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TRAINING AT THE INTERNATIONAL AGRICULTURAL RESEARCH CENTRES
(Working Paper by the TAC Secretariat)

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Introduction

1. Following the recommendation (Recommendation No. 4) of the CGIAR Review Committee (1) ^{1/} that the CGIAR should support fora for information exchange, a "forum discussion" on the general subject of "Training for Research and the Application of Research" was held during the CGIAR Meeting of 12 September 1977. Four working papers (2, i-iv) were presented and discussed during the course of the half-day discussion. These had earlier been made available to TAC members and were briefly discussed at the Seventeenth Meeting of the Committee.

2. Although discussion was quite wide-ranging it was inconclusive, probably because the meeting attempted to cover far too great a variety of topics, covering both training in general and that at the IARCs, in the short time allocated. The CGIAR Secretariat in introducing the topic pointed up some issues as indicated below. The working papers stressed that these issues might prove difficult to resolve as long as more reliable and comprehensive data on the centres' training activities remained lacking.

3. The key issues identified by the CGIAR Secretariat included the following often raised questions:

- the need for an internationally sponsored effort to improve the data base training: if a need existed, who should do it?
- should the centres' principal objective in training be to ensure adequate spread of their technology only, or should they all give attention to the wider needs of strengthening national research and extension: if so, how?
- where do the centres have comparative advantage, and could their programmes be strengthened in these areas without detriment to the research programmes?
- what (if such is desirable) should be the balance in centres' programmes between education and training at the graduate level, and non-academic development of technological skills?
- should the CGIAR take a more active role in training, and if so how?

^{1/}Numbers in parenthesis refer to the Bibliography in Annex I

4. This working paper will recapitulate some of the general considerations governing training at the centres only, briefly examine the role of the centres in the professional/technical training field and the scope of the training undertaken, and will attempt to point up some major issues. The resolution of some of these issues will help to provide a basis on which TAC can formulate some guidelines on centres' training policy.

The role of the IARC in training

5. The activities actually conducted by the centres were well detailed by Fernandez and Swanson (2, ii, iii) and need not be repeated in detail. A common pattern has developed among the centres, training being divided between individual and group activities, short and long term, and research and production. In general individual training is longer term, and at a higher level, whilst group training is of shorter duration, and oriented more towards technical assistant or production trainees.

6. The objectives of centres' training have been recognized and defined by the centres' own training officers (3) as follows:-

"The centres are first and foremost research organizations and that their training must be intimately tied to their research and to the validation and transfer of its results. Thus the following overall objectives were recognized as common for training activities at all the centres: To help national commodity programmes increase their scientific and technical manpower in research and production, in order to facilitate the validation and transfer of centre-developed technology from the centres to national institutions. This, in turn, is expected to result in increases of national yields of commodities in the centres' mandates. A parallel goal was recognized as: To help strengthen the national research capabilities for cooperatives and independent research on centres' commodities and areas of research.

In the above definitions of centre objectives, the terms "national commodity programmes" may include, besides the government central research agencies, other official, semi-official or private organizations in agriculture. ^{1/}

Within these overall objectives the centres were recognized to have a number of operational objectives that may vary somewhat among centres but are generally as follows:

^{1/}It should be noted that this may give a very broad scope to the training objectives of the IARC's. The first objective, as formulated above, assumes that countries do have commodity programmes whereas many have different research and production structures. It should also be noted that training in farming systems research is not explicitly covered in these definitions although several countries do have training programmes in this field.

- (a) to train scientists for collaborative research in specific disciplines;
- (b) to train multi-disciplinary "production agronomists" to staff networks for field testing validation and adaptation of new technologies;
- (c) to train professionals for the multiplication of training;
- (d) to train research support services personnel;
- (e) to help bridge validative research with extension programmes in the countries;
- (f) to assist scientists and decision-makers to plan and apply research-production strategies for the utilization of new high yielding technologies."

