

THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH
TECHNICAL ADVISORY COMMITTEE

TAC REVIEW OF PRIORITIES FOR
INTERNATIONAL SUPPORT TO AGRICULTURAL RESEARCH

Progress Report to CGIAR

TAC SECRETARIAT
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1978

TAC REVIEW OF PRIORITIES FOR INTERNATIONAL SUPPORT TO AGRICULTURAL RESEARCH

Progress Report to CGIAR

I. Background

1. The Terms of Reference of the Consultative Group on International Agricultural Research (CGIAR) require it 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."

This is understandably reflected in the Terms of Reference of its Technical Advisory Committee (TAC) which open with the statement that TAC will:

"advise the Consultative Group on the main gaps and 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."

2. Consequently, TAC has, from its first meeting, been conscious of the need for it to maintain a current awareness of the changing global situation with respect to agricultural research requirements. During its first years of activity, however, TAC did recognize that its approach to selection of activities for support must, in order to avoid unnecessary delays, be essentially pragmatic with respect to pipeline proposals.
3. At that stage, priorities were considered by TAC more in terms of gaps to be filled than in terms of competition between various fields of research for limited resources. However, as the number of activities financed by the CGIAR increased, the Consultative Group and TAC felt it necessary to undertake a more systematic examination of priorities.
4. TAC submitted recommendations on priorities for support to international agricultural research in a paper for consideration by the CGIAR at its meeting in July 1973. These recommendations were endorsed by the Group, and served as a basis for resource allocation until 1976 when a more elaborated version of the document was produced on the occasion of the Review of the CGIAR System. This new version was also endorsed by the CGIAR.
5. In both the 1973 and 1976 versions of its "priority paper", TAC made the assumption that there would be a "continuing modest expansion of funding in real terms which admitted the inclusion of new proposals" and, implicitly, further growth of some of the ongoing activities. On the recommendations of its Review Committee, however, the CGIAR decided on a three-year consolidation period (1977-79) during which no additional major initiatives would be taken by the Group. Still, during this three year moratorium, the ongoing activities financed by the CGIAR have continued to expand, the level

of funding has been raised from US\$ 65 million in 1976 to some US\$ 85 million in 1978, and present tentative projections for 1979 and 1980 are in the order of US\$ 105 and 120 million respectively. Meanwhile, TAC also continued to examine the need for new initiatives in such areas as soyabean research, tropical vegetable research, assistance in strengthening national research, and others which it might in the future recommend for funding by the CGIAR.

6. At the end of the consolidation period, therefore, the CGIAR will have to address such basic questions as: "Which among the ongoing activities should receive additional support? Which, if any, may have reached a stage at which support could be reduced? What new initiatives should be undertaken? What should be their level of funding? To what extent could this expansion be achieved by economies in the present system and reduction in required levels of funding to any existing projects?"

7. While it is not the task of TAC to advise in quantitative terms on the allocation of resources in the CGIAR, TAC should provide the Group with a set of detailed criteria and priorities on which decisions can be taken on the above questions. Actually, this need was already anticipated in the second version of the "priority paper" ^{1/} where it was stated in paragraph 10: "As time goes by and the costs of the whole CGIAR System rise, it may become increasingly necessary for the TAC to look at priorities within its priorities, for example between and even within individual cereals (e.g. between irrigated, rainfed, deep-water and upland rice). This would allow shifts in emphasis to meet changing circumstances to be made in good time, and in some cases might indicate the need to phase out an on-going programme in order to allow resources to be re-allocated to a new line of research within the CGIAR System either at the same institution or elsewhere." ... and in paragraph 143: "(These) shifts between and within priorities must be anticipated, and, in order to maintain flexibility to accommodate new research thrusts without always adding to the overall financial commitments of the CGIAR as well as to avoid the risk of petrification inherent in research and to encourage new growth, pruning may sometimes be necessary."

