SOME IMPLICATIONS OF THE CGIAR IMPACT STUDY

FOR CONSIDERATION BY TAC

CONTENTS

Introduction .................................................. 1
The Scope of CGIAR Activities ................................ 1
Mandates ...................................................... 4
Centralisation and the Need for De-Centralised Research ... 6
De-centralisation and the Need for System-Wide Strategies ... 7
Biotechnology in the CG System ................................ 8
SOME IMPLICATIONS OF THE CGIAR IMPACT STUDY FOR CONSIDERATION BY TAC

Introduction

The Impact Study and the TAC Review of Priorities and Strategies were conducted concurrently but largely independently. Although there was informal liaison between individuals concerned with both studies, there was no formal relationship between the Study Team and TAC and there were no joint working sessions. Consequently, there is a need to examine the Impact Study to see what implications it has for TAC's future deliberations.

Large sections of the Study are essentially factual and review the work of the CGI System as a whole. Many of the views expressed are consistent with those presented by TAC in the Priorities Paper. There are numerous observations and minor criticisms relating to specific points that should be taken into account by individual Centres and, in some instances, added to the lists of questions prepared for External Programme Reviews.

This paper confines itself to the broader issues. It draws on the printed summary of the Impact Study (in which the external advisory committee raises some issues of its own); the draft of the main document, dated August 31, 1985; the TAC Review of CGIAR Priorities and Future Strategies, dated August 1985; and the various presentations and interventions made during the course of Centres Week. It raises some general issues on which TAC may wish either to re-consider or to re-affirm its position.

The Scope of CGIAR Activities

The Study comments on the scope of activities supported by the CGIAR in several different contexts. Section 4.2.2., for example, notes that distortion may occur in national priorities because scientists are attracted to work on those commodities in which Centres are involved, even though other commodities may be more important in relation to national needs. It states:

"Now that the major food crops are better served by the present set of international centers, including those centers not within the sponsorship of the CGIAR, the distortions are more between food crops and other crops, especially "export" crops such as beverage crops (e.g., tea, coffee, and cocoa), fiber crops (e.g., cotton, jute) and other tropical tree crops may have gone too far in some countries, for example in Kenya and Tanzania, the proportions of research funds going to coffee, tea, sisal and pyrethrum are far below their contribution to value of output. However, most countries' export and cash crops still receive a higher proportion of the research budget than they contribute to the value of output."

Gaps in commodity coverage are further discussed in section 4.3.2., which notes that most of the major food crops of importance to developing countries are now encompassed by the System's work. Vegetables are identified as a somewhat neglected field of research in many parts of the
world, while attempts to strengthen international research on starchy bananas and sweet potatoes are noted. The Section continues:

"Notwithstanding the continued investment in many national programs on research on export crops, the main perceived gaps brought to the attention of the study concern commodities beyond major food crops including industrial crops or export crops; fibers such as cotton, jute and kenaf, oil crops such as coconut and palm oil, and beverage crops such as tea, coffee and cocoa and pharmaceutical crops. The production of these commodities has traditionally been an important source of foreign exchange for many countries. Typically their research and development infrastructures have declined in the post-colonial era and in many tropical countries there are now perceived to be serious imbalances in the research infrastructure supporting such crops vis-à-vis those of more immediate interest to the CGIAR centers. Of course, any suggestions for expanding the commodity scope of the CGIAR must be considered against a backdrop of limited budgetary support and the already long list of commodities and farming systems under study."

The Study Team's views on gaps (section 4.3.4) stress the importance of tree crops as a means of stabilising resources, production and incomes in fragile economies. More generally, the gaps in research on cash crops are perceived as particularly significant in view of domestic capabilities for their production, compared with food crops.

Research on aquatic resources is seen as an important gap, while soil and water management is identified as another area where research could usefully be strengthened. Reflecting national views of the work of the CGIAR, the Study Team also draws attention to the relative lack of work on animals and trees in farming systems research, and to the general need to strengthen research in agroforestry.

