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THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

REPORT OF

THE FIFTEENTH MEETING OF THE TECHNICAL ADVISORY COMMITTEE

TAC SECRETARIAT

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 1977

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FIFTEENTH MEETING OF THE TECHNICAL ADVISORY COMMITTEE

OF THE CONSULTATIVE GROUP ON

INTERNATIONAL AGRICULTURAL RESEARCH

31 January - 4 February, 1977

Rome, Italy

REPORT OF THE MEETING

ATTENTION IS DRAWN TO THE  
SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS  
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1. The Fifteenth Meeting of the Technical Advisory Committee of the Consultative Group on International Agricultural Research was held from 31 January to 4 February, 1977, at FAO Headquarters, Rome, Italy. Dr. R. W. Cummings was in the Chair.

2. The meeting was attended by twelve members, ten observers and other participants in specific discussions. A list of participants is attached hereto as Annex I.

welcome address by the Representative of FAO

3. On opening the meeting the Chairman invited Dr. D. F. R. Bommer, Assistant Director-General, Agriculture Department, FAO, to address the Committee. Dr. Bommer, on behalf of the Director General of FAO, welcomed the participants to the Organization's headquarters for the fifteenth meeting of TAC. It was a particular pleasure for FAO to host this, the first meeting of TAC under the Chairmanship of Dr. Cummings. Many in FAO were aware of Dr. Cummings wide experience of research management in the lesser developed countries and, in particular, his leadership of the International Crops Research Institute for the Semi-Arid Tropics. This background of knowledge and experience augured well for TAC under his chairmanship.

4. TAC, since its inception in 1972, had attained high prestige in the international agricultural research community. This was due to its membership and its independence and in large part to Sir John Crawford and his authority as Chairman and spokesman for TAC. TAC had the continuing confidence of the co-sponsors of the CGIAR and the CGIAR donors.

5. Dr. Bommer saw that the key role for TAC was in providing the link between the CGIAR as a group of donors, the IARCs with their increasing demands, and the developing countries which were the beneficiaries.

6. He referred to FAO's position not only as one of the three co-sponsors of the CGIAR and as the United Nations specialized agency in food and agriculture, but also as additionally involved both 'upstream' and 'downstream' of the CGIAR system and of the IARCs. In the upstream position it provided essential support to the CGIAR and TAC through its world-wide machinery for assessing the global food situation, and by means of its multiple expert groups as well as its statistical service, provided trend analyses in food and agriculture. Also, as Dr. Bommer emphasized, FAO would continue to provide the technical backstopping to the TAC Secretariat. With respect to its 'downstream' activities, FAO was one of the main users of the output from the CGIAR system in the application and dissemination of new technologies developed at IARCs.

7. With the new trends in FAO's policy, particularly the stronger focus on individual developing countries and on action-oriented programmes, there was developing a greater complementarity between the FAO and CGIAR activities. It was essential therefore to strengthen cooperation between FAO and TAC, FAO and the IARCs, and between the CGIAR donors. In view of this, Dr. Bommer reconfirmed FAO's support to TAC and wished TAC continuing success under its new Chairman.

#### Introductory Remarks by the Chairman

8. After thanking Dr. Bommer for his welcome address and for the continuing support which FAO was giving to TAC, the Chairman introduced and welcomed the newly appointed TAC members, Drs. A. Abou Khaled, H. Ishikura and A. B. Joshi, and welcomed the re-appointment of Dr. D. Hopper. He also conveyed the apologies of Dr. V. Ruttan for being unable to attend the meeting.

9. The Chairman then paid tribute to his predecessor, Sir John Crawford, and to the older members of TAC. The unprecedented development of the CG system since its inception was largely due to the confidence which donors had placed in the advice of TAC under the distinguished leadership of Sir John Crawford. The future of the system would therefore depend to a great extent on maintaining the integrity and quality of the advice that TAC had been providing so effectively up to now. To this end, it was essential that TAC members continued to exercise the large degree of independence, freedom of judgement and objectivity conferred on them by their status as members in their personal capacity.

10. The Chairman briefly reviewed the terms of reference of the CGIAR and TAC and the development of the CGIAR system. Through the successive addition of IARCs and programmes which had been made to it over the past five years, the system had grown from four centres in 1971 to nine centres and three associated programmes (WARDA, IBPGR and CARIS). He emphasized the flexibility of the system and the relative independence of its components. The primary role of TAC was stressed in this context, it being pointed out that TAC should continue to provide the highest standards of competent and independent advice, without expecting to impose its views on either the Consultative Group donors or the centres.

11. Reference was made to TAC's previous work on priorities and to the need to continue assessing and reviewing these priorities. While the CGIAR Review Committee had recommended that efforts should now concentrate on the consolidation of ongoing activities, consolidation did not mean stagnation, and topics such as vegetables, coconut, aquaculture and several others still required further assessment by TAC. Furthermore, it was important, in the Chairman's opinion, that TAC also developed criteria for assessing the relative priority of new initiatives, their relationship to the CGIAR system, and of the further development of ongoing activities. TAC will now have to review the system's activities in greater depth, and new proposals may have to be considered in the context of a tighter financial stringency.

12. The Chairman then reviewed the different activities of TAC, including the consideration of new initiatives, the quinquennial reviews of the centres, the stripe reviews of facets common to the programmes of more than a single centre, and the annual reviews of their programmes of work and budget. He also outlined the 1977 schedule of meetings: the Sixteenth TAC Meeting would be held in Cali at the end of May and into the first week of June at CIAT Headquarters, and the Seventeenth Meeting in Washington in early September, preceding Centres' Week and the CGIAR meeting. A heavy workload had been placed on TAC, and TAC members had therefore to bear in mind that the duties of their assignment were not confined to attending TAC meetings. In fact, it was essential that they not only do their "homework" on documentation prior to meetings but also that they respond to requests for written comments, nominations of TAC consultants and other contributions, whenever required.

13. In closing his introductory remarks, Dr. Cummings reiterated his sense of responsibility as Chairman of the Committee, and appealed for the cooperation of the members in a continued dedication to the cause and objectives of the CGIAR.

Adoption of the Agenda (Agenda Item 1)

14. The Chairman referred to the ad hoc informal consultations on a soyabean research consortium which had just been held in Rome at FAO, in line with the recommendations made at the 14th TAC Meeting. He suggested that the report of these consultations should be included in the agenda for discussion in closed session. Mention was also made of the recent developments at ILCA and of the TAC mission to this centre, planned for March. Dr. Hodgson, Chairman of the ILCA Board, was expected to visit FAO on 1 February. Dr. Cummings intended to ask him to make a progress report to TAC.

15. After reviewing the reports of the 13th and 14th TAC Meetings, a member felt that the subject of water management still required further discussion and requested that this be considered under other business.

16. With these additions, the Committee adopted the agenda, on the understanding that the customary flexibility of TAC would be maintained and that other changes could be made as deemed desirable.

Adoption of the Report of the 14th Meeting (Agenda Item 2)

17. The Report of the 14th Meeting, which had been previously circulated to Members, was adopted, subject to one minor correction which a member pointed out. This referred to paras. 228 and 229 in which the acronym for the Group for Assistance on the Storage of Grains in Africa should read GASGA, and not GASCA.

Report by the Chairman on the CGIAR Meeting of 27-29 October, 1976  
(Agenda Item 3)

18. At its last meeting, the CGIAR considered the report of its Review Committee. The report was welcomed and its conclusions were endorsed with the following general comment. It was seen by some as rather conservative and cautious although there was, however, general agreement that the emphasis on consolidation rather than on continued rapid growth was appropriate. There would be some expansion and change during this period of consolidation but it would not be a time of stagnation. New initiatives would continue to come under the group's consideration, although it would be unwise to attempt to take on too much. The dangers of too much bureaucracy were stressed, particularly in view of the importance of maintaining the individuality of the centres, the autonomy of their boards, and the flexibility of their programmes. The report was essentially an internal document for the guidance of members of the group and it tended to confirm the recommendations of the TAC on emphasis and priorities. There should be caution about attempting to set too rigid criteria for the priorities of the centres, and for their optimum size. The value of long-term planning was stressed. The relationships between the centres and national programmes were not treated exhaustively in the report because they involved many and complex issues.

19. Of the specific recommendations made by the Review Committee, some had been referred to the Directors of the IARCs for comment. Others were of particular interest to TAC, especially those which called for consideration of each centre's entire programme, including its extra core activities, by means of annual examination of programmes and budget presentations and quinquennial reviews. The joint preparation of commentaries on the centres' annual programmes and budgets by the TAC and CG Secretariats called for a tight schedule of cooperation, and steps were being taken to this end. The CGIAR had also confirmed the role which TAC could play in making its "good offices" available on request for the solution of problems concerning inter-centre relationships.

20. The retiring TAC Chairman, Sir John Crawford, had reviewed the deliberations, and the conclusions and recommendations of the 14th Meeting. These were generally well received by the CGIAR. The recommendation with regard to ICIPE was thought by some to involve some additional policy principles which would require further study and consideration by the group. In any case, the exact magnitude of support from the CGIAR had

not been specified and some doubt existed at that time as to whether the full financial requirements of the existing centres could be met with resources in prospect for 1977. The CGIAR Secretariat subsequently prepared a more detailed analysis of budget requirements of ICIPE for activities in support of the IARCs and has circulated this to the CGIAR members for comment. Drs. Coulter and Webster would be visiting ICIPE in February, 1977 for further review of the matter.

21. The CGIAR expressed very warm appreciation to the retiring Chairman of TAC for his outstanding contribution throughout his tenure, and to the TAC for the quality of its advice. The Chairman-elect was welcomed.

22. The Chairman then reported that the reports of the Quinquennial Reviews of IRRI and CIMMYT had been well received by the CG. The director of each centre and the chairman or a representative of the review committee, as well as the TAC Chairman, were present to introduce the reports and participate in the discussion which ensued. The importance which TAC should continue to give to these reviews, which had proven to be of great value not only to the CG donors but also the centres themselves, was clearly evident.

23. Commenting on the Chairman's report, several members emphasized the need for TAC to examine the relations existing between the CG System and the national programmes, and in particular the feedback mechanisms from the national programmes to the centres in the development and dissemination of new technology. The members were invited by the Chairman to formulate their proposals for the future consideration of the Committee.

