breeder with a record of achievement in breeding cross-pollinating annual crops. Assessment of the relevance of a pearl millet programme, however, would require detailed knowledge and experience of that particular crop, its current and future place in the diet of people in the developing countries, as well as knowledge of national development policies, institutional frameworks and research capabilities. With some programmes, the considerations to be taken into account are even more complex and it would be difficult to assemble panels of reasonable size with all the required expertise to assess the relevance of all the programmes of an Institution.

7.43 Consequently, there may well be occasions when it would be desirable to examine the relevance of a programme by means of a commodity or activity review either as an addition to an external review of an Institution, or as an alternative. We consider that commodity and activity reviews could play an important part in reinforcing TAC's assessment of the continuing appropriateness of the mandates of Institutions, leading to recommendations from TAC to the Group for specific changes in mandates and corresponding changes in the levels of financial support.

7.44 External reviews of Institutions. An occasional external review of an Institution is important as an independent check on its effectiveness, and provides information that is essential for planning the work of the System. The Study Team encountered no opposition to the principle of external reviews; only encouragement to find ways of making them more effective, and fears that they already place too heavy a burden, both on those subjected to them and on those doing them.

7.45 External reviews of Institutions at five-yearly intervals were initiated by TAC in response to the recommendations of the Bell Report. They have become widely known in the System as "Quinquennial Reviews" and have come to be regarded as an essential part of the management of the System. Since their initiation, TAC has developed more precise guidelines for conducting them and, although the standard has varied, it is generally agreed that their value has increased. Even if some quinquennial reviews have left something to be desired, the preparation for an external review and the discussion it generates, have often had a significant impact on the operation of an Institution.

7.46 We suggest that quinquennial reviews should concentrate on assessing the continuing suitability of the mandate of an Institution and its effectiveness in terms of the professional ability of its staff, the quality of the work, the suitability of its operational procedures, its linkages with other institutions, its relations with the developing countries and the impact of its work. Future external reviews should incorporate a management audit (see paragraphs 7.38 to 7.40) and should assess the appropriate level of funding in relation to the work undertaken. To the extent that TAC has a continuing role in the analysis of priorities and the annual assessment of programme changes, we do not consider it necessary for external reviews to cover the same ground. Rather, TAC's assessment of priorities and relevance, together with the reports of commodity or activity reviews, should be provided as background inputs to the members of the review panel.

7.47 Owing to the importance we attach to developing collaborative programmes and networks, as well as to forging links with other institutions involved in basic and strategic research, these aspects of the work of the Institutions should continue to be subject to external review. Furthermore, future external reviews should pay particular attention to the arrangements made to foster good working relations between the CGIAR Institutions and government officials in the developing countries. Such reviews should include, when appropriate, the institutional mechanisms involved, as well as operational procedures and the adequacy of methods of communication among all concerned.

7.48 While some flexibility should be permitted in the frequency of external reviews, we consider that the present quinquennial basis should be regarded as the norm. We also consider that, in order not to present the Institutions with an unreasonable burden of reviews, donor agencies should refrain from conducting their own reviews that simply duplicate the agreed machanisms in the System.

Reviews of the System

7.49 The concept of reviews of the System arose from the Bell Report. They have been arranged by the CGIAR Secretariat acting on the advice and approval of the Group. They are conducted by a Committee appointed by the Chairman of the Group from individuals within the System. The Committee is assisted by a small Study Team of external consultants. The first such review produced its final report in 1977: the report of the present Committee will be submitted to the Group in November 1981 and published in 1982.

7.50 The terms of reference of these reviews have been very wide, raising the question of whether it is possible, in a sufficiently penetrating manner, to undertake all the work required in the time available. With more precise terms of reference, it should not be necessary for future reviews to cover the same ground as that covered by other mechanisms for review. Rather, the findings of other reviews should provide basic information for the Review Committee and Study Team so that they can concentrate on the broad strategy of the System, its resources, organization operational procedures, linkages with other institutions, relations with developing countries and the impact of its work. Future reviews of the System should, like the present one, include regional symposia (paragraph 7.68) as well as extensive visits to developing countries to sample the opinions of senior administrators and scientists. Furthermore, the work of the Review Committee should be phased so as to allow opportunities for interaction with all components of the System during the review process.

7.51 To summarize, this analysis of the requirements for review in the System and how requirements can best be met, suggests that the present mechanisms for review could be strengthened. The guiding principles of reviews should be to avoid duplication of effort, to waste as little of the staff's time as possible, to produce recommendations for maintaining or improving the efficiency of the System and its components; and thereby to give continued confidence to the donors in the effectiveness of the System in fulfilling the purpose of the CGIAR. The mechanisms we propose are largely consistent with those currently in use, but they include several important changes. Our proposals are summarized in Table 7.1.

Table 7.1 External Reviews of the System

	Requirement	Mechanism for Review, existing or proposed
(i)	Financial accountability of the Institutions	Financial Audits 1
(ii)	Administrative efficiency of the Institutions	Management Audits, using inputs from 1 2
(iii)	Programme relevance and co-ordination of common programme elements within the System	Commodity and Activity Reviews. . . . 3
(iv)	Suitability of mandate	
(v)	Scientific quality	
(vi)	Links with other Institutions inside and outside the System	External Reviews of Institutions using inputs from 2 and 3 4
(vii)	Relations with developing countries	
(viii)	Impact of the work	
(ix)	Strategy, organization and operation of the System; its resources, linkages with other institutions, relation with developing countries and impact of the work.	Reviews of the System, using inputs from 2, 3, and 4

The Determination of Policy

7.52 Ultimately it is the Group itself that determines the policies of the System and approves budget allocations. There has been little enthusiasm by members of the Group to delegate these decisions to the Chairman, the service units or to any form of Executive Committee. Consequently, if the Group is unable to resolve all the issues placed before it at plenary meetings, there is a tendency for both the CGIAR Secretariat and TAC to be drawn into the vacuum caused by the absence of explicit and detailed policy. The service units then run the risk of being criticized for acquiring power that they were not intended to have.

7.53 As we have seen, decisions by the Group are reached by consensus. Good communications among all concerned are essential for creating a strong feeling of consensus. In this connection, the main plenary meeting of the Group, "Centres' Week", has come to play a pivotal role in the affairs of the System. It is the only occasion on which the whole System assumes a corporate identity. The opportunities for communication, both formal and informal are so valuable that no component can afford to be excluded. In this connection we consider it essential for TAC to schedule one of its meetings to coincide with Centres' Week (see paragraph 7.18).

7.54 Traditionally, Centres' Week has consisted of two parts: a "plenary" meeting, during which the Centre presentations are made, and a "business" meeting. Our view is that this accepted format should be rationalized by regarding the first part as a meeting of the System and the second, as a meeting of the Group.

7.55 Meetings of the System. At meetings of the System, Chairmen of Boards, Directors General, members of TAC and other members of the System should participate fully in discussions alongside members of the Group. The Report of the First Review Committee suggested that an occasional forum discussion should be held in association with Centres' Week. We understand that one such forum was tried, on the general subject of training, but that the discussion was not rated a great success and the experiment was not repeated. Our opinion is that the idea was probably sound and perhaps should not have been abandoned on the basis of a single trial. We think it would be worth trying an occasional item for general discussion on the agenda of the meeting of the System, and we have already suggested one such topic that would be suitable (paragraph 6.30).

7.56 Concerning presentations by individual Institutions, the most generally held view is that none of the various formats that has been tried has generated as much discussion on the scientific issues as most would like to hear. Some think that the more difficult, and perhaps more interesting, issues cannot be raised by Directors General in the atmosphere of Centres' Week, in which they feel under pressure to present only their successes. Perhaps it is this lack of critical evaluation that has caused some to regard the presentations as too superficial. All agree, however, that a series of lengthy presentations becomes boring and consequently counter-productive.

There is also general sympathy for Directors General in that, having regard to the nature of the work, they can hardly be expected to produce something startlingly new every year. Nevertheless most donors would like to see each Director General appear at the rostrum every year, even if only for a short time.

7.57 One possibility would be to develop the format that has previously been tried at meetings of the Group in which some of the presentations and discussions have been linked to the reports of reviews commissioned by TAC. The discussions could be opened by the leader of the review panel, commented on by the Chairman of TAC, and responded to by the Directors General of the Institutions involved. The review could then be opened to a wide-ranging discussion in which, being part of the meeting of the System, all could freely participate. This arrangement would, however, imply longer attendance at Centres' Week by those delegates who normally attend only the business meeting.

7.58 In addition, reports from all Directors General or Board Chairmen could be accommodated through, for example, short (15 minute) presentations focussing on the theme "What's new at the Institutions?" Each presentation could be followed by a short period for questions leaving follow-up discussions on points of detail to be taken up informally outside the meeting.

7.59 Whatever format is adopted for the meetings of the System, however, everyone recognizes that informal contacts outside the meeting have been, and are likely to remain, one of the most important means of communication among all concerned. To this extent therefore, there is limited risk in damaging the value of the meeting by experimenting with the format, even if some formats should prove less successful than others.

7.60 Meetings of the Group. At meetings of the Group, only members would participate in decision-making as at present. Others could be accorded observer status, or invited to participate in the discussion of selected items. In this connection, we consider that both the meeting of the Chairmen of the Boards and the meeting of the Directors General should be encouraged to submit discussion papers in advance of meetings of the Group and their representatives be invited to participate in the discussion of the relevant items on the agenda.

7.61 Clearly, more substantive debates could be held and more difficult decisions made if the Group itself had more time for deliberation. For more debating time to be possible, either Centres' Week would have to extend into two weeks or a second meeting of the Group would be required each year. More frequent meetings would not be popular with some members owing to the increased costs of attendance; others would prefer two meetings a year. There are advantages and disadvantages associated with either solution and only the Group can decide its preference; decisions could be made annually in relation to the volume of work to be completed.

7.62 One arrangement might be for the Group to meet on the Thursday and Friday of one week and the Wednesday and Thursday of the following week. This would leave the Monday and Tuesday for presentations by the Institutions and the intervening weekend could be used for other meetings and for meetings of the sub-groups of the CGIAR. Sub-groups could be nominated by the Chairman when considered necessary to resolve conflicting viewpoints, or to analyze in more detail suggestions from the floor of the meeting.

7.63 The effectiveness of debates and the ease with which consensus can be reached are greatly helped by continuity in the representation of donor delegations. Donors should be encouraged, whenever possible to include in their delegations individuals who not only have a professional background in relevant disciplines, but also have some prior knowledge of the System and can attend meetings for a continous run of at least five or six years.

COMMUNICATIONS

7.64 The success of the CGIAR System depends as much on the adequacy of its mechanisms for communication as it does on any other aspect of its work. Considering the number and diversity of individuals whose willing cooperation is essential for success, the necessary communication linkages are numerous and complex. For example, from the viewpoint of an individual Institution, these linkages involve its own staff, those of other institutions throughout the world; its Board Members; its donors; the CGIAR; TAC; the two Secretariats; officials, scientists, trainees, and indirectly, rural populations in the developing countries; as well as an interested, and occasionally critical, public at large.

7.65 We have dealt implicitly with problems of communication throughout this report. Here we mention more specifically some problems in communications that have not been developed in the body of the document.

Public Relations

7.66 During their discussions with officials in developing countries the Study Team was consistently surprised by their lack of knowledge of the System, even though some of their own scientists were well informed about a particular Centre. While most were prepared to concede that part of the fault was their own, all recognized a need for more literature aimed at policy-makers and administrators in developing countries, rather than at donors or scientists.

7.67 In this respect, the recent introduction of a CGIAR newsletter is a step in the right direction. It needs to be augmented, however, by other activities in the general area of public relations.

Visits and Symposia

7.68 We have no doubt that the visits of the Study Team to developing countries and, in particular their participation in the Regional Symposia

were, in themselves, very worthwhile contributions to the general public relations' activities of the CGIAR - quite apart from their specific function as part of the Review. Perhaps, in future, visits to government officials in developing countries could be included, in a more systematic manner, in the travel schedules of members of the CGIAR service units. To cover every beneficiary country regularly in this manner would clearly be impossible but such visits might provide a mechanism which, when added to all the others, would help in the public relations exercise.

7.69 In addition to those organized in conjunction with reviews of the System, other symposia should be arranged from time to time. Apart from their value as a means of keeping in touch with the changing attitudes of scientists and officials in developing countries, they also provide valuable opportunities for communication among countries in a similar region, as with the anglophone and francophone countries of Africa, for example. Such symposia might well fulfil the type of function proposed at the Asian regional symposium for a Policy Advisory Committee (see Appendix I). The Committee considers that the extent to which this need could be met through symposia should be tried before establishing a more formal mechanism.

7.70 Perhaps it would be possible for one of the Centres, instead of a beneficiary country, to act as host for a future symposium. Moreover, if the symposium were scheduled to be held either immediately before or immediately after a TAC meeting held at the same Centre, there would be opportunities for a few TAC members to attend, particularly those unfamiliar with the region.

7.71 Apart from the usefulness of symposia in keeping the beneficiary countries informed of, and interested in, CGIAR affairs they might also be useful in helping to identify potential members of Boards or even of TAC itself. A lot would depend on the way in which delegates to a symposium were chosen. To make the best use of symposia, careful preparatory work would be needed in co-operation with the appropriate government officials in the countries concerned.

ADEQUACY OF THE ADMINISTRATIVE STRUCTURE

7.72 In analyzing the present administrative procedures in the System and ways in which they could be improved, we started with two basic assumptions:

(i) that the existing service units would be strengthened, and

(ii) that the processes of making decisions could be improved by holding longer or more frequent meetings of the Group.

Concerning the first of these assumptions, which is discussed in more detail later (paragraph 7.88), a greater capacity for work by the service units should result in all concerned being better prepared to participate in discussions on policy issues. Concerning the second, we noted that debates

at meetings of the System and of the Group could be further strengthened by greater participation of the Chairmen of the Boards and Directors General and by providing more time for deliberations of the Group. We also noted that the Group, in general, had been reluctant in the past to delegate its responsibilities to an Executive Committee or other type of sub-group. Indeed, it is only to be expected that those who become members of the Group should wish to participate fully in the determination of its policies.

7.73 We consider that a solution along these lines would go a long way towards solving the problems outlined at the beginning of this chapter. We are not convinced, however, that it would provide a satisfactory solution to the problem we noted in paragraph 7.27 of the annual allocation of resources. Under the present management structure, and following the procedures we have described, responsibility for making final recommendations to the Group on budget allocations would devolve entirely on the CGIAR Secretariat. We must now examine the extent to which this arrangement would be satisfactory and acceptable, particularly in relation to the steps in the budgetary process.

7.74 At several points in the sequence of budget preparation, it is necessary to make judgements. For example, the construction of budget guidelines involves judgements, among others, of whether or not an Institution should be regarded as "developing" and consequently permitted incremental growth, or as having reached maturity and therefore either permitted no incremental growth at all, or a much reduced rate of growth. Similarly, but with greater exposure to criticism, proposals on the allocation of funds require judgements to be made on the relative importance of programmes, whether as a result of shortfall or surplus.

7.75 The disadvantages of assigning these responsibilities solely to the staff of the CGIAR Secretariat are that there would be no independent check on their judgements and, even if their judgements were the best that could be made, there would be nothing to shield them from the criticism that would inevitably arise from the necessity of making unpopular decisions. We consider that good relations between the Secretariat and the Institutions are fundamental to the successful administration of the System. In our opinion it is essential for the Executive Secretary and his staff to be assisted in these judgements by a small, independent review body of professional scientists and managers. Consequently it is necessary to reconsider the issue of whether TAC should be involved, to some extent, in the budgetary process, whether the principle of the Standby Committee should be retained, or whether a new committee is needed to fulfil, on a regular basis, the main purpose for which the Standby Committee was intended.

7.76 In our opinion, the need for judgements on the optimum use of funds and their allocation to individual Institutions will be a permanent feature of the System in the future. Consequently, we do not consider the concept of a Standby Committee to be adequate to meet the needs. In its place we propose a small Budget Review committee assigned the specific task of working with the Chairman of TAC and the staff of the CGIAR and TAC Secretariat, to make judgements on budgetary issues including the optimum allocation of funds.

To avoid associating the concept of this small committee with the concepts of other committees that have been suggested (Policy Committee, Executive Committee, Management Advisory Committee, etc.) we call it the "Budget Review Committee".

7.77 To summarize, we consider that the present administrative structure, with strengthened service units, more effective deliberations of the Group and with the addition of a small Budget Review Committee, should form the basis for the future development of administrative procedures in the System. We now proceed to examine in more detail, what these proposed changes would comprise.

PROPOSED CHANGES

The Budget Review Committee

7.78 We recommend that a Budget Review Committee should be introduced into the structure of the administrative services of the System in order to strengthen the basis of determining budget guidelines and allocating resources to individual Institutions. Following the underlying principles that govern the structure of the System (Chapter 3), and in accordance with precedents already established, we recommend that the members of the Committee should be selected for their professional ability and appointed in their personal capacities.

7.79 It is axiomatic that those assigned the task of making judgements on the allocation of funds in the System require collectively, management experience in scientific institutions, knowledge of the developing countries, familiarity with the System and the Group, and specific knowledge of its agreed priorities. It does not follow, however, that members of TAC would be the only, or necessarily the best, persons to contribute to these judgements. There would be others equally well qualified. Indeed, individuals who have just completed their term of office would be better qualified than newly appointed members of TAC. Individuals who have been active in the affairs of the Group for long periods, could also make valuable contributions.

7.80 Nevertheless, recognizing the importance of taking the views of TAC fully into account, and recognizing the wishes of the Group to keep the administrative structure as simple as possible, we recommend that the Budget Review Committee should be chaired by the Chairman of TAC and consist of six additional members. Of these six members, two would be current members of TAC, appointed by its Chairman, and four would serve in their personal capacities and be appointed by the Chairman of the Group after wide consultation among members and with the Chairman of TAC. Members would be appointed to serve for a maximum of three terms, each of two years, with two members retiring every other year. It will be necessary for the two Executive Secretaries to work out details of an appropriate budget review calendar and the phasing of meetings of TAC in relation to those of the Budget Review Committee.

7.81 In arriving at this recommendation, the Committee discussed the general desirability of introducing another committee into the administrative structure of the System, and also considered in detail various compositions of a committee that would be appropriate for assisting with the resolution of budgetary issues. Full recognition was given to the good progress that had been made towards resolving budgetary issues during 1981, which implied that the existing procedures might prove, with further refinement, to be generally acceptable. Nevertheless, the Committee was not convinced that to effect no changes, would be in the best long-term interests of the System, having regard to the desired role of TAC and the heavy work load that involvement in budgetary details would continue to place on its members.

7.82 Concerning the composition of the Budget Review Committee, several possibilities were examined, including one composed primarily of representatives of donors. Although a committee of this type appeared to have considerable merit in principle, difficulties became apparent when considering the practical details of selecting members. While there are valid reasons for keeping the Budget Review Committee small, restriction of its number of members would result in the infrequent membership of any particular donor. For example, with 36 donors and nine members of the committee, each serving for three years in rotation, three new members would be appointed each year. In other words, a donor ceasing membership in 1985 would not be eligible for re-appointment until 1997. It is clear that such an arrangement would be unacceptable to some of the major donors. If such donors were accorded more frequent (or even permanent) membership, the result would be a further reduction in the frequency of membership of the smaller donors. Furthermore, the principle of appointment of donor representatives to committees or boards is not one that fits easily into the underlying philosophy of the System (see Chapter 3).

7.83 The composition proposed for the Budget Review Committee allows continued involvement by TAC in the budgetary process, without imposing a heavy work load on all of its members. It also allows participation by four individuals in their personal capacities, to give a balance of relevant experience, including wide experience of the Group and donor attitudes. We do not consider, however, that the Budget Review Committee should necessarily become a permanent feature of the System, but that its operation should be fully tested for three years, after which TAC and the CGIAR Secretariat should report their views on its desirability and effectiveness to the Group.

7.84 In arriving at these conclusions regarding a Budget Review Committee we gave very careful consideration to a range of other suggestions for changes in the administrative structure of the System. In analyzing the possible advantages of some form of policy or management advisory committee we encountered problems similar to those discussed in paragraph 7.82. Any microcosm of the Group that would adequately represent all of its members and remain reasonably small would almost certainly create difficulties and serve to dilute rather than strengthen the collective will of the Group. Consequently we have rejected the idea of a sub-group or committee with terms of reference wider than those of the proposed Budget Review Committee.

The CGIAR Secretariat

7.85 The functions of the CGIAR Secretariat are described in Appendix II. It has a difficult role to fulfil in serving both the donors and the Institutions and assisting in the resolution of complex issues. At the same time it must maintain a broad overview of the System, its operations and the resources on which the Institutions can draw. In this connection, the value and excellence of the Integrative report, presented annually by the Secretariat to the Group, was invariably commented upon by donors to the Study Team.

7.86 Another important task of the Secretariat is to maintain liaison with the donors, the Institutions and TAC in order, on a continuous basis, to match the likely supply of funds to the needs of approved programmes. Consequently, the staff need to understand the views of donors, the operation of the Institutions and the principles developed by TAC. Appropriate professional knowledge is essential for them to establish constructive working relations with all concerned. Heavy travel schedules cannot be avoided and, with only a few professional staff in the Secretariat, the amount of new work they can undertake is severely constrained.

7.87 The Secretariat must also be in a strong position to analyze difficult policy issues on a broad basis, to render service to the donors and the Institutions in the ways we have described; to provide information services; and to promote good public relations throughout the System and with the beneficiary countries.

7.88 Taking all of these considerations into account the Committee recommends that the CGIAR Secretariat be strengthened in the following ways:

(i) In future, selection of the Executive Secretary should be based on wide consultation by the Chairman among members of the Group with respect to both the qualifications required and to specific nominees for the post. In making the selection, the Chairman would be assisted and advised by a Search Committee.

(ii) The staff of the Secretariat should be strengthened by the addition of a management consultant and another scientific adviser with relevant experience in either the natural or social sciences, depending on the expertise required to achieve an overall balance of professional staff.

(iii) In the light of the recommendations of this Report, particularly with respect to communications and public relations, the Executive Secretary should review the responsibilities of the other senior staff in the Secretariat and decide what changes of responsibility or additions of staff are necessary.

Strengthening the functioning of TAC.

7.89 Our conclusion that the System has now reached the stage where it needs stronger service units is also applicable to TAC and its Secretariat. In order that the members of TAC can use their limited time to the maximum advantage, it is essential that the TAC Secretariat should maintain an appropriate number and balance of staff of the highest possible calibre. Furthermore, having regard to the importance of the Chairmanship of TAC and nature of the duties involved, we consider that the Chairman must be able to devote a very substantial amount of time to the work although the position should not be a full-time appointment. We therefore recommend that the terms of service of the Chairman of TAC should remain negotiable but should approach those of full-time employment.

7.90 Regarding the members of TAC, the Committee agreed that greater continuity of service was essential. At present, TAC members serve for a minimum of two years, renewable by one further term of two years to a maximum of four. The Committee agreed that the length of service should be extended by one further two-year term, to give a maximum length of service of six years. Those TAC members appointed to serve on the Budget Review Committee will be required to devote considerably more time to the work than the other members. The Study Team's survey of the availability of current TAC members showed that, although some would be able to devote substantially more time to the work, the majority would not.

7.91 The function of defining research priorities and selecting new activities is an extremely difficult and complex one. It requires expertise in a number of different disciplines, first-hand knowledge of the specific issues and time to think. The part-time appointment of TAC members places considerable stress on them. We suggest that the work of TAC might be assisted through the wider use of consultants who could develop discussion papers on subjects under consideration, and that greater use might be made of the technical expertise in Institutions such as IFPRI on appropriate topics of concern to TAC.