7. This definition raises the important issue as to whether, as stated, the centres should concentrate on training, "to facilitate the validation and transfer of centre-developed technology" and, "help strengthen the national research capabilities for cooperative and independent research on centres' commodities and areas of research;" or whether the latter phrase should perhaps be terminated at "independent research". It may be argued that this is not intended to be restrictive to the interests of the centre, but merely indicative that any centre could be expected to have comparative advantage in training in its own commodity field. However, given the accumulated expertise at the IARCs it would not seem unreasonable to suggest that the centres might revert to their initial broader training concept of "training to strengthen national institutions". This, according to Ruttan and Hayman (4) was modified, on the basis of experiences at CIMMYT and IIRI, to a more centre-oriented concept of "training to develop commodity research and diffusion networks of collaborations". The validity of this approach in the early developmental stage of the centres is unquestionable. To what extent it should be maintained as the centre approaches "maturity", when it may be assumed that adequate collaborators have been trained at all levels for the immediate needs of the centres' own programmes, is open to question.

8. The view of the centres, again, has been very clearly expressed by Fernandez (3) as follows:-

"All of the links of the technology transfer chain require trained individuals thoroughly familiar with commodity research and the resulting technologies, inspired by a sense of urgency, and imbued with "esprit de corps". The personnel trained by the centres (at all levels) are undoubtedly their best resources for in-country validation and the spread of technology.

Therefore, the question becomes: who should be trained? What is the target audience? To what extent should training efforts be spent on audiences which are not directly and actively employed in collaborative commodity research

or technology transfer, i.e. undergraduate university professors or experimental station superintendents? The answer seems to be, "only when essential for a cooperative project". ^{1/}

TAC may wish to examine this question rather closely as it is also relevant for discussion of the scope of training which is, at present, rather wide.

The scope of training at the IARCs

9. It may be assumed that the IARCs will have a continuing role in helping to meet the demands for trained scientists, scientific and production assistants for some time to come. The scope of that training should, logically, be based on decisions as to the training activities in which the centres have a comparative advantage.

10. At present, most of the IARCs offer similar types and levels of training and the extent to which these are utilized by participant countries depends on their needs and the extent to which those needs can be met by other training opportunities at the national or regional level. Such opportunities vary very considerably from country to country and region to region, some having more than sufficient middle-level capacity, and others experiencing the opposite.

11. Reaction of the recipients of centres' training has been most gratifying and the quality of the training given at the centres has been considered by the Quinquennial Review teams to be of a very high standard. So much so that one review panel gained the rather firm impression that training might be the single most useful output of the IARCs even to the output of improved genetic materials.

12. On resolving to offer training opportunities to any given participating country the IARC concerned is often forced to carry out (and certainly should do so) a careful assessment of the needs in collaboration with national authorities. The requisite training courses are then tailored to meet the most commonly felt needs. Thus, to a large extent the scope of much of the training offered by the IARCs has to remain very flexible.

13. There is, however, a limit to this flexibility since, for practical reasons, most of the training has to be organized through group training, and curricula and programmes cannot be changed continuously.

^{1/} Underlining by the Secretariat

14. As the centres reach maturity there is, not surprisingly, a tendency for the training programmes to level out, as the capacity of the training staff reaches saturation. Expansion of training programme beyond this point could carry with it the risk of serious interference with the research programme. To avoid this, at least two, not mutually exclusive, solutions present themselves. Each has been either tried by one or more centres, or recommended by one or more quinquennial reviews.

15. The first is to establish a specialist training cadre, specifically aimed at taking the pressure off the research workers. The second, and possibly in the long run the preferable solution, is to adjust the scope of the centres' programmes and to concentrate more on "training the trainers", and assisting national institutions to conduct their own training courses. Training materials of use to local commodity programmes have now been developed at most, if not all of the IARCs and could make a valuable additional output from the centres.

Gaps in IARC's training programmes

16. (a) A level of training not yet specifically offered by the IARCs, and yet in which the need is great (cf. the Airlie House Meeting Report), (5) is research planning and management. It has been suggested (2 (a), Oram) that a short, "staff college" type of training might be offered by such regional institutions as SEARCA and IICA in addition to courses already offered. This would have the advantage that training could be carried out in a proper environment, and on problems of relevance to the trainees' needs.