#### Progress Reports (Quinquennial Reviews of CIAT and IITA (Agenda Item 4 (a)))

##### CIAT

24. The Committee was informed of the arrangements being made for the Quinquennial Review of CIAT due to take place from 19 to 30 April, 1977. The composition of the review Panel had been finalized, taking into account suggestions received from CIAT and from the Chairman and some members of TAC. Plans for the review included visits to CIAT's off-campus activities in the Ilanos Orientales and in Guatemala by two subgroups of the Review Panel in the week preceding the team's assembly at CIAT Headquarters on 17 April. The Committee also had before it a list of questions prepared for the consideration of the CIAT Review Panel and was invited to comment on them.

25. The Chairman and several members of TAC stressed the importance of the Review Panel examining the ongoing activities and future programmes of CIAT in the light of its mandate. To this effect, CIAT had been requested to provide the Panel with a current statement of the mandate and the centre's interpretation thereof, and its present objectives and strategy as well as an outline of its forward plans for the next five years. This was suggested as being essential not only for the CIAT Review but also for all quinquennial reviews. One member recommended that the review also consider the role of CIAT's activities as a documentation centre. Another stressed the importance of studying the cooperative activities of CIAT on other crops besides the Phaseolus bean.

26. During the brief discussion which followed, a question was raised by the CGIAR representative regarding the request made earlier by some donors to have the opportunity to review and comment on the Terms of Reference of the Quinquennial Reviews. It was pointed out that this opportunity was offered by the circulation of the Status Reports on review preparations which included both the composition of Panels, their Terms of Reference and lists of specific questions. CGIAR members would be approached by the TAC Secretariat to comment on the two latter and to prepare questions of their own to be added to the lists, which were considered as supplementary to the Terms of Reference.

27. It was agreed that the notice of donors to particular centres would be drawn to these documents, by individual covering notes, and that their contribution of specific questions would be invited.

28. Several members expressed their concern over the limited time which had been allocated to the CIAT Review Panel both for examining specific research programmes of the centre at its Headquarters and for visiting its off-campus activities. The Chairman thereupon pointed out how difficult it had proven to recruit high-level specialists able to make themselves available for the review for more than three weeks. It was, however, noted that the review programme was provisional and that consideration would be given to its possible expansion.

#### IITA

29. At the invitation of the Chairman, the Secretariat presented a brief report on the current status of preparations for the Quinquennial Review of IITA.

30. Following discussion with the Director-General the approximate timing had been decided upon; the review of outreach activities (in Zaire, Tanzania, Sierra Leone and Liberia) would take place between 20-29 October, 1977, the team being divided for this purpose, and with the main review at IITA headquarters between 31 October - 12 November, 1977. After further consultation with the Director-General, these dates were moved forward by one week.

31. The Terms of Reference for the mission had been requested by the Director-General and their finalization should be undertaken during the course of the current meeting. A draft, based on the standard Terms of Reference prepared for all Quinquennial Reviews was circulated to members. This had been amended for the CIAT Review, to make it more appropriate for a multidisciplinary multicommodity centre and it was felt to be equally applicable to IITA. It would of course be complemented, as in the case of earlier reviews, by additional specific questions which would also be discussed with the Director-General. Submission of questions was solicited from TAC members.

32. The Director-General of IITA had submitted a list of names of possible participants in the Review Panel which would be acceptable to IITA and members of TAC were requested to submit additional names during the course of the current meeting.

33. The Chairman specifically requested members to submit any complementary questions, and their proposals of candidates, by the third day of the meeting in order to ensure the early preparation of lists which could be discussed with the Director-General of IITA during a visit to the centre by the Deputy Executive Secretary of TAC in the week following the meeting. Members were informed of the disciplines to be covered by the IITA Panel.

34. During the closed session discussion a number of names of suggested candidates for the Panel were submitted to the Chairman.

35. It was also agreed, on the suggestion of the Chairman, to add a clause to the Terms of Reference covering what was felt to be an essential task of a Review Panel viz., to give close attention to the Centres' interpretation of its mandate and its strategy and plans for carrying it out. A suitable revision would be prepared by the Secretariat, in consultation with the Chairman, and reported to the next meeting of TAC, along with the composition of the Panel.

#### Aquaculture (Agenda Item 4 (b))

36. The Chairman reminded members that TAC had not yet reached a decision with respect to international support for aquaculture which had been on its Agenda for a considerable time. It had earlier urged bilateral donor support for a modest pilot venture in training of aquaculture research workers which it saw as an essential prerequisite to any larger endeavour, and after some initial doubts believed that this request was now being met.

37. The 14th TAC Meeting was not prepared to make any further judgement or recommendations on the basis of data provided at that time and reiterated an earlier expressed belief

At the FAO/UNDP Global Aquaculture Project came close to meeting the needs recognized and expressed by the TAC's own Sub-committee on Aquaculture Research. It had resolved therefore to maintain a watching brief, in the light of numerous new developments, and to request periodic progress reports from those closely associated with the expanding frontiers of aquaculture research. In particular, reports from FAO regarding the Global programme would be sought at the 15th TAC meeting, from the Philippines, through Dr. Madamba, regarding developments at the South East Asian Fisheries Development Centre (SEAFDEC), and from India, where a very strong national programme was being developed.

At the request of the Chairman, the FAO representative gave a brief account of developments in the FAO/UNDP Aquaculture Development and Coordination Programme (ADCP) as follows:

(i) Progress had been made in the establishment of the Regional Centre for Aquaculture Research and Training for Latin America. The detailed plans and estimates for additional facilities to be developed at the site selected in Brazil had been submitted to the Government which had initiated action for the award of contracts for construction work. It was proposed to convene a meeting of experts and representatives of the participating Governments in Brasilia in March/April 1977 to prepare detailed research and training programmes and discuss the possible secondment of scientists from various countries to work at the Centre within the framework of Technical Cooperation among Developing Countries (TCDC).

(ii) The Government of Nigeria had communicated its support of the Programme's activities which included the establishment of the Regional Centre for Aquaculture Research and Training in that country. A small mission was scheduled to visit Nigeria shortly to prepare detailed plans and estimates for the physical facilities to be developed at the selected site. The mission would also investigate the possibility of starting an ad hoc training programme.

(iii) With regard to the three Lead Centres proposed to be developed in Asia, technical assistance was being provided to the Central Inland Fisheries Research Institute in India under the UNDP Country Programme to prepare detailed plans for the establishment of the Freshwater Aquaculture Research and Training Centre in Dhauli, Orissa. During the year, ADCP would provide assistance to the Inland Fisheries Research Station in Bangkok, Thailand to expand its facilities to serve as the second Lead Centre. It was also proposed to assist SEAFDEC in the research programme on brackish water fish farming systems and to organize the training of senior aquaculturists.

Also, towards implementation of the recommendations of the recent Technical Conference on Aquaculture in Japan, the Programme had established the nucleus of a Pituitary Bank with donations received from several donor governments.

Details of the various sub-projects to be implemented by ADCP, including the regional research and training centres, had been sent to a number of bilateral funding agencies in order to ascertain their interest and willingness to provide supplementary financial support.

An updated status report on the activities of SEAFDEC had been distributed to members by Dr. Madamba. SEAFDEC had currently an investment of some \$12 million in buildings, equipment and pond facilities. It had recruited a number of well-trained staff and had many more currently under training. However, Dr. Madamba expressed the opinion that there was a pressing need to further improve the professional staffing of the Centre. As this was a global problem he reaffirmed the need, earlier expressed by TAC, for a concerted effort on training of aquaculture research workers. To some extent this had been improved following a recent association with the University of the Philippines College of Fisheries, but the basic difficulties ensuing from staffing by a number of independent bilateral donors, over which SEAFDEC had little control, would not be overcome until a strong cadre of core staff could be recruited and appointed. Up to the present time SEAFDEC's research thrusts have been centred on prawn, milkfish, fresh water fisheries, and sea farming. There was however a need to further improve on the research programme planning.

mechanism at SEAFDEC. It was indicated that SEAFDEC's activities might, to some extent, be duplicated by those of ICLARM which has its headquarters in the Philippines, although the indicated operational thrust of ICLARM showed the encouraging possibility that their several activities could be made to complement each other.

42. Dr. Hopper reported that IDRC was resolved to support some quite extensive training activities in South and South East Asia with the ultimate objective of speeding up the transfer of aquaculture technologies to the small cultivator. These activities would not be confined to any single centre but it would however concentrate on SEAFDEC, with complementary programmes envisaged at other institutions in the region such as Barrachpore in India. The possibility of supporting research and training programmes at institutions in other parts of the world would also be investigated. Particular attention would be given to information systems.

43. A consultant group would be charged with the preparation of the detailed proposals for these activities for consideration by the Board of IDRC and Dr. Hopper anticipated that a full report on the proposals might be available for the information of TAC by the end of the year.

44. It was recognized that this proposal had similar objectives to the global aquaculture programme of FAO but was oriented towards the further strengthening of already established "lead centres", able already to fulfill a regional role, rather than a number of national centres which would require considerable strengthening before being able to undertake such a role.

45. In this context it was noted that ICLARM apparently had the intention also or orienting its assistance towards the strengthening of national centres.

46. TAC recognized that Asia would be well provided with assistance in the near future and noted the requirements of other regions, especially Africa, which members had indicated. The Nigerian government had already agreed to participation in the TAC/IDRC global programme in a regional role, but the whole of East and North East Africa still remained to be covered.

47. The Committee concluded that whilst some difference of opinion was apparent between IDRC and FAO with regard to where, and on what aspects of work greatest attention should be focussed, the needs were so great that, with adequate complementarities suitably worked out, there was room for all the activities reported.

48. TAC noted with appreciation the initiative of IDRC and would await with interest the receipt of the Consultant's report. It would also continue to request regular progress reports from all interested supporting organizations in the field of aquaculture research and research training.

49. With regard to the possibility of TAC recommending support for aquaculture to the CGIAR it was felt that although there was a strong likelihood of a satisfactory long-term yield, there was a high risk factor which would have to be taken into consideration. TAC was not prepared at this time to put forward a recommendation for CGIAR support to aquaculture but would continue to keep abreast of developments in the field.

TAC Review of Farming Systems Research at the IARCs - Progress Report  
(Agenda Item 4 (c))

50. The Chairman gave a brief history of the progress achieved in TAC's review of farming systems research at the four centres, IITA, ICRISAT, IRRI and CIAT, following the decision at the 14th Meeting to proceed step-by-step in this complex field and to confine the review to on-going research in farming systems or related cropping systems at these IARCs.