BOARDS OF TRUSTEES

7.92 The Boards of Trustees of the Institutions constitute potentially the most important element in the decision-making mechanisms of the System. Decisions taken by the Boards, however, must conform to the policies formulated by the Group. The Group naturally wishes to influence, to a greater or lesser extent, the activities and attitudes of the family of Institutions it supports, all of which can rightly claim that they are independent. Some of the problems that have arisen have been described in a paper prepared by Mr. Charles T. Greenwood, at that time Chairman of the Board Chairmen (Appendix III). Although the Committee agrees with many of the points made in his paper, there remain areas of anomaly, and even paradox, where further clarification is necessary.

7.93 In our discussion of management for the System we do not imply that we favour the concept of bureaucratic control. Our concept is one of a strong central capacity for maintaining communications and analyzing issues so that policy decisions can be made more easily at all levels in the System. We do not believe that strengthening the service functions of central management need necessarily rob the individual Institutions of their essential autonomy. Accordingly, we examine in more detail the relationships among the Boards of Trustees, the CGIAR and the components of central management.

Relationships with the CGIAR

7.94 First, there is the question of "accountability", a word that arose repeatedly during the Study Team's investigations, but in many different contexts. In his paper, Greenwood rightly states (page 2, last paragraph) that the Institutions have not been formally accountable to external agencies but that they are morally responsible to their donors and beneficiaries. However, this statement begs the question of whether the Boards are in any way accountable to the CGIAR. Formally, they clearly are not. But, because the Group provides their funds, the Boards must de facto be ultimately accountable to the Group. If this were not so, the existence of the Group would have very little meaning.

7.95 Our view is that regardless of its relations with individual donors, a Board cannot escape from the reality that it is ultimately dependent for its funding on the collective will of the CGIAR. It should therefore conduct its affairs as if it were accountable to the Group, even though its legal status makes no provision for such a relationship. To ignore this responsibility would be to force the Group in the direction of greater central authority, which no-one wants.

7.96 What then should be expected of a Board in its relations with the CGIAR? Again, we come to the practical interpretation of a principle which, in the real world, is heavily dependent on the common sense and good-will of the individuals concerned. Let us consider, purely as an example, the appointment by a Board of a Director General. Undoubtedly the Board would resist any suggestion of interference in this appointment by the CGIAR through its Chairman, Secretariat or any other means. But the identification and appointment of the right type of person as Director General is just as important for the Group as it is for the Board. Consequently, it might be desirable for Boards to develop some informal mechanism for consultation between the Board and the Group before important policy decisions of this type are finally made.

7.97 Throughout our analyses of problems of this type, we come back to the conclusion that if the Group rejects the principle of formal and structured management in the System, it must introduce more positive and better defined channels of communication. We believe that Boards must recognize that they have a responsibility to communicate their intentions to the Group just as much as the Group has responsibilities in the reverse direction. Because we believe that procedures for effective administration should not be imposed from the top downwards, we consider that the Boards themselves, should make a strong contribution to any principles that are formulated on issues such as the one we mentioned above. It is for reasons

such as this that we have suggested that there should be greater recognition within the System of the meetings of the Chairmen of Boards and of the Directors General. If the principle of operation is to be "government by consensus", more active steps must be taken to develop a feeling of consensus right through the System, rather than simply within the Group and its administrative components.

7.98 The question then arises of what practical steps could be taken to encourage a collective feeling of responsibility among the Boards on matters affecting the System as a whole, rather than the Boards individually. There have been several discussion papers on this topic, one produced by the Secretariat in 1979 (Appendix IV) discussed the issues in some detail. The Study Team was not able to test the impact of this paper, however, other than through the transcript of a debate at the 1979 meeting of the CGIAR. It had very little opportunity for sampling the opinions of Boards and there is no central collection of the minutes of Board meetings to which it could refer.

7.99 Nevertheless we see no reason why the Boards should be resistant to suggestions for a more structured method of arriving at a consensus on important issues of policy affecting the collective relationship of the Boards to the CGIAR. In the particular example of the Secretariat paper referred to above, a more positive outcome might have resulted if the paper had initially undergone detailed review by the Boards followed by discussions during Centres' Week. We would see a procedure along the following lines:

(i) The CGIAR Secretariat initiates a discussion paper that is circulated to Boards and members of the Group for commment.

(ii) Through their personal and official contacts, members of the Boards, the Group and the Secretariat encourage wide discussion of the topic.

(iii) Replies are analyzed by the Secretariat and a consolidated paper circulated in advance of the next CGIAR meeting. The paper would include recommendations, when appropriate, and a full discussion could be held at the meeting with both members of the Group and Board Chairmen participating.

7.100 In this way we would see a means of arriving at policies affecting Boards without the Boards or their Chairmen feeling under threat of losing their independence. While the Boards are justifiably protective of their direct relationships with donors on matters affecting their own Institutions, we do not think that these relationships would be impaired if meetings of the CGIAR were regarded as a central mechanism for communications between Boards and donors on policies affecting the whole System. Indeed it is vital for the future of the System that donors generally should have greater confidence in

the effectiveness and accountability of the Boards. As Greenwood points out, the responsibility for strengthening this confidence rests primarily with the Boards themselves.

Other Issues

7.101 Questions relating to various aspects of membership of the Boards of Trustees have been raised frequently during the course of this review. It is clear that Institutions whose main activities impinge on governmental priorities in the countries they serve must accept on their Boards a greater degree of political influence from the governments concerned, than those whose work is more globally orientated. The principle is well illustrated by the Governing Council of WARDA which is composed entirely of representatives of the countries in the region it serves. Other Institutions supported by the CGIAR appoint their Board members mainly in their personal capacities. Such members should not have strong links with their own governments or organizations, but should have a global perspective of the work of the CGIAR and be in a position to make an effective contribution to the work of the Board.

7.102 There are, however, one or two exceptions to this general rule. Ex-officio representatives are appointed to Boards from the host countries, for obvious and compelling reasons that recognize the special relationship between an Institution and its host country. Furthermore, some of the Boards have preserved their tradition of reserving places for representatives of the Ford and Rockefeller Foundations.

7.103 With the exception of the host-country representatives, the Committee recommends the appointment of Board members in their personal capacities, as a general principle. Care must be taken by all concerned, however, to ensure that individuals ostensibly appointed on a personal basis are not so strongly associated with a donor agency, or the government of a particular country, that they may be perceived as projecting the views of their own organization no matter how careful they may be to avoid doing so, nor should they be appointed with a view to gaining particular donor support. These considerations apply to all nominations for Board membership including those made by the CGIAR. It is evident that to view Board members as representing the views of particular governments or organizations, whether in the developed or the developing countries, would weaken the principle of the objective nature of the System and would put in question the governance of the Institutions by individuals chosen for their personal expertise. Should that occur, there would be mounting pressure by both the donors and the developing countries to change the nature of the Boards and make them representative bodies.

7.104 Other questions of membership of the Boards relate more specifically to the term of office of Board members and to the criteria for membership. There is considerable variation among Boards in the length of service of their members, although several Boards appoint them for a three-year term, once renewable. Others are contemplating the adoption of the same principle and the Committee strongly supports its adoption by all of the Boards.

7.105 Concerning the criteria for selection, it is clear that the members of each Board must collectively maintain expertise in relevant branches of the agricultural sciences as well as in financial and personnel management of scientific institutions. Although Boards have given full attention to the first of these two criteria they have not consistently given adequate attention to the second. Where appropriate, Boards should also maintain among their members those with more specific expertise relevant to the work of the Institution.

7.106 For example, many Boards would wish to have some members with first-hand knowledge of the economics, social organization and customs of the people in the countries served by the Institution. It might also be desirable to include members with specialized knowledge of the farming systems of the countries. Such requirements would indicate the need to select individuals from the developing countries who could foster close working relations with the countries served by the Institution. We discuss other issues relating to the participation of individuals from developing countries on Boards of Trustees in Chapter 8, while some additional points relating to the selection of Board members generally are given in Appendix IV.

7.107 We consider it essential that all prospective board members should be fully briefed on CGIAR affairs before taking up their positions on the Boards. Accordingly, we recommend that the CGIAR Secretariat should initiate a routine procedure designed to provide present and future Board members with information on their functions and responsibilities with respect to the Institutions, as well as on the organization and functioning of the System as a whole. We consider, for example, that all board members should receive a copy of the final report of this Review Committee.

7.108 Concerning meetings of the Boards, there is much to be said for keeping the business of the Institutions, like that of all public bodies, as open as possible. Donors should make an effort to accept invitations to attend Board meetings and boards should be encouraged to circulate minutes of their meetings (except those relating to closed sessions) to donors and to the two Secretariats. In recognition of the responsibilities of each Board to the System as a whole, as well as to its own Institution, Boards should include the wider affairs of the CGIAR in their discussions, through appropriate items on the agenda.

7.109 Effective management of the Institutions requires good relations between the Directors General and their respective Boards of Trustees. While the Board and its individual members must be careful not to interfere directly in the affairs of an Institution, the Director General must act at all times with the full authority of the Board. The Director General must also keep the Board fully informed on the operation of the Institution to ensure that members have sufficient background information against which to make decisions. The relationship between the Director General and the Board should be a symbiotic one in which each supports the work of the other. An effective relationship of this type can be a very powerful instrument in maintaining the vigour of an Institution and the confidence of the donors in its effectiveness.

HUMAN RESOURCES

7.110 In other sections of this report, we have discussed various aspects of human resources as they affect the operation of the System and the needs

of the developing countries. In particular, we have discussed training needs and manpower development generally; we have also discussed the need for maintaining the highest possible standards of recruitment both in the Institutions and in the service units; and we have considered the criteria for membership of Boards. In this section we deal specifically with two additional issues: the need for continuity of service of the staff of the Institutions and the role of women in the System.

Continuity of Service

7.111 One of the advantages of the International Institutions is that they have attracted and, in general, retained staff of high quality. Continuity of staffing and the greater understanding it fosters have contributed greatly to the successes achieved. This continuity of service is in marked contrast to the rapid turnover of professional staff in some of the research services of the developing countries where, over the years, the work has shown striking fluctuations in quality and extent.

7.112 High rates of inflation have necessitated frequent reviews of salary levels and terms of service in order to continue to retain and attract staff of high quality. In this connection it is important for the System not only that salaries should remain competitive but that staff should feel confident that their retirement benefits are not being eroded to a greater extent than those in comparable positions elsewhere.

7.113 Accordingly, we recommend that the CGIAR Secretariat should commission a study of social benefits in the System in order to investigate ways of safeguarding staff pensions in the face of continuing inflation.

The Role of Women in the System

7.114 In many parts of the developing world, women play an important role in agricultural production, for example as farm owners, managers, sales agents and field workers. Too often this role has been overlooked, resulting in reduced impact or even total failure of programmes related to agricultural development. Consequently, it is important that the System should give explicit attention to the role of women wherever relevant to its work. In particular, Centres should review their programmes, particularly those on farming systems, to ensure that the role of women is specifically considered and that the possibility of differential benefits to men and women is analyzed. Furthermore, we consider that TAC should ensure that the impact on women of the System's work is fully taken into account in designing and evaluating programmes of work.

7.115 We have already referred to the training needs of women (paragraph 5.56), and the need to review personnel policies of the Institutions in relation to the employment of women (paragraph 7.40). Currently, women play a relatively small part in the affairs of the System. We therefore recommend that vigorous efforts be made throughout the System to increase the participation of women as professional staff and to identify women qualified for membership on Boards of Trustees and of other CGIAR bodies. We further recommend that the Secretariat should report to the Group, at appropriate intervals, on progress made in these respects.

Chapter 8. PARTICIPATION BY DEVELOPING COUNTRIES

8.1 In Chapter 3, we analyzed the basic philosophy that underlies the structure of the CGIAR System. In doing so we emphasized the need for preserving its international nature and described ways in which it was necessary to compensate for the absence of central control by an intergovernmental body. In particular we referred to the role of the developing countries in these respects. We described the delicate balance that must be maintained between the countries that draw upon the work of the CGIAR System and the donors who support it. We have also analyzed the role of the System in the world pattern of related activities (Chapter 4). We concluded that the role of the Centres should be primarily directed towards the creation of new technology, rather than towards direct involvement in national programmes through technical assistance. We also showed that the specific role of an Institution has implications for its own governance as well as for the governance of the System to which it belongs.

8.2 We now examine the consequences of these conclusions for the procedures by which the System should nurture and strengthen its links with developing countries. To be effective, these links must satisfy the following requirements:

(i) they must ensure that the needs of developing countries are integrated into the process by which the policies of the Group are formulated, giving due consideration to the impact of new technologies on the countries the System serves;

(ii) they must enable similar considerations to be taken into account in formulating the policies, priorities, organizational patterns and operational procedures of the individual Institutions; and

(iii) they must permit a degree of co-ordination between national and international research and must foster creative relationships among the scientists involved.

8.3 During the course of the evolution of the System these links have been provided in a variety of ways that relate both to the formulation of policy by the Group and to the control and functioning of the individual Institutions. Indeed, there are already many well-established channels for participation by developing countries in the affairs of the System. Nevertheless, as the System has expanded, the developing countries have clearly felt a need for an even greater sense of involvement.

The Views and Aspirations of Developing Countries

8.4 In general, the developing countries recognize the great potential value of active collaboration with the CGIAR Institutions but specific problems remain to be solved if more of that potential is to be realized. Some

of the criticisms presented to the Study Team related more to individual programmes rather than to the Institutions themselves. Although the Institutions have already made great progress in forging productive associations with developing countries, it is vitally important that all the international staff in the System should be constantly aware of the need to foster and maintain good relations with the Government officials in the countries in which they operate or reside.

8.5 Individuals from developing countries consistently voiced the need for strengthening their participation in the System at all levels, but especially at the level of programme determination. The Committee agrees that participation of individuals from the developing countries in the affairs of the System is most needed and most effective at the level of programme formulation and on Boards of Trustees. Moreover, having regard to the aims of the System and to the need to preserve its international nature, we also agree that effective participation by individuals from developing countries is essential at all levels in the System. Consequently, we examine how their participation could be improved and make recommendations accordingly.

Involvement at the CGIAR Level

8.6 The Consultative Group includes ten member countries elected through the biannual Regional Conferences of FAO. Two countries are elected from each of the five regions. The countries then nominate individuals, either research administrators or senior scientists, to attend meetings as their representatives, but the understanding in the CGIAR is that only one person from each region acts as spokesman on any particular issue. Election is for two years, with the possibility of re-election. Attendance of these regional representatives has not been very good and only three were present at the CGIAR meeting in 1980.

8.7 CGIAR membership includes additional representation from individual developing countries by reason of their participation as donors. There were three such members in 1980, recently increased to five, with the possibility of some further increases in the future.

8.8 As far as the service units of the Group are concerned, half of the members of the Technical Advisory Committee come from the developing countries and half from industrialized countries. Currently, neither of the two Secretariats includes staff members from the developing countries, but the existing staff, though small in number, have wide international experience.

8.9 Interviews with individuals revealed a range of opinions concerning the relative importance of participation by the developing countries in such CGIAR activities as Centers Week. However, recommendations drafted in the three Regional Symposia, as well as at the Bellagio Conference in 1977,[1/] stressed the usefulness of maintaining this participation in the Group's

1/ "Potentials of cooperation among Agricultural Research Systems". Conference held at Bellagio from October 17-21, 1977.

deliberations. Dissatisfaction with the present method of participation was expressed, and explained mainly by the lack of briefing and commitment of those attending Centers Week. Recommendations to improve this participation were:

(i) that appropriate mechanisms should be developed for information about the System and the agenda of Centers' Week;

(ii) that the mechanism for selecting representatives should be improved in order that those selected would be interested in and knowledgeable of the System;

(iii) that a mechanism should be developed whereby scientists and administrators of each region could deliberate and provide an informal brief ing to their representatives; and

(iv) that the CGIAR should support the cost of the participation of developing country representatives.

8.10 We have already established the principles of operation under which the System may legitimately justify its non-political character. Provided these principles are followed, the effectiveness of developing country participants in the deliberations of the Group need not be as much related to their numerical strength, manner of selection, or their strong association with specific governments, as to the extent to which they are well-informed and effective in debates.

8.11 Furthermore, the weight of representation required at the Group level is also related to the type of management model followed. In a model where most of the control is decentralized, decisions in the central body are less important from the point of view of developing countries, particularly as the central function of the Group is mainly concerned with funding. It is then more important for developing countries to be strongly represented on Boards of Trustees, Programme Committees, etc., where they can effectively influence policies that affect them more directly. It would appear, therefore, that the greater the extent to which the mechanisms for policy-making are centralized, the greater the need for developing country participation within the Group.

8.12 Given that the general spirit of the recommendations in this report is directed towards keeping a decentralized system of management and operating principles that are compatible with the non-political nature of the System, it follows that the present spirit of representation by developing countries in the Group does not need to be changed. However, this argument does not negate the need to ensure that qualified, articulate and well-informed representatives of developing countries have opportunities for interacting with donors and others in the process by which policy decisions are made. This participation is healthy for the operation of the Syatem as a whole and

constitutes an effective mechanism for the development of a clear understanding of the System on the part of the professional community in the developing countries.

8.13 Against this general background, the Committee considers that a concentrated effort should be made to strengthen the present method of representation before any new methods are tried. The present mechanisms could be strengthened if the following action were taken:

(i) the CGIAR Secretariat and TAC should establish, in collaboration with FAO, mechanisms by which individuals who participate in meetings of the Group could be better informed about the System;

(ii) FAO should seek ways of increasing the continuity of attendance of those individuals chosen as representatives;

(iii) FAO regional meetings should provide opportunities for more extensive discussion of subjects that are relevant to the briefing of the representatives; and

(iv) the Group should ensure that funding is provided to enable the representatives to attend meetings of the CGIAR.

Participation in the Management of Individual Institutions

8.14 There is considerable variation among Institutions in the participation of individuals from the developing countries as members of Boards of Trustees. The following table gives the approximate position with regard to the number of individuals from developing countries who are currently members of Boards.

Numbers of Individuals from Developing Countries

Who are Members of Boards of Trustees

Institute	Number	Total	Institute	Number	Total
CIAT	10	17	IITA	8	15
CIMMYT	7	15	ILCA	5	12
CIP	5	10	ILRAD	5	11
IBPGR	7	16	IRRI	10	16
ICARDA	8	16	ISNAR	6	15
ICRISAT	5	12	WARDA	15	15
IFPRI	8	15			

The table shows the distribution of membership between developed and developing countries.

8.15 Interviews with representatives of individual countries and discussions at the Regional Symposia supported the importance of participation by individuals from the developing countries in the management of Institutions. There was also wide agreement that the appropriate mechanism for exercising this function should be through participation on Boards of Trustees. Although the individuals from developing countries have served with distinction on Boards, opinions varied on their general effectiveness in this capacity. A number of persons with experience on Boards considered that they had not been able to exert an effective influence on the policies of the Institution. Several explanations were offered, but the most important seemed to be a feeling of inadequate involvement in Board affairs and a lack of time to devote to them.

8.16 One way of increasing their effectiveness and influence would be to choose members who could devote more time to the affairs of the Institution, enabling them to develop closer contacts with the beneficiary countries generally, to monitor priorities and to assume the Chairmanship of the Programme Committee or the Board itself. The amount of time required for these activities would further restrict the choice of potential Board Members and would also add to the costs of operation, but would give Board Members from the developing countries a greater feeling of involvement in the affairs of the Institutions.

Staffing of Individual Institutions

8.17 As far as the senior staff are concerned, the numbers from developing countries vary considerably among Institutions. Preliminary estimates suggest that about one-third come from developing countries, of whom only a small proportion are in the most senior management positions. WARDA has been headed by an individual from a developing country throughout its period as a member of the CGIAR family, and the new Director General of ICARDA, who assumed office in July 1981, is from a developing country.

8.18 The participation of scientists from developing countries in staff positions in the Centres has been both criticized and recommended by individuals from developing countries. Critics have emphasized its "brain drain" effect and the creation of rivalries with colleagues left behind in the less favorable conditions of the national institutions. Supporters of the idea indicate its usefuless both as a training mechanism and as a way of introducing the perspectives of developing countries into the work of the Institutions. Although both arguments seem valid, they carry different weights depending on the relative supply of trained scientists in the countries concerned. In addition, some of the desirable features could be more effectively realized by:

(i) instituting a larger number of post-doctoral fellowships;

(ii) increasing, when possible, the proportion of senior management positions in the Centres occupied by persons from the developing world, and

(iii) creating a number of fixed-term appointments at each Centre to permit secondment of both young and established scientists from developing countries.

Participation in Programme Planning

8.19 In addition to their contributions as members of Boards and as members of the staff of the Institutions, individuals from developing countries contribute in a number of important ways to the determination of policies, priorities and modes of operation in numerous informal discussions between leaders of national programmes and the staff of the Institutions, as well as by participation in seminars, workshops, networks and other collaborative research programmes. There was general agreement that it was at this level of programme formulation and interaction with national programmes that their participation was most important and potentially most fruitful. It was also stressed that this level of relationship with national programmes was one that had created, in some instances, a feeling of frustration. The reasons given were principally:

(i) staff of Centres operating in countries without official clearing of their activities;

(ii) personal relationships of Centre staff with national research workers without regard to the official hierarchy;

(iii) lack of consultation by Centres regarding local research priorities;

(iv) the need for a larger number of scientists from developing countries to be involved in the work of Programme Committees; and

(v) lack of coordination among the Centres themselves, forcing national programmes to deal with what sometimes appeared to be competing interests of different Centres operating in the same region.

The general philosophy regarding the level and organizational forms used for these relationships varies considerably among Centres. Furthermore, the perceptions that developing countries have of the responsibilities of Centres in these respects also vary, although not in a consistent way.

8.20 A few Centres have developed formal advisory committees to select priorities, guide their programmes, and coordinate their activities with national programmes. Similarly, there are a few examples of Centre staff being invited to participate in national programmes or co-ordinating committees. Some Centres invite staff from national programmes to their internal reviews in a formal and consistent manner. In general, all of these mechanisms for participation were strongly supported by representatives of the developing countries.

8.21 Centres extensively use the less formal mechanisms of workshops and discussion groups in their relationships with national programmes. In spite of the usefulness of these methods, the Study Team heard criticisms that they may provide a biased feedback to the centres, especially if the national members of staff are invited directly by the Centres and not through those responsible for national policies. Nonetheless, there was strong backing for the idea of networks, especially by the representatives of countries with stronger national research systems.

8.22 A great deal of effort is devoted by the Institutions to initiating and improving this involvement of scientists from developing countries in the determination of research priorities, the formulation of plans and the implementation of collaborative programmes. In addition, Centers may organize technology transfer committees on the lines of the procedure adopted by ICRISAT. In such committees scientists from the developing countries should be actively involved.

8.23 A large proportion of the core activities of those Centres concerned with crop improvement is related to the generation of genetic material with wide adaptability. In relation to these activities, Centres must be able to design their programmes according to the requirements of their mandate while location-specific problems should be the responsibility of individual countries. Nevertheless, scientists from the developing countries must be able to discuss their particular requirements during the process of programme development. One way of allowing them to do so would be to provide for wider participation by leaders of national research programmes in internal reviews, together with the Programme Committee of the Board. Participants could be selected in a rotational manner from the countries interested in the activities of the Centre.