8. It would be illusory to expect that the priorities established by the CGIAR in 1976 may require drastic changes less than three years later. During this period, the world food situation has improved slightly but in the long-term prospects remain as grim as before. The advances made in research and technology development do not justify major shifts in CGIAR priorities either. What has changed and improved is the information and data base on which priorities can be established and a growing concern for the welfare of the less advantaged, resource poor sector of rural societies. The IARCs are in the process of formulating forward plans. Five quinquennial reviews and a stripe review have now been completed and have given TAC a better insight into the Centres' priorities. Several basic studies have also been completed such as the U.S. National Academy Report on "World Food and Nutrition Study: The Potential Contributions of Research", and other reports by FAO, WFC, and IFPRI on related subjects. Statistics on expenditure by IARCs have been prepared by the CGIAR Secretariat. For the first time, data are available in a compiled form on the resources allocated year after year by the IARCs to specific crops and activities. These may be considered as an expression of their

^{1/} DDDR: IAR/76/2

priorities as seen by the Centres. The publication of CARIS registers should provide additional information on ongoing research, while the report of the CGIAR Task Force on strengthening national agricultural research gives an assessment of some of the problems being faced by national agricultural research systems. More information is also available on the requirements for international support to research in particular fields such as vegetables and agroforestry. Finally, considerable progress has been made in clarifying the concepts and methods for resource allocation to agricultural research.

9. TAC, at its 18th meeting in February 1978, discussed the objectives, criteria and methods for this review of priorities. The proposals which emerged from this meeting were subsequently discussed jointly by the Committee and the Centre Directors at its 19th meeting in June 1978. TAC was helped in these discussions by the presentation of a document prepared by IFPRI at the request of the Secretariat, which provided a preliminary analysis of some of the available data at global and regional level. ^{1/} Reference is invited to paras 267 to 294 of the report of that meeting, which summarize TAC discussions on this topic.

10. TAC had further discussions in a closed session at a special meeting (the 20th) held in Paris on 20-22 September. Progress achieved through this series of meetings is reported below.

II. The Changing Role of International Agricultural Research

11. Initially, international support to agricultural research in developing countries was seen as a means to accelerate the development of improved technologies suited to the conditions of LDCs. Recognizing the general weaknesses of national research in developing countries, research was conceived and launched at international level for and on behalf of those developing countries which had not the means to do it with the appropriate scale and speed required. International research priorities were therefore conceived as the common denominator of the highest priorities at national level, addressing the same problems and commodities which were considered also at national level as the most important in a majority of LDCs.

12. As their national research capabilities improve, the developing countries increasingly see the role of international research as being a complementary one to supplement research activities which they consider it their responsibility to carry out themselves (with or without foreign assistance to their individual projects). As clearly indicated at the 1977 Bellagio Conference, the trend is for national programmes therefore to request international research to carry out activities which may be different from their own, in particular those which they are not ready to undertake at present either due to lack of sufficient funds, staff and facilities or because they consider these activities as having longer term perspective: for example, some aspects of path breaking research, systems research, development of research methodologies and techniques, and advanced research training. They may also see the IARCs not only as research institutions but as service institutions to their own research programmes,

^{1/} Criteria and approaches to the analysis of priorities for international agricultural research. IFPRI - WF1/CGIAR - 1 February 1978

providing support to areas to which national programmes cannot presently allocate sufficient resources. In this way, priorities for international research may gradually become the common denominator of national requirements for international activities which may complement and support their own national research programmes, such as research for the agricultural development of marginal lands, research on commodities which have potential for development in the longer term, or providing genetic materials and background technological principles applicable to several countries. Assistance in improving the training of their scientists and in broadening the range of their perspective and understanding of the problems concerned may also be sought.

13. At the same time, a trend towards regional or sub-regional decentralization of international research can be seen, together with an increase in regional cooperative networks and technical cooperation among developing countries. A growing task for international institutions is to facilitate inter- and intra-regional cooperation between national research systems.

14. Before going any further in the review of priorities for international support to agricultural research in LDCs, TAC and the CGIAR will have to carefully assess these trends. The type of international support which was called for when establishing the first IARCs under the aegis of the CGIAR is obviously still in demand, and present trends should be reviewed realistically against the pressing need to alleviate major deficits in the main food commodities. At its 19th meeting, TAC reiterated its understanding of the objectives of the CGIAR as being the funding of international research to increase the amount, quality and stability of food supplies in the less developed countries, keeping in mind the need for efficient use of resources and for equity in the distribution of benefits. The study of farming systems and/or production systems has been a clearly recognized component of research conducted under these objectives. It is significant, however, to note that several recent international initiatives such as CARIS, ICRAF and ISNAR, and the changes in cooperative policies of such institutions as FAO, IRRI, CIMMYT, CIP, CIAT and IBPGR tend more and more towards a concept of international support to research which is that of providing services to national institutions, facilitating their cooperation, and filling gaps which cannot otherwise be filled by direct support to national programmes. In this context, the need for priority shifts among and within international research programmes on individual commodities may come second in importance to the need to reassess the priorities to be given to different modes and types of international support to agricultural research. The relevance and need for the CGIAR System to address policy issues and problems directed to specific factor and input consideration in the research activities it supports must also be re-examined.