51. He pointed out that in subsequent consultations between the Secretariat and his predecessor, Sir John Crawford, it had been proposed that the review should start with

a desk study by the Secretariat, followed by consultants' visits to the different IARCs, which in the case of CIAT and IITA would coincide with the quinquennial reviews, and then, if possible in December 1977, the convening of a workshop of IARC representatives and the consultants together with other invited specialists in the field. The report of this workshop hopefully would be ready for consideration by TAC at its first meeting in 1978. With respect to the scheduling of the workshop in December 1977, however, the Chairman felt that further thought should be given to the feasibility of organizing this so soon after the IITA quinquennial review which was not due for completion before 12 November. In view of this, it may be necessary to delay the workshop and have its report considered at the May (1978) meeting of TAC.

52. He mentioned that Professor J. Dillon, an eminent agricultural economist and farm management specialist from the University of New England, Australia, had been engaged by TAC as one of the consultants for the review. Professor Dillon would be taking part in the quinquennial reviews of CIAT and IITA specifically to examine respectively the crop production and farming systems activities of these IARCs, and would also visit ICRISAT and IRRI at some convenient time.

53. The Chairman, before handing over to the TAC Assistant Secretary to provide details of the desk study, asked that members discuss and consider for approval the overall approach adopted for the review, the proposals for the follow-up, and the terms of reference for the consultants engaged in the review. He also requested that members assist the Secretariat by providing names of suitable persons for consideration as participants in the review, suggested amendments to the terms of reference, and any additional questions which may be addressed to the IARCs on their farming systems programmes.

54. The Assistant Secretary in summarizing the report of the desk study (appended to the Progress Report) pointed out that because of the impossibility of organizing a consultant working group for the review before April or May 1977, it had been decided by the Secretariat in consultation with San Jose consultants to make a desk study as soon as possible after receipt of requested documentation from the IARCs. The desk study, carried out in the third week of January, entailed the compilation and collation of existing documentation, an attempt to clarify basic concepts and definitions, and a preliminary review of the on-going activities of the IARCs in farming systems research in order to provide a list of questions for consideration by the consultants and IARCs. An opportunity had been taken to discuss with Professor Dillon the major items for consideration in the desk study. Also the TAC Secretariat was assisted in the desk study by a senior FAO production economist and a consultant agro-climatologist to an FAO project.

55. In discussing the report, a member pointed to the need to have some agreement on the terminology and some definitions as a basis for the discussions between the review working group and the IARCs. Some members suggested that the title "farming systems' research" was, in fact, not appropriate as most of the centres were studying cropping systems or crop production systems.

56. Other issues which TAC considered important to be addressed in the review were:

(i) the extent to which general principles could be expected to emerge from the studies at an IARC which might have broad application across the ecological zones of concern to the IARC and perhaps to those zones of concern to other IARCs, in contrast with individual case studies which might be highly location-specific;

(ii) the criteria that would be used for selecting the benchmark sites within the environmental matrix in which studies might be made or from which extrapolation could be made to other areas; and

(iii) the need for an assessment by the research personnel of the IARCs of the adequacy of the research base for each of the components that made up the system.

57. With respect to the latter issue, it was pointed out that in the cropping systems studied at IRRI and in national programmes throughout Asia, the rice element in the rotational cropping system was well researched and understood but in the case of other crop elements, for example, the sweet potato, the research base was comparatively weak. In such systems the overall productivity was determined by the productivity of the rice element. In the case of IITA, which was dealing with component elements not covered by the mandate of other IARCs, it would be necessary to determine the extent to which the research base for the individual crops in the system was sufficient for the purposes of the farming systems programme.

58. A number of members felt that the review should include a study of some national programmes in farming systems. Some basic principles may have emerged from research at the national level and these might be useful for comparison with basic principles arising from the work of the IARCs and especially in so far as they might cover components not studied by the IARCs. It was also suggested that irrigation in farming systems should be included in the study.

59. However, as pointed out by the Chairman, supported by other speakers, there was a danger in expanding the scope of the review beyond that presently intended. Adding just a few more components to the study added greatly to the complexity of what was already a complex field, because of the many interactions between the various components of the system.

60. One member felt that "farming systems" in the IARCs could be taken to include almost all activities other than plant breeding and in view of this it was necessary to look at the proper balance between farming systems and breeding work, as well as the relative importance to be given to the various components in farming systems. The question was raised as to what was, for example, the relative importance of water use and management, which was a separate subject for study, within the purview of farming systems research. Unless the review was purposefully made broad and considered all aspects it was necessary to sharpen the terms of reference for the review working group.

61. One specific issue concerning all the IARCs was the need to determine the extent to which the research activities of an IARC should relate to those national programmes which are concerned with the testing, application and extension of new technologies.

62. There was general agreement that the review as proposed would be useful in helping to focus attention on the main issues in the farming systems research. However, as one observer pointed out, it was necessary to clarify the time scale in the application of farming systems research in view of the fact that to date few new systems had emerged. The position was fairly well understood in the case of IRRI but less so in respect of the long-term aims of IITA.

63. One other expected benefit of the review would be the development of closer collaboration between the IARCs concerned.

64. In closing the discussion the Chairman concluded that TAC was in agreement with the proposed programme of the farming systems review and that subject to some sharpening of the terms of reference for the working group, the overall modus operandi was acceptable. The Chairman requested that members kindly submit suggested candidatures for the working group and suggested improvements to the terms of reference.

#### Coconut Research (Agenda Item 4 (d))

65. The Chairman reminded members that TAC had originally decided to arrange a working group on the subject because it wished to have further information on the needs and opportunities for coconut research in order to enable it to confirm, or otherwise, the high priority rating accorded to the crop. At its last meeting, being informed of an international symposium to be held at Kasaragod, Kerala, in India, on coconut research and production,

TAC had resolved to facilitate the attendance at this meeting of two representatives, Dr. M. S. Swaminathan of India, and a then member of TAC, and Dr. Carlos of the Philippines, with the objective of providing TAC with the views of the international coconut research community on the main research priorities for international support with especial reference to integrated culture systems.

66. The reports of Drs. Swaminathan and Carlos had been made available to the members along with a background paper on coconut research prepared by FAO.

67. Presenting the report of Dr. Swaminathan, Dr. Joshi indicated that the meeting had recognized five major research requirements, grouped under genetics and breeding, vegetative propagation of elite palms, production physiology, diseases of uncertain etiology, and post-harvest technology. Detailed suggestions within each group had been made for the information of participants and four research topics had been singled out as lending themselves to international collaboration:

- (i) Exchange of research expertise for solving specific problems particularly with regard to diseases of unknown etiology;
- (ii) Germplasm collection and supply;
- (iii) A communication centre for indexing current work in different areas and the setting up of an International Data Bank on Coconut Problems;
- (iv) Production, processing, and marketing intelligence.

68. Dr. Madamba, on behalf of Dr. Carlos, informed TAC that the efforts in the Philippines on at least one disease of unknown origin (cadang-cadang) were being diminished. It now appeared that this disease might be at least partially associated with senility, although quite considerable progress in its study had yielded disappointing results toward a clear understanding of the disorder. In the past, independent efforts had been made by several countries with similar problems and their solutions appeared no nearer. Although the symposium had not perhaps been fully representative of all interested countries, there seemed to be a consensus that some form of collaborative effort would be useful.

69. The TAC recognized the concern of the coconut industry for an international effort on the diseases of unknown origin but saw difficulties with a concerted effort on a series of similar diseases in diverse localities. It also recognized the advantages of an international effort in germplasm exchange and conservation. Concomittant problems of quarantine, related to the avoidance of disease transfer, might to some extent be alleviated by increased research on vegetative propagation and tissue culture. It was also not yet clear, however, what support might be necessary in this field and where it might best be applied.

70. FAO, for its part, had been able to catalyze collaboration, especially in the field of information exchange, and the IBPGR might be able to assist in advising on the establishment of germplasm centres if approved by the Board. This matter had been under discussion in the IBPGR, and the Secretariat would call for the IBPGR report on the subject, for the information of members, as soon as this was available.

71. It was clear that a number of common problems existed but a member pointed out that the priorities seen by the Kasaragod symposium were not the same as those recognized earlier in the Report of the Tropical Products Institute which had led TAC to give a higher priority to coconut. These included tall/dwarf hybridization, post-harvest and processing problems and mineral nutrition of the coconut.

72. TAC itself had also expressed considerable interest, and to some extent had based its priority rating, on the importance of the coconut in small farming systems. Obvious needs and opportunities for an enhanced research effort existed but some major problems might require an improved management approach rather than more biological research (e.g., the senility aspects of cadang-cadang). There was considerable effort already going into

coconut research (IHRO, India, Philippines, Indonesia, the South Pacific Commission, the Caribbean, etc.) but a need to refer a number of problems, such as the tremendous need for considerable replanting, to the development agencies such as FAO and UNDP also had become apparent. The Secretariat would continue, with the assistance of some members and FAO, to maintain up-to-date information on ongoing research of significance.

73. The Chairman expressed the gratitude of TAC for the reports presented.

74. It was suggested that anticipated discussions and consideration of soyabean research might perhaps lead to a similar approach for coconut research.

75. The Committee accepted the reports and resolved to retain coconut research as an item on its Agenda. It would be reported to the Consultative Group that the Committee had given consideration to international support for coconut research, but was not yet ready to make specific recommendations on the subject.

#### International Research on Water Buffalo (Agenda Item 4 (e))

76. The Chairman referred to the self-explanatory background paper prepared by the Secretariat which gave an account of TAC's involvement in buffalo research and the events leading up to the proposal for the consultant mission to be executed on behalf of TAC, to provide a more detailed formulation of the international buffalo research project which had been discussed at the 13th Meeting.

77. The selected consultant, Dr. P. Mahadevan, a Senior Livestock Production Officer of FAO, currently assigned to the Livestock Education and Research Service, was introduced to members to whom he presented a brief account of his forthcoming mission. A desk study had been carried out based on the report of the TAC Working Group on Buffalo Research, augmented by information available in FAO. The objectives of his mission had been spelt out in the Terms of Reference and a detailed itinerary had been prepared for the necessary country visits which would, with recent changes, permit him to prepare a report in late April and early May for circulation prior to the 16th Meeting of TAC.

78. He sought the further views of the Committee on the alternative organizational structures which were possible, making particular reference to the TAC's earlier expressed views on the possible scope of the project viz. that this could be viewed either as an international unit servicing a network of strengthened national centres or as a "decentralized institute".