8.24 Some Centres have embarked on activities focussed on the specific needs of individual countries such as the development of site-specific technology, and other forms of technical assistance including training, trials in farmers, fields, etc. These types of activity impinge more directly on the direction and nature of technical change in the country in question and should be precisely tuned to the priorities and needs of the countries concerned. In this respect we recommend that the procedures currently in use should be reinforced to take into account the following needs:

(i) to establish formal mechanisms through which Centre staff should obtain approval at the appropriate administrative level for the development of the activities proposed; and

(ii) to establish contacts with donors in order that funds can be available to interested countries to contract with Centres on mutually agreed collaborative programmes or to participate in a collaborative network.

8.25 We foresee that effective participation by the developing countries in the affairs of the System will continue to evolve along the lines that have already been developed. Owing to the large number of organizations and individuals involved in the work, however, there can be no escape from the continuing need to foster good communications at all levels of organization in the System and among all of the individuals concerned.

Chapter 9. FUNDING THE SYSTEM

9.1 In 1972, total expenditure on core activities was $19.5 million compared with a total financial requirement expected to be about $177 million in 1982. These figures exclude the costs of Special Projects. Details of expenditure from the time of the inauguration of the first International Centre are set out in Table 9.1. A breakdown, showing expenditure by individual Institutions is given in Tables 9.2-9.4. Growth of the System in constant 1981 dollars is shown in Figure 9.1.

Core Capital and Operating Expenditures

9.2 The figures in Table 9.1 illustrate the remarkable success of the CGIAR in mobilizing funds although the real rate of increase is obscured by inflation. In current dollars, the core expenditure of the System grew at an average rate of almost 25% from 1972 to 1981; in real terms the average growth rate of core funds was 15%. The average rate of growth in expenditure on Special Projects was somewhat greater: 28% in current dollars and 18% in real terms.

9.3 These average growth rates are somewhat misleading, however, in that they conceal the sharp reduction in growth that has been forced on the System in recent years not only by inflation but also by strains on the economies of the industrialized countries. Although core expenditures of the Institutions have been increasing in current terms, the real growth of the System has slowed dramatically, as Table 9.5 shows. In both 1975 and 1976, as the First Review Committee reported, 91% of the annual increase in total expenditure was was either for new programmes or for the expansion of existing ones. By 1981, this figure has fallen to 33%, the remainder of the budget increase being absorbed by price increases caused by inflation or currency fluctuations. In 1981, over $7 million had to be cut from budget requests in order to meet the financial shortfall in relation to new or expanded programmes, which had already been reduced by some Boards of Trustees in response to the guidelines set by the CGIAR Secretariat. Subsequently a further cut of more than 2.5% had to be made owing to shortfalls that occurred after the budgets had been approved by the CGIAR. The real rate of growth in 1981 is therefore smaller than that indicated in Table 9.5 and negative for some Institutions. Moreover, it seems certain that the real growth of the System will at best be small in 1982.

9.4 As the First Review Committee predicted, capital expenditure has declined as a percentage of total core expenditure. In 1976, capital comprised 21% of total expenditure and by 1981, had falled to 8%. It is expected that only ICARDA and to a lesser extent ICRISAT will now have substantial requirements for capital. Nevertheless, it is unlikely that annual capital expenditure will fall below the current level of $11 million The older Centres will need to replace obsolete equipment and some of the buildings and facilities are already showing signs of wear and tear, and will need renovation.

Table 9.1 Institution Expenditures, 1960-81, in current $US thousands

Year	Core Operations	Core Capital	Total Core Expenditures	Special Projects	Total Expenditures
1960	160	7245	7405		7405
1961	188	-	188		188
1962	434	-	434		434
1963	512	360	872		872
1964	566	-	566		566
1965	1091	173	1264		1264
1966	1832	106	1938		1938
1967	3040	-	3040	49	3089
1968	2897	2946	5843	341	6184
1969	5649	4614	10263	1170	11433
1970	7643	5617	13260	1376	14636
1971	9874	8001	17875	1514	19389
1972	13364	6178	19542	2188	21730
1973	18111	7561	25672	3236	28908
1974	25360	6757	32117	4099	36216
1975	33929	10792	44721	5725	50446
1976	45296	12198	57494	7073	64567
1977	59847	18053	77900	9241	87141
1978	76575	21118	97693	10729	108422
1979	93908	15194	109102	14822	123924
1980	111563	12140	123703	18069	141772
1981 R	133147	11000	144147	19923	164070
TOTAL	644986	150053	795039	99555	894594

R - Latest estimates.
Source: Center Budget Documents.

Table 9.2 Core Operating Expenditures 1960-81
(in current US$ thousands)

YEAR	IRRI	CIMMYT	IITA	CIAT	CIP	ICRISAT	ILRAD	ILCA	WARDA	IBPGR	ICARDA	IFPRI	ISNAR	TOTAL
1960	160	-												160
1961	188	-												188
1962	434	-												434
1963	512	-												512
1964	566	-												566
1965	841	-	250											1,091
1966	1,025	457	350											1,832
1967	1,202	838	1,000											3,040
1968	1,553	1,187	112	45										2,897
1969	1,927	2,080	695	947										5,649
1970	2,135	2,587	1,342	1,579										7,643
1971	2,310	3,046	2,169	2,349										9,874
1972	2,607	4,060	3,270	2,891	352	184								13,364
1973	2,800	5,026	4,491	3,630	1,024	1,140								18,111
1974	3,693	5,714	5,959	4,503	1,792	2,816	142	260	475	6				25,360
1975	5,479	7,472	7,201	5,270	2,280	3,393	520	1,272	555	487				33,929
1976	7,331	8,712	8,353	5,878	3,187	4,151	1,925	2,811	656	915	1,377			45,296
1977	9,012	9.760	10,025	8,388	4,307	5,391	2,655	4,233	882	1,258	2,767	1,169	-	59,847
1978	10,960	12,587	11,580	9,977	4,965	6,565	5,327	5,403	1,384	1,715	4,517	1,595	-	76,575
1979	13,376	14,582	13,351	12,619	6,582	8,637	5,611	6,812	1,516	2,369	6,505	1,948	-	93,908
1980	15,797	16,179	14,996	14,361	7,405	10,352	7,226	8,306	2,289	3,031	8,402	2,467	752	111,563
1981 R	19,257	19,700	15,796	17,111	8,450	12,915	8,336	8,766	2,822	3,304	11,511	3,000	2,179	133,147
TOTAL	103,165	113,987	100,940	89,548	40,344	55,544	31,742	37,863	10,579	13,085	35,079	10,179	2,931	644,986

R - Latest estimates.

Table 9.3 Capital Expenditures 1960-81
(in current US$ thousands)

YEAR	IRRI	CIMMYT	IITA	CIAT	CIP	ICRISAT	ILRAD	ILCA	WARDA	IBPGR	ICARDA	IFPRI	ISNAR	TOTAL
1960	7,245													7,245
1961	-													-
1962	-													-
1963	360													360
1964	-													-
1965	173													173
1966	106													106
1967	-													-
1968	79	193	2,512	162										2,946
1969	28	77	4,027	482										4,614
1970	-	1,786	3,098	733										5,617
1971	366	1,902	4,647	1,086										8,001
1972	353	975	3,127	1,426	140	157								6,178
1973	284	1,298	1,657	2,496	256	1,570								7,561
1974	2,257	359	699	987	446	1,403	564	42						6,757
1975	3,038	97	1,281	768	420	2,996	1,886	306						10,792
1976	2,380	315	1,076	418	1,015	2,674	2,735	1,414	171	-				12,198
1977	2,950	316	712	1,111	1,227	4,367	2,766	2,343	393	-	1,868			18,053
1978	1,447	335	3,346	1,712	412	6,031	2,595	1,907	330	-	3,003			21,118
1979	430	317	2,397	750	480	3,169	1,772	2,016	242	-	3,621			15,194
1980	100	382	502	1,425	329	1,913	1,915	1,483	303	-	3,406	-	382	12,140
1981 R	200	400	1,025	343	300	1,515	2,404	1,000	121	-	3,573	-	119	11,000
TOTAL	21,796	8,752	30,106	13,899	5,025	25,795	16,637	10,511	1,560		15,471		501	150,053

R - Latest estimates.

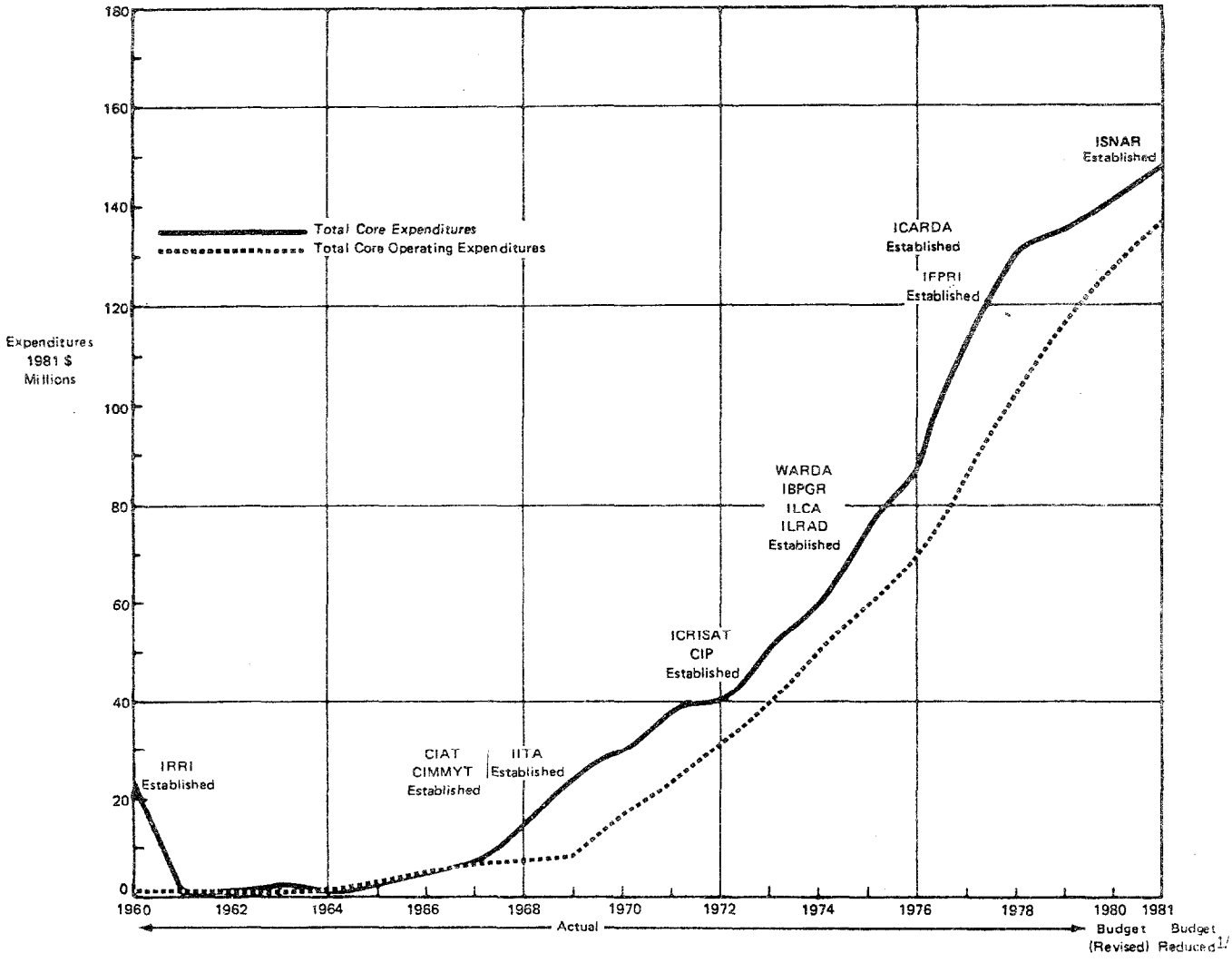
Table 9.4 Special Projects Expenditures 1960-81
(in current US$ thousands)

YEAR	IRRI	CIMMYT	IITA	CIAT	CIP	ICRISAT	ILRAD	ILCA	WARDA	IBPGR	ICARDA	IFPRI	ISNAR	TOTAL
1960														
1961														
1962														
1963														
1964														
1965														
1966														
1967		49												49
1968		341												341
1969	782	388												1,170
1970	569	807												1,376
1971	778	734	2											1,514
1972	1,013	1,165	10											2,188
1973	1,482	1,506	248											3,236
1974	1,536	1,362	553	602	17			29						4,099
1975	1,884	1,427	1,332	613	186	103	-	180		-	-	-	-	5,725
1976	2,046	1,555	1,631	710	540	472	-	119		-	-	-	-	7,073
1977	2,602	1,946	2,076	730	331	1,440	-	116		-	-	-	-	9,241
1978	3,392	1,304	2,512	1,306	442	1,531	-	196		-	46	-	-	10,729
1979	4,872	1,724	3,735	1,782	350	1,734	-	172		-	453	-	-	14,822
1980	4,904	1,447	4,531	2,333	423	1,999	-	252	864	16	1,300	-	-	18,069
1981 R	4,844	1,407	5,190	2,404	315	2,174	-	780	1,521	-	1,197	-	91	19,923
TOTAL	30,704	17,162	21,820	10,480	2,604	9,453		1,844	2,385	16	2,996		91	99,555

R-Latest estimates.

Figure 9.1

International Agricultural Research Centers
Annual Core Expenditures and Core Operating Expenditures 1960–80
(in Terms of Constant 1981 Dollars)



1/ Level of Budget Expenditures to be Proposed to the CGIAR

World Bank – 21950

CGIAR Secretariat 1980

Table 9.5 Annual Percentage Changes in Expenditure in the CGIAR System, in Real Terms

Year	Core		Total Core Expenditures	Special Projects
	Operational Expenditures	Capital		
1972	29	-27	4	37
1973	30	18	26	42
1974	32	-16	18	20
1975	22	46	27	27
1976	19	0	14	10
1977	28	43	31	26
1978	12	8	15	7
1979	15	-36	4	28
1980	10	-28	5	17
1981	3	-13	2	-6

Special Projects

9.5 Expenditure on Special Projects by each Institution is given in Table 9.4.

Table 9.6

Total Expenditure on Special Projects as a Percentage of the Total Core Budget

Year	Percentage
1972	11.2
1973	12.6
1974	12.8
1975	12.8
1976	12.3
1977	11.9
1978	11.0
1979	13.6
1980	15.1
1981	14.0

9.6 Expenditure on Special Projects reflects the ability of the institutions to attract funds for specific purposes, for example, technical assistance projects to help individual countries strengthen their national research programmes, collaborative research programmes or, less frequently, the acquisition of some new facility. Of the three main types of special project, the collaborative programme is the most common (for further discussion of special projects, see paragraphs 9.18 to 9.28).

Availability of Funds

9.7 The funding shortfall of the past two years has focussed attention on the resources that will be available to meet the needs of new programmes and activities. Funding in the System is complex in that it is based on the individual commitments of a large number of donors, most of whom earmark their funds for individual Centres, either for core support or for the support of individual activities. Decisions are made on an annual basis, with pledges made approximately two months before commencement of the budget year of the

institutions. Often, as in 1981, the final tally of available funds cannot be made until the expenditure period is underway. This creates complexity for planning and budgeting.

9.8 Because each donor is independent, it is not possible to expect fully assured forward funding in the System. However, some attempt should be made to increase the predictability of funding. In other words, there is a need for a greater degree of accuracy in forward planning at all levels: the System, the Centres and the programmes. It is also essential to give the Centres that feeling of the security of their basic budgets so necessary for recruiting and retaining research scientists of high quality.

9.9 Three avenues might be explored to introduce a higher degree of budget stability and predictability. One is to increase the number of donors. The larger the number, the less would be the impact of the withdrawal of one. Those responsible for fund-raising consider that there are possibilities for adding a few new donors. The question of additional developing countries becoming donors was raised and one suggestion was that host countries as well as other countries that benefit substantially from the research of the System would be logical candidates. We have considered this suggestion in some detail. If a country contributes to a Centre primarily because it is benefitting directly from that Centre's work, it may expect a direct response to its future needs. This expectation would be increased if the funds were contributed specifically to compensate for a shortfall in funding affecting the Centre in question. It seems clear that if developing countries choose to become donors, they should join the CGIAR on the same basis as other donors in order that the Centres should not be subjected to pressures arising from the policies of particular donors.

9.10 A second suggestion relates to the erosion of funding, in constant dollar terms, caused by the difference in the provision for inflation by donors and the actual inflation experienced by the Centres. It was suggested that donors might attempt to establish, as an operating principle, mechanisms for adjusting their donations annually to match the inflation percentage in the System. Implementation of this principle by a high proportion of donors would not only introduce more assurance of programme continuity, but would also provide a better basis for planning at all levels.

9.11 A third suggestion is that donors might consider the possibility of making forward commitments for a three-year period. Some already are in a position to do so, and others indicated that it might be possible in the future.

9.12 Fund availability has not been a problem until recent years, as evidenced by the growth rate of budgets. However, it has now become a major problem. Donors generally expressed the view that it was increasingly difficult to increase their pledges although most were optimistic about increases to cover inflationary costs at the level provided within the

budgets of their own countries. With inflation running at a weighted average of 15 per cent for the Institutions, this leaves a gap. Many donors pointed out that while they had maintained their contributions to the System, reductions had been made elsewhere in their budgets, illustrating their generally strong support for the System.

9.13 Although the general view presented to the Study Team was one of restrained funding for at least a few years ahead, some stated that if new, well-planned proposals were advanced, new funds might be found. Moreover, if the network approach were introduced more widely, it seems probable that bilateral funds could be made available to the countries, particularly in sharply focussed networks for which the Centres provide the central coordinating function. Although this type of support for research would not increase the funds directly available to the System, it would expand the research potential of the Centres. Furthermore, the linkages developed by the Institutions for undertaking strategic research on a collaborative basis (see Chapter 6) represent further inputs into the System, often provided on a cost-free basis as far as the CGIAR is concerned. In total, these activities could increase considerably the total resources available to the System.

9.14 In summary, we think that the next five-year period will be one of financial constraint, but we are optimistic about the basic funding level and we think there are real possibilities both of funding new activities and of expanding the work of the System through collaborative effort.

9.15 The division of responsibility for donor relations is another question that has been raised. At present, individual Directors General maintain close contact with the donors who fund the work of their Institution, and also search for new donors. In addition, the Chairman of the CGIAR and members of the CGIAR Secretariat are deeply involved. Some have said that this divided responsibility is an inefficient use of the time of the Directors General. They argue that Directors General should devote their main energies to management of the Institutions and that the CGIAR Secretariat and the Chairman should be responsible for all, or most, of the direct contacts with donors for funding purposes. In our view, if this policy were adopted, the consequence, in the long run, would be a serious decline in donor support. The System is built on the free choice of donors for support of individual Institutions. Direct contact with the Director General provides the donor with access to first-hand information about the Institution. Further, we have no concerns about the competition among Institutions that results from these individual approaches. A moderate degree of competition is healthy for the System. We think that the Directors General, the CGIAR Secretariat and the Chairman all have important roles to play in fund-raising which, with due attention to coordination, they should continue vigorously to fulfil.

Donor Contributions

9.16 As Table 9.7 indicates, the number of donors has increased from 16 in 1972 to 32 in 1981 contributing about $140 million, compared with 26

who were contributing $63 million five years previously. Since 1976, the average annual increase has been 17% in current dollars and 8% in real terms.

9.17 Traditionally, 35% of the requirement has been met by two donors, the United States and the World Bank and, in 1981, almost 50% of the total requirement was met by only four donors. As the contributions of the two largest donors are based on the contributions of the remaining members, the CGIAR is still highly dependent on the policies of a relatively small proportion of the total membership. The donors now comprise the majority of the industrialized countries, as well as an increasing number of developing countries. India, Mexico, Nigeria, and the Philippines have already joined and it is hoped that others, particularly the major beneficiary countries, will also do so. What will be difficult in the future will be to find new donors who could bring relatively large sums (e.g. $5 million) into the System.

EXTRA-CORE FUNDING

9.18 Funds that are pledged by donors to the System at Centers' Week are contributed for the main or "core" programmes of the Institutions. It is these programmes that form the basis of the budgets submitted to the group for approval. The Institutions also seek funding for other activities called "Special Projects" that are additional or complementary to their core activities. The term "extra-core" was proposed for these funds by the 1977 Review Committee.

9.19 One of the fundamental characteristics of the System has been the attempt to have, at one and the same time, a co-ordinated mechanism of funding but freedom among donors to choose which Institutions to support (unrestricted core funding) and even which programmes within an Institution to support (restricted core funding). The Institutions would find it much easier to run their affairs if all the funds pledged by donors for core programmes were unrestricted, and several donors have already agreed to greater flexibility in this respect. This quite unusual set of circumstances has been made to work only because of the existence of funds from the "donor of last resort" (the World Bank) and because of the goodwill of some donors in allowing flexibility in the way that they pledge their funds (see also paragraph 7.25).

9.20 Nevertheless, concern is continually expressed by donors about the effect of extra-core funding on the delicate mechanisms of balancing an essentially de-centralized budget. We have already referred to the need for more details of extra-core funding to be supplied with the budget submissions (paragraph 7.25). We have also noted that Recommendation 9 of the First Review has not been implemented. That recommendation listed the circumstances in which the Institutions should refer to TAC before undertaking special projects. We consider that the principles of the recom-

Table 9.7 CGIAR CONTRIBUTIONS 1972-1981
($ millions)

	Actual									Estimated
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981 1/
African Dev. Bank							.025	.030	.040	.050
Arab Fund						.310	.310		.255	.255
Asian Dev. Bank				.300		.500	-	.700	-	-
Australia		.005	1.015	1.215	1.745	1.790	2.580	2.650	2.955	3.315
Belgium	.140	.600	.380	.620	1.740	2.250	2.720	3.085	3.265	3.530
Canada	1.160	1.780	4.675	4.340	5.390	6.800	7.370	7.544	6.875	7.620
Denmark	.250	.225	.370	.400	.455	.615	.760	1.045	1.210	1.170
EEC						2.500	2.240	3.790	4.545	5.460
Ford Foundation	5.315	3.675	3.000	2.800	2.000	1.590	1.000	1.000	1.300	1.300
France			.130	.410	.510	.415	.340	.675	.855	1.095
Germany		1.805	3.040	3.935	4.475	5.350	6.760	8.475	10.100	10.000
IDB			2.030	4.120	5.000	5.700	6.185	6.200	6.700	7.400
IDRC	.175	.345	.645	.990	1.780	1.305	1.045	1.818	1.530	1.075
IFAD							-	1.550	3.570	6.570
India										.500
Iran					1.975	2.000	1.000	-	-	-
Ireland							-	-	.200	.200
Italy					.100	.030	.100	.100	.700	1.250
Japan	.105	.230	.265	.675	1.200	2.500	3.500	4.845	7.000	8.400
Kellogg Foundation	.155	.290	.280	.290	.300	.310	.320	-	-	-
Leverhulme							-	-	.490	.585
Mexico							-	-	.495	1.000
Netherlands	.375	.430	.555	1.235	1.500	1.720	1.785	2.430	2.600	3.070
New Zealand					.105	.025	.025	.025	.025	-
Nigeria				.645	.645	.620	.790	.825	1.976	1.720
Norway	.075	.185	.445	.810	1.120	1.510	1.880	1.975	1.995	2.000
OPEC Fund							-	-	.900	1.000
Philippines							-	-	.150	.500
Rockefeller Foundation	3.990	4.545	3.500	2.885	2.165	1.595	1.250	1.220	1.600	1.000
Saudi Arabia					1.000	1.000	-	-	-	-
Spain										.500
Sweden	1.000	.150	1.490	2.290	2.255	2.240	2.725	3.115	3.390	3.525
Switzerland		.410	.140	.460	.855	1.205	1.350	1.850	2.450	2.580
United Kingdom	.690	1.110	1.920	2.410	2.890	3.515	4.765	6.395	6.790	7.140
UNDP	.850	1.000	1.465	2.165	1.930	3.500	4.400	3.995	4.615	4.981
UNEP				.600	.340	.340	-	.150	-	-
United States	3.770	5.390	6.805	10.755	14.870	18.140	21.145	24.800	29.000	35.000
World Bank	1.260	2.780	2.375	3.195	6.525	7.850	8.675	10.200	12.000	14.600
Others										
Kresge	.750									
TOTAL	20.060	24.955	34.525	47.545	62.870	77.225	85.045	99.487	119.576	138.391

Source: Centers' Program and Budget Papers and accounts, 1974-1981.