III. The Objectives of the CGIAR and the Priorities

15. The objectives of the CGIAR request the group inter alia:

- "(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;

- (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 ...".

16. In reviewing these objectives, TAC wishes to draw the attention of the group to the difficulty of gathering adequate information on "existing national, regional and international research activities." While recognizing that the information base on these activities is improving (for example through the CARIS programme) the Committee felt that some mechanisms should be developed whereby new developments in national research programmes could be monitored and the views of national programmes on priorities could be better taken into account in reviewing priorities at regional and international level. Unless TAC and the CGIAR are better informed on research priorities and programmes in individual developing countries, it seems difficult for the CGIAR "to attempt to ensure maximum complementarity of international and regional efforts with national efforts" as required in its terms of reference.

17. TAC also felt it necessary to clarify the basic principles whereby this complementarity could be achieved. The role of international agricultural research was not seen only as a temporary one of filling gaps in national agricultural research programmes. International agricultural research had a continuing function of providing support and services to national agricultural research. This support and services could take several forms ranging from direct contributions to the strengthening of national activities, to facilitating agricultural research advances of general interest in those fields where an international effort had a comparative advantage in terms of efficiency. A critical mass of resources on a specific research area of interest to a large number of countries was seen as an essential condition of ensuring the efficiency of international research. It was recognized however that a national programme could play a similar role if provided with the same critical mass and given the same focus, although it could be subject to changes in its own national priorities.

18. Among the continuing functions of international research which would complement and support national programmes, mention was made of the following tasks which had been identified in a recent Conference of research directors from developing countries held at Bellagio:

- "(i) collection, conservation, cataloguing and distribution of germplasm;
- (ii) organization of path-breaking research designed to raise the ceiling of yield and to impart greater stability to yield (i.e., research which can lead to the development of high yield and high stability varieties with desired quality);
- (iii) development of improved research techniques;
- (iv) organization of relevant training programmes;
- (v) organization of information and bibliographic services; and
- (vi) organization of symposia, seminars and monitoring tours."

These international activities apply essentially to crop improvement programmes.

19. In considering the present commodity focus of the IARCs in the light of the CGIAR objectives set forth in 1971, it was noted that these objectives were essentially of a procedural nature detailing the series of steps whereby the CGIAR could reach agreement on the financing of specific proposals. Agricultural research was used in this context in a very broad sense and the CGIAR objectives did not make explicit reference to the need to focus research on the solution of the food problem.

20. When interpreting its objectives and translating them into specific action programmes, the CGIAR, with the advice of TAC, had given priority to certain food commodities, first individually and then again as part of production systems. TAC had now reviewed the validity of this choice in the light of the experience gained and of the results of activities financed by the CGIAR. It recognized that, although it was difficult to dissociate the objectives of satisfying the basic human needs (food, clothing, shelter and overall welfare) in the context of an optimum use of resources, TAC would continue to recommend giving precedence to food in priorities for international support to agricultural research in or for the developing countries. It wished however to qualify this recommendation by mentioning the importance of a number of other factors which can play a role not only in food production but also in food consumption, e.g. access of people to food and in overall improvement of living conditions of the less advantaged segments of the population.

21. The Committee therefore proposed that the objectives of international support to agricultural research in developing countries be to contribute to:

- (a) Increasing the amount, quality, and stability of food supplies in the LDCs, and meeting the total world food needs;
- (b) Meeting the nutritional requirements of the less advantaged groups in LDCs.

While concentrating at present on these objectives, TAC also recommended that due account be also taken of the need to achieve an improvement in income and level of living of the less advantaged sector of society in the LDCs (especially rural) and their access to food; equity in distribution of benefits from research; and efficiency in use of agricultural resources.