79. A majority of members agreed that the activities proposed for the consultant, and which they endorsed, were fully in line with the recommendations of the 14th TAC Meeting, and expressed their good wishes to Dr. Mahadevan for a successful outcome to his mission.

80. The Chairman requested members to consider any possible changes that might be made in the Terms of Reference to suggest, identify, assess and discuss possible priority problems, and to comment on alternative organizational approaches.

81. During discussion in closed session it was confirmed that the consultants' task was essentially a refinement of the second or operational phase of the project proposal prepared by the TAC Working Group, prompted in part by the poor response of potential donors to the original proposal, evidenced at the last two CGIAR meetings.

82. In reshaping the proposal care should be exercised to clearly identify research needs, as distinct from needs for improved extension and management. An inadequately prepared proposal would only jeopardize the prospects of its further serious and favourable consideration.

83. Two members suggested changes in the Terms of Reference which would aid the Consultant, in what was considered to be a very arduous task, and contribute towards the preparation of a realistic and viable project. The first of these related to the need to include an assessment of the probable pay-off from the various priority lines of research identified, and the second related to an examination of major research results already obtained but not as yet generally applied including investigation of the constraints which have limited the adoption of the improved technology already generated.

84. The Chairman noted the agreement of members to amend the Terms of Reference as suggested. (See Annex IV). He further raised the hope that countries concerned in the proposed project would, in their own interests, extend every support to the TAC consultant.

85. Finally, in closing, the Chairman supported a proposal from the Secretariat that, in view of the tremendous task facing the Consultant which would only be completed immediately prior to the next TAC meeting, the Consultant be permitted to present a verbal, rather than a written report, to that meeting.

TAC Quinquennial Review of the International Potato Centre (CIP) (Agenda Item 5)

86. Before requesting Professor ten Houten, leader of the Review Panel to CIP, to present the draft report, the Chairman reminded members that, following established precedent, the report was being presented as a preliminary draft on which substantive comments were not sought at this stage. The finalized report, taking into consideration comments of TAC, CIP staff and the mission members, would be formally presented to the next TAC meeting, at which the Director of CIP would be present, and the comments of TAC at that time would be recorded and presented to the Consultative Group in company with the report.

87. At this meeting he would request members to comment in general terms on the draft, specifically to identify those sections or paragraphs which they felt required clarification, to identify any gaps in the report as related to the questions which were initially presented to the Panel in its Terms of Reference and supplementary listing and on which additional information was felt to be required. These comments would be recorded by the Secretariat and used in the preparation of the final report, but would not appear in the TAC report as any substantive judgement or recommendation would be premature at this stage.

88. Professor ten Houten first mentioned that the team was impressed by CIP's activities and wished to compliment the Director-General. He recalled that CIP was in fact reviewed a little before it had been in existence for five years and referred to the internal organization into discipline-oriented departments and inter-disciplinary research thrusts. The use of CIP's five-year Planning Conferences to advise on the programmes of these thrusts he considered an ideal approach to systematic organization of the recording of research progress. The annual reporting of detailed research was also a good procedure. The annual review by the Board's Programme Committee maintained an overall examination of the total programme and the most recent report of this body had been made available to the Quinquennial Review Panel.

89. The Panel had also considered carefully the remarks of the CGIAR Review Committee on the question of Quinquennial Reviews and had kept in mind the three major tasks foreseen by that Committee, namely, to evaluate the scientific quality of current programmes, to comment on the scope and balance of those programmes, and to evaluate future plans including the explicit review of centre's proposals to continue projects of long standing.

90. The Mission had received a wealth of documentation from CIP, including the very useful summaries of CIP Planning Conferences, although no overall documentation of the total programme and future plans had been especially prepared for the Mission. This need should, he felt, be made quite plain in advance of future reviews, and the documentation should include a statement of the Centre's interpretation of its mandate, and its strategy and approach to carry it out. This latter had however been drawn from the documentation provided.

91. Specific attention had been paid by the Mission to the questions of regional research and contract research. Although the report was quite clear on the question of

contract research he recognized that considerable improvements were necessary in the section dealing with regional research and training. This resulted, in the main, from the Mission running out of time.

92. In that respect he suggested that consideration be given in future to allocating rather more time, if this could feasibly be done, to the report writing period of missions' itineraries.

93. Apart from contract research and regional research two other aspects which could profitably lend themselves to discussion by TAC, were the planning conference concept, as a means of establishing priorities, and the overall balance of the programme.

94. The Planning Conference as they related to the Research Thrusts had been mentioned in the Report and this section could perhaps be dealt with in a more positive way when the report was edited.

95. The balance of CIP's programme had been examined and the Panel took note of the rapidity with which the regional programme had been developed. It had therefore recommended that a period of consolidation should now follow. Some minor imbalances in programme, such as between virology and nematology and the place of physiology in the programme, had also been given emphasis in this part of the report.

96. Concluding, Professor ten Houten indicated that he and the Panel members would be most grateful for the critical remarks of TAC to assist in the formulation of the final version of the Report which he wished to be of real interest and utility to TAC, to the CGIAR donors and, not least, to CIP itself. The Chairman thanked Professor ten Houten for his presentation and invited further comments on the review from Mr. Webster and Dr. Coulter, who had accompanied the Panel as Secretary and Observer respectively.

97. Mr. Webster made a brief mention of some logistic problems that the Panel had encountered which were no fault of CIP itself and expanded on some of the points made by Prof. ten Houten, emphasizing particularly the need for the preparation of a general overall statement summarizing the Panel's views on the Centre as a whole and particularly its interpretation of its mandate. He also called attention to one or two areas of divergence of opinion within the review panel which had emerged and which were now being sorted out through correspondence with the panel members concerned. He believed that a sharper focus could be given to certain sections of the report and suggested some ways of achieving this.

98. Dr. Coulter commented on the uniqueness of CIP as an international centre responsible for a crop which was still of minor importance in many of the developing regions of the world and which had expanded regionally in consonance with the headquarters development. As a consequence this had led to some problems in elucidating expenditure accounts as between core and special project funding. On the whole, however, the budgeting and accounting procedures appeared to be in good shape.

99. He highlighted the recommendation for the establishment of a Potato Advisory Committee under IBPGR and remarked that the potato was one of the few crops handled by an international centre for which an IBPGR crop committee had not yet been established. It was assumed that this point probably would now be taken up by the IBPGR.

100. The Executive Secretary of TAC drew attention to the need for the preparation of a summary of the report, its conclusions and recommendations, in a form which clearly responded to the Terms of Reference and questions posed to the Panel, for presentation to the Consultative Group. It was understood that this would be prepared as an integral part of the final report.

101. Considerable discussion ensued, in which all members participated and many comments on the substance of the report were in fact recorded. In line with the agreed procedure however these would not be reported but would be referred by the Secretariat to the Chairman of the Panel, for consideration in finalizing the draft report.

102. General comments of the members were however favourable, one member voicing the opinion that the review set a standard for the future. There were nevertheless many comments regarding the need for better expression of many conclusions and recommendations and for an overall improvement in definition in the finalized version.

103. More specifically, attention needed to be given to those sections of the report which addressed the Terms of Reference and its supplementary questions especially with regard to the CGIAR Review Committee's call for expression of views on the optimum size of the Centre and its relative position within the CGIAR system.

104. The Panel Chairman thanked members for their constructive criticisms and requests for clarification and undertook, with the aid of the Secretary of the Panel, to ensure that their suggestions were considered as the final report was prepared. A schedule for its preparation had been worked out and some Panel members had already submitted additional and/or amended material for incorporation.

105. A finalized draft of the report would be brought to the 16th Meeting of the TAC for review, after which it would be finalized for submission to the CGIAR. In case any differences of opinion between the review panel and the centre staff should emerge on any point, the Chairman of the Panel would use his best judgement as to whether to record such differences in the body of the report or separately as an addendum. The final report, however, would be the views of the review panel and should reflect their considered judgements. The comments of TAC to the CGIAR on the report would be a separate submission.

Report of the TAC Vegetable Research Project Formulation Mission (Agenda Item 6)

106. The Executive Secretary introduced the report and after tracing the background to the present mission, referred specifically to the Terms of Reference for the Mission (Annex III of the Report) which essentially had requested the consultants to determine suitable locations both in Africa and S/S.E. Asia for establishing a pilot project, without making any commitments in respect of national or international research institutions which might host the project.

107. Dr. Choudhury, the consultant responsible for the Asian section of the mission, highlighted the special problems of the tropics, in particular the diversity of ecological zones, the general under-nutrition and malnutrition of the peoples representing 70 per cent of the world population, and as a consequence the many deficiency diseases. It was known that the seriousness of the latter could be considerably relieved by an adequate intake of vegetables. He then gave a summary of the visits to seven countries and the reasons for his choice of Kundasale, Sri Lanka, as the most suitable location for the Asian project base.

108. Mr. Thrower, consultant for the African section of the mission, believed that there was little difference between research on cereal grains and research on vegetables in-so-far as both were aimed at making available improved varieties and encouraging the information flow. He thought there were possibilities of great improvement in the production and quality of vegetables in tropical countries by providing good seeds of varieties, combined with requirements of relatively low inputs of pesticides, machinery, etc. Problems related to the storage of vegetables and to the transfer of technology to farmers fields were other priority areas which were more the responsibility of the national programmes. In addition, in W. Africa the language barrier between francophone and anglophone countries required special consideration.

109. Mr. Thrower briefly surveyed the ongoing research in vegetables in the African countries visited and reiterated the reasons, given in the report, for his selection of IITA, Nigeria, as first choice for the African base linked with a francophone training component at CDH in Senegal.

110. In discussing the report members first sought assurance that lack of research was a principal constraint in limiting the production and consumption of vegetables in tropical developing countries. For example, a member cited the case in India where a recent expansion in vegetable production and consumption could be attributed not only to the supply of improved materials but also to improvement in storage and transportation. If this was generally true, then what was the relative importance of lack of crop production technology and lack of infrastructure? Another related question concerned the magnitude of yield increases that were likely to stem from the type of research proposed in the project.

111. Subsequent debate revealed that although infrastructural constraints were important there was little doubt of the need for research to provide improved varieties in respect of resistance to insect attack and disease, and for better nutritional quality. For example, of the eight species of amaranths cultivated and eaten over a wide area in Asia little was known of their comparative nutritive value. In tomato production, without research to combat pests and diseases, there was little hope of increasing the low productivity of the traditionally grown varieties. With regard to the magnitude of yield increases it was reported that at IITA increases of the order of 500 per cent had been achieved with improved varieties of tomatoes and leafy vegetables (Celosia sp.)