1/ Contributions as pledged November 1980. Values will vary depending on date of disbursement.

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mendation were sound, but that the requirement to submit proposals to TAC for prior approval was perhaps too restrictive and bureaucractic to be generally acceptable. Nonetheless, we consider that both the donors and the Institutions should examine proposals for Special Projects very carefully before accepting a commitment to them. Where doubts arise, the proposals should be submitted to TAC for prior approval, particularly under the following circumstances:

(i) when there is a question of whether the purpose of the activity lies within the mandate of the Institution,

(ii) when acceptance has implications for future core support,

(iii) when the proposed activity might put undue strain on the management of the Institution, and

(iv) when the extent of the funding is particularly large.

9.21 Extra-core funding originates from three main sources and, there are roughly six uses that Institutions might make of them. Our views on the eighteen combinations of source and use are summarized in Table 9.8 and explained in the comments that follow.

9.22 We consider that funds given to an Institution outside a donor's main pledge (Table 9.8, a) should be used for expanded core activities only if there is some technical reason preventing the donor from providing the funds through the CGIAR. Otherwise, the action both of the donor and the Institution could be seen as an infringement of the basic principles on which the cohesive operation of the System depends. On the other hand, if it is not possible for technical reasons for the donor to include the funds in question in its CGIAR pledge, then the mechanism could be seen as a legitimate way of allowing the Institutions to use their initiative in attracting additional funds, thus increasing the total resources available to the System.

9.23 Following a similar principle, we consider that members of the Group should refrain from funding prospective core activities within a Center that are awaiting consideration or approval by the Group (Table 9.8, b). On the other hand, we see no reason for restraining Institutions from procuring funds from non-members, provided that the proposed work falls clearly within the mandate of the Institution, and due account is taken of its implications for other aspects of the work and overhead costs.

9.24 If, after a full hearing from the Board, the Group recommends that certain activities at an Institution should be phased out (Table 9.8, c), we consider that the Board would be unwise to attempt to circumvent that decision. Likewise, Boards should not attempt to seek funding for work outside their mandates (Table 9.8, d).

Table 9.8 Extra-core Funding

Type of Activity	Source of Funds		
	Members of the Group		Non-members of the Group
	Not part of CGIAR pledge by donor's decision	Not part of CGIAR pledge, for technical reasons	
a. Expansion of core activities capital equipment etc.	Not acceptable	Acceptable	Acceptable
b. Long-term activities within the mandate but not yet approved by the CGIAR	Not acceptable	Not acceptable	Not acceptable
c. Maintenance of core activities that the Group had decided to phase out for policy reasons	Not acceptable	Not acceptable	Not acceptable
d. New long-term activities outside the mandate	Not acceptable	Not acceptable	Not acceptable
e. Special Projects directly concerned with national programmes	Sometimes acceptable	Sometimes acceptable	Sometimes acceptable
f. Fixed-term activities directly related to the mandate	Acceptable	Acceptable	Acceptable

9.25 The definition of the extent to which the Institutions might reasonably become directly involved in work for national programmes (Table 9.8, e) presents especially difficult problems. Collaborative programmes can be of great benefit to both the developing countries and the Institutions, provided that the country, the Institution and the donor are all agreed on the scope, purpose and timing. Indeed the success of the original programmes in wheat and rice depended greatly on arrangements of this type. Many other examples could be cited, a more recent one being IITA's collaborative programme in Nigeria, where the Centre was not only able to explore the validity of its findings on raising the yields of interplanted cassava and maize, but also to identify some of the constraints on the adoption of the improved varieties.

9.26 Our views on the relationship between the Centres and national programmes (Chapter 4) apply to both core activities and special projects. Here, we are concerned with the direct involvement of Centres in national programmes through Special Projects, and we have already established the basic principle that the Project should be relevant to the work of the Centre. We do not wish to imply, however, that Centres should be unresponsive to clearly perceived needs, but we concur with the views of the First Review Committee that Centers must guard against significant effort and resources being drawn away from their central mandates.

9.27 It is short-term projects directly related to the mandate of the Institution that are truly "special" (Table 9.8,f). They enable new avenues to be explored and new opportunities to be exploited. We consider that Institutions should be given every encouragement to undertake short-term projects of this type, provided that such projects do not have long-term implications for overhead costs.

9.28 To summarize, we consider that extra-core funding can be a valuable means of increasing the ability of Institutions to respond quickly to new opportunities; it should not be used, however, to circumvent the allocative procedures established by the Group nor to divert the Institution from its central mandate. If the Institutions are to be accountable for their actions to the Group then the donors must respect the collective wishes of the Group regarding the allocation of what have become scarce financial resources. These conclusions are consistent with those of the 1977 Review Committee. We also endorse its view that for review purposes the programmes of an Institution should be regarded as an integrated whole, regardless of the type of funding.

Chapter 10. FUTURE STRATEGY AND FIVE-YEAR INDICATIVE PLAN

10.1 The first five-year period of the CGIAR was one of rapid expansion, the second was one of consolidation and further growth but on a declining scale; we see the third as one of limited growth of the individual Institutions, but marked by the development of wider collaboration to increase the total volume of research aimed at solving food problems in the developing countries.

10.2 In evolving towards a more integrated System, the International Institutions are changing the emphasis of their approaches and collaborating more effectively with the developing countries they serve. We have seen how they are also collaborating with each other to develop integrated regional programmes, and with other research institutions to obtain results that they could not produce themselves. We have endorsed the importance of close collaboration among scientists in multi-disciplinary teams for the solution of more complex problems, and we have supported the development of carefully planned collaboration in programmes and networks involving national as well as international staff. We have also described ways of strengthening the collaboration among the Boards, the members of the Group and the service units that administer its policies.

10.3 The future strategy should clearly be to encourage the productive trends already present in the System and to reinforce the value of the work without making demands on the donors that they are either unable or unwilling to meet. The framework of the System is now firmly established; it must remain dynamic and have the courage to discontinue activities as well as to support new ones.

10.4 The recommendations in this report are designed to ensure that the successes of the past will be repeated in the future. At the same time they have been framed with the recognition that, in the years immediately ahead, expansion of the work will depend not only on the provision of increased funding but also on the efforts of the Institutions to foster wider collaboration. We see a period during which current trends in the evolution of the System will be reinforced through wider participation in its work and a common understanding of the contributions that can be made to alleviating world food problems through agricultural research at both the national and international levels.

Five-Year Indicative Plan: 1983-1987

10.5 A rolling five-year financial plan for the System was introduced by the CGIAR Secretariat in 1979 and described in the 1979 Integrative Report. It was adopted by the Group and subsequently updated annually. We consider a sound five-year plan to be a vital element in the planning process of the System and support its continuation.

10.6 All forward plans have limitations and must be used with caution. A five-year financial plan can provide a general framework describing the

most likely requirements of the System during the projection period, but it should not be considered as a precise and definitive pattern of development. For donors it will provide guidelines for forward financial planning, but it should not necessarily be regarded as either a ceiling or a floor for funding in any single year. Similarly, although it should be built on the plans of individual Institutions, it should not be seen as having established budgetary limits for any particular Institution. The development and maintenance of a realistic plan of action, which is reasonably sound in its predictions, and can secure the general support of the donors, requires sound information on costs and priorities for operations and capital, as well as clear indications of the Group's intentions on funding new or expanded activities. As we suggested in Chapter 7, its preparation should involve the Institutions, TAC, the Budget Review Committee, the CGIAR Secretariat and the donors in a series of interactive discussions.

10.7 The quality of a forward plan of this type is highly dependent on the quality of the information fed into it. It must start with information on the long-term plans and five-year financial forecasts of the individual institutions as developed by their Boards. A basic requirement is a five-year financial forecast, endorsed for each Institution at the time of the external review, and updated annually in terms of major changes in programmes and associated costs. Because forward estimates of operating costs and capital requirements are not yet available for all of the Institutions, the indicative plans produced so far have involved judgements made by the CGIAR Secretariat on the basis of information that contains considerable deficiencies. We indicated earlier (Chapter 7) and emphasize again here the need for the Institutions to produce their forward plans as a matter of great urgency.

10.8 For purposes of constructing a five-year plan, different assumptions have been made by the Secretariat for the newer or developing Institutions as compared with the older or established ones. Allowances built into the Indicative Plan for growth of the newer Institutions have been related to the requirements estimated to make them fully operational. For the established ones, however, a growth rate of 3% per annum has been assumed as an aggregate figure, recognizing that the actual growth might vary considerably from one Institution to another, and from one year to another. Some of the reservations expressed by donors to the Study Team concerning the Indicative Plan concerned this apparent commitment to indefinite growth in the System, unrelated to specific programme elements. The Committee considers that future five-year plans should not include assumptions of incremental growth, but should reflect specific and approved lines of action.

10.9 Consequently, in constructing a five-year plan for the period 1983-1987, we have not included a provision for incremental growth of the established Institutions. Furthermore, we have been influenced by the views of some donors who consider that the activities funded by the CGIAR should not be allowed to grow much larger, at least in the immediate future. In this connection the Committee does not favor the concept of a predetermined optimum size for any particular Institution. Rather, the Institutions should expand, contract or change their methods of operation according to the needs of the work and the resources available.

10.10 As a contribution to the Committee's development of a Five-Year Plan for the period 1983-87, the Secretariat, using updated information and the principles on growth agreed by the Group in May 1979, revised the planning amounts for 1982-86 and 1983-87. On these assumptions, the total budget expressed in constant 1982 dollars, would grow from $187 million in 1983 to $216 million in 1987, an increase of 22% over 1982, representing an average annual growth rate of 4.1%. Although this rate of increase is by no means out of keeping with the requirements of the System's work, the Committee has recognized the difficulties that some donors would encounter in attempting to provide resources of this magnitude, having regard to the economic problems they face in their own countries.

10.11 There are additional difficulties in the process of constructing a realistic five-year financial plan. The uncertainties of rates of inflation and the depreciation or appreciation of relative values of currencies have caused us to focus our attention on the constant dollar as a basis for future planning. Nevertheless, we shall discuss the impact of inflation and currency fluctuations later.

10.12 We have also recognized the possibilities that might exist for increasing the efficiency in the use of funds following an in-depth review of the financial management of the Institutions, recommended in Chapter 7, and the scope there might be for shifting funds among programmes within the Institutions following rigorous internal reviews. The possibility also exists that as a result of external reviews TAC may identify activities that could be reduced substantially, or even phased out, with a consequent release of funds for expansion of existing or initiation of new activities.

10.13 Taking all of these considerations into account, we propose that an indicative plan for the period 1983-87 be initiated from the elements shown in Table 10.1. It should continue to be updated anually as more accurate information comes to hand. The data presented in Table 10.1 are based on information available from the Institutions, estimates made by the CGIAR Secretariat and our own preceptions of donor intentions.

10.14 Element 1 shows the level of funding required to maintain the overall operation of the existing Institutions at the 1982 level. It is not meant to imply that there would be no changes, or that all programmes would continue in their present form during the whole period. It does not preclude reduction or even total phasing out of programmes at particular Institutions, with proportional expansion at others if, in the considered view of the Group, such changes would be in the best interests of the work and represent the most efficient use of resources.

10.15 Element 2 represents the amounts estimated by the Secretariat to be necessary to allow the existing Institutions to reach their intended level and standard of operation. The increases would, in all cases, relate to specific proposals, however, and would be subject to the normal procedures for budget scrutiny and approval by the Group.

Table 10.1 Five-Year Plan Recommended by the Review Committee
(Constant 1982 $ Millions)

		1983	1984	1985	1986	1987
(a)	Basic Operational Requirements					
	1. Operations and working capital at 1982 level	167	167	167	167	167
	2. Estimated increases to bring all existing Institutions to an approved level and standard of operation	4	8	13	17	18
	Sub-total	171	175	180	184	185
(b)	Capital Requirements					
	3. Estimated capital requirements, excluding part of the building requirements of ICARDA	11	10	8	8	6
	4. Remainder of ICARDA building requirements	3	3	3	3	1
	Sub-total	14	13	11	11	7
(c)	Additional Elements					
	5. Provision for accelerated programmes (see text)	1	3	5	5	5
	6. New activities					
	(i) Water Management	1	3	5	5	4
	(ii) A Second Activity			1	2	3
	Sub-total	2	6	11	12	12
(d)	Grand Total	187	194	202	207	204

10.16 Element 3 is the estimated capital requirements allowing approximately 50% of the total building costs of ICARDA, and element 4 is the remaining proportion of the ICARDA building costs. The total building costs of ICARDA were approved by the Group at its meeting in 1979, but the ICARDA Board subsequently thought it might be possible to obtain funding, to the extent indicated in element 4, from sources outside the CGIAR. The Group having decided to establish ICARDA is under some obligation to ensure that it has adequate facilities for carrying out its mandate. It may wish to reconsider an investment in capital plant of this order of magnitude, having regard to current problems in the region served by ICARDA, or it may wish ICARDA to continue to seek funding from sources other than regular CGIAR contributions. One way or the other, it should reach a decision.

10.17 Concerning capital requirements generally, the information available does not permit a full analysis of the extent to which capital items represent additions to the programmes or facilities, and the extent to which they represent replacement of existing, but worn out, items. Some, but not all, of the latter category are included under operating costs. Accordingly, the Committee endorses the Secretariat's plans to convene a meeting of the Comptrollers of all the Institutions in order to discuss, among other financial and budgetary matters, the need for more precise analyses of capital items.

10.18 Element 5 is a provision to encourage the Institutions to implement some of the proposals made in this report. Appropriate components of programmes would be submitted by the Institutions in their budget proposals and reviewed by TAC. The suggested categories of work are:

(i) strengthening the multi-disciplinary approach to commodity programmes in order to accelerate progress and exploit breakthroughs on the major problems limiting yield, quality and the adoption of technology;

(ii) increasing the use of collaborative networks; and

(iii) strengthening strategic research on appropriate topics.

The proposal is that this provision would provide 50% of the funds needed by an Institution to implement the work. The remaining 50% would be provided by the Institution from savings achieved in its core budget after careful scrutiny of its internal priorities. The arrangement is aimed at encouraging the Institutions to identify their lowest priority areas and transfer funds to areas of higher priority within their central mandates. Allocation of funds under this arrangement would be for an initial period of three years, but would be renewable or transferable to the main core programme if so recommended by TAC.

10.19 Element 6(i) provides for the addition of a new activity in water management beginning in 1983, although the operational details have still to be worked out. The figures include the estimated operational costs as well as provision for capital requirements. Element 6(ii) allows for a second, as yet unidentified, new activity to begin in 1985.

10.20 From the foregoing discussion, it is clear that the grand totals of these elements represent, in the most realistic terms possible on the available information, the requirements of the System to develop and sustain the structure already approved by the Group. They also include a minimum provision for the addition of accelerated programmes and new activities. Essentially, the figures represent tight levels of financing, implying sound management, reassessment of internal priorities and the phasing out of activities, consistent with the need for the System to remain a dynamic force in international agricultural research. The figures do not, however, take into account the effects of inflation.

10.21 Estimating future price increases with reasonable accuracy is difficult and any projection of price increases for an extended period must be treated with great caution. Clearly, a projection of such increases, for one or two years in advance, is important for planning purposes for the donors. Consequently, it is important for the CGIAR Secretariat to develop as accurate forecasts as possible, taking into account, as they are now doing, the estimated rates of price increase for the activities of each Institution. The individual estimate of price increase for each Institution needs to be provided to donors and this should be done in adequate time for financial planning by the donor. Such information might well assist in accomplishing the goal of enabling donors to plan their contributions to cover the cost of the price increases.

10.22 The total price increase is determined by four inter-related elements: (a) the distribution of expenditures in the countries in which the Centers operate and in the industrialized countries, (b) price increases in the countries of operation, (c) price increases in industrialized countries and (d) fluctuation in the values of currencies. Based on these four elements, the combination of which is Institution specific, a weighted rate of price increase has been arrived at for each center for 1982.

10.23 The conversion of the projections from constant 1982 dollars into current dollars for the years 1983 and 1984 has been done on the basis of the weighted average for all centers as obtained for 1982. Two estimates are presented in Table 10.2; one based on the same rate for both years (15.5%) and the other on a declining trend of one percentage point per year from 1982. With the price increase, an adjustment of the working capital fund has been built in, based on 8.2% of the nominal increase of the operating expenditure in current dollars to keep, on average, the working fund at the conventional level of 30 days' operating expenses. As a basis for planning, it might be reasonable to assume that the requirements of the System in current dollars would lie within the limits set by the two estimates.

Table 10.2 Estimated Financial Requirements for 1983 and 1984 in Current Dollars (Millions)

			Constant 1982 Dollars	Current Dollars	
				Fixed Rate of Price Increase	Declining Rate of Price Increase
1983	(a)	Operations	171	198	196
	(b)	Capital	14	19 1/	19 1/
	(c)	Additional elements	2	2	2
	(d)	Total	187	219	217
1984	(a)	Operations	175	234	228
	(b)	Capital	13	20 1/	20 1/
	(c)	Additional elements	6	8	8
	(d)	Total	194	262	256

10.24 Having regard to the restrictions on the availability of funds with which many of the donors are faced, the Committee discussed two possible scenarios for the future of the System, in relation to the basic requirements for funding as presented in Tables 10.1 and 10.2 First, it discussed some of the consequences of shortfalls. It then proceeded to consider the desirability of persuading donors to reassess their priorities in order to channel more funds into international agricultural research through the CGIAR System. Table 10.1 could then be regarded not as the estimated requirement for the five-year period, but as the base-line to which additions could be made as a result of positive responses by donors to specific and well-conceived proposals made by the Institutions and by TAC.

The Consequences of Shortfalls in Funding

10.25 There are real dangers in constraining the funding of the System too tightly. With inadequate or declining funds, cuts would be made by deferring capital expenditure, deferring staff replacements, postponing the planned development of programmes and by such things as cutting allocations for travel, workshops and training. All of these would result, quite rapidly, in seriously impairing the effectiveness of the work.

10.26 The established Centres, on which the reputation of the System has been built, need adequate funding to allow them to exploit new and unpredictable opportunities as they occur. All the Institutions need to be in a position to respond to new ideas and to develop new lines of work. Tightly-constrained budgetting leads to inertia, a lack of flexibility, declining staff morale and failure to respond positively to the needs of the countries that the System is intended to serve.

1/ including incremental working capital.

10.27 With no expansion of the older Centres, there is a real danger that they would no longer be able to attract onto their staffs the most competent young scientists at the forefront of new thinking and at the most innovative stages of their careers. Furthermore, although we endorse the principle of giving the Institutions every incentive to eliminate the least productive aspects of their expenditure, in reality there might be little more that they could cut. The nature of the work is such that some of the programmes must expand in order to maintain the progress already made. These circumstances are particularly applicable to those programmes in crop improvement concerned with breeding for resistance to pests and diseases. For reasons such as this, and because efficiency in the use of funds is not necessarily equal in all Institutions, painful decisions would have to be made. Indeed, in circumstances of serious shortfalls in funding, it might well be preferable for the Group to discontinue its support for a whole Institution, rather than to remove the limbs from an Institution that had already undergone major surgery.

The Case for Expansion

10.28 The decision to create the CGIAR a decade ago recognized the overwhelming needs of the developing countries for larger and more reliable supplies of food both for survival and ultimately for self-sufficiency. The commitment made by its founder members to support a concerted effort in international research carried with it an obligation to continue to support that effort until its purpose had been fulfilled. Its purpose, which was valid a decade ago, is even more relevant today. Those who now support the CGIAR have a collective responsibility to maintain adequate levels of funding for its Institutions, not only as a reflection of the integrity of the Group, but also as a commitment to the vast numbers of less advantaged people in the world that it serves.

10.29 The favourable cost-benefit ratios of well-planned and efficiently-managed agricultural research are well understood and universally accepted. They form the basis of the heavy investment in agricultural research in the developed countries. By comparison, total investment in agricultural research in the developing countries, including that invested through the CGIAR, is very small. For example, investment in research at a single university in the USA may amount to more than $200 million compared with a total approved budget for the CGIAR of only $149 million (gross) for 1981.

10.30 In Chapter 1, we saw how the development of new technology and its application in farmers' fields provided the best ways of stimulating food production in the developing countries, because the local adoption of new technology is largely independent of the forces that determine the mass movement of food from one region to another through the process of trade. We saw that the development of technology, particularly that adapted to the needs of the resource-poor farmer, was entirely dependent on vigorous research programmes and that, for the foreseeable future, it would be essential for national programmes to be backed by international effort. Currently, the CGIAR does not attempt to encompass the whole field of agricultural research, nor does it cover all food commodities or all research related to food production. TAC

has identified many additional areas where there is an urgent need for international effort: research on tropical vegetables, aquaculture, pests and diseases of food crops, plant nutrition and a range of food commodities not currently included in the mandates of the Institutions, to mention but some of the problems detailed in TAC's priorities paper. Furthermore, we have already described the great importance of finding the resources to expand at least some of the programmes currently in progress. The scope for more research and training is enormous but, relative to the needs, the resources currently available are scarce. Many of the developing countries are not yet ready to devote large amounts of their own resources to agricultural research and training. They lack the professional personnel and the commitment to this type of work which, in the developed countries, has been built up over generations, rather than over years.

10.31 In all important respects, the CGIAR System has the framework for doing the right things in the right ways. It is evolving in a manner that allows flexibility in responding to needs and exploiting opportunities; it fosters a highly-efficient and professional approach; it permits increasing participation by individuals from developing countries, not only in its operations but also in the management of its affairs. Moreover, as we discussed in Chapter 3, it provides bridges across national boundaries to bring the results of research to bear on the problems of world agriculture and, both directly and indirectly, to harness the resources of the industrialized countries in support of research directed to the food needs of the developing countries.

10.32 During this second review of the CGIAR, donor organizations and developing countries have freely and openly expressed their views to the Study Team. They have described what they perceive to be the strengths of the System as well as its weaknesses. We, as a Committee, have responded to those views and added some suggestions of our own. In the conclusions and recommendations of this report we have sought to preserve and develop the strengths of the System and to suggest action that will satisfy both the concerns of the donors and the aspirations of the developing countries.

10.33 We believe that the System should conduct its affairs and the Institutions their operations in ways that allow the maximum participation by all concerned. The donors must be constantly reassured that the Institutions are soundly managed and that funds are being used for the purposes intended. The developing countries must likewise be reassured that the System is directed towards meeting their most urgent needs, both in research and in manpower development. With these basic requirements met, we see no virtue in imposing unnecessary constraints on the future expansion of the System.