Commentary

The original objectives of the CGIAR were stated in terms of "agricultural research", as distinct from research that is confined to food commodities. In drawing attention to the changes in emphasis that had occurred since the original objectives were formulated, the Second Review of the CGIAR noted (Second Review, p 35):

"At the present time, it is clear that the System is concentrating its efforts on research related to food crops."

This concentration on food commodities was analysed further (Second Review pp 52-53) and the main conclusions were encapsulated in the following statement:

"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. ... Even though there is an urgent need to support research on some industrial crops, such as cotton ... 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."
In its analysis of priorities and strategies, TAC saw this view as the consensus, noted that the System's long-term goal had evolved towards greater clarity and specificity, and adopted the following goal statement (Priorities Paper, p 26):

"Through international agricultural research and related activities, to contribute to increasing sustainable food production in developing countries in such a way that the nutritional level and general economic well-being of low-income people are improved."

TAC's analysis of priorities among commodities rested heavily on this statement. In common with the impact study, TAC's assessment called for a widening in the scope of CGIAR activities to include work on vegetables and aquaculture, but recognised that any such expansion would require increased funding. TAC also recognised the importance of tree crops and cash crops, but limited its recommendations in these respects to expansion of work on those crops that also contribute directly to food production (e.g. starchy banana, coconut and selected oil-seeds). TAC's view on the further expansion of effort on cash crops is epitomised in the following paragraph (Priorities Paper, p 98):

"TAC has confirmed that critical food problems persist in developing country regions and that research and related activities to increase food production cannot be diminished. Not only do urgent needs persist, but opportunities for impact and returns to additional investment in research remain excellent. TAC has, therefore, recommended that the CG System maintain its focus on food crops, rather than expand its coverage to include export-cash crops, at least for the current 25-year planning horizon." (See also, pp 95 and 96).

This view is re-iterated in the final section which considers the long-term future of the CGIAR (Priorities Paper, p 119). The contribution of cash crops to solving the interrelated problems of poverty, food production and nutrition is stressed. Noting that work on cash crops would fit easily into the CG System, the paper suggests that in the long term they could be added through a process of gradual change, as food crops become increasingly the responsibility of national programmes.

Consistent with the views expressed by the Study Team, TAC has stressed the need for more research on soil and water management. While recognising the importance of research on specific factors of production, however, TAC sees this type of work as being appropriately undertaken by specialised institutions outside the CG System (Priorities Paper, p 35). Within the System, TAC sees a strengthening of research in the general area of the management and conservation of natural resources being accomplished through a combination of the multidisciplinary approach to commodity research and closer co-operation with other institutions (pp 49-52).

Questions

1. Should the criteria used by TAC to define the boundaries of CGIAR activities be re-considered?
2. Should one or more important small-holder cash crops (such as cotton) be added to the System's work in the short term, rather than in the long term future?

3. Should tree crops (and trees generally) be given greater emphasis in work supported by the CGIAR?

Mandates

The philosophy, interpretation and scope of mandates are reviewed in Chapter 2 of the Impact Study. A summary of formal and operational mandates of the ten "Biological Centres" is given in Table 2.4.

The relationship between Impact and "focus" of mandate is mentioned in Chapter 4 (section 4.3.2.) in the context of Africa where the comment is made that several scientists "held the view that IITA and ILCA . . . should have their mandates reviewed and streamlined." This view was re-iterated in the debate during Centres Week when several speakers stated that "focus" had been fundamental to success, implying that a Centre with a mandate for one or two commodities was likely to achieve greater impact than one with a broader mandate.

The subject was treated with caution, however, by the Study Director in his concluding remarks. The Study Team's views are contained in the following extract from a first draft of the final chapter of the Impact Study (kindly loaned by the Study Director).

"Investors in agricultural research would be assisted in their decisions if there was clear information as to the most effective concentration of research focus. A simplistic interpretation of the CG experience is that a sharp focus, as overtly manifested in the rice and wheat research of the international centres, has been instrumental in engendering success. It is tempting to conclude that single-commodity centers have some inherently greater chance of success. Unfortunately, the topic is more complex than this interpretation might suggest. Witness the focused effort on maize which is as long-lived as wheat, for example, and which to date has led to little impact, notwithstanding the related considerations canvassed in section 6.2.3. The study is less than definitive on the optimal degree of focus required for an international center to contribute to impact.