112. Members stressed the importance of considering the needs of the rural farmer who very often grew and consumed his own vegetables. There could be a major advance if reliable supplies of seeds of high yielding, disease and pest-resistant varieties were made available. It was pointed out that in India there had been virtually no research on the leafy vegetables commonly grown by the rural populations. The scope for improvement was very great, particularly if research could provide suitable varieties, the seeds of which could possibly be produced by private farmers as had been demonstrated with hybrid cotton.

113. With respect to the priority list of vegetables suggested by the mission for consideration in the project research programme, the consultants pointed out that account had been taken of the on-going research of AVRDC on tomatoes and of CIAT's and IITA's work on Phaseolus vulgaris and Vigna spp., respectively. This did not negate the need for the project to consider these species particularly in view of the international importance of tomatoes and the fact that of the above legumes the species used for grain production were different from those used as green vegetables.

114. At least two members agreed with the mission's selection of IITA as the location for the project base in Africa pointing out that this IARC already had ongoing activities in vegetable research as well as having a fairly well established outreach programme. It would be necessary, however, to clarify how the proposed vegetable project could be linked with the existing programmes at IITA and what would be the expected size of the project in 3 to 5 years. The Executive Secretary suggested that either the vegetable pilot project could be treated as a special research project hosted by IITA, or it could be placed, along with the Asian base, under a separate governance, but located at IITA although not directly under the IARC's management.

115. On the question of the budgetary requirements for the project there had been an amount indicated (\$0.5m/annum) as an upper limit for the project overall but as pointed out by the Executive Secretary the amount required would depend to a large extent on the facilities, staff and equipment made available by the host and cooperating countries. With respect to the probable increase in expenditures as the project developed over the initial 3 years, it was mentioned that this could amount to two- to three-fold increase.

116. With respect to implementation of the project, the Chairman stressed the need to have some mechanism whereby after the 3 - 5 year period of the project, the CGIAR would be in a position to make a free decision on the follow-up; that is, prejudgement of any further actions should be avoided so that there would be no commitments to an on-going independent agricultural research institute. There was also the question of how the proposed project could be fitted into existing international arrangements and what kind of governance and guidance it might have. It would also be necessary to explore the best procedure for reporting on the project so the results which emerged from it might be useful to the TAC and CGIAR in the subsequent decision making on the follow-up.

117. It was important for TAC to carefully consider the likely impact of the project on the quality of life of the people it was designed to serve, in comparison with the other new initiatives in agricultural research.

118. In considering the suggested work programme of the project members believed that emphasis should be given to pests and disease problems. It was pointed out that a special problem was the misuse of pesticides and fungicides by vegetable growers in tropical countries.

119. On the question of the need to study the influence of various physical environmental factors on vegetable production, Dr. Choudhury replied that one of the main advantages in the choice of Sri Lanka for the Asian base was the easy access to a diversity of tropical climates and soils.

120. The mission's case for the need of a francophone sub-centre for documentation and training in Senegal was supported although one member thought it was perhaps better to concentrate all the projects' activities in one place and provide facilities for bilingual documentation and instruction. The proposal to have liaison officers in Sudan and Ethiopia was also supported but it was mentioned that these officers should have international status so that they would have the necessary standing in the country and be able to travel freely. The mission consultants stressed, however, the importance of having national (counterpart) liaison officers responsible to the project in each country.

121. Further elucidating the major issues, the Chairman pointed to the long-term consideration by TAC of vegetable research and if any recommendation was to go to the CGIAR, TAC must ensure that the proposed programme would have the desired impact. He reaffirmed the need for a mechanism of implementation that did not predetermine some larger programme after the 3 - 5 years of this pilot project. It was seen, therefore, that such a mechanism would need to be monitored by TAC and the CGIAR.

122. In view of the present lack of any budgetary provision for the project, TAC would need to explore what action could be taken particularly as it was not yet clear what the project might achieve. One possibility as far as the African base was concerned, was to have vegetable research as a special project at IITA supported by a few interested donors. The position as regards the Asian base, as proposed by the mission, was more complex since it would have to be decided who would be responsible for executing and monitoring the project. The position of AVRDC vis-a-vis the project had to be further examined so that full use could be made of AVRDC particularly as this centre was developing a strong outreach programme.

123. Referring to the international staffing of the project, the Chairman felt that the title "Director", as used in the mission report, was inappropriate and preferred "Project Leader" or similar term.

124. Concluding the discussion, the Chairman felt that since there were a number of new initiatives coming on stream for TAC's and the CGIAR's consideration, it might be profitable for TAC to examine these as a group to see if there were any common elements which might help in determining the most appropriate mechanism for their implementation.

125. TAC expressed its appreciation to the mission for the report and the effective and efficient presentation.

126. Further discussion by the Committee focussed on the possible alternative mechanisms by which the project might be implemented, financed and administered. Members were divided on the question of establishing an International Board for Vegetable Research to oversee ongoing research and integrate the international and national programmes. In view of the various questions still to be satisfactorily answered on how the project could be implemented and operated, it was agreed, on the proposal of the Chairman, to appoint a small TAC Subcommittee, assisted where necessary by the Mission consultants, to further study the issues and see whether a viable mechanism was possible. The Chairman would determine the composition of the Subcommittee. He requested from the Committee more time for informal explorations to determine a clear definition of the role and duties of the Subcommittee which, he suggested, might meet one or two days prior to the next or the following TAC meeting. (Subsequently the Chairman named the members of the TAC Ad Hoc Vegetable Research Subcommittee as Drs. Ajibola Taylor, Camus and Joshi.)

Agroforestry Research (Agenda Item 7)

127. Reference was invited to the IDRC document entitled "The tropical forest - overexploited and underused. Research Priorities in Tropical Forestry"<sup>1/</sup> which had been circulated prior to the 14th Meeting of TAC. Dr. J. G. Bene, Team Leader of the IDRC Study introduced the subject at the request of the Chairman.

128. Dr. Bene first pointed out that while tropical forests covered a considerable area they contributed little to human welfare. This resource was however undergoing rapid degradation and irreversible depletion. When considering how an internationally supported research effort could possible change this situation several groups of problems had been identified by the study team. It was felt that no research initiative could significantly help in improving the management of natural forests in the tropics. The considerable, but slow, progress which had been made by existing institutions in this field was mainly due to the inherent complexity and heterogeneity of tropical forests. The man-made forests of the tropics were more productive and uniform but their relative importance (about 1% of all tropical forest area) did not seem to justify new international research efforts either, although major problems of protection against diseases and other hazards were experienced in this type of monoculture. On the contrary, the problems associated with the interface between agriculture and forest lands appeared to lend themselves to some form of international support.

129. While agrisilviculture was not new, the knowledge of the many different systems of simultaneous or sequential growing of trees and crops and/or livestock was limited. Little information had been collected systematically and verified. There had been, however, an increasing interest in agro-forestry over the last few years both in a number of countries of the tropics and by several international institutions. It was therefore proposed by the IDRC Study team to establish a centre which would gather, check and disseminate existing information; identify gaps and contract research to existing institutions to this effect; assist bilateral and multilateral donors in channeling resources to this field; contract surveys and assessments of potentially useful tree species; and carry out related socio-economic studies. The centre would aim at bridging disciplines and institutions in the field of agriculture and forestry and assist in training "tree scientists" with a broad multidisciplinary background rather than foresters. This undertaking would be carried out in close cooperation with other international institutions, in particular FAO and IUFRO which had been consulted by the study team and expressed interest in this initiative.

130. The tentative annual budget of the centre would amount to approximately \$2 million of which about \$1 million would be devoted to research contracts, \$0.5 million to management, collection and dissemination of information, and \$0.5 million to seminars and training activities. The centre personnel would be composed of a multi-disciplinary team which would play an essentially catalytic and stimulating role vis-à-vis cooperating institutions. If effective in this role the centre could be of limited duration.

131. Many donor countries and institutions had been contacted already by IDRC for support to the proposal. Several had given a definite and positive response while many others had indicated their interest. Interested donors had met recently and volunteered to establish a steering committee for furthering this proposal. The Committee was expected to meet on April 6, 1977 at the Royal Tropical Institute of the Netherlands.

132. The Chairman, thanking Dr. Bene for his presentation, recalled the continued interest of TAC in this subject. Although TAC had essentially identified major staple food crops as its first priority and other food commodities including oil seeds as a second

<sup>1/</sup> A revised version of the document of December 1976 is entitled "Trees, food and people - land management in the tropics".

priority, other priorities had been considered which necessitated further review and assessment. Among these, forestry and, more specifically, agrisilviculture were important. He then invited comments on two main aspects of the proposals: that is, the research needs and the priorities, and the alternative mechanisms for an international support to research in this field.

133. It was noted that it was not IDRC's intention to submit a proposal for financing by the CGIAR. Donors which were contacted and had shown interest merely wished to have the views of TAC on the proposal for their own guidance. It was likely that their contributions would be made outside of those made through the CGIAR. The centre could possibly have an "associate status" with the CG and, as several precedents indicated, provide progress reports to the Group. The Chairman pointed out, however, that TAC's support to this proposal could have some implications for several other proposals which were now under consideration by the Committee.

134. Dr. King, Assistant Director-General, Forestry Department, FAO, recalled the long-standing interest of FAO in agrisilviculture. However, there was still a great knowledge gap and also a number of superstitions or erroneous ideas on the subject. Agrisilviculture could certainly contribute a solution to the increasing and conflicting demands placed on the world's finite resources especially to the problems associated with shifting cultivation. FAO was not in a position to devote significant resources to research in this field and therefore welcomed and supported this initiative by IDRC.

135. Dr. Bommer, Assistant Director-General, Agriculture Department, stressed that the main objective of the CGIAR towards increased food production did not call merely for better seeds and increased fertilizer and water supply. The integrated approach provided by agrisilviculture systems was probably essential to a sustained improvement of food supplies in large areas of the tropics. It could therefore be argued that research on agrisilviculture, far from being of marginal interest to the basic objectives of the CGIAR, might call for direct support through the Consultative Group rather than having an associated status with it.

136. In the ensuing discussion several members pointed to several research needs in forestry which received so far very little attention in developing countries. These included the control of pests and diseases in monospecific stands of man-made forests and the improvement of forest trees and shrubs as a source of food, fodder, fuel and organic fertilizers, as well as medicines and gums. The role of forestry in arid areas was emphasized especially for wind breaks and for sand dune stabilization. In this connection it was felt that research on agrisilviculture should not be confined to the humid tropics but also include consideration of the problems of arid and semi-arid tropical areas. Another member stressed the need to consider agrisilviculture systems for both tropical highlands and tropical lowlands. The question was also raised as to the role which wildlife could play in agrisilviculture systems, as exemplified in East Africa.