10.34 If, in the face of rapidly rising costs of inputs, food production is to keep pace with the needs of an ever-expanding population, we see no alternative to massive investment in the development of new technology. Consequently, there could be no more effective way of contributing to the world food problem, and no better way of using funds for development, than by supporting international agricultural research through work sponsored by the CGIAR. We hope that this report will assist those responsible for

determining priorities in the allocation of funds for international development to understand and support the work of the CGIAR System, so that it will continue in the future, as in the past, to make vital contributions to the world problems of food supply and malnutrition.

APPENDIX I

VIEWS EXPRESSED BY THE DEVELOPING COUNTRIES IN THE REGIONAL SEMINARS ORGANIZED IN CONJUNCTION WITH THE SECOND REVIEW OF THE CG SYSTEM

Introduction

A comparative Analysis of the Views and Aspirations of the Developing Countries regarding the CGIAR System

African Regional Seminar, Nairobi, Kenya

1. Agenda and Summary Statement by Participants
2. List of Participants

Asian Regional Seminar, Laguna, Philippines

1. Summary of the Discussion by the Chairman

Meeting of Directors of National Agricultural Research Systems in Latin America and the Caribbean, San Jose, Costa Rica

1. Preliminary Considerations regarding the Relationship between the International Centres and the National Research Agencies

2. List of Participants

INTRODUCTION

The members of the Team attended three regional Symposia organized during the month of March in Nairobi, Kenya; Los Banos, Philippines and San Jose, Costa Rica. The first two Symposia were organized in conjunction with the Second CGIAR Review by regional chapters of IFARD with the collaboration of ISNAR and funding by the Governments of Sweden, Holland and Australia. The Seminar in Latin America was organized independently from the Review but with similar objectives in mind, by IFARD, ALCA and IICA with funding from IICA and the Government of Spain. Representatives of national research institutes attended the three Seminars and discussed a number of subjects related to the relationship of developing countries with the CGIAR. The three Symposia produced brief documents summarizing the main conclusions of the discussions. The document prepared in the African and Latin American Seminars is the result of a joint effort of all participants and has their formal approval. The document related to the Symposium in the Philippines is the summary prepared by its Chairman. On the other hand, the Latin American Symposium, because of the special circumstances of its organization, produced, in addition to summary recommendations, a number of documents presented by individual speakers. These papers are available for consultation.

Although the recommendations produced in the three Symposia reflect similar preoccupations and perceptions on the part of the participants, they also suggest interesting and important differences. In addition, they indicate some differences in perception with previous important and well-attended workshops. A brief analysis of these differences, as well as the agendas, list of participants and the summary of recommendations produced in the three Symposia are presented in this appendix.

A COMPARATIVE ANALYSIS OF THE VIEWS AND ASPIRATIONS OF THE DEVELOPING COUNTRIES REGARDING THE CGIAR SYSTEM

1. Nature and Activities of the System

The information obtained during the course of these reviews, as well as that available from previous sources, indicate that the perceptions of the developing world regarding this issue have some variations.

A large number of persons interviewed, especially those representing the largest and more developed countries tend to uphold the ideal model of the International Center focussed on applied research and progressively maturing into doing some strategic research. At the other extreme, a number of people coming from the smaller and poorer countries would like to see the Centers concentrating on production of technology readily applicable to their own specific production conditions and helping them to develop their weak national programmes.

In spite of these differences, what emerges as the majority view regarding the future orientation of the System is clearly summarized in the recommendations of the 1979 Bellagio Conference. There the representatives of the developing countries suggested that the Centres should concentrate their long-run effort on the following activities:

- collection, conservation and distribution of germplasm
- organization of research designed to increase the level and stability of yield ceilings
- development of research techniques
- relevant training programs
- organization of information and bibliographic services
- organization of symposia and seminars

It is important to emphasize that in these recommendations they specifically excluded farming and cropping systems research, including animal components and common factor research.

The general tone of these recommendations was also voiced in the three Symposia organized in connection with this Review. However, some differences in emphasis must also he mentioned.

The Manila meeting stressed the limitations of farming systems research and socio-economic research. However, they also indicated the possible role in methodology development that the Centres could play in these related fields. Similarly, the participants stressed that the Centers should increasingly move into strategic research and to the development of new approaches that could have a catalytic effect on national programmes.

On the other hand, the Nairobi Seminar indicated the need for the Centers to pay more attention to research based on ecological and regional problems, rather than on crop programmes. Similarly, the African representatives and some of those from Asia indicated that research on non-food crops should only be undertaken as part of specific and important farming systems.

The differences of emphasis, especially between the Bellagio Conference and the Nairobi Symposium, can be accounted for by the different level of development of the national programs represented. The Bellagio Conference brought together some of the best known scientist-statesmen from the developing countries and consequently was a biased sample in the direction of the more advanced developing countries. It is only natural that these representatives would view the Centers in their more traditional role of improved germplasm generators.

On the other hand, it is also important to mention that in the discussions at the three Symposia and in the interviews in individual countries, only in a few cases issues related to the small, resource-poor farmer were mentioned as an overriding research priority for the Centers. This issue was

not addressed in relation to the concept of appropriate technology, to labor intensive technology or to the concentration of effort on food crops. Furthermore, in regard to crops, a few representatives mentioned the importance of cash crops as a way of increasing the poor farmers' income. (See Ruttan's paper in the San Jose Symposium for a good conceptual discussion of this topic.)

This lack of emphasis on the needs of resource-poor farmers contrasts strongly with the views expressed at the Conference organized by SAREC in 1979. The recommendations of this Conference strongly emphasized issues related to the resource-poor farmer, the usefulness of farming systems' research and the relevance of socio-economic and agricultural policy research problems. This conference also reflected a much more critical view of the Centers and was more demanding with respect to coordination of activities among Centers and between them and national programmes.

In spite of the fact that a variety of opinions exist, it is important to emphasize the common ground of most of the views and the considerable coincidence of these views with the recommendations developed by TAC.

2. Developing Countries' Views and Aspirations Regarding Their Participation in the System

Developing countries' representatives have consistently voiced their desire for strengthening their participation in the System. However, the options suggested for this participation and the problems they create are quite varied. Similarly, the emphasis placed on the different functional levels at which this participation can be developed varied considerably among countries. (See the main body of the document for a discussion related to these functional levels.)

a) Participation at the Overall Policy Level

Interviews with invididual countries produced divided opinions in regard to the relative importance and potential effectiveness of developing countries' participating in Centres' Week as members of the donor group. However, recommendations drafted in the three regional Symposia organized in relation to this Review and the well-attended Bellagio Conference of 1977 stressed the usefulness of maintaining developing countries' participation in the Group's deliberations. Also mentioned was the present dissatisfaction regarding the ineffectiveness of this participation, which was mainly explained by the deficient information and commitment of persons attending Centres' Week. Recommendations to improve this participation were: 1) to develop appropriate information mechanisms about the CGIAR System and the agenda of Centers' Week; 2) to improve the selection mechanism of representatives, in order that those selected are interested in and knowledgeable about the System; 3) develop a mechanism by which countries of each region can deliberate and provide an informal mandate to their representatives; and 4) that the CGIAR support the financial cost of this participation.

In addition to these recommendations, the African and Latin American countries suggested the possibility that regional representatives be selected through the newly organized IFARD in biannual meetings organized for that purpose. This would ensure a more direct relationship of selected representatives to the regional establishment, keeping political considerations at a lower level. In addition, the delegates could exchange relevant information during the meetings and draft a mandate for their representatives to the CGIAR.

The Asian countries suggested the creation of a new advisory body to the CGIAR (Policy Advisory Committee, PAC) that would channel national needs to the CGIAR. PAC would be integrated exclusively by developing countries' representatives.

b) Participation in the Policy Formulation and Management of Individual Centers

Interviews with individual countries' representatives and discussions in the Regional Seminars upheld the importance of developing countries' participation in the management of individual Centres. There was also wide agreement that the appropriate mechanism for exercising this function was through participation in the Boards of Trustees.

On the other hand, opinions regarding the effectiveness of this participation, in the light of past experience, was varied. A number of representatives considered that their capacity effectively to influence the direction of the Centers has been low.

This undesirable result was basically exlained by two reasons:

i) The informality of the System as a whole created grave informational deficiencies in regard to the individual Center, and the System as a whole. This lack of information, coupled to the presence of donors on the Boards (and other donors who are better informed on most of the crucial issues) tend to inhibit critical comments and substantive discussion.

ii) Time dedicated to Board matters was considered insufficient in most cases. However, it was not clear how many of these same Board members could effectively allocate more of their time to Board matters if they were requested to do so.

c) Program Formulation and Execution

Most individuals interviewed in developing countries, and the reports prepared in the Regional Symposia, emphasized that this level of interaction with national programmes was the most important and potentially fruitful level of relationship. They also stressed that this level of relationship was one that has created, in a number of cases, the highest level of frustration. This frustration originates principally in:

i) Centers' staff operating in countries without appropriate clearing of their activities;

ii) personal and selective relationships of Centres' staff with national research workers;

iii) lack of consultation regarding research priorities;

iv) lack of co-ordination between the Centers themselves, which forced the national programs to deal with what sometimes appears to be competing interests of the different Centers operating in the region.

This general philosophy, regarding the level and organizational forms used for these relationships, varies considerably among Centres. Consequently, the perception that countries have of different Centers varies considerably although not in a consistent manner.

Only in a few instances have Centers developed formal advisory committees to guide their programmes in priority selection and as a way of co-ordinating activities with national programmes. Similarly, only a few instances can he found where Centers are invited to participate in national programming committees and/or invite their national counterparts to their internal reviews in a formal and consistent manner. Developing countries' representatives, in general, approved of this possible mechanism and, indeed, the few observed cases seem to be successful (for example, ILCA in Mali).

Centers extensively use the more informal mechanism of workshops and informal discussion groups in their relationships with national programmes. In spite of the potential usefulness of these methods, developing countries feel that they are incomplete, insufficient and tend to provide a biased feedback to the Centers. This bias originates in the fact that the national staff invited and selected by the Centers may not be as well informed on national policies as would be desirable.

In addition, an observed problem is the drawing of national staff and resources into the specific programmes within the mandate of the Centers, without adequate consideration to the over-all priorities or needs of the developing countries.

There was a strong backing to the idea of networks, specially voiced by representatives of countries with stronger national research systems, who more forcefully resent the "big brother" approach and expect a relationship based on mutual respect and shared responsibilities.

The African countries forcefully indicated the desirability of the Centers including a larger proportion of scientists coming from developing countries on the staff of Centers. They claimed that this procedure would not only integrate the views of developing countries into the daily operations of the Centers, but would also be an effective training mechanism and a way of improving personal relationships between staff at Centers and those in national programmes.

3. Diversity in Levels of Development and Research Capabilities of Beneficiary Countries: The Need for Compromise

A large part of the diversity in opinions and perceptions reflected by developing countries can be explained by the different levels to which they have been able to develop their own research capabilities. This, in turn, strongly conditions not only their real needs and the most effective contribution the Centers can objectively make, but also their subjective perceptions in regard to the System, as well as the personal expectations of the individual researchers.

A progressively larger number of countries have attained a respectable level of development in their research capabilities. A small number of them have become or are becoming donors (Philippines, Mexico, India, Nigeria and Brazil). Others, like Argentina, although not formally part of the system, have relatively large and well-rounded research systems, and are capable of carrying out a sizeable part of their most pressing research needs. It is only natural that these countries would like to see the Centers in their more traditional role of collection and development of genetic materials (strategic and applied research) that they can use as basic inputs in their own reasonably well-developed breeding programmes. They have little interest in, and see with reservation, the Centers doing research on farming systems, agronomic practices etc. (adaptive research), activities which they consider their own responsibility. This perception is not only natural but also conceptually correct in relation to an effective global research system, as discussed in the main body of the report.

These same countries are particularly interested in the network idea and expect to be treated by the Centers as equals. Similarly, the fact that they have reasonably large numbers of well-trained and mature researchers makes them desire and expect to participate on Boards, TAC, etc., and thus exert some degree of influence on the whole System. These are the countries that have voiced with more conviction the importance of having beneficiary countries representation in Centers' Week and to attain through it and other mechanisms some political control of the individual Centers and of the System as a whole. These comments, however, must also be contrasted with the views of a representative of a relatively large Latin country who argued that political control had been a negative factor in the development of national research institutions and thus it should be avoided in the case of the Centers.

At the other end of the spectrum, there are several small and poor countries, many of which have achieved independence only recently. These countries have extremely weak research systems and few trained personnel. As a consequence, they tend to see the Centers as the best (perhaps the only) source of technology that may help them to solve their food problems. These countries tend to have a less critical view of the present operational methods of the Centers, are less inclined to wish to influence their research

priorities and are not very interested in networks with shared responsibilities. These countries are the clients for Special Projects and outreach activities directed to technical assistance and direct transference of technology and they are also the main users of the present training programmes focussed on middle-level staff.

This diversity of interests and needs, in conjunction with the different developmental paths followed by different Centers, makes it particularly difficult to prescribe the optimal role and organizational pattern to be followed by all Centers in the development of links with national institutions at the programme level.

SECOND REVIEW OF THE

CONSULTATIVE GROUP ON INTERNATIONAL

AGRICULTURAL RESEARCH

DRAFT

PROCEEDINGS OF THE

AFRICAN REGIONAL SEMINAR

Nairobi, Kenya
3-5 March 1981

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Introductory Remarks

1. Mr. Stachys N. Muturi, the Science Secretary of the National Council for Science and Technology of Kenya welcomed the participants and hoped that they had a comfortable trip to Kenya. He proceeded to outline the main objectives of the Seminar.

2. The first review of the CGIAR was carried out in 1976. Since that time, new centres have been added to the system making it more complex. During the CGIAR meeting in Manila in November 1980, it was decided that a second review be undertaken and that regional seminars be organized to facilitate inputs from developing countries into the review. The African Regional Seminar had been organized to gather opinion on the extent to which the CG system has met its objectives in the continent. The Government of Sweden had provided funds for the seminar.

3. Mr. Muturi further elaborated on the purpose of the meeting by giving the following major objectives:

(a) The CG system's strategy for the future;
(b) Relationship with African countries;
(c) Structure, organization and management of the CGIAR system; and,
(d) Efficiency of resource utilization.

4. Mr. Muturi informed the delegates that 25 African countries had been invited to participate, out of which eighteen countries had arrived (Sudan joined the meeting later). A number of countries had not responded to the invitation while others who had accepted the invitation and had been ticketed had not turned up.

Election of Chairman and Rapporteurs

5. The meeting proceeded to elect Mr. S. N. Muturi as its Chairman and Dr. J. M. Liwenga (Tanzania) and Mr. B. Traore (Mali) as rapporteurs. The Chairman informed the participants that he had made arrangement for the rapporteurs to be assisted by two senior scientists, Drs. F. J. Wang'ati and J. D. Wachira, from Kenya.

6. The meeting discussed the question of participation of representatives from the CGIAR system and agreed that this was not desirable as a matter of principle.

Adoption of Agenda

7. After discussion, the following agenda and programme were adopted:

Tuesday, 3 March 1981

Session I

0900 - 0930	-	Registration of Delegates
0930 - 1000	-	Election of Chairman and Rapporteurs
1000 - 1030	-	Administrative Arrangements
1030 - 1100	-	Coffee/Tea Break
1100 - 1130	-	Adoption of Agenda & Procedural matters
1130 - 1230	-	Financial disbursement
1230 - 1400	-	LUNCH.

Session II

1400 - 1530	-	Brief Statements on the State of Agricultural Research in Participating countries
1530 - 1600	-	Coffee/Tea Break
1600 - 1700	-	Brief Statements on the State of Agricultural Research in Participating countries.

Wednesday, 4 March 1981

0900 - 0930	-	Opening Ceremony including statement on the 1st Review (1976)
0930 - 1030	-	Purpose of the CGIAR System (T1)
1030 - 1100	-	Coffee/Tea Break
1100 - 1230	-	Relationship between CGIAR System and National Agricultural Research Systems in Africa (T4)
1230 - 1400	-	LUNCH
1400 - 1530	-	Relationship between CGIAR System and National Agricultural Research Systems in Africa (T4 contd.)
1530 - 1600	-	Coffee/Tea Break
1600 - 1700	-	Activities of CGIAR System in Africa (T2)
1830 - 2030	-	Cocktail Party hosted by the National Council for Science and Technology, Baraza Room, Panafric Hotel

Thursday, 5 March 1981

0900 - 1030	-	Donor Contributions to the CGIAR System (T3).
1030 - 1100	-	Coffee/Tea Break
1100 - 1230	-	Future Development of CGIAR Centres (T5)
1230 - 1400	-	LUNCH
1400 - 1530	-	Personnel, Organization and Management of the CGIAR System (T6 & T7)
1530 - 1600	-	Coffee/Tea Break
1600 - 1700	-	Conclusions.

8. Members further agreed that in order to facilitate more meaningful discussion, each delegate would prepare and circulate a brief statement on existing agricultural research system in his own country including any activity sponsored by CGIAR centres.

State of Agricultural Research in Participating Countries

9. It was noted that every African country represented at the Seminar has recognised the importance of agricultural research and had had some form of research organization even before independence. During this session, participants accordingly gave brief statements on the state of agricultural research in their respective countries. It was evident from these statements that with inevitable variations in detail, the objectives, organization, problems and experiences are generally common and could be summarised as follows:

(a) Objectives:

10. African countries have as their main objective in agricultural research the continuing effort to provide technology which could help to keep livestock and food production ahead of the relatively fast rate of population growth. Furthermore, cash crops constitute an important contribution to the GNP and more importantly are the primary sources of

foreign exchange essential for development of African countries. In this respect, development of improved livestock, higher yielding crop varieties as well as methods of intensive production have achieved greater emphasis followed by problems of diversification in food and traditional cash crops. Animal production, soil and water management, aquaculture, crop protection and socio-economic studies are also increasingly becoming important.

(b) Organization and Management:

11. There are several systems of organization of research in participating countries - research based in government departments, research councils, universities, semi-autononous and fully autonomous research institutions. It was apparent that semi-autonomous research institutes has many advantages and is increasingly being adopted. One major advantage seems to be the greater flexibility in management leading to stabilization of research scientists. The change to this system has not been without some problems in some countries where new management has had to find a place in the overall government administrative machinery and the associated difficulties of coordination.

12. Most countries represented had a network of agricultural research institutions and stations located in such a way as to cover the important agro-ecological zones. where such a network was not available, plans were already being made to fulfil this need.

13. It was also evident that most of the countries represented were either already participating in or had desire to collaborate with activities of International Agricultural Research Centres, notably CIMMYT, IITA, IRRI, WARDA, ILCA, CIP, ICARDA and ICRISAT.

14. Most countries had experienced changes in government policies relating to agricultural research organization and management. This was reflected in changes of priorities and resources allocated to agricultural research with greater emphasis on food crops. It was, however, felt that current resource allocation of less than 1% GNP to agricultural research does not conform with the importance of agriculture in these countries.

(c) Linkages:

15. All countries recognised the importance of establishing suitable and efficient machinery for transfer of research findings to the farming community as the only way of justifying allocation of public funds at the national level. Efforts were being made to improve the linkage between research, the extension service and the farmer but a lot still remained to be done to make this linkage effective.

(d) Problems and Experiences:

16. In most African countries, agricultural research programmes were carried out by foreigners before independence. Consequently, there was considerable instability following independence and the departure of most expatriate scientists. While a lot of effort had been made to train local scientists, there was, and there still is, a dire need for both trained manpower and training facilities in various scientific disciplines. Unfortunately, it would appear that attraction and retention of trained manpower has continued to be a problem common to all African countries. The problem appears not to have been adequately recognised at the highest policy

making levels of most national governments. While efforts continue to be made to improve the appreciation of this problem nationally, participating countries generally felt that the CG system, especially the IARCs, could play a more prominent role in the training and development of research personnel at both the high and middle levels.

Opening Ceremony

17. The Chairman welcomed Professor P. Gacii, Secretary, Kenya National Council for Science and Technology and members of the CGIAR Review Mission. After introduction, Prof. Gacii addressed the Seminar. He welcomed the participants on behalf of the National Council for Science and Technology and hoped that they had a pleasant journey and wished them a happy stay in Kenya.

18. In his address, Prof. Gacii noted the importance of agriculture in African economies not only in feeding the people but also in the generation of foreign exchange. He further observed that agricultural research is an important input in promoting national development, with favourable input-output relations. The research system was, however, faced with organizational, financial and manpower problems. He also noted that the linkage between research and extension services and the farmer was poorly developed in most African countries. The CGIAR System was well placed to assist in overcoming these problems. It was gratifying that the second review of CGIAR has made arrangements for the African input. He therefore wished participants success in their deliberations and formally declared the Seminar open.

19. In response to Prof. Gacii's address, Dr. Agble from Ghana moved a vote of thanks on behalf of the participants and the CGIAR Review Team. He expressed appreciation for the continuing interest and support by Kenya Government and the NCST which had facilitated two regional meetings of Directors of Agricultural Research in Nairobi. He noted that Kenya had consistently attended the CGIAR meetings as one of the representatives of the African region.

20. Dr. M. Arnold, a representative of the Review Team, also expressed appreciation to NCST and the Kenya Government for hosting the regional seminar in Nairobi, and the Government of Sweden which had provided financial assistance.

Brief Statement by the Representative of the CGIAR Secretariat

21. Dr. J. Coulter tabled two documents for the guidance of participants. One document was the 1979 Integrated Report of the CGIAR System. The second document provided a brief commentary on how CGIAR Organization functions as part of overall research system.

22. Dr. Coulter noted that increase in agricultural production may be derived from increase in land under production or through efficient utilization of various inputs. He observed that for success in development of agricultural research, both total amount of funding and its stability are equally important. Furthermore, the effective use of available funds can make a difference between success and failure of any research programme.

23. The CGIAR System had categorised countries in various groups according to status of national agricultural research systems. These categories range from those countries with what is considered adequate level of manpower, well organized research structure, effective linkages with other countries and research centres, to those with very limited resources and whose current levels of production of any single crop does not warrant a complete research system.

24. Dr. Coulter traced the evolution of the International Agricultural Research Centres including such aspects as growth in financial support, peculiar advantages of the system and the impact they have had in adoption of new technologies. The CGIAR also examined the likely future direction of the CG System including such factors as resource allocation, policy, and the choice of crops to be improved through research.

25. Finally, Dr. Coulter dealt with the linkage between the national research programmes and those of the International Agricultural Research Centres and suggested a number of kev issues which the seminar could discuss.

26. In the discussion that followed, the participants felt that they could not discuss the report in detail since they had not had time to study it. The Review Team requested participants to advise on the methods of achieving better communication between CGIAR and the African Countries. It was suggested that each government should identify an appropriate office where CGIAR documents could be directed to ensure efficient distribution. Participants felt that there was no problem where research management was centralized but in many cases the current fragmentation of research establishments presents a problem. Some members suggested that CGIAR should carry out studies in the latter countries to advise on possible reorganization. The consensus was that proper channels of communications exist but should be better utilized. The CGIAR Centres should also be encouraged to set up appropriate forums of communication in developing countries.

Purpose of CGIAR System (T1)

27. This topic was considered very important and was discussed at length. The objectives of the CG System were read out as a basis for discussion. Participants considered that the CGIAR System had been fairly successful especially in the activities at the Research Centres, and there was no need for change in its objectives.