IV. Criteria and Parameters for Establishing Priorities for International Agricultural Research

22. Having reviewed and clarified its interpretation of the objectives of international support to agricultural research in developing countries, TAC elaborated the following criteria for the consideration of the suitability of specific activities for support by the CGIAR:

- (i) The commodity or activity should be of present or potential importance to a substantial segment of agriculture and people from several developing nations (diet, income, efficiency of production, etc.).
- (ii) There should be clear evidence that there is potential for substantial progress or improvement in productivity in the sector involved.

- (iii) There should be clear evidence that such improvement is now limited by deficiencies in presently available scientific technology and lack of the required information.
- (iv) There should be a good prospect that the development of new scientific information and technology on the subject has the potential and prospect of making important and significant contributions to the level and efficiency of production of the food or other commodity concerned, and thus contributing to the improved welfare of an important segment of population in the developing world.
- (v) The proposal should address itself clearly and directly to the solution of the critical problems now limiting improvement.
- (vi) The proposal should be of such a nature that international (multilateral) support and attention is required. CGIAR multilateral support may be recommended only for those phases of the proposal which are truly international in character.
- (vii) The proposal should contribute as far as possible to an equitable access to agricultural research benefits among different income groups in developing countries.

23. The Committee recognized, however, that several problems could arise when applying the above criteria and felt it necessary to qualify conditions for their use. These criteria may serve to establish the rationale for international support to a given activity taken individually. This would not be sufficient, however, to lead to a priority ranking against other activities or to recommend shifts in resource allocation. Quantitative parameters are necessary to provide a common basis for comparing the importance of diverse research activities and thus reaching some kind of priority rating. The Committee therefore identified quantitative parameters which should be examined as a part of the background both for the assessment of priorities for international support to agricultural research as a whole and for resource allocation within the CGIAR system along the lines defined in para. 12 above.

Quantitative parameters for priority assessment

24. The following parameters are being considered:

- (i) Area planted or numbers (livestock) concerned with the activity or commodity globally and in the LDCs. 1/
- (ii) Production involved, globally and in LDCs (in tons and in US\$ equivalents).
- (iii) Number of countries and people involved by this production, globally, and in LDCs as producers and as consumers.
- (iv) Demand for a production increase in LDCs as expressed by imports, increase in acreage and prices in LDCs.

1/ As a whole and in specific groups of developing countries.

- (v) Contribution to rural and urban diets in LDCs (in calories, proteins, vitamins, minerals and other nutritional factors).
- (vi) Yields in LDCs (average, attainable).
- (vii) Resources allocated to the activity/commodity by national research programmes and by international assistance other than the CGIAR (in monetary terms and/or number of research personnel involved).

25. The above quantitative parameters should not be considered in absolute terms only. Their trends, i.e. their changes during recent years, and future projections are often more important than their present quantification as a means of assessing where a significant research pay-off can be attained. Moreover, the time-span within which this pay-off could be expected should also be quantified and expressed in terms of probabilities. ^{1/} This probability assessment should take into account several elements such as:

- (i) the relative status of present scientific knowledge and its geographical partition;
- (ii) the status of basic material required for the research contemplated (for example that of germplasm collections);
- (iii) the relative complexity of the research needed and of the means and conditions required for a successful research output;
- (iv) the potential contribution to national research systems;
- (v) the importance of other factors (climatic, socio-economic and others) which may restrict the impact of the research on production.

Quantitative parameters for resource allocation

26. In addition to the above factors, several other parameters should be considered when translating priorities for international agricultural research in general for recommending shifts in resource allocation within the CGIAR system:

- (i) the present number of senior scientists working in the area considered;
- (ii) the present operational budget allocations to core and non-core programmes in the area considered;
- (iii) the estimated inflation rate.

27. Furthermore, other considerations should be introduced at this stage when implementing priorities in operational terms. These relate to the desirable and manageable size not only of the activity required but also of the

^{1/} The long-range planning exercise recently carried out by IRRI is an example of this kind of quantification in terms of probabilities.

institutions concerned. The CGIAR Review Committee has invited the existing Centres to determine their optimum size, and several of the older Centres have now come close to some kind of provisional ceiling for their total number of senior scientists and their budgets in constant currency value. These numbers can be compared activity-wise and centre-wise and discrepancies identified as related to priorities. They should not however be used in absolute terms but in relation to the mandate and objectives of the institutions concerned, their efficiency in meeting these objectives as indicated by their past results and as compared with those of national programmes. Although some centres may well reach a plateau in the volume of their activities after some years, others may be expected to continue to grow with the scope of the problems they tackle and the success of the results they achieve. Others may be expected to reduce or phase out some of their activities with time. Nevertheless the Committee felt it useful to consider priorities and resource allocation from this angle also, while realizing that these aspects should first be handled by the Directors and the Boards of each centre individually and not be an overriding consideration in establishing international research priorities.