However, the provision of trainers for this type of high level training, in which there is little enough expertise to spare, has not perhaps been sufficiently considered. It seems likely that the IARCs have a fair share of the high level of management competence required of someone who is required to teach such a subject. Consequently one could see advantages in establishing a form of cooperative teaching course in research management, utilizing the staff of regionally sited IARCs and the facilities of regionally supported institutions.

An alternative, suggested by Oram (2a), would be to continue this type of training with post graduate courses at selected universities. Given the concentration of research management experience at the IARCs however it is considered that their involvement would be the best of the available alternatives.

- (b) Another gap in the type of training provided by the IARCs in general relates to their crop coverage since most countries have expertise in a few food commodities only. The type of training provided by the centres

is thus rather specialized, whereas most developing countries require research workers and production agronomists who can deal with a wide range of food and non-food crops and a variety of problems. Two possible solutions can be envisaged for resolving this issue: either regionally-sited IARCs could organize training for production agronomists with the participation of other IARCs and other institutions, or a national institution could call on several IARCs and other institutes to assist in broad training programmes for production agronomists.

(c) Most IARCs also recognize that the geographical coverage of their training programme is still not optimal mainly because of language barriers, but also of other limitations such as the existing structures and staff regulations at national level. Several international and bilateral organizations have been instrumental in broadening the geographical coverage of the centres' training programmes and this trend should be encouraged. Such a trend, however, carries the risk of overlaps and also of overloading the training programmes of the centres. Some degree of control should therefore be exercised by the centres on these initiatives.

In this context, several quinquennial review teams have raised a question related to geographical coverage in querying the criteria and methods whereby trainees were selected, and have recommended that the IARCs establish more definite principles and procedures for their recruitment.

(d) Another gap lies in the nature of the training, which is mostly devoted to pre-harvest aspects, whereas post-harvest technologies are often neglected. The centres, however, have limited expertise in this field.

Balance of training programme

17. A question frequently asked with reference to the management of the IARCs system relates to the balance between research and training in budgetary allocations. Whilst there is overall and uncontested support for the continuing need of training and the complementary nature of that training within the general activities of the centres, there is no standard ratio of training budgets to research budgets, utilized by all the centres, neither is there a standard ratio within training budgets. Each of these factors is governed very much by the internal usages of individual centres and this has led to some problems when certain comparisons have been attempted, on a between centre and between commodity basis.

18. This question has been considered by the centres as rather futile and irrelevant since they claim that this ratio is determined by practical considerations such as the absorptive capacity of research programmes for concurrent training activities, and the experience and technologies which a centre can offer at a certain point in time.

19. Another obstacle to a comparative analysis of the centres' allocations to training is that there is no standard format and classification for training activities:

- (i) It is difficult to quantify the resources of the research programmes and research support which are actually devoted to training, in particular the time spent on training by research workers. This varies with the programme and the centre considered.
- (ii) Budgets allocated to conferences are usually merged with training budgets.
- (iii) There is no standard terminology adopted throughout the system for different types and levels of training.

20. One example of difference is that of the post-doctoral fellow, some centres charging these against their training budget, whilst others, in order to obtain more funds for training, or to utilize nearly all training funds for lower level training, charge many of their post-doctorals against the research programme. The contribution of the post-doctoral in general to the research programme is not inconsiderable, and it would be easy to adduce an argument in support of a generalized charge to research programmes. However, there must be a limit to the number of post-doctorals which any centre (or any individual programme) can absorb, and this might be set by the total number of post-graduate workers (including post-doctorals) which any individual scientist can supervise. Thus, given a variable figure of 2-4 per senior scientist (opinions differ widely on this issue), the limitation of post-doctorals could well be achieved also by including them in the training budget, as part of the general post-graduate allocation. In this context it may be noted that several quinquennial reviews have recommended that a larger allocation of available post-doctoral places in all the centres should be allocated to developing country personnel, despite the view of some centres that more attention, if not financial support, should be given to post-graduate trainees from developed countries, with interests in LDC agriculture.