28. A number of changes were, however, required in the outlook and, possibly, organization of these Centres in order to meet the needs of the African Region especially in adoption of research findings from the Centres into the national programmes. One of the recommended changes is that the Centres should decentralise their activities and work more in collaboration with national research systems. It was strongly felt that Africa had special problems of agriculture which had not been adequately recognised by the CGIAR System. Delegates called for a new direction of activities of the Centres which should now focus on Africa, especially IITA. An example was given of IRRI which had achieved success in Asia. Participants suggested that this Centre should now turn its efforts to Africa where its research work had so far had little impact on rice production.

29. Participants expressed concern at the current lack of long term commitment to funding of the IARCs by donors. They wondered how the continued existence of the Centres could be assured without longterm planning.

30. Some participants felt that the shift in policy by some donors from funding of research to funding of development projects had an adverse effect on the development of national agricultural research capacities and hence on the effectiveness of the CG system. If this situation persists, it should be realised that the benefits would be short lived in the absence of local technological capability to sustain investiments in development projects.

31. It was observed that there is an apparent preference by donors to channel their research funds to the CGIAR System at the expense of national agricultural research systems. This was considered undesirable and not conducive to a good working relationship between the Centres and the national research systems. Participants stressed that the Centres will only be effective if national systems are strong enough to absorb the Centre outputs. It was recommended that a mechanism be established to enable donors and Centres to have direct inputs including funding, equipment, personnel, library facilities and training, in national research programmes in order to improve their absorptive capacity. ISNAR was considered suitable in performing these tasks.

32. Participants also stressed the role of the CGIAR Centres in training national staff. The CGIAR was requested to consider allocating at least 60% of the training capacity of the Centres to Africa and to organize training facilities to cater for various levels of personnel from management to technicians.

33. To complement training at the IARCs, it was recommended that CGIAR should solicit funds from donors to enable the system support post-graduate training in about four universities in Africa. All African countries would be availed opportunities under this programme.

Relationship between CGIAR System and National Agricultural Research Systems in Africa (T4)

34. Discussion on this topic centred on the mechanism for improved linkages between IARCs and the national research systems. It was noted that national systems differ greatly in their capacity to absorb or participate in outreach programmes of the Centres and effort should be made to establish functional outreach stations in a number of countries.

35. A delegate stated that the linkage between IARCs and North African Countries was poor. In this case, attention was drawn to existing laboratories which could be augmented by the Centres to enable them to carry out effective research and training on localised problems. The cases of biotypes, soil salinity and waterlogging were mentioned as examples.

36. Considerable discussion took place on the contribution by African national research systems in policy making systems of CGIAR and the Research Centres. Participants stressed the need for the IARCs to ensure participation in their meetings by regional representatives of national research systems by providing full funding to meet travel costs. Membership of the Governing Boards of the Centres should also be reviewed to ensure that the African members are knowledgeable in and can represent the interests of the region as opposed to national problems.

37. It was also considered important to expose research directors and other scientists at national level to the work of the Centres through well planned visits to the IARCs. Since many African countries could not afford travel costs for such visits, it was recommended that the CGIAR should provide such funding. It was also recommended that research directors and scientists availed of such opportunities should visit as many Centres as possible in one trip. This arrangement would be less expensive than the present arrangements where only one Centre is visited at a time.

38. The current fears of brain drain can be alleviated if IARCs were to adopt a system of employing a few core scientists to be supplemented by short-term secondment of national scientists to the Centres for periods of about two years.

39. Scientists at the Centres should be encouraged to visit national programmes regularly in order to learn first hand possible bottlenecks in the adoption of the results of their research at national level.

40. Another interesting possibility was the participation of scientists from IARCs in technical specialist meetings organised by national research systems. This was already taking place in Mali and has resulted in increased cooperation.

41. The seminar suggested that the concept of International Centres 'Week' which is at present held for the benefit of donors should be extended to directors of research from African countries. This approach would promote linkages with national programmes and should be organized on a sub-regional basis annualy or biennially. The CGIAR should provide financial support for these activities.

42. In the general area of cooperation, participants requested that the International Centres should provide among others badly needed central data processing facilities, computer based bibliographic services and should utilize more personnel from the developing countries in their outreach programmes.

43. It was also stressed that the mandate of International Centres should be broadened to include crops and areas of research peculiar to Africa. Examples of problems of new biotypes, water and soil management, agrometeorology, agricultural mechanisation and socio-economic studies were cited.

Activities of CGIAR System in Africa (T2)

44. Discussion on this topic mainly re-emphasized points made under T4, but concentrated on new areas or research which the IARCs should include for the benefit of the African region. Participants recommended that in view of the limited resources, no new International Research Centres should be established unless express need is identified and provided that such research cannot be accommodated in existing Centres.

45. Participants noted that the present mandate of the Centres was too restrictive and should be based on agro-ecological requirements rather than crops only. There was also need for more intensive work on the mandated crops in Africa. Drought tolerance in maize was cited as an example. The Centres should also focus more on regional rather than global problems. There was a call for the Centres to address their research programmes to problems of energy input in crop production, effects of agricultural practices on environment, post harvest technology, fish culture, agro-forestry and maintenance of soil fertility.

46. The International Board on Plant Genetic Resources was called upon to expand its activities to assist national programmes in conservation of germplasm.

47. The meeting agreed that certain cash crops are important in national economies and should receive international support in research. Participants did not, however, consider that such crops should be mandated to the IARCs except as part of farming systems research. It was recommended that an alternative method for supporting research in cash crops at international level be worked out.

48. Participants underscored the need for long term commitment of donors to enable making of future research plans for each centre. The delegates from the only donor country in Africa, Nigeria, stated that it was difficult to give long term assurances of a given sum of money because this very much depended on availability of funds which had a bearing on the growth of national economies.

49. A number of delegates spoke on the need for contribution, token or otherwise, from their Governments. The view was expressed that such a contribution would provide African countries with a clear sense of belonging to the CG system and perhaps therefore be able to influence its policies and research programmes. It was felt that such contribution would solve the problem of representation. Others observed that the African nations, with few exceptions, are so short of funds, especially foreign exchange, that any meaningful contribution would be at the expense of the national programmes which already suffer from inadequate funding. These problems of contribution are complicated by the fact that many African governments do not fully know the contribution the CG is making and can make to solve their intricate agricultural production and development problems through IARCs.

50. The Seminar was informed that the minimum contribution according to the custom is 500,000 U. S. dollars. This is according to consensus and there is no written rule. Several delegates felt that the contributions to the CG system should not only include core funds but should take full cognizance of special project funds as indirect contribution. For example, those African countries hosting IARCs provide land and other privileges which enable the centres execute their research activities. This was also true of the countries hositing regional programmes. Finally when a country agrees to collaborate with a centre, it automatically shoulders certain responsibilities which have substantial financial implications. While the country may benefit from the centre's presence and research activities, what it provides to facilitate its smooth running should be regarded as token contribution, perhaps in kind but nevertheless a positive contribution.

51. The question of contribution was then related to representation at various levels. There seems to be a general feeling that the African countries would get better attention from the CG system if they were adequately represented at various CG forums. If all countries which have dealings with the IARCs were to be represented in the Group, there would be too wide a representation which has a number of disadvantages including more politicization of the system. The system would be thrown off its present balance and this would result in less research output. It was therefore felt that African countries should seek representation at the levels of the Boards of Trustees and/or Programme Development.

52. It was recommended that the CGIAR Secretariat should cover travel costs of the 2 African representatives to CGIAR functions. The expenses incurred by these representatives constituted considerable expense in their institutional budget.

53. The meeting considered several ways of involving African countries in operations of the CG system and agreed that the most desirable one was to integrate the activities of IARCs more closely with those of the national programmes. Governments are likely to ask themselves what they can expect in return for their inputs. It is for this reason that the priorities of the system should be re-examined and perhaps reviewed to give more emphasis to production of appropriate technology covering most, if not all, of the spectrum of farming systems found in Africa. The goal should be to provide food security

maximize agricultural production, and minimize losses at various stages of crop and animal production. The system should go farther and address itself also to the transfer of the technology to the grassroot level. This is basic if the system is to attain its own stated objectives.

Future development of CGIAR Centres T5

54. Discussion under this section centred on development of the International Centres over the next decade. The points raised mainly reiterated conclusion reached under topic T2. It was emphasized that the International Centres should devote a lot more effort in establishment of well coordinated networks of regional activities rather than continue to develop facilities at the Centres. Such networks should be integrated with national and sub-regional research programmes. Centre staff working in the regional networks should be seen to work alongside national staff.

55. It was noted that the older centres were established to solve particular regional problems but only later turned into global responsibilities. The original concept should be reverted to with a greater focus on Africa. The centres should aim to achieve for Africa the kind of result which constituted the green revolution in Asia and South America. Diversification of crop mandate was also re-emphasized and a plea was made for reduction of apparent rivalry between centres through establishment of regional multi-disciplinary units.

56. The Seminar specifically discussed the role of IFPRI. It appeared that this organization was not yet well known and there was some problem with its location in the United States. Participants considered it a valuable service which should help national governments to evolve food policies. The data collected by the Institute should assist national research programmes and the IARCs to develop priorities in research programmes. It was felt that IFPRI should closely collaborate with UN agencies such as FAO in order to be more effective.

Personnel (T6)

57. There was a consensus that the IARCs have not succeeded in recruiting as many African scientists as would appear possible and desirable. It was observed that the presence of African scientists would enhance more meaningful collaboration between African countries and the centres since the scientists would share in management and execution of various activites of the centre. Other multinational bodies have benefited from recruitment of African scientists particularly the UN network including the FAO. Lack of participation of African nationals in the IARCs cannot be explained by lack of qualified and skilled scientific workers in Africa. While it is true that some countries are acutely short of skilled personnel, others have a spare capacity and nearly all have experienced "brain drain" to other countries. Participants felt that the success of IRRI is at least partly explained by the fact that the Centre has involved more local scientists with local knowledge in its research programmes. There was a general consensus that the presence of Africans in the senior staff establishment of a centre would have a multiplier effect on increasing the supply of skilled manpower to these countries and result in improvement of national research capacities. For IARCs to have an impact in Africa, the meeting felt that there was need for centre staff to be knowledgeable on the farming systems of the African countries.

Organization and Management (T7)

58. Participants expressed the need for the coordination of centre activities at centre level and also in outreach programmes. Apparently, there is no mechanism for providing this linkage. Often, individual centres enter into agreements and there appear to be elements of rivalry. The CGIAR Secretariat should devise a mechanism for coordination of the centre activities at all evels.

59. At close of meeting, the Seminar adopted the appended list of recommendations and requested the Chairman to forward the draft report to the Chairman of the CGIAR and the review mission. The meeting also requested the Chairman to edit the draft report and publish the proceedings for circulation to all African countries, the CGIAR, IARCs and donors.

60. Mr. Muturi stated that it was an honour to the National Council for Science and Technology and he in particular to have been associated with the organization and hosting of the seminar. Delegates had highlighted a number of issues of particular importance to Africa. He stated that he would abide by their request regarding the production and distribution of the report.

61. By acclamation, participants thanked Mr. Warren Baum, the CGIAR Chairman and the 1980 Manila meeting for recognizing the need for an African input into the CGIAR second review. The CGIAR Secretariat assistance was recognized. Special thanks and commendation were accorded to the Government of Sweden for providing financial support without which the seminar could not have been hosted. Participants thanked the 4 man review team for their participation and indulgence during the seminar.

62. On behalf of the review team, Dr. Arnold expressed gratitude to the Government of Kenya for facilitating the seminar and thanked the participants for their frank and open contribution to the seminar. The deliberations of the seminar would greatly assist in the mission's report. He hoped that the seminar report would persuade the CG system and donor to recognize the special needs of Africa.

The meeting closed at 9.05 a.m. on Friday, 6th March, 1981.

DRAFT SUMMARY OF RECOMMENDATIONS

1. The African Regional Seminar had provided an opportunity for African directors of research to make a contribution to the CGIAR second review. It was recommended that this procedure be followed in all future reviews.

2. It was emphasized that the main objective of agricultural research in the Region is to provide innovations for increased crop and animal production to meet the needs of the fast increasing populations. It was recommended that CGIAR should recognize the special needs of Africa relative to other regions and deliberately organize its activites to help African national agricultural systems meet this objective.

3. The African region had diverse systems and agencies responsible for national agricultural research. National capacities for R & D differed from country to country. The overall capacity of these systems to absorb technologies emanating from IARCs was inadequate. Since the effectiveness of the CG system presupposes strong national programmes, it was recommended that the CG system should explore ways and means of strengthening national agricultural research systems including direct support.

4. An efficient linkage between IARCs and national agricultural research systems, and also between these systems and the farming community were important and crucial to the success of agricultural research undertaking. These linkages are either absent or inadequate. It was recommended that the CGIAR addresses itself to this problem and, together with national agricultural research systems, devise methods which could overcome this constraint.

5. African countries experienced problems in attracting and retaining skilled agricultural research workers in national agricultural research systems. As a result, there was brain drain at international level and also to other non-research sectors of the economy within countries. While the responsibility for the retention of research scientists lies with individual governments, the problem could be alleviated by increasing the pool of trained research scientists. It was recommended that the CG system should play a more prominent role in the training of scientists in Africa.

6. In view of the special need for trained research workers in Africa, it was recommended that 60% of the training capacity at IARCs should be reserved for Africa. Special emphasis should be laid on post-graduate level where the greater need exists.

7. Post-graduate training facilities in African Universities was inadequate to meet manpower needs for agricultural research in Africa. It was recommended that CGIAR should solicit donor funds to enable the CG system support about four African Universities to undertake this training for all African countries on a continuous basis.

8. Lack of communication between the CGIAR, IARCs and national research systems was noted. It was recommended that national governments should publicise the national agricultural research agencies with which the CGIAR and IARCs should establish channels of communication. It was further recommended that IARCs should also establish joint focal points in African countries through which they could establish channels of communication. Currently, IARCs have separate focal points through which they communicate, some of which are at research station level.

9. African agriculture had peculiar problems which had not been fully understoood by the CG SYSTEM. There was a tendency by IARCs to apply philosophies and concepts of Asian and Latin American agriculture to the African continent. It was recommended that the farming systems prevailing in Africa should be studied and understoood. The strategy for the development of agricultural research can only succeed if IARCs decentralise their activities and establish functional research establishments on the African continent. IITA, which should have spearheaded this development, had failed to do so.

10. The meeting noted the apparent lack of long-term commitment to funding of agricultural research by donors. This was considered to constitute a major constraint not only to the continued existence of IARCs but also to the undertaking of desired activities in collaboration with national agricultural research programmes. While appreciating problems facing donors in making long-term commitments, the seminar urged the CGIAR and donors to develop mechanism through which long-term funding of agricultural research could be indicated or guaranteed.

11. It was noted that the African continent had the lowest capacity for agricultural research and that this capacity could not be developed without assistance from developed countries and other donor agencies. Participants urged the CGIAR and donors to create a special fund for Africa to increase the capacity for agricultural research in Africa.

12. Participants noted the apparent preference by donors to channel funds for agricultural research to IARCs. It was recommended that this should not be at the expense of national programmes which need all assistance available to develop and increase national capabilities for agricultural research. It was emphasized that the two systems should be regarded as complementary and interdependant if the international agricultural research were to succeed. As such therefore, there should be no room for competition for resources.

13. The meeting reiterated that national systems differ greatly from country to country in their capacity to absorb technologies emanating from the IARCs or participate in outreach programmes. It was recommended that as far as possible, the centres should seek to establish direct contacts with national rather than regional programmes.

14. The input by African countries into policy decisions of CGIAR and IARCs was considered inadequate. Many African nations could not afford to pay contributions that would make them eligible for participation in various forums of the CG system. It was recommended that the African representation at the CGIAR be increased and that representation be at sub-regional level. In addition, more African representatives be appointed into the Boards of Trustee and programme development committees of the IARCs.

15. It was reported that African representatives in the CGIAR found it difficult to meet travel costs to CGIAR forums since such costs were met from their institutions. To ensure attendance by African representatives, it was recommended that the CG Secretariat should assist with travel.

16. The activities of IARCs were not well known by African policy makers. It was recommended that resources be availed to enable directors of research from Africa to visit IARCs regularly.

17. Africa experiences problems in research information, documentation, storage and retrieval. Noting the need for this service in decision making process at national, sub-regional and regional level, the meeting recommended that CGIAR consider the establishment of regional computer based bibliographic and data processing facilities.

18. The meeting was of the view that the present mandates of individual IARCs to be too restrictive, especially in view of the need to develop comprehensive farming systems in Africa. While appreciating the need to develop the biological potential of individual crops, it was recommended that centre mandates be based on agro-ecological requirements rather than individual crops.

19. The meeting recommended that more research work be undertaken on such aspects as energy input in agricultural production, effects of agricultural practice on the environment, agricultural mechanisation, and post - harvest technology.

20. The meeting noted that certain cash crops were important in and crucial to national economics and warrant international support in research. It was, however, recommended that such crops need not be mandated to the IARCs but that an alternative method of international support should be worked out.

21. The meeting accepted the desirability of contribution from African countries towards the operational budgets of the CG system. Participants, however, regretted that because of the financial crisis currently experienced by the majority of African countries, many countries cannot afford to make even token contribution without adversely affecting national programmes. The meeting further observed that countries hosting IARCs have made, and continue to make, significant contributions in kind and recommended that this type of contribution should be recognized.

22. It was noted that donor contribution to the CG system was not likely to rise in real terms as fast as has been the case in the past decade. It was recommended that no new international research centre should be established for the time being unless an exceptional need is identified which cannot be accommodated in an existing centre, national or regional programme.

23. It was observed that the older centres had regional mandate originally but this mandate was later widened to cover global responsibility. As a result, the impact of these centres is minimal, especially in Africa. It was recommended that these centres assume a regional approach to research. One way of achieving regionalization is through decentralization, with a greater focus on Africa.

24. The IARCs had not succeeded in recruiting as many African scientists into their staff as would have appeared possible and even desirable. It was recommended that efforts be made to correct this imbalance. The presence of African scientists at the centres would improve the linkage between the IARCs and national programmes in Africa.

25. Participants noted that the activities of the centres in the CG system are not adequately linked and coordinated. Often this has resulted in apparent rivarly in the execution of centre outreach programmes. It was recommended that a mechanism be established to effect such coordination.

Report on

THE PRESENT AND FUTURE ROLES OF THE CGIAR SYSTEM IN ASSISTING NATIONAL RESEARCH PROGRAMS

Report on

THE PRESENT AND FUTURE ROLES OF THE CGIAR SYSTEM IN ASSISTING NATIONAL RESEARCH PROGRAMS

The meeting of National Agricultural Research Leaders of the Asian region with members of the Consultative Group on International Agricultural Research (CGIAR) Review Study team was held at the SEARCA headquarters in Los Banos, Laguna, Philippines on March 16-17, 1981. It was devoted mainly to a discussion of the present and probable future roles of the international agricultural research centers supported by the CGIAR system in assisting national agricultural research programs.

The countries represented were Bangladesh, Fiji, India, Indonesia, South Korea, Malaysia, Kathmandu, Papua New Guinea, Philippines, Western Samoa, Sri Lanka, Taiwan and Thailand. (Please see printed program for list of participants).

Pre-meeting materials which served as part of the background information for the participants consisted of:

1. Issues for consideration in discussing the present and future roles of the CGIAR system in assisting national research programs.

2. The CGIAR Integrative Report 1980.

3. General Information for participants in seminar program.

These materials were mailed to the participants in their respective countries.

As an introductory presentation, Dr. John K. Coulter, agricultural research adviser of the International Bank for Reconstruction and Development and member of the CGIAR Study Team, reported on the results of the review of the CGIAR and its family of activities. The review was conducted by an ad hoc committee with staff assistance provided by a study team.

A summary of the deliberations during the meeting follows.

PURPOSE

The forum appreciates the current role which the CGIAR System is playing for the benefit of developing countries; however, linkages and relationships between the IARCs and the NARS seem to need improvement. Obviously, there are constraints to the operationalization of achieving

the CGIAR goals. Also, a re-definition of the purpose of the CGIAR System may be necessary in the light of the issues and concerns which emerged under the topics that follow. In redefining, certain specific suggestions were registered at the Conference.

ACTIVITIES

CGIAR, through the IARCs, should now focus on pressing problems according to felt needs of national programs.

The following problem areas were suggested:

1. Basic research on soils, climate, water sources, etc.

2. Research on non-food crops, because they are also part of the farming system.

3. Research programs on organic fertilizers in view of energy constraints and rising costs of chemical fertilizers.

4. Germplasm collection, conservation and exchange. National programs can take charge of farming systems research.

5. Develop key concepts and overall strategies of research.

6. Continue on the international selection of Rice Blast disease resistance under different race populations or insect resistance under different biotypes.

7. Develop the technical manpower profile in national research systems. Training must be oriented towards preparing young scientists to work in their respective countries with up-to-date knowledge on available technology.

8. Work closely with national research centers in identifying national problems like how to increase productivity and overcome poverty; and helping the national centers to solve these problems.

9. Consider an in-depth study of returns-on-investment in some of the selected national research systems and the IARC research systems.

10. Explore possibilities of some of the IARC programs being passed on to national research systems to be undertaken under bilateral or other types of

assistance. There should be a sorting out of "mature" technology which would be ready for "extension" to NARS. IARCs should be ready to identify what the NARs could take up and NARs should claim what it can do.

11. Tackle common problems like energy with national centers.

12. Encourage the development of socio-economic research as an equally important aspect as biological research in dealing with rural problems.

13. Strengthen and provide funds for research on pest management and energy problems.

14. In view of varying degrees of development in expertise and infrastructure, the international research centers should form a task force for periodic review of research programs in the national centers to determine their requirements for support.

AID FUNDS

There should be a system of prioritization of aid funds so that in cases of dearth of financial resources, only the most important ones can be supported.

Funding of research centers should not be indefinite but should be extended only to specific programs deserving support.

Please see also item 2 under Linkages of CGIAR with Developing Countries, and item 6 under Organization and Management.

LINKAGE OF CGIAR WITH DEVELOPING COUNTRIES

1. The possibility of assigning senior staff members of international research institutes to host countries on full time basis to participate in national agricultural research and development should be considered. National scientists could also spend their sabbatical leave at the international centers.

2. To avoid cases of overlapping of fund aid, duplication of efforts and competition between CGIAR and other international funding agencies, CGIAR should link with international agencies for better coordination and utilization of resources.

3. International and national research centers must improve and expand their relationsips; IARCs should understand better the problems faced by the national systems through better communication systems.

   As suggested in the Jakarta meeting, there is a need for one more body, that is the Policy Advisory Committee (PAC), in addition to the four existing bodies in the CGIAR system, namely: donor countries, TAC, IARC and the CGIAR Secretariat. This advisory committee can channel national problems and needs to the CGIAR. PAC members should be taken also from developing countries. The consensus, however, was that the creation of another body is not the solution to poor communication. What is needed is a better system of communication with the international research centers. IARC personnel should perhaps visit national programs to determine their problems and priorities. Through this dialogue purposeful discussions could take place and meaningful areas of collaboration could be established.

   Another alternative which was indicated is that TAC as presently constituted has, in a way, outlived its usefulness. In order to viably continue with its operations, TAC should be combined with the CGIAR Secretariat so that there could be integration of technical advisability on the one hand and resource availability on the other.

4. CGIAR must be reorganized so that the ruling party will include one or two top scientists from the LDCs. After ten or twenty years, CG may succeed in turning over a good part of its total operations to the national centers.

5. Another proposal to improve communications between IARCs and NARS is through a national agricultural development agency as the contact instrument to communicate with various international and other research centers to make possible an integrated and workable national program.