V. Scope of the TAC Review of Priorities

28. Having defined its criteria and the parameters for the priorities assessments, TAC considered the scope of possible priority shifts which could be envisaged.

29. As far as ongoing international activities are concerned, priority shifts would result on a short term time frame in relatively small incremental changes on resource allocations and these adjustments would proceed by successive approximations as priorities would also continue to change. Reference was made in this context to the change over time in the relative importance of major activities at IRRI in basic, applied research, network coordination and technical assistance to individual countries as an example of the priority shifts which an international programme might undergo over several years. It was also noted that increasing emphasis is being placed on regional programmes in international agricultural research and the TAC supported this trend while recognizing that some activities should remain global in character and scope and others might become a national responsibility with appropriate cooperative links with other countries. Priorities for international research need to be seen in a dynamic context where the interface between international and national programmes was continuously changing.

30. The major scope for priority shifts therefore related to new activities. These new activities were not expected to add greatly to the list of food commodities covered by international agricultural programmes but rather to cover new types of international research (factor-oriented, basic research, resource management and development research, etc.) and new modes of international support to agricultural research. In considering these different types of research and modes of international support, it is important to distinguish among these which call for direct and collective involvement of the CGIAR and those which are given as a general indication to individual donors and assistance institutions for consideration in their individual programmes.

VI. Preliminary Findings and Conclusions

31. The Committee recognizes the complexity of making recommendations for priority shifts in international support to agricultural research on the basis of the above principles and criteria. It is not yet prepared to submit, at this stage, to the CGIAR specific recommendations for changes in its "priority paper". TAC feels that it needs to pursue the collection and analysis of data and information and have further consultations prior to arriving at a considered view on the needs for priority shifts which could encompass in a coherent and comprehensive framework both the ongoing activities and a number of new initiatives and proposals which emanate from different sources.

32. The Committee will have to continue to work at two distinct, although related, levels. One level is that of the overall priorities for international support to agricultural research in developing countries. These priorities are changing as the research problems and requirements change. TAC wishes to stress, however, that these priorities should not be affected by considerations of availability of resources for international support but express solely a relative ranking of international research problems and needs.

33. The other level is that of resource allocations by the CGIAR. These are not only affected by the priorities but also by the actual availability of resources. TAC will continue to examine and advise the Group on the need for possible changes in resource allocations under different assumptions on the growth of the CGIAR resources, and in the light of changing priorities.

34. The TAC proposes to present some draft suggestions on both the above sets of issues to the CGIAR by the time of its meetings in the Spring of 1979.

A. Overall Priorities

35. For the present, TAC wishes to retain provisionally the main conclusions presented in its "priority paper" as revised in 1976. The Committee has, however, identified a number of areas which require further examination and this may lead to some changes in ratings being recommended.

36. The Committee is re-examining the relative importance of research and supporting activities. It has reiterated the importance of strengthening national research through different ways and means and generally supported, with some qualifications and reservations, the proposal of creating a new international service for this purpose. It feels, however, that this new initiative should not prevent re-consideration of the relative priorities given to training, documentation, information exchange, advisory services and technical assistance as compared to research s.s. within the whole range of ongoing international efforts to support agricultural research in developing countries.

37. TAC is also re-examining the place of basic research (path-breaking research). TAC has debated a number of times whether enough basic research is presently being carried out to provide the necessary fundamental knowledge for further advances in the development of agricultural technologies in five or ten years from now. For the moment, a large number of institutions provides support to international centres in some aspects of basic research. Most of these institutions are in developed countries, however. Although national institutions, and international ones such as ICIPE, in some developing countries are engaged in basic research, the scale of these efforts is generally insufficient and additional international support may be required in several areas such as human and animal nutrition, plant and animal physiology under stress conditions, host resistance to pests and pest ecology. With the exception of ILRAD, the contribution of the CGIAR system to mission-oriented

basic research has been modest so far. As national programmes in developing countries become better equipped to handle applied research problems, they may expect that the CGIAR system might devote more resources to complementary aspects of basic research. As progress continues, this may increasingly become one field in which the IARCs would be called upon to fill gaps and develop activities in areas where they may have a comparative advantage over the national programmes. ^{1/}