It is inconclusive because of the confounding of the issue of degree of focus with such things as the historical antecedents to research programs, the age and maturity of the centers involved, the demonstrable extent of their various impacts, and the relative ease of technological advance in different environments or, conversely, the difficulty of the mandate challenge.

The need for a critical mass of resources is clear, although the colonial African experience and that of many other parts of the world counsel that the resources required for a critical mass can be quite modest. Proliferation of commodity programs, per se, thus should not be an impediment to the centers making contributions. The key issue is the adequacy of research
resources to match designated research goals and effective, efficient management of those resources."

Commentary. The question of focus versus diversity in formulating research strategies is one that extends well beyond the CGIAR and its research institutions. In short-term research, designed to answer specific questions, focus is often considered to be desirable, if other considerations are not overriding. With research that is less specific, however, and particularly with research that is initiated against a long-term perspective, too sharp a focus is usually seen as unnecessarily restrictive and even dangerous in that it might cause focus on what eventually transpires to be a non-productive approach. Moreover, considerations other than either focus or diversity may be more important in determining the extent of success in research - the conceptual framework against which the research is projected, for example.

Another consideration, mentioned during the Centres Week debate, is the time required to achieve impact. In commenting that "money is no substitute" for time, Carl Eicher was echoing the views of many, particularly in the context of Africa. Nonetheless, in stating subsequently in his presentation that the mandate of IITA was too broad, he did not develop the relationship between these two ideas. If mandates are narrowed in order to make more money available for fewer projects, what is the overall benefit, if money is no substitute for time?

In reality the statement that "money is no substitute for time" is seldom wholly true. There are many ways in which money, to a greater or lesser extent, can substitute for time, particularly in plant breeding, where scale of operation and sophistication of techniques can contribute greatly to shortening the time required for success. Equally, there are outstanding examples of projects backed by relatively small resources achieving highly significant impact (the development of cotton in Africa, for example).

The question of overlap of mandates has also been raised in several different respects. In the African context, particularly, the need to define the inter-relationships of thirteen Centres working in the same region was stressed.

TAC has recognised the need to rationalise the distribution of mandates among Centres (Priorities Paper pp 114-117) but sees this as an evolutionary process to be accomplished gradually in consultation with Centre Boards and managements. Furthermore, the mandates of individual Centres are continually monitored by TAC through External Program Reviews, and adjustments recommended as circumstances change. TAC has also endorsed the concept of global (as distinct from regional) commodity mandates (p 35).

Questions

1. Should rationalisation of mandates be accorded higher priority by TAC so that action can be taken more quickly?

2. How should the collective effort of Centres be harmonised for greater impact in a given region, particularly in Africa?

3. Are the mandates of IITA and ILCA too broad?
Centralisation and the Need for De-centralised Research

The dangers of over-centralisation are illustrated in the Impact Study mainly by reference to strategies in plant breeding (section 6.4.3). One possible consequence of centralisation is that parents may be chosen and selections made under conditions that are not typical of the environments for which the material is intended. "If the object is to breed varieties for small-scale farmers employing low inputs, a procedure of selection under high input conditions on experiment stations is likely to be self-defeating." The Study also makes the point that there is a limit to the number of characters (especially resistance to pests and diseases) that can be coped with at one place, with the consequent need for de-centralisation at an early stage in the breeding process.

Greater de-centralisation also has implications for the concept of the "International Centre", as well as for the network approach. Some speakers during the debate at Centres Week appeared to interpret TAC's endorsement of the Centre concept as representing its lack of support for de-centralised approaches to international research.

Commentary

Comments on breeding strategies, similar to those made in the Impact Study, have been made in several reports of External Programme Reviews of individual Centres. For example, in the recent review of IITA, which was endorsed by TAC, the need for greater de-centralisation was stressed, not only for the breeding programmes but for other activities as well.