6. The Republic of China wants it on record: She would like to be informed on the system of membership and would be willing to make a contribution according to existing regulations.

INTERNATIONAL RESEARCH CENTERS

1. In Sri Lanka, where research has already developed a certain critical mass, especdially in rice research, the existing centers should now move to address the problems faced by the next generation. The next phase as agreed should be one of consolidation, and at the same time there should be a shift away from programs that have already served their purpose.

2. International specialists should conduct research in collaboration with national specialists in all their outreach activities.

3. While international research centers are commodity-oriented, national centers are working towards the development of integrated farming systems and have to refer to so many Centers to get assistance for various projects. This situation, perhaps, calls for a regional approach which can look into regional problems under similar geo-climatic conditions. These regional centers may be created or developed through the expansion of already existing centers.

4. If there is enough critical mass to the size of an IRC, there is no need for very large campuses or buildings or additional centers. Instead, the IRC should now be more perceptive to different agro-ecological conditions of individual regions and strike up more meaningful working interactions with national scientists.

5. New centers may be needed to attend to problems like energy, water management, and food items in addition to rice or crops such as soybeans, sweet potatoes, vegetables, as well as animal protein. IARC should also strengthen programs focused on basic research.

6. There should be hesitation to support a specific international center for water management. The macro aspects of water management problems are institutional and socio-economic. The on-farm or micro aspects vary considerably across different irrigation environments in Asia. Drawing up a "model" or representative physical location for such a center would be very difficult.

7. It would be appropriate to have an organization of the nature of IBPGR to tackle water problems by drawing on the experiences of countries like India or major works, or Taiwan on minor works.

8. Regarding optimal size of research centers, CIP would be a good model which optimizes the utilization of research funds.

STAFFING

1. Big countries with a large reservoir of scientists should be able to release few scientists to international institutes. If opportunities to join international institutes are denied, this could possibly lead to frustration and migration, which would be a permanent loss.

2. There is a need to narrow the gap between national and international systems in terms of salaries and perquisites. This would avoid brain drain from developing countries, and scientists from developed countries need not have to make numerous sacrifices when assigned to projects in developing countries.

3. Taiwan has lost quite a number of competent scientists to the international research centers and organizations over the past 20 years. It is somewhat painful but we accept with full concurrence and approval since it is in line with our policy to assist other countries in every way possible. However, to recruit national scientists thru personal or secret channels without the least understanding of the Director in charge of the said organization should be avoided in order to minimize misunderstanding.

4. If the CG top authority goes to the country concerned clearly talking with the top administration describes the exact job to be performed, and type of person needed especially if the person is to become the counterpart specialist in the regional post established to help the national program, CG will be able to find the right person. Pure scientists can be recruited by CG in the present system. However, for top local scientists with administrative experience and prestige to help implement thenational agricultural research and development programs, CG should have an appropriate national top counterpart.

ORGANIZATION AND MANAGEMENT

1. More participation in quality and quantity should be solicited from the less developed countries in CGIAR and TAC. Related to this is the delinking of membership in CGIAR and TAC from monetary contributions.

2. It was felt that in the light of the increasing number of IARCs in the CGIAR system and the rise in number of decision-making issues which transcend technical consideration, there is a need to restructure and reconstitute TAC with a clear definition and delimitation of mandate, duties and powers. Perhaps TAC and CGIAR can be located in one place to improve coordination between the two bodies.

3. To obtain feedback and direct inputs from LDCs, the NARS represented by their respective DGs should be constituted as a group to meet with TAC, perhaps regionally, to discuss new emerging problems in the areas where the system is supposed to serve. With this mechanism a stronger interface between TAC/CGIAR and LDCs will be fostered.

4. There was consistent and overwhelming clamor that NARS should be strengthened and immediate practical steps should be taken by the IARCs now to identify programs that could already be handed over to NARS considering that the initial work has already been satisfactorily completed.

5. Membership in the boards of trustees of the IARCs might include some members of CGIAR to improve the communication and coordination between the IARCs and CGIAR.

6. Instead of a year-to-year commitment by CGIAR on the IARCs, CGIAR has to give medium- to long-range funding commitment to the IARCs' operation and at the same time grant the IARCs a greater degree of autonomy.

7. To avoid the IARCs getting out of line, TAC needs to submit its findings and guidelines to the IARCs.

8. Members of the board of trustees and those of the TAC should be people who are highly sensitive to pressing problems of the times, and who are able to exercise their independent thinking and judgment on major issues.

While decision making on operational control could be quite autonomous and straight-forward, policy formulation on the other hand should be exposed to a broader degree of considerations.

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MEETING OF DIRECTORS OF NATIONAL AGRICULTURAL RESEARCH SYSTEMS IN LATIN AMERICA AND THE CARIBBEAN

(San Jose, Costa Rica, March 16-18, 1981)

PRELIMINARY CONSIDERATIONS REGARDING THE RELATIONSHIP BETWEEN THE INTERNATIONAL CENTERS AND THE NATIONAL RESEARCH AGENCIES

The directors of the national agricultural research systems of Latin America and the Caribbean, meeting in San José, recognized the important role played by the international centers in the development of agricultural technology. They also noted that the degree of interaction between their institutions and the centers varied, ranging from insufficient in the English- and French-speaking Caribbean to very adequate in a number of countries.

In the course of the meeting the following views and concerns were expressed:

1. In the planning of joint research to be done by the international centers greater weight should be assigned to national priorities, especially in field work of direct interest to a given country. This would intensify the collective effort.

2. The joint work carried out by the centers with the national programs in research, evaluation of materials and technical support should be pursued more actively and on a permanent basis.

3. Interest was expressed in generating new models for multilateral cooperation with the participation of national institutions, regional agencies, international centers and financing entities, so as to ensure comprehensiveness and effectiveness within a given region. Some of these possibilities are now being implemented, e.g. PRECODEPA, Programa Cooperativo Regional de Semillas Mejoradas de Centro América y Panamá (Regional Cooperative Program for Improved Seed in Central America and Panama).

4. Interest was expressed in having the national institutions cooperate with the centers in exploring new ways of conducting research which would foster the integration of work being done by the governments, the private sector, farmers' associations, universities, etc.

5. The desirability was noted of the international centers helping to increase the lateral transfer of technology, thereby catalyzing the formation of regional research networks.

6. The information on the international agricultural research system should be augmented, as regards the centers in the hemisphere and more particularly those in other continents.

7. The suggestion was made that the international centers should substantially increase the production of informational materials (technical publications, programmed learning aids, etc.) in Spanish and Portuguese, in close cooperation with the national systems.

8. While recognizing the work done by the training centers, the participants noted that the hemisphere's great need for trained scientists called for a substantial expansion of training activities, particularly those carried out in the countries themselves using nationals to give the courses.

9. The discussion of the comparative advantages of the international centers noted that their financial stability, flexibility and administrative autonomy were key factors in their efficient operation. The question was raised whether it might be possible to establish national institutions with such characteristics. One suggestion was that a special and imaginative effort be made to devise a model of this nature and to encourage the national institutions to adopt it wherever possible.

10. The recommendation should be made to the Consultative Group that the representatives to the Group be selected by IFARD, rather than the current mechanism which operates through FAO's regional system.

MEETING OF DIRECTORS OF NATIONAL AGRICULTURAL RESEARCH SYSTEMS IN LATIN AMERICA AND THE CARIBBEAN

(San Jose, Costa Rica, March 16-18, 1981)

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APPENDIX II

THE CGIAR AND INTERNATIONAL AGRICULTURAL RESEARCH

1. This note has been prepared in response to the suggestion that it would be useful to have a description of the whole CGIAR enterprise as background for the Review. All members of the Review Committee are generally well informed about it and each is intimately informed on certain parts of it. The purpose of this note is to bring together in one place basic information about the enterprise as a whole and provide Committee members with a common base for their deliberations.

2. The Consultative Group for International Agricultural Research (CGIAR) is an informal association of countries, multilateral organizations and private foundations. It was formed in 1971 to produce broader support for several international agricultural research institutions which had been established and up to then funded by the Ford and Rockefeller Foundations. It was contemplated from the start that other institutions and activities would be added to the array supported by the Group.

3. Many developing countries no longer produce enough food to feed themselves and this shortfall is becoming much more serious as increases in population outstrip increases in food production. The basic objective of the CGIAR is to support research which will provide a technology whereby land used to grow food can be more productive and food supplies for developing countries can be improved. This is done mainly through breeding new varieties of important food crops which will give higher yields, have better resistance to pests and diseases, and grow under poor ecological conditions. Important research is also carried on into farming systems, animal production and animal diseases. Other activities include collection and conservation of genetic material, training of scientists from developing countries, and assistance to developing countries in strengthening national research programs.

4. The whole enterprise has several aspects or components. There is the Consultative Group itself. There is the array of activities the Group supports. There are the Group's two services -- the Secretariat and the Technical Advisory Committee (TAC), together with its Secretariat. Each of these is discussed below.

The Consultative Group

5. The CGIAR is composed of countries, international development organizations, and private foundations. Basically they are in two categories -- donors (sometimes referred to as "continuing members") and developing countries elected biennially by the countries in the FAO five regions of the developing world to be their representatives in the Group. There are no formalities attached to joining the Group as a donor -- all that is needed is the willingness and ability to provide substantial annual grants to support the international agricultural research conducted under the aegis of the CGIAR. There is no formula determining the amount of a donor's annual

contribution. Most donors are now providing annual contributions running to several million dollars a year, and the total provided by 32 donors in 1981 will be close to $140 million.

6. The CGIAR has no constitution, no legal personality, and no rules of procedure. Decisions are taken by consensus. The Group as a whole now generally meets only once a year, though it is prepared to meet a second time if needed. Some of the donors in Europe have taken to holding a meeting each year among themselves between meetings of the Group. In some years the donors in North America do the same.

7. Among the continuing members the FAO, the World Bank and the UNDP hold a special place as the original Cosponsors of the Group at the time of its establishment in 1971. They retain some special responsibilities. They meet the costs of the Group's two services and they provide the staff for the two Secretariats. They act as a nominating committee in recommending for the Group's approval candidates for membership on TAC. From their vantage point as large international organizations directly concerned with agricultural development, they have an overview of the working of the CGIAR effort.

8. Each donor member decides for itself how much it will provide each year in contributions to the CGIAR system. It also decides which institutions it will support. Only one donor supports all thirteen. Procedures for authorizing the contributions, and accounting for them, vary from donor to donor. Parliamentary approval may be involved. There is a procedure under which the program and budget of each institution is submitted to the Group for approval before the beginning of the budget year. Donors then contribute to the funding of the approved program. Most donors provide funds without restriction as to their use within the approved budget. Some however, restrict the use of their funds to particular activities within the approved program. Donors also sometimes provide funds for "Special Projects" outside the approved program. Such special funding, although frequently substantial, is not currently included in the tally of contributions through the CGIAR.

9. The Chairman of the Group is provided by the World Bank. So far the Group has had two Chairmen. Both have been members of the Bank's senior management and have combined the part-time duties of the CGIAR chairmanship with their regular Bank duties. In addition to presiding at meetings of the Group, the Chairman oversees the work of the Secretariat, plays an important part in the work of the Cosponsors and actively pursues the interests of the CGIAR in such things as obtaining increased resources, getting the Group and the system better known and helping to solve unusual problems that arise. The job occupies a significant proportion of his time.

The Array of Activities Supported

10. There are at present thirteen activities supported by the Group. Most of these are multidisciplinary international agricultural research centers in the pattern of those established before the CGIAR was founded. The term International Agricultural Research Center (and the acronym IARC) is customarily used for them and has come to be applied also to institutions which, though funded by the Group, are not research centers, for example the International Service for National Agricultural Research, the International Board for Plant Genetic Resources and the West Africa Rice Development

Association. It is the IARCs which are the operational entities in the CGIAR enterprise, carrying out the research, developing the technology and providing the services which are the reason for the whole endeavor. All but three of the IARCs have their headquarters in developing countries. They have (or in one case, are in the process of getting) international status under the laws of the host country. They are governed by independent Boards of Trustees, with an international membership. Most, but not all, Boards have provisions whereby a number of Trustees (usually three) are nominated or appointed by the CGIAR members as a whole. Other members, except one or two appointed by the host country, are appointed by the Board itself and the chief executive of the institute, usually termed Director General, serves ex officio. Boards are fully independent, and, legally speaking, not answerable either to the CGIAR´ nor any donor, except insofar as grant contracts may individually stipulate.

11. Acting on policies determined by its Board, the management of each IARC is responsible for the proper use of donor resources to meet the scientific objectives laid out in its mandate. For IARCs created by the CGIAR, the mandates have been written by an ad hoc Committee of CGIAR members, constituted separately for each new IARC. The mandate is normally included, in general terms, in the IARC´s Charter or Constitution, which together with the Host Country Agreement, forms the legal basis for the IARC´s operation.

12. Since IARCs are independent, relations between them and their donors remain bilateral. As noted below, the Group´s services have a part to play in facilitating such relations, but funds are provided direct from donor to recipient IARC on the basis of a one-to-one agreement. In rare cases a donor may prefer to have a third party, such as the World Bank, act as a channel for its funds, but this arrangemnt merely acts as a postbox, and does not affect the bilateral nature of the transaction.

13. Collectively the IARCs form a loose network under the aegis of the CGIAR. IARCs are tending increasingly towards greater coordination and cooperation among themselves. Regular meetings of all center directors, chaired by one of their number and lasting several days twice a year, are an established routine. Center Board Chairman also now hold shorter meetings once a year.

The CGIAR´s Services

14. The Services consist of the Secretariat of the CGIAR and the Technical Advisory Committee (TAC), together with its Secretariat.

15. The CGIAR Secretariat is the Group´s staff for dealing with all Group matters except those handled by TAC. It has several main functions. First it is responsible for ensuring that the funding requirements of the centers are submitted in an orderly way to the Group, and for advising the Group on plans to meet future requirements. Second it seeks to ensure that the system is provided with adequate resources. Real growth in activities as well as inflation have required continually increased funding so the Chairman of the Group and Secretariat have needed to attract new donors into the Group while encouraging existing donors to increase their support.

Third, on behalf of the Group and with the advice of TAC, it attempts to ensure that the resources provided to a center are effectively used to fulfill its mandate in keeping with the Group's established policies. Fourth, it brings policy issues to the Group for decision and facilitates the implementation of the decisions. Fifth, it facilitates communication between the various elements in the CGIAR enterprise and provides information about it to those outside. Last it provides administrative support for the Group's meetings and other collective activities, acts as staff for the Cosponsors and provides advice to the centers on matters within its competence.

16. The Secretariat is staffed by regular staff members of the Bank. Its full cost is borne by the Bank. Its full-time staff currently comprises five higher-level staff, one support-level member, and four secretaries. It also has modest provision for extra assistance from consultants or temporary staff as needs arise.

17. Some examples of activities in which the Secretariat is engaged are given below. It must be borne in mind throughout that though operational in character the Secretariat is vested with little formal authority in its relationships with donors and centers. In a system based on consensus, it operates by persuasion and suggestion, and by virtue of the fact that it forms the only central point of reference in the system. Secondly, its establishment is small. Consequently, while there are many functions which fall to it, most can be discharged in only a limited way. This is consistent with the Group's belief that there should be minimum bureaucracy and a light hand at the center.

18. In carrying out its functions in respect of funding and the use of resources, the Secretariat begins the annual budget cycle by preparing an updated version of the five-year indicative financial plan. The assumptions behind this plan, in terms of the needs of the international centers, the probability of new activities being supported, and estimated future donor contributions, are set out, and the Group as a whole may accept or modify them at its annual meeting. Acceptance of the indicative plan does not commit any donor to contributing a particular amount, nor does it guarantee that the total amount suggested in the plan will be forthcoming. Based on the five-year plan and its assumptions, and on a careful estimate of funds likely to be available for the next budget year, the Secretariat issues guidelines to each center, indicating the upper financial limit as a basis for each center's construction of its budget.

19. Each center's annual request for funds is embodied in a Program and Budget Paper submitted to the Group for consideration at its annual meeting. The scope and format of this submission is as prescribed by the Secretariat. It is first prepared in draft for review by the Secretariat and, in recent years, by TAC and its Secretariat. As a result of this review -- and of consideration by the center's Board -- the Paper may be modified before being sent to the Group. The CGIAR Secretariat is responsible for providing the Group with an analysis of any issues (including questions on the center's use of funds provided to it in the past) and an explicit recommendation on funding. This is done in a paper known as its "Commentary" on the

center's submission. The Secretariat's Commentary reflects TAC's views as well as its own. The issues and recommendation are discussed with the center concerned before the Commentary is put in final form for the Group. The final stages of this discussion take place at the time of the summer meeting of TAC when it meets with Center Directors on their programs and other matters.

20. The Secretariat endeavors to ensure that the aggregate of its recommended funding for the centers individually is consistent with the best available estimate of the availability of funds for the year in question. The Group reviews the recommendations at its fall meeting, and approves or modifies them. Based on pledges made at that meeting by each donor, and all such other information available to it, the Secretariat ascertains the funding each center can expect and, by persuasion, seeks to ensure each donor's funds are allocated in such a way that each center secures funds as close as possible to the approved amount. The World Bank's contribution is allocated last, and is used to fill gaps. Some of the Bank's contribution and occasionally some of the contributions of other donors too, are kept unallocated until well into the budget year, so that funding for each center can be adjusted if actual allocations by donors or other circumstances differ from initial expectations.

21. Centers often have cash flow difficulties in the early part of the year and the Secretariat uses its good offices to try to get donors to accelerate their payments to centers short of cash. The system has no central contingency fund, or revolving fund, which could be used to relieve short-term cash-flow difficulties. To substitute, in part, for this need the Secretariat manages an arrangement whereby, under carefully defined conditions, part of the World Bank's initially unallocated contribution can be lent temporarily to centers to tide them over early in the year.

22. Throughout the year, the Secretariat tries to recruit substantial new donors to join the Group, and to encourage existing donors to increase their contributions in future years. However, most substantial donors are already members.

23. From time to time, usually as part of its routine visitations to centers, the Secretariat also advises centers on budget and financial management matters. In doing so, it may call on financial specialists from other departments of the World Bank or recommend outside consultants with whom the centers may contract, as for example, for the study of staff benefits.

24. The Secretariat is responsible for annually reporting on the CGIAR enterprise as a whole. For this purpose it prepares a report (often called the "Integrative Report" since it deals with the enterprise as a whole rather than any single institution) in which it raises policy issues of interest or concern to the Group, proposes a plan for future funding and summarizes information on the use made of the resources provided through the Group. It also provides staff reports on policy matters being put to the Group at its annual meeting but all scientific matters are the responsibility of TAC.

25. Except as may be otherwise provided, the Secretariat is responsible for arranging for the Group's decisions to be put into effect. If a new center is to be created, for example, the Secretariat arranges for a steering committee of the Group to oversee the operation and the commissioning of an Executing Agency to do the job including the necessary legal work. The Secretariat looks after such ad hoc activities as the Group may from time to time commission -- the most important of these being the two reviews of the CGIAR enterprise. Such exercises usually involve setting up a committee, selecting consultant staff and organizing several international meetings.

26. While the TAC Secretariat is responsible for administering TAC's affairs and for acting as staff to TAC and its Chairman, the CGIAR Secretariat, either as staff to the Cosponsors or on its own account, has some responsibilities in relation to certain TAC matters.

27. The Cosponsors are responsible for recommending for the Group's approval, candidates for appointment to TAC. This function includes obtaining suggestions of candidates from the Group, identifying the disciplines and experience needed to bring balance to TAC membership, checking the qualifications and availability of candidates, obtaining the Group's approval of candidates recommended and arranging for appointment of the new members approved. As staff to the Cosponsors, the CGIAR Secretariat assists in this process.

28. TAC is responsible for reviewing changes in the centers' programs from year to year. The CGIAR Secretariat helps to brief TAC on the program and budget issues respecting each center's annual request for funds. TAC is also responsible for reviewing each center in depth every five years. A member of the Secretariat usually participates as an observer in these quinquennial reviews.

29. The Secretariat has a growing part to play in communications and public relations. The centers are responsible for disseminating information about their own programs and achievements. The TAC Secretariat keeps the Group and the centers informed about matters within TAC's purview. Providing information on all other matters, however, falls to the CGIAR Secretariat. As the Group and the system have expanded and become more diversified, this function of the Secretariat has grown. It needs to be strengthened. The Secretariat is also responsible for the function of public relations or public information. This too is an expanding activity and important in building up a constituency in support of the CGIAR.

TAC and the TAC Secretariat

30. TAC's functions were established in Terms of Reference agreed at the first meeting of the CGIAR in 1971. These envisaged that TAC would:

(i) advise the Consultative Group on the main gaps and priorities in agricultural research related to the problems of the developing countries, both in the technical and socio-economic fields, based on a continuing review of existing national, regional and international research activities;

(ii) recommend to the Consultative Group feasibility studies designed to explore in depth how best to organize and conduct agricultural research on priority problems, particularly those calling for international or regional efforts;

(iii) examine the results of these or other feasibility studies and present its views and recommendations for sction for the guidance of the Consultative Group;

(iv) advise the Consultative Group on the effectiveness of specific existing internstional research programs; and

(v) in other ways encourage the creation of an international network of research institutions and the effective interchange of information among them.

31. While these general functions remain unchanged, as the system has grown and matured TAC has become charged with continuing responsibility for conducting regular and detailed reviews of center activities (the Quinquennial Reviews), reviewing annually major changes in a center's program, conducting studies of activities common to more than one center, and reviewing such long-range plans as the centers may produce. These monitoring and review functions are now central to TAC's activities.

32. TAC consists of thirteen members including its Chairman. As a matter of policy at least six members come from developing countries and at least six from developed countries. Members are appointed by the Group on the recommendation of the Cosponsors. The term of service is two years. A number may serve a second term. To preserve continuity or for other good cause, a member may, as an exception, serve more than four consecutive years. TAC meets two, or occasionally three, times a year for between a week and ten days. It is served by a full-time Secretariat, based at FAO in Rome. The Chairman of TAC serves part-time. In recent years he has spent as much as six months a year on TAC matters. TAC forms sub-committees for consideration of specific topics, and frequently uses outside experts, notably for quinquennial reviews and special studies. As technical advisor to the Group, TAC provides the Group with reports on matters of policy (e.g. research priorities), analyses of particular problems or issues (e.g. the justification for the off-campus outreach activities of the centers) or evaluations (e.g. of a proposed new activity or a quinquennial review of a center). It regularly supplies the Group with the record of its deliberations containing its views on all matters coming before it.

33. The TAC Secretariat performs, in support of TAC, staff and administrative functions analogous to those of the CGIAR Secretariat, including for example, identification and analysis of scientific policy issues, recruitment of experts selected for Quinquennial Review Panels and other missions, documentation and administrative arrangemnts for TAC meetings and other operational activities, and participation in the annual process of reviewing the Programs and Budgets of centers. A TAC Secretariat staff member is normally assigned to act as Secretary to each Quinquennial Review Panel; the

Scientific Advisor of the CGIAR Secretariat usually participates in these Reviews. Members of the TAC Secretariat, like members of the CGIAR Secretariat, regularly visit centers and attend Center Board meetings as observers.

34. The staff of the TAC Secretariat is provided by FAO. The cost of TAC operations, including the cost of the Secretariat and the emoluments of TAC members, is shared equally by the three Cosponsors. Occasionally, a particular activity of TAC, such as a workshop organized by TAC on a particular subject, may be funded by some other donor. The cost of quinquennial reviews is charged to the centers concerned.