137. Commenting on the mechanism required for an international support to agrisilvicultural research, several alternatives were discussed. It was first noted that legal considerations had led to a change in the terminology as initially used in the IDRC proposal from an "international support unit" into "centre", although this institution would have a purely catalytic role which did not compare in any way with that of the IARCS. Several members emphasized the need for a mechanism which would mostly stimulate research through existing national institutions in different ecological zones. In this context, training was considered as a major task for this institution. It was also understood that the "centre" would be hosted within an existing institution and therefore would not call for significant capital investment in terms of building, lands and equipment. In fact, it was proposed that the research activities at the centre would be confined to compilation and assessment of existing information, most of the research, per se, being contracted to outside institutions.

138. In closing the discussion, the Chairman noted that this proposal called for some basic policy considerations in closed session, which could equally apply to other proposals being examined by TAC, in particular those of the following agenda item on Forest Genetic Resources. Moreover the discussion of priorities in the field of conservation of forest genetic resources in the context of CGIAR objectives had much in common with those related to agro-forestry

139. In closed session it was agreed that although expressing keen interest in agro-forestry and recognizing its importance in agricultural systems, TAC would at the present time maintain a passive role in relation to IDRC's proposal for an international research effort. It applauded IDRC's initiative, however, and would, as and when appropriate, consider the matter again.

140. Considering the possible future role of the IARCs, and particularly of IITA, in this international research venture, members were not clear as to what would be the status of any staff involved in the project working at IARCs; would they, for example, be staff of the agro-forestry "centre" (or board) or staff of the IARC involved? It was observed that in this connection TAC should be fully consulted before any negotiations for agro-forestry research projects at IARCs be completed. The Chairman suggested the possibility that this problem could be examined with respect to IITA by the Quinquennial Review Panel when considering the Centre's mandate and its interpretation thereof. He thought perhaps that IITA should have agroforestry included in its mandate since it was basically involved in studying the transition from shifting cultivation in the tropical forest area to settled agriculture. However some members saw that this could mean a significant extension of IITA's farming systems programme, possibly requiring a complete review of IITA's mandate to determine to what extent it should be involved in the total farming systems of the humid tropics.

141. It was concluded that the proposed international agro-forestry "board" should seek the advice and approval of TAC before requesting IARCs to take on any agro-forestry projects. TAC, itself, would take no position at this time with respect to recommending IARCs' involvement in this research field; neither would it include the subject in the quinquennial review of IITA or the "across-centre" farming systems review.

#### Forest Genetic Resources (Agenda Item 8)

142. The Executive Secretary pointed out that a large part of the documentation provided for this agenda item included information on IBPGR's programme proposal which, at this stage, had been submitted for discussion by the Committee but only as background documentation for discussion of the priorities. The IBPGR had requested TAC's guidance on the need to include activities on forest genetic resource conservation in this programme. Should TAC agree to this extension of IBPGR activities, it would have the opportunity at its 16th Session to examine specific proposals as part of IBPGR's 1978 Programme of Work and Budget.

143. Introducing the subject at the invitation of the Chairman, Mr. Willan (FAO Forestry Department) referred to the several steps which had led to the formulation of a global programme on forest genetic resources, with the assistance of the FAO Expert Panel on Forest Genetic Resources, and that of UNEP and other agencies. The global programme included a series of activities involving the collection of substantial quantities of seeds of important species in selected provenances, the establishment of ex situ stands for each specific provenance and of natural reserves for conservation in situ.

144. The IBPGR had been approached several times for support of these activities, and had lately examined in detail those elements of the global programme which could be produced as part of its own programme. While most of the tree species destined for commercial timber production could not be included in its priority list, the IBPGR considered that three categories might call for its support: namely, those tree species which served as an important source of food and fodder, those used as a source of fuel for rural communities, and those which played an important role in the stabilization of marginal lands. However, before starting to promote activities in forest genetic resources related to these

three categories, the Board wished to have TAC's advice on the principle of including this type of activity in its programme.

145. Several members and observers intervened to clarify the role of IBPGR in this context. It was first emphasized that IBPGR considered the conservation of forest genetic resources as an integral part of its mandate. The question was therefore more one of priority than of principle. It was also stressed that IBPGR was not only a money-granting institution but could also, through its counsel and recommendations, stimulate and promote activities to be financed by other sources. In fact, as pointed out by a member of the CGIAR Secretariat, several donors had underlined the advisory role of the IBPGR, and its possible involvement in forest genetic resource conservation would have to be seen in the context of a forward plan similar to the quinquennial programme which the CGIAR Review Committee had recommended each IARC should make.

146. In closed session the discussion centred on how TAC might support IBPGR's involvement in the operations side of the plant genetic resources programme. The FAO representative and a TAC member supported the Board's request emphasizing that the guidelines for seed storage standards, etc., had already been provided by IBPGR's studies which also included work on data systems of considerable usefulness and broad applicability.

147. Whilst appreciating FAO's suggestion with respect to the level of funding for limited operations in forest genetic resources TAC wished to take no action until it could examine a firm proposal from the IBPGR itself giving details of duration, the agency concerned, and possible future costs as well as the method of implementation. The Chairman suggested that the Board include this in the Programme and Budget Proposals for 1978 which TAC would consider at its next meeting.

#### ILCA (Unscheduled Item)

148. The Chairman, welcoming Dr. R. Hodgson, Chairman of the Board of Trustees of ILCA, recalled that TAC at its 14th Meeting had agreed that there should be a TAC Review of the activities at ILCA in keeping with the principle of having an interim review two to three years after the establishment of the Centre. Plans were made for a TAC Mission, under the leadership of Sir John Crawford, to visit ILCA in mid-March to coincide with the meeting of the Board of Trustees.

149. Dr. Hodgson expressed his appreciation for the opportunity of informing TAC of the latest developments at ILCA, recalling the common concern of its Board and of TAC for developing a sound programme in the complex field of animal production in Africa. The Governing Board had, on December 2, 1976, regretfully accepted the resignation of Dr. J. Pagot, the Director, recording his outstanding contribution to the establishment of the Centre. The Board decided that during the interim period, before the nomination of a new Director, the Board itself would be responsible for the direction of the Centre. It had appointed Professor Tribe as Resident Board Representative for two months, a task now taken over by Dr D. Pratt for a few months while the Board conducted its search for a new Director. During the last two months, the staff of ILCA had made an intensive review of the programmes for consideration by the Programme Committee which had met during the week preceding this TAC meeting.

150. Dr. Hodgson confirmed that the subcommittee of TAC would be welcomed on its planned visit to the Centre at the same time as the Board Meeting. Programme documentation and meetings with the senior staff would be arranged when the mission arrived at ILCA.

151. In closing, Dr. Hodgson reaffirmed the determination of the ILCA Board to fulfill the objectives of the Centre as set out in its mandate and to be at the service of both anglophone and francophone countries in Africa.

152. Dr. Cummings thanked Dr. Hodgson and expressed his appreciation for the preparations being undertaken for the TAC Mission to ILCA. TAC's sympathy and understanding of the problems encountered by the Board of ILCA were recorded. The Centre had an exceedingly difficult mandate and was working in unusual circumstances. TAC's gratitude for Dr. Pagot's accomplishments was also acknowledged.

Unscheduled Item - ICIPE

153. The Chairman drew attention to the reference to ICIPE made in his report on the last meeting of the CGIAR. With the assistance of the CGIAR Secretariat representative he had compiled the following additional information for the benefit of the members.

154. The CGIAR Secretariat had drawn up a document specifying the financial requirements of ICIPE for 1977, to permit it to undertake the cooperative activities envisaged with certain IARCs. The core budget of ICIPE for 1977 had proved to be much larger than anticipated and the position had been aggravated by an expected shortfall in the funding available from UNDP and its other traditional donors. The capital budget of some \$15 million also seemed unrealistic.

155. The Secretariats of CGIAR and TAC were shortly to make a joint visit to ICIPE with the purpose of examining the 1978 budget with a view to presentation of a realistic proposal to the next TAC Meeting. At the same time, they would try to obtain details of the minimal requirements for 1977 in order to give clear guidance to potential donors who might then be identified.

Unscheduled Item - Soyabean Research

156. The Chairman informed members that in line with the proposal made at the last TAC meeting, FAO had convened an ad hoc meeting of organizations interested in the possible establishment of a consortium on soyabean research. The FAO, EMBRAPA of Brazil, INTSOY, IITA and India had participated. He requested Dr. Blumenschein, who represented EMBRAPA at the meeting, to report to the TAC on the conclusions reached.

157. Dr. Blumenschein reported that the basic conclusion of the meeting was to pursue the idea of establishing a consortium of interested organizations able to furnish a sound research resource base on soyabean rather than to consider the establishment of a single centre of excellence. A modest managerial structure was foreseen, with a managerial board (of up to 9 members) and an executive secretariat to be located in an organization able to ensure international standards.

158. Possible membership in a consortium could be, in the first instance, INTSOY, the All India Coordinated Soybean Research Project of ICAR, EMBRAPA and IITA. All these organizations could provide substantial research and training research bases, and had the status and dimensions capable of supporting international activities. Interest had also been shown by other countries, including Japan.

159. The objectives of the consortium would be to assist, support and supplement national efforts through a linking of major centres in the mobilization of world expertise, and to provide an organizational structure capable of handling funding for this purpose.

160. The activities of the proposed consortium would include the identification of priority problems for research and the stimulation thereof; the collection and utilization of germplasm; the evaluation of soyabean as a component of cropping systems, and appropriate information and training activities, and advice and assistance in the development and extension of soyabean culture in other countries.

161. The Chairman, responding to a question from a member, confirmed that the status of the proposition was that of a report, not a formal proposal to TAC. This latter might follow later, if the interested organizations were able, with possibly consultant assistance, to prepare a precise proposal for assistance.

162. The Chairman referred to a situation which was arising with respect to a number of activities which could be regarded as "associated activities" to those of the international agricultural research centres, and which were near to, but not of the CGIAR system activities. The question of possible methods and form of affiliation or an association with the system was, therefore, of increasing importance. He suggested that the Secretariat, with or without consultant assistance, should prepare a position paper, setting out the basic considerations and questions relating to possible methods of affiliation with the CGIAR, and the mechanisms whereby a consortium could handle (receive and expend) international funding for diverse activities.

