

CIMMYT ECONOMICS TRAINING

July 20, 1983.

I INTRODUCTION

This is a brief statement about training within the CIMMYT Economics Program. It is written with the realization that both the CGIAR and CIMMYT's QQR Panel have placed particular emphasis on training. As training will be an important topic later this year during Internal Review it is hoped that this document will provide a basis for discussions about Economics training in those meetings.

Although it is true that the majority of what all of us do can be construed as training, the following deals only with the formal aspects of training, in both classroom and field. In this sense, Economics training is concerned almost exclusively with the process of on-farm research (OFR) in national programs, and its clients are the economists, agronomists and other biological scientists of those institutions.

This note has four purposes:

- i) To provide a concise description of current Economics training activities.
- ii) To speculate a bit on possible future directions.
- iii) To examine the issue of the integration of Economics training with the rest of CIMMYT's training efforts.
- iv) To provide a summary of our needs, with a view toward the possibility of extra resources being available for the development of methods and materials.

II. CIMMYT ECONOMICS TRAINING ACTIVITIES

The following is a brief outline of the principal activities in which CIMMYT Economics training participates:

A. Production Agronomy In Service-Training in Mexico

Each year there are two in-service maize production courses and one wheat production course. Economics participation here attempts to give trainees an overview of the process of OFR and some experience in procedures developed by CIMMYT Economics. Economics provides the following contributions to these training courses, usually in this order.

1. Classes in OFR. Early classes include an overview of OFR, discussion of the concept of farmers' circumstances for the production research area (Veracruz or Calpulalpan). Later classes cover the concept of recommendation domain, technology design, and data collection.
2. Follow-up farmer collaborators. Trainees interview the farmers several times during the year. They use these opportunities to study farmers' practices and collect information useful for interpreting the experimental results.
3. Exploratory survey. A week-long exploratory (informal) survey is carried out with the trainees. Beginning in 1983 we will do these surveys in areas different from where the experiments are planted. Trainees learn to design guidelines for farmer interviews, practice informal interview techniques, and conduct farmer interviews. The results are used to describe the local farming system, make a preliminary identification of research opportunities and specify further information requirements.
4. Economic analysis of experiments. Approximately ten classes are devoted to lectures and exercises on partial budget analysis and related topics. Trainees then do an economic analysis of their own experiments and use the results in their final presentations.

B. "In-Country Training"

The term "in-country training" in the Economics Program refers to a relatively new CIMMYT activity which consists of training carried out

around a full cycle of OFR. It is a joint activity, between a crop program and economics. It is usually done only with national programs that are already doing a substantial amount of OFR. One such course has been completed in Venezuela and two more, in Honduras and Zambia, are underway. Such courses usually consist of six separate "calls", each lasting 1-2 weeks, carried out over the space of 15-18 months. The six calls are:

1. Exploratory survey --Introduction, 5-6 days of fieldwork, analysis of results.
2. Formal survey --Survey design, sampling, execution of survey, and analysis.
3. Technology and research program design --Information from the previous calls is used to select research priorities and design on-farm experiments.
4. Planting --Experiments are planted on farmers' fields.
5. Observation of trials --Experiments are visited and their progress is discussed. Other topics, such as an introduction to economic analysis, may also be covered.
6. Harvest and analysis --Participants do statistical and economic analysis on experiments. Recommendations for farmers and for the following year's OFR are discussed.

C. Short Courses and Workshops

CIMMYT Economics participates in a range of other training activities as part of its regional activity. These include shorter versions of the "in-country" model (e.g. several courses in Ecuador which involve the last three calls only), workshops (e.g. the diagnostic and experimental workshops carried out for several years in Nairobi and now re-located to the University of Zimbabwe), and various short courses (e.g. three-day courses in economic analysis).

D. Economics Training at CIMMYT, Mexico

Over the last several years five courses for economists were held at CIMMYT headquarters. The courses lasted for three months and there were about six participants per course. The focus was on diagnostic techniques (participants carried out both exploratory and formal surveys), techniques of economic analysis, and an introduction for social scientists to the problems and procedures of biological research. These courses have been at least temporarily abandoned because of the high instructor/participant ratio, the problems of translation in what is basically a fieldwork course, and the growing feeling that this kind of training carried out "in-country" is both more cost-effective and relevant.