35. The TAC Secretariat and the budget of TAC are administered by FAO. The authorized full-time staff is for four higher level professional staff and three general service staff.

CGIAR Secretariat
April 15, 1981

APPENDIX III

THE INTERNATIONAL AGRICULTURAL RESEARCH CENTERS BOARDS OF TRUSTEES

The Role and Responsibilities of the Boards of Trustees of the IARC's

The role of the Boards of Trustees of the International Agricultural Research Centers has been evolving steadily since the inauguration of the Consultative Group. Originally, Boards were primarily concerned with the internal operations of their Centers and relations with Donors but the emergence of a variety of external influences and institutions emanating from the Consultative Group is having a clear impact on the management of the Centers and, therefore, on the Boards of Trustees.

These factors have caused the Chairmen of the Boards to dedicate substantial effort during the past two years to an evaluation of the role of their Boards for the purpose of carrying out any adjustments in their methods of operation which might be necessary. This paper sets out the conclusions which have been reached and some agreed principles upon which the conduct of the Boards of Trustees should be based.

I. The Role of a Board Within a Center

An analysis of the role of Boards of Trustees requires that a Center be viewed in two ways: first, as an independent scientific institution carrying out research for the benefit of developing countries with the financial support of a specific group of donors and second, as a component in the Consultative Group system with its increasing variety of Centers and rapidly growing competition for funds.

The traditional responsibilities and functions of the Boards of Trustees are related directly to the first concept of a Center and are described in its basic Charter. The Board is the governing body of the Center and is responsible for all strategy and policy decisions as well as for approving the programs, budgets and financing agreements needed to carry them out.

The execution of the Board's decisions and the management of the Center itself are, of course, the domain and responsibility of the Director-General and his staff. Consequently, the selection of the Director-General is a decision of fundamental importance for the success of the Board of Trustees and of the Center.

The relationship which exists in a well managed Center between the Board and the Director-General is a symbiotic one in which the Board depends on the Chief Executive for dynamic and visionary leadership while he looks to the Board for authority, direction, advice and support. The Board can normally in this situation concentrate on being well informed and responsive in a critical but positive manner to the initiatives and proposals of the Director-General. It is only when that leadership is deficient in some respect that a Board must consider exercising authority independently by taking its own corrective

initiatives. However, except in these unusual circumstances, there is no doubt that the successful management of a Center depends on a positive, interdependent and mutually respectful relationship between the Board and the senior management.

The Trustees themselves have tended in the past to give greater emphasis to the research aspects of a Center's activities because most of them had scientific backgrounds and because the most urgent issue was the search for solutions to the food problem. Financial and institutional matters, except for budget approval, were usually left to the Director-General.

In recent years, however, there has been a clear trend toward more active involvement in these issues by Boards of Trustees. This has resulted from the program and budget growth and the attendant need to give greater consideration to management and financial policies. Moreover, there has been some broadening of the composition of Boards to include social scientists and managers which has improved their capacity to review such matters. Nevertheless, the maintenance of the quality and relevance of the research program continues properly to be the highest priority of the Boards of Trustees.

In addition to the diversification of the interests of the Boards, the frequency and intensity of their participation in the management process continue to grow as well. Program and Executive Committees have become common elements of a Board's structure and have permitted Trustees to make contributions in the manner which best suits their expertise. There seems little doubt, however, that even more active participation by the Boards will become necessary in order to carry out successfully an expanded policy and review role. Among the most probable changes will be more frequent meetings of Executive Committees and full Boards in order to deal with the policy problems that might arise from limitations of funding.

The clearest implication of this trend is that Trustees and particularly the officers of a Board will be required to devote more time and effort to their functions which has been a problem for many Trustees whose other responsibilities are very demanding. As a result, a nucleus of each Board has frequently carried out the major part of its activities. An increased demand on time will undoubtedly further complicate this situation. Consequently, it will be essential to improve the system of appointment of Trustees so that the increased roles of the Boards can be shared by a greater number of Trustees who are both willing and capable of fulfilling the responsibilities of the position. The most important need will be to broaden the range of variety of candidates so that a Board can choose its members from a larger and more diversified group of nominees.

II. Relations With Donors

The Boards of Trustees are independently and legally responsible for the performance of the Centers and have not been formally accountable to external agencies. Nevertheless, they are morally responsible both to the donors and beneficiaries of the Centers for the quality of research, of management and of the use of contributed funds.

This responsibility has tended to be demonstrated implicitly in the reporting function of the Boards but the growing concern about the funding of the Center has made it increasingly necessary for them to be sure that donors are even better informed about the operations and performance of the Centers. It is not always possible under current circumstances for the Centers to achieve that objective because of the inadequacy of opportunities for dialogues between donors and Centers.

There already exists broad range of reports about programs and budgets which provide in considerable detail the basic information about the activities of each Center. The Boards and Managements carry out regular in depth reviews and evaluations of the programs of their Centers through their Program and Finance Committees. They identify the strengths and weaknesses of programs and determine any corrective measures which might be needed.

The Boards of Trustees believe that donors would find that the internal program and management reviews are generally critical and demanding, and provide more than adequate level of program supervision. It is worth stressing that these reviews are carried out by highly qualified specialists in the fields of activity of each Center and that by virtue of their knowledge of the programs, they should be the most competent judges of their quality and effectiveness. However, in order to give them even greater value, annual Program Committee reviews might also include the participation of outside experts as is done in some Centers already. Members of the Consultative Group would then have access to independent critical opinions of program performance.

In addition to these internal reviews and reports on the operations of each Center, there are periodic external evaluations by such institutions as the TAC and the CG Secretariat. The value of these reviews to the donors and the Centers depends very much on their quality and on the knowledge of the evaluators. Generally speaking, they have been constructive and useful to the Centers but the Boards believe that their utility to donors and beneficiaries would be enhanced if the responses by the Boards of Trustees and the managements were also taken into account. This has rarely been the case in the past and has resulted in leaving out of consideration the most informed opinions.

The Boards consider that the most glaring weakness of the existing situation is the lack of opportunity for the Centers to present and discuss their programs in depth with their donors and beneficiaries so that the wealth of internal information and evaluation can be made fully available. Centers Week no longer provides an adequate vehicle for such exchanges but it would clearly be the most convenient opportunity if an improved format can be devised. It would then be possible for the members of the CG to participate in discussion among the Directors-General, the Chairmen of Boards, the TAC and the Secretariats about the programs of the Centers.

The Boards attach great importance to improving the flow of information between the Centers and their donors because the main external relationship of a Center has been with them and the maintenance of confidence in the Centers depend in part on being able to show that they are managing their programs and resources in a competent manner.

III. Relations With the Consultative Group

The ability of the Boards of Trustees to demonstrate to the members of the CG that the Centers are being responsibly managed has become somewhat more complicated by the increasing degree of formal organization of the Consultative Group system. This is not unexpected as the system becomes more complex and the financial requirements reach substantial levels but the Boards are concerned that this trend not undermine the successful direct relationships between Centers and donors which have characterized the system during its first decade or the creative research environments within the Centers.

The existing situation has arisen from the tendency of the CG to look progressively to its own institutions, the TAC and the CG Secretariat, for policy papers as well as program evaluations. The Centers appreciate the need for such valuable supporting and advisory services but are concerned about the trend toward the use of the CG bodies as intermediaries between the Group itself and the Centers. This has result of limiting the contributions of the Centers to the Consultative Group which might be well served by hearing the views of the Centers on strategy and policy issues as well as program matters.

At the present time, the Centers have limited opportunity to participate actively in the various deliberations of the Consultative Group. During Centers Week, they can make brief and superficial presentations of their programs but are not able to contribute to the discussions concerning strategy and priorities. The Boards of Trustees, being aware of the knowledge that the Centers possess about virtually all of the significant issues before the Group, feel that the Group's decisions could be materially assisted by an active role by the Centers in their consideration. Moreover, these decisions would then have much greater significance to the Centers which are responsible for their implementation.

There is no doubt about the need for the coordination function and the essential role of the Secretariats in carrying it out. This is as true in the case of program coordination by the TAC as in the case of the CG Secretariat in financial matters. The complexity of this task is recognized as is the contribution to the Centers which the TAC and the Secretariats have made. However, the Boards do believe that the pragmatic evolution of the CG system has produced some important uncertainties in the relationships among the Centers, the donors and the Secretariats which require clarification.

One such issue is the coordination of budget preparation and resource allocation. This was not a controversial task until recent differences between the financial needs of the Centers and available funding gave rise to the need for more careful budgeting and priority setting. The TAC and CG Secretariat have played a very active role on behalf of the donors in balancing budgets and funding to the extent of determining budget levels for the Centers and specific areas for reduced funding.

This development is a cause of special concern to the Boards because it is eroding their fundamentally important responsiblity for the approval of the programs and budgets of the Centers. They fully accept the need for budget adjustments if sufficienct funds are not available for each Center but they

cannot accept externally determined changes in approved programs and budgets. The Boards are not only formally responsible for that decision but are also the most competent body to determine the adjustments which might he necessary in the face of shortfalls in funding. As a minimum, they must have the opportunity to review and approve any proposed changes and, if they are not acceptable, to request a reconsideration of the amount of funding by the Center's own donors or the CG. Without this right, the real power of program and budget approval passes, de facto, to the Secretariats and to the Consultative Group. Moreover, the Centers would lose the direct relationships with their donors which has been a fundamental principle of the Consultative Group concept and which permits donors to support the Centers which satisfy their individual priorities in agricultural research.

It is worth emphasizing that the single most difficult aspect of the budget adjustment process is the determination of the amount by which each Center's proposed budget should be reduced to accommodate the total available funds. At the present time, there exists no agreed formula so that changes have had to be made somewhat arbitrarily through awkward and difficult negotiations between the Secretariats and the Directors-General. This problem would be minimized to a considerable extent by having the clearest possible guidelines from the CG concerning probable availabilities of funds during budget preparation so that realistic ceilings can be used. Subsequently, it will be essential to establish criteria by which budget adjustments can be identified so that the Boards of Trustees and managements of the Centers can present to the Consultative Group budgets which are realistic and responsive to the strategies and programs of the system as a whole.

The Boards of Trustees realize that it would be difficult for the Boards or the donors themselves to carry out all the needed coordination. Boards can require that the Directors-General report specifically on program coordination with other Centers and can take actively into account the reports and comments of the TAC and the strategy and priority decisions of the CG. The Chairmen of the Boards can and do discuss this issue during their periodic consultations so that there is a continuing awareness of the importance of program coordination. In an environment of insufficient financing, there is clearly good reason for Boards of Trustees to avoid costly duplication of effort and futile insistence on budget levels that cannot be financed.

However, the Boards of Trustees could not willingly accept a conversion of the international coordination function into one of centralized management and of the Consultative Group into a Governing Body of the system. Many countries have had unfortunate experiences with the centralized control of research even when knowledgeable and well intentioned administrators exercise that responsibility. The difficulty of that task would be compounded in the case of the International Agricultural Research Centers by the geographic as well as scientific diversity of the Centers and by the fact that they are legally constituted under the laws of a number of different nations.

The most potent defense of the original decentralized concept of the Consultative Group is that the great variety of technically complex activities of the Centers is best oriented, supervised, and evaluated by responsible Boards of Trustees at each Center which are expert in a given field and which are

also responsive to the collective needs of the donors who support the Centers and the recipients who benefit from them. If Boards of Trustees are perceived as not adequately carrying out that responsibility in some manner, the solution is to correct these deficiencies: this has been the intent of the Board Chairmen in their own review exercise.

IV. Conclusion

The Boards of Trustees clearly have an interest in maintaining and improving the Consultative Group system and their own role within it. They believe that their contributions to the scientific aspects of the operations of the Centers have been and will continue to be productive and that their participation in financial and operational affairs is achieving the same standards. They are taking the necessary steps to be able to carry out a broader role and look to the CG for support in finding the type of qualified Trustees who can participate in an active Board.

The Boards of Trustees accept the need to be more aware of and responsive to the concerns of their own donors and of the Consultative Group as a whole in addition to their own fundamental concerns about the quality of research and its relevance to the food production problems of the developing countries. It is the objective of the Boards that the members of the Consultative Group look to the Boards of Trustees for the basic critical and objective evaluations of the scientific and management performance of the Centers and to the Secretariats for specific reviews of issues of interest to the CG.

The Boards of Trustees will be better informed about the Consultative Group and its concerns by the Chairmen and Directors-General. The Chairmen themselves will continue to devote more time and attention to matters relating to the Consultative Group through a more formal and active process of mutual consultation. During Centers Week, the Boards of Trustees believe that a more active participation by the Centers in Consultative Group deliberations would be very beneficial to the Group and to the Centers.

The Boards of Trustees consider that the Decennial Review of the Consultative Group with its emphasis on management issues will provide an excellent opportunity to clarify the roles and relationships of the various participants in the system. The Boards of Trustees have already benefited by preparing themselves for the review through a process of critical self evaluation by their Chairmen which has resulted in a clearer and broader concept of their role and responsibilities within the CG system. They are ready to contribute to the Decennial Review in the most appropriate manner and will continue to contribute to the success of the Consultative Group concept by carrying out their own responsibilities to the Centers and the donors who are the cornerstones of the International Agricultural Research system.

Charles T. Greenwood
Chairman
Group of Board Chairmen

APPENDIX IV

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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ICW 79/4

FROM: The Secretariat

September 20, 1979

Role of Center Boards of Trustees
within the CGIAR System

Introduction

1. The Boards of Trustees of the international centers and programs supported by the CGIAR are a cornerstone in the operation of the international agricultural research effort. It is the Boards which have the final, legal responsibility for ensuring the scientific quality and relevance, managerial efficiency and financial integrity of the individual centers. Many of the unique strengths of the CGIAR enterprise -- the autonomy and independence of its constituent parts, the informality and the relatively non-bureaucratic, decentralized structure -- are possible largely because of the confidence and trust shown by members of the Consultative Group in the Boards of Trustees.

2. The current problem of allocating scarce funds in 1980 has underlined a basic dilemma in the nature of the responsibilities of Center Boards of Trustees as presently constituted.

3. The first responsibility of a Board of Trustees is, and must be, to its own center, for the Board must ensure the quality, effectiveness and soundness of that institution. Yet the center forms part of a larger enterprise, and what is best for an individual center may not always be best for the system as a whole. What is the responsibility of a Board to this greater entity?

4. For example, given its responsibility for the continued viability and effectiveness of its center, a Board of Trustees properly seeks to ensure that it will be financially secure. While a Board may appreciate the constraints affecting the system as a whole, and the need to carefully scrutinize each major item in its center's program and budget request, it may also feel that it is in competition for scarce funds with other centers and must therefore put forward its strongest case, both in its budget request and in its periodic contacts with the donor community. Similarly, in scientific management, if duplication or conflict arises where two or more centers are working on the same commodity or in the same country, a Board may give less weight to the need for complementarity and efficiency within the system than to what it perceives to be the legitimate and proper role of its own center.

Distribution:

CG Members
Center Board Chairmen
Center Directors
TAC Chairman
TAC Secretariat

5. The CGIAR was created for the explicit purpose of building a set of complementary activities filling the major gaps in agricultural research. The sponsors of the enterprise -- the members of the Consultative Group -- expect the international centers and programs to share a sense of common responsibility.

6. Moreover, as the CG system has grown, the members of the Group have become more actively concerned with setting the future balance and direction of the CGIAR research effort. Recent examples include the emphasis on research which will benefit resource-poor farmers, the decision to limit the growth of established centers and the desire to review and modify the research priorities within the network.

Responsibility

7. Responsibility for implementing the decisions of the Group rests initially with a center's Board of Trustees, which sets the policy for that center. How thoroughly this responsibility is exercised depends on the degree to which a center Board of Trustees feels responsible, and accountable, to the Consultative Group as a whole. There are about 150 Board members. As yet, there appears to be no clear consensus among them as to what obligation they may feel they have to carry out the decisions of the Group. Where, in fact, does final authority rest?

8. The Boards of Trustees themselves are beginning to grapple with this question. A paper on the "Responsibilities of Trustees for International Agricultural Research Centers" has been prepared for discussion at a meeting of Center Board Chairmen during Centers Week. This year's Chairman of the Chairmen" will be reporting to the CG meeting on the outcome of these discussions. Essentially, the paper outlines the duties and functions of Boards and their members, selection procedures and criteria for new members, committees, relationship with the Director General, and other matters important in the management of a center.

9. One paragraph of the paper describes the appropriate relationship of the centers to the Consultative Group. It suggests there is a "delicate balance of power and influence between the CG, TAC and the centers" the maintenance of which is essential to the continued success of the system. It argues that the Boards must be more helpful to the Group and TAC than in the past, both in the coordination among centers within the system and in external relations with donors.

10. In the future, competition for funds will be an inevitable feature of the CGIAR. As the network grows the need for effective collaboration among activities will become greater. Under these circumstances, the questions of resource allocation, research priorities and balance and the resolution of problems on a system-wide basis will become increasingly important. At the center of these questions is the role of the Boards of Trustees in the future, and the relationship of the individual units within the CGIAR to the network as a whole.

Accountability

11. The responsibilities of a Board of Trustees may be divided into four. These relate to (i) the center which it governs, (ii) the other centers which comprise the CG network, (iii) the developing countries which benefit from the center's work" and (iv) the Consultative Group which sets policies and provides funds for the system as a whole.

12. As part of its first responsibility a Board is concerned with the quality and relevance of the center's research programs. Judging by the findings of TAC's Quinquennial Reviews to date, this function is being carried out satisfactorily. A second part of this responsibility is to oversee the management and financial affairs of the center. Boards have varied as to the importance and attention they have given to this function. However, there is a growing awareness of the need to ensure the same standards of excellence as in the scientific programs.

13. The second responsibility -- toward making the CGIAR system a genuinely collaborative effort -- is being given greater attention by several centers and their Boards. Collaborative agreements among several centers have been signed, and cooperation in both scientific and administrative matters is increasing. The role of TAC is also becoming more important in this area, such as in the case of upland rice research. While collaboration may still not be wholly satisfactory in every instance, most centers are making genuine efforts to collaborate rather than compete.

14. The third responsibility -- to the developing countries and their peoples -- is common to all participants in this effort, and it is on how this responsibility is discharged that the centers and Consultative Group will eventually be judged. The growth of center off-campus programs over the past three years demonstrates that centers and their Boards recognize this responsibility and are committed to collaboration with the developing countries.

15. If the centers and their Boards execute these first three responsibilities properly, they are, in fact helping to fulfill their fourth responsibility -- to the Consultative Group. The members of the Group share these same objectives: to create a collaborative network of high-quality research institutions carrying out research of direct relevance and value to developing countries. For the Group, a basic issue respecting future governance and management is the degree to which it should actively guide the centers in the carrying out these responsibilities.

16. The principal management question is whether there should be a more direct relationship between the Boards and the Group.

17. The independence and autonomy of the centers has always been one of the guiding principles of the Consultative Group. The international centers have been largely free from the political pressures which surround most publicly-sponsored activities. Because of the long-term nature of research they have also needed to be less susceptible to rapid shifts in thinking and emphasis sometimes characteristic of the international aid

community. At the same time, each center must be aware of, and responsive to, the genuine concerns and interests of its sponsors and its beneficiaries. Indpenedence should not be synonymous with isolation or insulation. If the centers are to he effective, and if the Group is to act wisely and responsibly, there may need to be a greater integration of effort. The Group may need to be more aware of the objectives and concerns of the centers and their Boards, while Boards of Trustees may need to understand and appreciate better the interests and expectations of the members of the Group. More explicit cooperation may be needed if the proper balance between independence and accountability is to be struck.

18. There are several steps which could be taken within the existing CGIAR structure to improve understanding and cooperation between Boards of Trustees and the Group, and enhance the sense of participation in one another's affairs. An essential feature of this process would be improvements in the manner in which Board members are selected and prepared for service on the Board.

19. Presently, each international center is governed by an independent Board of Trustees. Apart from ex officio members, such as host country representatives and the Director General, members serve in their individual capacities. Most Boards are self-perpetuating, i.e. a Board itself is responsible for selecting new members as vacancies occur.

20. Since the creation of the CGIAR in 1971, the constitution of every new center supported by the Group (except WARDA) provides for certain members of the Board to be selected by the CGIAR. Typically three places are reserved for CGIAR-designated members, although in newer centers the number tends to be greater. The four oldest centers which pre-date the CGIAR have no CG-designated members.

21. While certain members of Boards serve as CG designated members, they serve in their individual capacity. They receive no instructions or guidance from the Group and are under no obligation to report to it.

22. If improved understanding and cooperation between the Group and the Boards of Trustees is to be sought, a number of actions are possible. First, the Group could have the responsibility and the right to place on each Board a certain number of trustees as recommended by the CGIAR Review Committee in 1976. While several of the four original centers have named to their Boards officials of donors and have invited suggestions from CG members when considering candidates to fill vacancies, none has amended its charter or Articles to provide for CG Board members. Since in their relationship to the CGIAR the older centers are no different from the newer ones, it is logical and appropriate that whatever arrangements are made for the CG to fill certain vacancies on Boards should be common to all.

23. Second, the function of CG Board members could have more meaning and purpose. Currently, they have no responsibility toward the Consultative Group, formal or informal. They neither receive guidance from the Group nor report to the Group. They may be no more familiar with the Consultative

Group actions or processes than any other Board member. To date, their designation has been largely symbolic. Only in their initial selection do they differ from other Board members.

24. The participation of CG Board members could be made more purposeful and could contribute to better mutual understanding if they understood, and could present, the views and interests of the Group to the Boards. This would require greater participation by these Board mmbers in the activities of the Group. To this end they could be specifically briefed on the Group's policies, interests and concerns and they could routinely attend CGIAR meetings. In this way, they would be better placed to present (but not necessarily represent) to the Boards the Group's concerns on important issues, and similarly express the views of the Boards at CG meetings when appropriate.

25. This action could be taken without altering the current practice that, once selected, CG Board members serve independently and in their individual capacities. A different issue -- which is not addressed here -- is whether these members should receive more explicit guidance from the Group on issues peculiar to the center on whose Board they serve.

26. Third, the continued vitality and proper functioning of Boards depends in large part on the quality of members who serve. The members of the CGIAR represent a broad spectrum of governments, foundations and international organizations with contacts throughout the world's scientific management and aid communities. The pool of highly qualified candidates for Board membership has not yet been adequately tapped. The present processes for identifying and assessing possible candidates could be improved. A more systematic and comprehensive process of seeking and evaluating candidates should be developed. Indeed, the sense of mutual responsibility between the Group and the centers might be enhanced if donors were more actively involved in the selection process.

27. While the role of the Boards of Trustees and the mutual responsibility and accountability of the constituent parts of the Consultative Group are not pressing issues at this time, they are bound to become more important as the system develops and expands. The principles and mechanisms which have guided it in the past will need to be reviewed to ensure that they are still adequate to deal with a larger and more complex institution. The structure of the governance and management of the CGIAR and the network it supports ought to be reviewed systematically.

28. The 1979 Integrative Report suggests that the Group undertake the second review of the function of the system in 1981. These questions could be specifically addressed in the course of the review.

29. The views of the members of the Group on the issues raised above would be a useful beginning to the process of reviewing the management of the Group. The Group may also wish to discuss whether any of the possible actions suggested merit further consideration and might be initiated prior to a full-scale review (which would not be completed until the end of 1981 at the earliest). If desired, the Secretariat could prepare specific proposals regarding the selection, appointment and orientation of CG Board members. These proposals could be considered at the next meeting of the Consultative Group.