38. The question of factor-oriented research has also been debated a number of times by TAC. In the past, TAC has held the view that a large part of such research is location-specific and can therefore best be dealt with at national level. TAC recognizes, however, the great value of soil correlation, agro-climatological studies and modelling in attempting to overcome to some extent the problems of location-specificity of factor-oriented research. It also recognizes the need to carry out basic investigations of general interest on efficiency and alternatives in the use of certain inputs (agrochemicals, water and energy at farm and village level). Several general aspects which relate to particular crops or farming systems in specific regions have been incorporated in the respective research programmes of the Centres. Other aspects may still be considered as being inadequately covered, such as soil and water management practices for a number of crops and major soil groups dealt with by the IARCs, maintenance of soil fertility in farming systems in arid and semi-arid tropics and sub-tropics, etc. Moreover, in view of the importance of production factors such as fertilizers, pesticides and irrigation water in raising crop yields, it might be considered necessary that some special international efforts be launched to support national research programmes by providing regional facilities for information exchange and training in these fields.

39. TAC is also reviewing the need for possible priority shifts among major orientations and approaches to international research, such as the question of yield increase vs. yield maintenance, wide adaptability vs. local adaptation and the special research needs for those farmers who have limited resources and marginal land conditions. These major questions are being re-examined in the light of new information. This re-assessment may have a significant bearing on the relative importance to be given the future to different types and different areas of international agricultural research.

40. Several possible gaps are being examined by TAC in terms of ecological regions. These are:-

(i) The high rainfall tropical lowlands:

With the exception of South-East Asia, international and national agricultural research devotes relatively limited resources to the high rainfall tropics. Most of the ongoing work concentrates on tropical areas with moderate rainfall and high rainfall areas still seem to rate second in the priorities of international research institutions. Those high rainfall tropical areas where agricultural development is strongly limited by lack of adequate research should probably receive higher priority in view of their potential in the context of future population demands. TAC wishes, however, to assess further the relative importance of these areas in terms of present and future numbers of people who may benefit from an increased international research effort.

^{1/} See para. 18 (ii) above

(ii) The tropical highlands:

Several Centres are concerned with some of the crops in the tropical highlands, although present efforts are scattered and, in most cases, uncoordinated. Tropical highlands have specific problems which may warrant a more concerted effort, especially on farming systems research.

(iii) Irrigated agriculture in the arid and semi-arid areas:

The cooperative programmes of the crop-oriented Centres cover some of the areas under this type of agriculture. TAC recommended, however, that the work of ICRISAT and ICARDA be concentrated on rainfed agriculture in the semi-arid tropics and sub-tropics respectively, principally because food problems are generally more acute in these areas than in those under irrigation. The increasing rate of development of irrigation and drainage works, the amount of capital invested, and the complexity of the physical and socio-economic problems encountered in the semi-arid and arid zones may justify a reconsideration of this position in favour of focusing both on rainfed and irrigated agriculture.

41. As regards specific commodities, TAC generally confirms the importance to be given to cereals. Some priority shifts may be necessary within each of the international cereal research programmes, as for example an increased attention to rainfed rice and tropical wheat. This and other aspects such as post-harvest technology, crop residues, protein quality, are also being re-assessed.

42. The Committee has also under examination the present balance of animal research efforts at international level. This includes not only ruminant livestock but also non-ruminant livestock and aquaculture, taking into account not only their feeding requirements as related to human food demands, but also such aspects as recycling of crop residues and other wastes.

43. Finally, several other commodities such as tropical vegetables, oilseeds, sugar cane, coconut, and cotton are under examination. Besides tropical vegetables to which TAC accords high priority, some of these crops may, after re-examination by TAC, receive a higher priority rating for international support in the light of the criteria established in paras 24 to 27 above.