Suggestion for action by the Committee

21. The position taken hitherto by TAC, and endorsed by the CGIAR with respect to training, is expressed very clearly in paragraphs 121-122 and 128-131 of the TAC "Priorities Paper" (6) which sets out guidelines for the relations of IARCs with national institutions (see Annex II).

22. These guidelines were generally endorsed by the CGIAR Review Committee (1) whose views on appropriate and inappropriate activities, as these relate to training, are also set out in Annex II.

23. The Committee may wish to review its position on training as indicated in the foregoing documents, on the basis of the issues and considerations presented above and in the documentation listed. This could lead to the submission to the CGIAR of revised and expanded guidelines for the conduct of training activities at the IARCs. Such a contribution may well prove very relevant to the ongoing discussion sponsored by the CGIAR on the strengthening of national research.

ANNEX I

BIBLIOGRAPHY

1. Report of the Review Committee, Consultative Group on International Agricultural Research, January 1977, Washington.
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(iii) Swanson, Burton E., Research and Production Training at International Agricultural Research Centres: View from the Outside, CGIAR, September 1977, Washington.

(iv) Drilon, J. D., High-Level Agricultural Manpower in Indonesia and the Philippines, CGIAR, September 1977, Washington.
3. Meeting of Heads of Training and Joint Session with Directors General of International Agricultural Research Centres and Associate Institutes, September 1977, Washington.
4. Ruttan, Vernon, H., and Hayman. In - "Fernandez, F., doc. cit."
5. Resource Allocation and Productivity in National and International Agricultural Research. Edited: Thomas M. Arndt, Dana G. Dalrymple and Vernon W. Ruttan, Minneapolis, 1977

ANNEX II

I. Extract from the section on "Strengthening National Research Institutions" in "Priorities for International Support to Agricultural Research in Developing Countries" (DDDR:IAR/76/2 Restricted - Revised 30.5.76)

a) Paragraphs 121 - 122

121. The TAC views its role and that of the International Centres as an interim one, to identify and help to fill the immediate and urgent gaps in technical knowledge affecting the developing countries. Unless the scientific capacity of those countries can be strengthened to enable them to move ahead, the ultimate aim of the system, of helping them to achieve self-sustaining technical and economic growth, is likely to be far removed.

122. However, to obtain a grasp of the complexities of a problem involving nearly a hundred countries has not proved easy, especially as there are wide differences in the relative research capabilities of different countries. A first step is the establishment of a better information base on the present strengths of the research institutions in developing countries, and the nature of their current research programmes so that they can be classified more adequately in terms of the level of their ability to cooperate with the International Research Centres as well as to undertake independent research effectively; and as a means of guiding funding and technical assistance agencies as to their needs for investment in research, and even more in research training.

b) Paragraphs 128 - 131

128. Meanwhile there is a need to see what practical steps can be taken to help national research institutions in the more immediate future and in this the International Agricultural Research Centres are already playing an important role in research, in information and the exchange of materials, and in training. Just how far and in what directions they should extend this support, however, has been an issue which has required very careful consideration by TAC, both in view of its financial implications for the CGIAR (e.g. in supporting proposals for "regional services" from the Centres), and of its inherent risks in overloading the Centres with "off-campus" activities to the possible detriment of their mission to develop new and outstanding agricultural technology.

129. The Committee is unanimous in attaching the highest priority to helping to build national research capabilities and the TAC has had this as its constant concern ab initio. It recognizes and sympathizes with the dilemma faced by International Centres in trying to assist national programmes which are too weak to benefit effectively from their results, whether this assistance is requested formally by the country or not.