163. Several members pointed out that a somewhat parallel although not identical situation had been met, and accommodated, in the case of the WARDA research programme and the TAC proposal for a field bean network in Latin America. Each of these however had been associated with a resource centre of which the activity was an integral part. The position of the proposed soyabean consortium, which did not yet have a base, was thus somewhat different.

164. The difficulties met with earlier on two occasions, in associating INTSOY with the CGIAR were recapitulated by another member who suggested, as a first step, an informal approach by the Chairman to USAID the major financiers of INTSOY. A foundation for discussions had been provided by the ad hoc consortium; what was now needed was some informal advance information on the possible receptivity of donors and additional summarization of the possible resources which could be provided by the consortium members.

165. This proposal was supported and the Chairman therefore undertook to make the contacts suggested, and to report back to TAC at a subsequent meeting. At the same time some members believed the views of countries desirous of receiving assistance might be sought.

#### Water Use and Management (Agenda Item 9 (a))

166. Dr. Hopper reintroduced the topic of water use and management to TAC's agenda requesting that the subject be discussed in depth at the next or a subsequent TAC meeting. He passed on to the Secretariat, for distribution to members, a set of the documents including the Hatt-Hopper (1970) and Peterson (1972) reports and extracts from the reports of the previous TAC meetings at which water use and management had been discussed.

167. Summarizing these reports, Dr. Hopper elucidated the major problems and the research and training gaps in water use and management. He believed that the subject demanded more than just the inclusion of water management as an input to crop production whether for rice production in the semi-humid tropics or for sorghum or millet production in semi-arid areas. He contended that there were some very distinct issues related to the use of water, its acquisition, storage and handling both in the larger irrigation systems and at the farm level, which made water at least comparable to fertilizer as an input-oriented factor. For example, he pointed to the 8-fold factor in the comparative rates of water use per unit area per crop in different countries, ranging from over 80,000 m<sup>3</sup>/ha/crop in parts of India to about 10,000 m<sup>3</sup>/ha/crop in Israel and Australia. These enormous differences in water efficiency needed to be examined. But it was not simply a matter of application of improved engineering technology, nor was there a need for any additional major research effort in the field of soil, plant, water interactions. The problem was more of having a better integration of wise farm water management use with good systems design and control. This required filling a wide gap in training and particularly that between the philosophies of the agronomist with training in soil and water and of the engineers with training in water technology. In this respect the French technological training was superior to the traditional training given in separate agronomy and engineering faculties in most other countries.

168. Although there was a need to strengthen the work of IRRI on irrigation in the humid tropics and of ICRISAT on water harvesting and control in small watersheds in the semi-arid tropics, he felt the main focus of international support should be on irrigation in the arid and semi-arid areas which could be made extraordinarily productive if water

was used properly. Dr. Hopper believed that the requirements and indeed the major investments of the donor community, including IFAD, in the near future would be for water development in the more arid regions. He would like to see an international seminar convened to determine what should be recommended for meeting the needs of irrigating these arid areas. He himself would consider recommending to the CGIAR that a centre be created which had as its mandate the issue of water management and adaptive investigations, and in particular, training and information exchange in water management. He recognized that this view was in opposition to the implied recommendations of TAC as its earlier meetings, and also that it did not meet with the finding of the CGIAR Review Committee that there should be a definite restriction on the development of new research centres under the aegis of the CGIAR. However, he saw that this was a better solution than appending additional water management research and training to existing centres or alternatively, attempting to create an international consortium such as had been suggested for soyabean research.

169. Dr. Abou Khaled supported the concept of a centre, or programme, for water use and management in the arid and semi-arid regions. He referred to the low overall efficiency of water use (from 40% to 60%) in some 20 countries in which he had reviewed water use problems. This amounted to a large resource potential which could be expressed in additional land irrigated and increased food production.

170. He agreed that the differences in training background and therefore the lack of understanding between agronomists and irrigation engineers was a major problem. He believed that the proposed centre or programme in water use and management should focus on providing suitable training to integrate agronomy and water engineering in the same way that the Department of Water Science and Engineering, University of California, Davis, offered a special curriculum in "irrigation science".

171. The Chairman added that other members, if called upon, would probably also give additional support to Dr. Hopper's proposal. The present discussion served as a basis for further active debate and consideration by TAC. The subject would be kept on the agenda and after preparation of additional background information would be discussed at a future TAC meeting.

Date, Place and Provisional Agenda of Next Meeting (Agenda Item 10)

172. After receiving the concurrence of Dr. Nickel, Director General of CIAT, the Committee agreed to hold its 16th Meeting at CIAT Headquarters, Cali, Colombia from the 30 May to 3 June, 1977, concurrently with the meeting of the centres' directors.

173. The following provisional agenda was outlined by the Chairman:

- (i) Welcome address by the Director General of CIAT.
- (ii) Adoption of the Agenda.
- (iii) Adoption of the Report of the 15th Session.
- (iv) Consideration of the IARC's programmes and budgets, and of the draft joint commentaries of the CG and TAC Secretariats thereon.<sup>1/</sup>
- (v) Discussion of the final draft report of the CIP Quinquennial Review.
- (vi) Discussion of the initial draft report of the CIAT Quinquennial Review.
- (vii) Report of the consultant on water buffalo research.
- (viii) Progress reports and future activities on agro-forestry, vegetable research, soyabean, farming system, aquaculture. (Some of these sub-items for information only).
- (ix) Formulation of recommendations.
- (x) Adoption of conclusions and recommendations.
- (xi) Chairman's summing-up.

<sup>1/</sup> As far as ILCA is concerned, this would include consideration of the report of the TAC Mission to ILCA, March, 1977.

74. At the request of a member, the following schedule of future TAC meetings was tentatively agreed upon:

- 17th Meeting: Washington, 9 - 10 September 1977
- 18th Meeting: Rome, 13 - 17 February 1978
- 19th Meeting: location undecided, 5 - 9 June 1978.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Progress Reports and Future Activities (Agenda Item 4)

(a) Quinquennial Reviews of CIAT and IITA

175. TAC was informed of the preparations and arrangements being made for the CIAT Quinquennial Review from 13 to 30 April, 1977. TAC endorsed the composition of the review panel, the programme schedule and the list of major questions to be considered by the review. The Committee recommended that in the CIAT review, as well as in all future quinquennial reviews of IARCs, a request be made to the Centre for a current interpretation of its own mandate, and that the terms of reference of the review panel include a thorough examination of the Centre's mandate, its strategy and procedures by which it was carried out. TAC also recommended that as much time as possible should be provided in the review schedule for examining individual programmes and for visits to off-campus activities.

176. The quinquennial review of IITA was tentatively scheduled for 16 October to 5 November, 1977. Dr. Camus was nominated and agreed to serve as leader of the review on behalf of TAC. A list of potential candidates for the review team had been compiled and the standard terms of reference amended to take into consideration the points made above. These would be discussed with Dr. Gamble during a visit to IITA by the Deputy Executive Secretary in mid-February.

177. TAC members were invited to provide the Chairman and Secretariat with a list of specific questions they would like to be addressed in the above reviews. This invitation was extended to observers present at the meeting and would be made to all CIAT and IITA donor members of the CGIAR.

(b) Aquaculture

178. TAC was informed of developments in a number of international and national programmes in the field of aquaculture in Asia, Latin America and Africa, and stressed the need for a closer coordination between several undertakings in Asia. It again recommended that increasing efforts be made in the field of training qualified staff for applied aquaculture research. In this context, the Committee welcomed the IDRC's initiative in appointing a group of consultants to review the overall situation in Asia and to make recommendations on priorities and coordination in this field, and recorded its wish to consider the report of the IDRC consultants at a future meeting.

(c) Farming Systems Research

179. The report of a preliminary desk study on the scope and objectives of the farming systems research at CIAT, ICRISAT, IITA and IRRI was considered by TAC. This report would provide a basis for the briefing of consultants for their visits to these IARCs during 1977. The Committee agreed to the review programme as proposed and reiterated the conclusion of the 14th TAC Meeting that the review should be restricted to the four IARCs selected. However, TAC was agreeable to the review mission examining, where feasible, some of the farming systems work in national institutions where this might be complementary to the programmes of the IARCs. The most suitable time for a workshop, tentatively scheduled for December 1977, would be decided after consideration by TAC of the progress made by this 'stripe' review to be reported to the 16th and 17th meetings.

(d) Coconut Research

180. TAC received with appreciation the reports of its representatives at the Kasaragod Symposium on coconut research and development. These reports had identified several areas in which international cooperation might be worthy of consideration. TAC recognized that coconuts is a crop which is vital to the diets of people in certain areas as well as being an important commercial crop. TAC reaffirmed its earlier conviction that there was a strong case to be made for international cooperative action on several aspects of coconut research, although it was not yet clear on how best this could be organized. A possible mechanism might be shown to be feasible through current proposals for cooperative work on soyabeans. For the moment, however, TAC would reiterate its interest to the CGIAR, whilst stating that it was not yet in a position to formulate a firm proposal.

(e) Water Buffalo Research

181. The Committee had considered the proposals for a TAC consultant mission to finalize, through a reformulation or refinement, the project for a cooperative water buffalo research programme prepared by the TAC Working Group on International Buffalo Research. The consultant had been identified and would visit countries in S. S.E. Asia, beginning with Sri Lanka in February, and also Egypt and Brazil. Some amendments to the Terms of Reference, aimed at assisting the consultant to submit alternative proposals for a convincing and viable project, were suggested and accepted.

182. The Committee wished the consultant every success in his mission and would look forward to the verbal presentation of his report at the 16th TAC meeting in Cali, Colombia, to be followed by the full written proposal at its subsequent meeting in Washington in September.

The Quinquennial Review of CIP (Agenda Item 5)

183. TAC had discussed at some length the draft report of the quinquennial review of CIP, and had commented favourably upon it believing that it addressed the Terms of Reference given to the team in a generally satisfactory manner. In accordance with established practice, however, substantive issues raised by the report were not discussed at this time. The Chairman commended the Team Leader and Members of the review panel for their efforts.

184. Nevertheless, there was still room for improvement in the draft and the many constructive comments of members were directed towards the need for a better expression of the conclusions and recommendations in the report, and for considerable editing.