It is widely recognised that ultimately, de-centralisation will be achieved through strong national programmes. The problem arises in the intervening period when national programmes lack the capacity to do the work themselves and Centres, by outposting staff, run the risk of becoming too involved in individual national programmes. Centres have responded to these circumstances through the network approach. But they continually have to strike a balance between the resources devoted to supporting networks and those required to retain a "critical mass" at headquarters.

TAC has developed its views on these complex and interrelated issues in several parts of the Priorities and Strategies paper. While endorsing the concept of the International Centre TAC has by no means rejected the de-centralised approach. TAC sees networking arrangements as complementary to the Centre concept and tending to reinforce it (Priorities Paper, p 29). Moreover, it foresees that the present trend towards decentralisation will continue and perhaps become even more pronounced, particularly with respect to breeding programmes (p 31; p 34).

Furthermore, TAC does not see the creation of additional centres as a necessary pre-requisite for undertaking new activities. Its view is that the existing institutional framework is such that new activities could easily be undertaken without the need for creating new International Centres (p 26). Consistent with this view, TAC has recommended that the System should participate in the international network for research on starchy bananas (p 89). A network approach is also suggested if the CGIAR decides to support work on coconuts (p 97) and, implicitly, if it decides to support work on vegetables (p 96).
Questions

1. Is there a need for greater de-centralisation of research programmes in the CG System?

2. How can decentralisation be reconciled with the need to retain a critical mass?

3. What are the long-term implications of de-centralisation?

4. Does CGIAR support for the “Centre Concept” inhibit the wider development of international networks for research?

De-centralisation and the Need for System-wide Strategies

In several different instances, the Impact Study suggests that there may be a need for a greater degree of System-wide centralisation in formulating research philosophies and strategies. The point is made, for example, with respect to work on plant protection. What should the CG approach be? Should it give more attention to the judicious use of chemicals, or should it continue to concentrate mainly on host-plant resistance and biological control? (Impact Study, chapter 13).

A similar point is made in relation to the ecological damage being done to tropical environments through over-concentration on short-term agricultural productivity at the expense of long-term conservation of natural resources (chapter 14, especially section 14.4.8). The Study points out that the CGIAR could adopt one of two viewpoints: either it could regard these problems as lying beyond its sphere of influence; or it could examine the possibility of introducing a system-wide plan of action that gives greater emphasis to sustainability as the yard-stick of success.

Likewise, in the chapter on Farming Systems Research (chapter 16), the need for Centres to be consistent among themselves is stressed, particularly in relation to training. In an entirely different context, the need for a System-wide policy is implicit in the criticism made at the end of section 6.4.3 which reads as follows:

“Some observers believe that there may be few actions that could confer greater benefit on the Centres than the banning of glossy reports and other sub-literature, and the promotion of orderly scientific publication in properly refereed journals . . .”

Commentary

The System-wide policies advocated by TAC have not, in general, been at the level of philosophies or strategies for conducting research in particular subject areas. These are considered to be primarily the concern of Centre Boards and management staff. Specific questions that have arisen as a result of External Programme Reviews have been dealt with on a Centre by Centre basis. Nevertheless, on the subject of the control of pests and diseases, TAC has expressed the opinion that “the search for sources of durable resistance and tolerance will remain at the fore-front of the CG System approach” (Priorities Paper, p 53). It has also endorsed the integrated approach to pest management in which the judicious use of chemicals forms an important part (p 56).
The broader issues of sustainability of production and conservation of natural resources have been extensively addressed by TAC in the Priorities and Strategies paper. While TAC supports the integration of much of this work into the multidisciplinary approach, it has recommended that the Centres should intensify their collaboration with other organisations working entirely in this area (p 49). The role of the CG System should be:

"to catalyse new initiatives, contract out basic research necessary for its work in conservation, and participate in collaborative efforts, rather than assume full responsibility for research itself" (Priorities Paper, p 50).