130. At the same time TAC does not believe that the Centres should or could respond to all needs or calls for help from countries, since if they try to do so in respect of some of the demands on them it might be to the detriment of the whole CGIAR system, and thus ultimately to the countries it aims to benefit. TAC has therefore proposed the following guidelines for consideration by the Consultative Group in respect of the limits of the Centres' collaboration with and assistance to national programmes:

- i) First and foremost the relationship between the Centres and national programmes must be in the interests of research. The Centres must have the means of studying the performance and identifying problems impeding the adoption of their improved plant materials or other research output, not only at experiment stations in countries where these are being utilized, but also at the farm level under field conditions. This on-farm testing (which is distinct from extension demonstrations) is seen as the logical scientific end to a Centre's work and an essential feedback to their future programming. It should normally be conducted in cooperation with national research institutions, but this in no way interferes with national prerogatives to undertake such work on their own where they have trained staff to do so, nor to release varieties or other proven results to their own farmers.
- ii) To enable Centres to undertake such important work the provision of core staff to work outside the Centres on a regional basis is considered reasonable; however, their primary task should be to forward the research objectives of the Centres. While they may help national staff with lectures on how to demonstrate the use of their materials to farmers, the Centres' personnel should not accept responsibility for organizing demonstrations, nor for extension or supporting services. Someone else, whether FAO or another agency, should assist countries in this respect. Similarly the TAC does not believe that regionally posted core staff should accept responsibilities in respect of advice to governments on policy and related activities of a marginal nature to the Centres' main research mandates. Again this does not mean that TAC wishes to prevent the Centres from undertaking or sponsoring socio-economic research appropriate to the furtherance of their main objectives.
- iii) In respect of training the Centres must be encouraged to train effective collaborators for their research activities, whether at their headquarters or on a decentralized basis, connected with the use of their planting materials on farmers' fields. Where training of

production specialists within countries is essential to the adoption of a Centre's research results, the Centre's role should be to help organize the training activities, but not to do the training. Neither is the administrative burden of taking responsibility for extension training in a large number of countries considered to be within the bounds of the Centres' responsibilities. However it is not the Committee's intension to discourage production training courses or training of trainers at the Centre's headquarters, where the relatively large training staff can cope with such courses without interfering with the core research work.

- iv) Where more than one Centre is engaged in a country in activities of a similar nature, sensible arrangements should be worked out for their collaboration in those activities with an agreement amongst them as to which should take the lead.

131. In order to help the Centres to avoid taking on commitments outside their remit (e.g. in extension training, seed production, economic policy guidance, etc.), because they feel that they have to fill a vacuum which may impede the acceptance of their research results, the TAC urges that other arrangements should be made to provide the necessary assistance and services to countries, with adequate arrangements for linkages and feedback to the Centres; for example, by FAO, or other international and bilateral agencies. Wherever such services are available to countries the TAC feels that it is entitled to advise the Centres to restrict their activities in this direction.

II. Extract from the "Report of the CGIAR Review Committee" relevant to Cooperative Activities with National Programmes.

Page 82 - Range of Cooperative Activities with National Programs

<u>APPROPRIATE</u>	<u>SOMETIMES APPROPRIATE</u>	<u>INAPPROPRIATE</u>
- Participation in national research programmes to further the centres' research mandate and to assist in the development of the national research capacity. Such activities might include:	On-farm trials to demonstrate the applicability of a centre's new technology	Management of national research organizations
- Evaluation of promising new breeding material for adaptation, productivity, and pest tolerance	In-country training of production personnel and advice on production systems	Participation in full time extension and delivery activities
- Two-way exchange of superior breeding lines from international and local testing programmes	Consultation on problems relating to regional or country production problems	Management of national agricultural production programmes
- On site evaluation of biological and socio-economic constraints to farm production and studies of the consequences of new technology	Assistance in the development of a national research institute involved in research and extension in a commodity or technology of direct relevance to centre	Responsibility for general technical assistance projects
- Testing key components of farming systems and evaluating farm machines suited to the needs of small farmers	Advice on research organization, staff recruitment, personnel policies and equipment	Making recommendations to national governments on agricultural economic policy and related issues
- Identifying potential trainees and training trainers in research and production at regional centres or in conjunction with country programmes		
- Staff visits and sponsorship of workshops and conferences at regional and country centres to disseminate results and technical information		

Note: It is recognized that not all the above points refer directly to training. However, insofar as a training element is inherent in almost all activities associated with strengthening of national research capabilities, it is felt that they are relevant.