185. The Leader of the review panel and the Chairman of TAC expressed their appreciation to the members for their constructive attitude and undertook to see that their suggestions for improvement were reflected in the final draft. TAC would not attempt to modify the report but at its next meeting would review the final draft and subsequently present the report, with TAC's comments separately expressed, to the CGIAR. Any differences of opinion between the review panel and the CIP staff could be noted and recorded either in, or appended to, the report as appropriate.

TAC Vegetable Research Project (Agenda Item 6)

186. TAC continued to recognize the need for some additional vegetable research in tropical developing countries and welcomed the report of the mission on the vegetable research pilot project formulation.

187. There remained, however, a number of points to be further studied; for example, the position of existing institutions and programmes in the proposed new international effort in Asia and the future role that these might play. In the case of the African base being located at IITA it was not yet clear how the project would fit into IITA's present programme, whether separate from or a part of the farming systems programme in which some work on vegetables was already underway. Although informed of IITA's interest in the project, TAC was reluctant to recommend such an expansion of the programme of IITA, at least prior to receipt of the forthcoming quinquennial review report. There would also be a need for clear plans under which the project could be carried out for a limited period - say three to five years - without any commitment from or to IITA, for its automatic continuation. Also, in Africa there was a linguistic problem which required special consideration, with a suggestion by the consultant that anglophone and francophone areas might require special attention.

188. The Chairman concluded that there was need in TAC for some of the various ideas to mature, both with respect to the separation of the 'international' from the more location-specific aspects of vegetable research, and the determination of a suitable mechanism for proceeding toward the implementation of the proposed project. Full use should be made of already established research resource bases.

189. It was agreed therefore that a small TAC Subcommittee be formed, assisted where necessary by the mission consultants, to further study and consider project proposals on which TAC could confidently make recommendations to the CGIAR.

#### Agro-forestry Research (Agenda Item 7)

190. TAC welcomed the proposal of the IDRC to establish a 'centre', with a tentative annual budget of \$2 million for agro-forestry research, the principal tasks of which would be to gather, collate and disseminate existing information; identify gaps; to contract research to national institutions and to assist bilateral and multilateral donors in channeling resources to this field. The proposal had been placed before TAC merely to obtain its views and guidance. IDRC did not intend that it should be submitted to the CGIAR for financing. It was thought that the agro-forestry research centre could possibly have 'associate status' with the CGIAR but, as pointed out by the Chairman, support for this venture could have implications for the several other proposals at present under consideration by TAC. Agro-forestry, as with the other fields of research that seemed to require attention internationally, had not been given a particularly high priority by TAC for CGIAR consideration although its importance in farming enterprises was well recognized.

191. TAC therefore wished at this stage only to maintain a watching brief on this activity.

#### Forest Genetic Resources (Agenda Item 8)

192. The IBPGR had sought guidance from TAC as to whether or not (and if so to what extent), the Board should consider forest genetic resources within its programme of work and budget for 1978. Although TAC reaffirmed its belief that forest genetic resources conservation was a matter of concern to IBPGR, it was not in a position at this meeting, through lack of a comprehensive proposal from IBPGR, to make a firm and definitive recommendation on this matter.

193. TAC therefore requested IBPGR to prepare as a separate item in its programme and budget proposal for 1978, at least one or more examples of such activities which it might consider, including the financial implications both for initial and longer term needs and the proposed means of implementation. With this information TAC would be in a much better position to indicate the extent to which it would wish to encourage IBPGR to pursue the matter of forest genetic resources.

International Livestock Centre for Africa (ILCA) (Unscheduled Item)

194. The TAC Mission to ILCA, for the interim review of its programme and activities, would take place from 16-19 March, concurrently with the meeting of the ILCA Board of Trustees. Sir John Crawford had agreed to lead the Mission, the other team members being Drs. Camus, Oslage and Ajibola-Taylor and the Executive Secretary of TAC. Prior to the Mission ILCA would provide a draft report on its recent Programme Committee Review, undertaken by the whole staff. The Chairman of the ILCA Board assured TAC of ILCA's fullest cooperation with the Mission.

ICRPE (Unscheduled Item)

195. TAC, at its next meeting, would consider a progress report arising from a forthcoming joint visit to ICRPE in February by representatives of the Secretariat of CGIAR and TAC.

Soyabeans (Unscheduled Item)

196. The Committee supported the proposal of the ad-hoc meeting on Soyabean Research, convened by FAO shortly before the TAC meeting, to further study the feasibility of establishing a consortium of interested organizations which were able to provide a soyabean research resource base for the benefit of the developing countries. The most appropriate kind of organizational structure, the financial requirements and the methods of incorporation of the interested parties, as well as the analysis of the contributions from the resource bases, needed to be examined in detail.

197. In order to overcome the difficulties encountered earlier in attempts to obtain donor support for the ICRPE programme, TAC agreed that its Chairman should make an informal approach to some of the major donors and to countries interested in seeking assistance in soyabean research, to seek their reaction to the use of a consortium as a means to channeling funds to appropriate activities.

198. The Chairman accepted this task and undertook to report back to TAC at its next meeting.

Other Business (Agenda Item 9)

(a) Water Use and Management

199. After considerable debate in the past, TAC had reached the decision that rather than establish a separate centre for this research it wished to encourage existing IARCs to integrate water use and management research into their programmes. However, at least two members believed that this topic deserved a more thorough consideration, particularly of the need for an international centre on water management especially oriented towards adaptive investigations, training and information exchange, and serving mainly the semi-arid zones.

200. TAC agreed to further explore the field by the preparation of additional background documentation that would enable it to make a decision either to follow its present approach or to seek some other mechanism.

(b) Election of the Vice-Chairman of TAC

201. Upon nomination by the Chairman, Dr. Almiro Blumenschein was unanimously elected Vice-Chairman of TAC for the period of his current membership.

Date, Place and Provisional Agenda of Next Meeting (Agenda Item 10)

202. It was agreed that the 16th Meeting of TAC be held at CIAT Headquarters, Cali, Colombia, from 30 May to 3 June, 1977. The provisional agenda, as outlined by the Chairman, was approved.

203. The date and place of future TAC meetings was tentatively agreed upon as follows:

- 17th Meeting, Washington, 9-10 September, 1977
- 18th Meeting, Rome, 13-17 February, 1978
- 19th Meeting, location undecided, 5-9 June, 1978.

15th Meeting

31 January - 4 February, 1977

FAO Headquarters, Rome

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15th Meeting

31 January - 4 February, 1977

FAO Headquarters, Rome

AGENDA

Agenda Item

- Welcome Address by the Representative of FAO
- Introductory Remarks by the Chairman
- 1 Adoption of the Agenda
  - 2 Adoption of the Report of the 14th Meeting
  - 3 Report by the Chairman on the CGIAR Meeting of 27-29 October, 1976
  - 4 Progress Reports and Future Activities:
    - (a) Quinquennial Reviews of CIAT and IITA
    - (b) Aquaculture
    - (c) Farming Systems Research at the IARCs
    - (d) Coconut Research
    - (e) Water Buffalo
  - 5 Quinquennial Review of the International Potato Centre (CIP)
  - 6 TAC Vegetable Research Project Formulation Mission
  - 7 Agro-forestry Research
  - 8 Forest Genetic Resources
  - UI\* International Livestock Centre for Africa (ILCA)
  - UI\* International Centre of Insect Physiology and Ecology (ICIPE)
  - UI\* Soyabean Research
  - 9 Other Business
    - (a) Water Use and Management
    - (b) Election of Vice-Chairman of TAC
  - 10 Date, Place and Provisional Agenda of Next Meeting

\* UI - Unscheduled Item.

15th Meeting

31 January - 4 February, 1977

FAO Headquarters, Rome

LIST OF DOCUMENTS

Agenda Item

- 1 Draft Provisional Agenda
- 2 Report of the 14th Session of TAC  
DD/IAR/76/23 RESTRICTED
- 4(a) TAC Quinquennial Review Mission to the International Centre  
for Tropical Agriculture (CIAT) - Progress Report  
DDD/TAC: IAR/77/5
- 4(b) International Centre for Living Aquatic Resources Management  
(ICLARM)
- 4(c) TAC Review of Farming Systems Research at the International  
Agricultural Research Centres (IARCs) - Progress Report  
DD/IAR: TAC/77/7
- 4(d) Recommendations of the International Symposium on Coconut  
Research and Development  
DDD/TAC: IAR/77/9
- 4(e) International Research on Water Buffalo - Status Report  
DDD/TAC: IAR/77/4
- 5 Draft Report of the TAC Quinquennial Review Mission to the  
International Potato Centre  
DDD/TAC: IAR/77/1 RESTRICTED
- 6 Draft Report of the TAC Vegetable Research Project Formulation  
Mission  
DDD/TAC: IAR/77/6 RESTRICTED
- 7 International Cooperation in Forestry Research and Need for  
Increased Research in Agro-Silviculture  
DDD/TAC: IAR/77/6
- 8 Forest Genetic Resources  
DDD/TAC: IAR/77/3 RESTRICTED
- Unscheduled Item Soyabean Research  
DDD/TAC: IAR/77/8

ANNEX IV

## TERMS OF REFERENCE FOR THE TAC CONSULTANT MISSION ON WATER BUFFALO RESEARCH

Under the guidance of the Technical Advisory Committee (TAC) of the Consultative Group on International Agricultural Research and under the supervision of its Executive Secretary, the Consultant will, with the cooperation of the Food and Agriculture Organization of the United Nations (FAO), formulate a project proposal for international support to an inter-country cooperative research programme on the water buffalo.

In formulating the project proposal, the Consultant will take due account of the recommendations of the Expert Consultation on Water Buffalo Research held in Singapore in March 1976, and of the conclusions and recommendations of the TAC at their 13th and 14th meetings.

In particular, the Terms of Reference of the consultant are as follows:

- (1) Within the broad priority areas identified by the Expert Consultation on Water Buffalo Research, assess current national research on the water buffalo in the research centres indicated in the report;
- (2) Examine significant results of research already completed and, where such results are not as yet generally applied, investigate the constraints which have limited the adoption of improved technologies generated;
- (3) After thorough discussions with the national authorities concerned, identify in order of priority selected research topics and programmes and especially those which require international collaborative research effort, including an appraisal of national resources available and external technical assistance required, and assess, to the extent possible, the nature and magnitude of the probable benefits which might accrue from enhanced support of such topics;
- (4) Suggest, identify, discuss and assess different possible organizational alternatives for the international collaborative research project;
- (5) Prepare a report to TAC with alternative project proposals and cost estimates under each alternative proposal which would be required to meet the above objectives.