B. CGIAR Resource Allocations

44. As a result of the continuing growth in budget demands from IARCs during the three year period of consolidation, there is some concern that at least some of the centers may pass the size of optimum efficiency and lose some of the sharpness of focus and concentration of talent and resources on a few very highly significant activities - features which have contributed so much to their effectiveness to date. The rapid growth in budget demands has absorbed all the resources the Group has been able to mobilize, and with present trends and prospects, would seem to leave little room for consideration of additional new initiatives and innovations. With each center developing its own programme and budget independently (albeit with the concurrence of its Governing Board) without any firm guidelines or restrictions as to prospective available resources, it is quite natural that most of the centers have been able to identify a rapidly growing list of relevant research problems all of which, individually considered, would seem to be meritorious. To a large extent, additional functions have been taken on in addition to all, and not in partial replacement of, activities previously

carried. It appears that, at least in most cases, they have not been fully assessed as to their relative merit, importance, and priority in relation to the various on-going activities. At least, it is not apparent that many of the new functions have been accommodated through substitution for functions completed or reduced. They have, by and large, required additional resources. The present mechanisms for assessing relative merit of expanded functions of one Centre against other demands within the system or against additional initiatives have not proved fully effective. These include, in addition to the governing bodies of the Centre, the quinquennial reviews, the stripe analysis and the review of the programmes of work and budgets by TAC. The Committee therefore feels the need to establish more systematic procedures and guidelines to advise the CGIAR on priorities for its resource allocations.

45. As the present three years have been identified as a period of consolidation of the system within the framework of the list of centres authorized, it might be expedient to consider a period of another kind of consolidation with the centers already authorized, for a period of four or five years, during which limits may be placed on the absolute size of each center, in terms of numbers of senior scientists and in budget allocations (in constant currency value terms) to further encourage each of the centers and their Governing Boards to reassess the relative importance of the various present or potential activities they can finance and perhaps sharpen their focus on the most important problems and those having the greatest prospect of alleviating the tightening world food situation and of contributing to the welfare of the large number of disadvantaged resource poor people. Inflation in unit costs for each center might be treated separately and assessed by independent professional financial talent for each center, taking into account the particular situation in which each operates.

46. Several of the older centers might be considered to have reached a plateau level and might require no further growth, immediately, in real terms. If such a center should encounter a situation which would seem, in its judgement, to justify taking on a new function or expanding its present budget or establishment in real terms, this expansion, however small or large, would not be incorporated within its budget, but could be set out as an addition and justified separately. This could then be considered separately in comparison with all other competing demands. The newer centers, which have not yet reached full maturity, might have size ceilings established within which their growth limits would be contained over the next several years.

47. To this end, it is suggested that a careful study and comparison of the various IARCs might be made with respect to a number of criteria outlined above, and, after due consultation, establish personnel and budget ceilings (at constant currency values, with separate provision for inflation) for each center for the next four to five years. If this could be done and the magnitude of the requirement for existing IARCs assessed with reasonable confidence, perhaps it may be more feasible to give consideration for at least a few additional high priority initiatives and innovations not currently provided for.

48. After a careful study by the CGIAR and TAC Secretariats of the necessary background information, consultation with the IARC managements and their Governing Board executives, perhaps both individually and collectively, would seem to be desirable prior to presenting the findings and suggestions to the CGIAR.

49. For the moment, TAC has assembled information and started investigations on the relative share of major types of activities (research, training, etc.) and of major commodities (crops, livestock, etc.) as indicated by the available statistics on CGIAR expenditures. It has also started compilation of data on IARCs' budgets such as personnel numbers, costs per senior scientists, etc. These are being

analyzed against a series of data such as yields, acreage, of different commodities, composition of the people's diet in different regions, etc.

50. Before proceeding further with this analysis, TAC would welcome on the part of the CGIAR some indication of the basic growth assumptions it could use in considering future resource allocations by the CGIAR. These may include, for example:

- (i) A very small (say 2%) real growth after 1980.
- (ii) A relatively modest and possibly sustainable real growth of, say, 7% p.a. over the next 10 years.
- (iii) A "quantum" growth in resources aimed at doubling the Group's resources within the next 5 years, i.e. about 15% p.a.

The term "real growth" is used here in terms of donors' currencies, i.e. based on inflation rates in donor countries.

51. Should the CGIAR confirm that the above procedures and assumptions provide a suitable basis for considering possible shifts in resource allocations, TAC would undertake to prepare and present its recommendations to the CGIAR for its consideration at an early meeting.