TAC identified ecological management and conservation on the grand scale, such as the trans-national management of the world's large river basins, as an issue of a long-term nature. Although requiring international action, problems of this type could probably not be tackled through the present institutional structure of the CG System (Priorities paper, pp 119-120).

In farming systems research, TAC has encouraged Centres "to maintain an active dialogue aimed at evaluating, improving and harmonising their respective approaches" (Priorities Paper, p 34). Clear evidence that this is occurring is to be seen in the Symposium to be convened at ICRISAT in February.

The issue of scientific publication is one on which TAC has not explicitly recorded its view, except in the context of the External programme Reviews of individual Centres, which clearly vary considerably in this respect. It is to be regretted that, in the scientific community at large, many of the Centres are not held in high regard with respect to scientific publication. The relatively poor output of good scientific papers by some of them can reasonably be attributed, in part, to the nature of the work, which does not lend itself to frequent publication. There are many who believe, however, that it is also associated with a range of other considerations, such as the attitudes of Centre scientists, the organisational pressures placed upon them and the inability of some of them to write well in English.

Questions

1. Does TAC concur with the view that there is a need for more explicit guidance on System-wide strategies and philosophies for research?

2. Should TAC and the System take stronger action to improve the output of good scientific papers from the Centres?

Biotechnology in the CG System

The introduction to the printed summary of the Impact Study draws attention to the need for Centres to take advantage of the "rapidly developing methods of genetic engineering and biotechnology." It stresses the need to establish linkages with advanced institutions and for staff members to be trained in the new techniques. It predicts that the tools of biotechnology will greatly increase the potential gains from investment in research and urges that the Centres take the earliest possible advantage from the new technologies.
Likewise, during the debate, at least one speaker spoke in similar vein, drawing attention to the risk of the CG System becoming obsolete, warning against complacency, and urging TAC to take note of current circumstances in which the World was on the brink of a major revolution in agriculture and that developing countries would get involved in biotechnology with or without support from the CG System.

Commentary Views among scientists and journalists generally on the possible contributions of biotechnology to future agricultural production range from the outrageously presumptuous to the unnecessarily contemptuous. TAC has to help the CG System to steer a realistic course through this morass of conflicting viewpoints in order that the CGIAR may invest its funds effectively and economically.

Developments in the general area of biotechnology have applications to both crop and livestock productivity. In its recommendations for work on livestock productivity, TAC has been highly selective, recognising that the field is enormous and that there must be concentration of effort. Its support for biotechnology in this area has so far been concerned primarily with the control of animal diseases, although the possibilities for applying new technologies to animal reproduction have not been excluded.

In research on crop productivity, TAC has stated its position as follows:

"The Centers must continue to keep closely in touch with developments in the fast moving areas of tissue culture and molecular biology. Linkages with advanced institutions must be strong enough to enable relevant aspects of DNA technology, as well as new techniques in biochemistry and tissue culture, to be applied to Centers' programs as they become available. In these respects, it will be necessary for the expertise of Center staff to be gradually strengthened through training and recruitment" (Priorities Paper, p 54).

Several of the Centres have already responded to the need to equip themselves to exploit new techniques in molecular and cell biology. In this work they are co-operating with various advanced institutions throughout the world. The work is also being assisted by initiatives such as that on rice, sponsored by the Rockefeller Foundation.

In a recent article entitled "Plant Molecular Biology and the International Agricultural Research System" (Plant Molecular Biology Reporter, 1985, Vol. 3, pp 1-11) Gary Toenniessen has summarised the evolving pattern of co-operative involvement in research on plant molecular biology and has stressed the need for continued investment in this type of research by the public sector. More generally, the views expressed in his article are essentially similar to those held by TAC.

It is possible, however, that TAC's view has not been given adequate visibility. In the priorities paper, plant biotechnology was not given a section in its own right but was presented in the context of crop productivity. Consequently, although TAC attached great importance to this section, its significance may have been overlooked by some readers.
Questions:

1. Should TAC specifically give higher priority to research on molecular biology, tissue culture and related technologies?

2. Has TAC adequately defined the role of the CG System with respect to plant molecular biology?