III OTHER POSSIBLE ACTIVITIES FOR ECONOMICS TRAINING

There are three areas in which an expansion of Economics training could be considered. These are: Mexico-based training; a wider range of methods for strengthening national program capacities; and regional or networking activities.

A. Mexico-based training

One of the problems with carrying out the training of economists in Mexico is that there are few examples of on-farm research that can be used as a basis for training. INIA has recently expressed considerable interest in CIMMYT OFR procedures, and one member of Economics (A. Hibon) is working full-time with INIA in demonstrating these methods and providing training to INIA staff. As this progresses it can be hoped that INIA will soon have some good examples of OFR which may be integrated with some of our own training activities.

An alternative is to include economists in the Maize or Wheat production training courses. This would be very good experience for young economists working in OFR. Various possibilities exist for having the economists enrolled in production training full-time or part-time with various supplementary activities being provided by Economics. The big problem is that there is such a high demand from agronomists for places in the training programs that accommodating more than one or two

economists would be very difficult. This option thus should probably be confined to special cases.

If in-depth training for economists, especially in diagnostic procedures, is going to be de-emphasized in headquarters-based training, what else can we offer in Mexico? There are possibilities for various short courses and workshops. Themes might include the introduction to software packages for data analysis, or a variety of specific topics related to diagnostic or analytical procedures. But these themes must be carefully determined and agreed upon by Economics staff. There is a need for regional staff to assess the demand for training in specific topics and for all of us to decide which areas are most effectively covered by Mexico-based, rather than regional, training.

B. Training to Strengthen National Programs

The six-stage in-country training course should be one of a number of alternatives for developing national program capacities. These sorts of courses are most appropriate for programs that are already organized to do OFR. For programs that are still considering this approach there are various training alternatives, from working with individual national personnel in selected areas, to small introductory courses and workshops.

For countries that have gone through an "in-country" training course there is still the need to devise ways of orienting new personnel in programs that typically have high turnover rates. This means designing short courses, strengthening national program training capacity (the much-discussed but seldom explored issue of "training trainers"), or arranging and perhaps supporting "apprenticeships" where new people have the chance to spend some time working with more experienced national staff.

C. Regional and Networking Activities

As an alternative to Mexico-based training in economics it may be that more training at the regional level is a possibility. The success of the East African workshops is a prime example. Another training opportunity at the regional level which has not been exploited fully is

interchanges among various national program personnel within a region. It will also be worth considering the support of networks of national personnel within regions.

IV THE COORDINATION OF TRAINING

The QQR panel raised the issue of a separate CIMMYT training program. It would probably be more productive to look at ways that the coordination and effectiveness of CIMMYT training could be improved within the present structure. There are several issues in coordination that touch Economics training.

A. Economics Training Network

As our training responsibilities grow, members of the Economics Program will want to keep each other informed of training activities and experiences. We have instituted a network in which all materials from Latin America and Asia are to be sent to Tripp and all African materials to Ananda. Ananda and Tripp will then be responsible for redistributing them. The network will include:

- i) Details (schedules, curricula) on all training activities.
- ii) Copies of teaching materials, classroom examples, exercises, etc. and comments on their effectiveness.
- iii) Experiences on the organization and development of in-country training.

B. Scheduling in Mexico

Economics participation in production training is scheduled in an informal and quite flexible way because of uncertainties in the agricultural cycle, variations in trainers' schedules, etc. This seems to work out quite acceptably. If there is an interest in more economics input to improvement training, experiment station training (or, indeed, more interaction between these and production training) then an improved method of scheduling will be necessary.

C. Development of Training Materials

With increased attention to training in Mexico and rapidly expanding programs in "in-country" and other activities in the regions there is a real need to develop a set of material for production-related training. As a great deal of this type of material is best developed jointly by agronomy and economics staff, it is worth thinking about ways to facilitate this kind of project. As a first step, Mexico-based trainers can work together to produce materials (there are already examples of this). Because there are many opportunities for feedback between Mexico-based production/economics training and "in-country" training, regional staff should also be enlisted to provide examples and develop and test materials. Training materials need to be developed as quickly and as efficiently as possible. (See Section V, below).

D. Training Strategies in National Program Development

Not only should we be concerned about the coordination of training materials and methods but also about the coordination of approaches towards national programs. Though beyond the scope of this paper, much of what has been said here has implications for such issues as the identification and selection of trainees, the targeting of "in-country" training to particular national programs, the coordination of training priorities between CIMMYT programs and between regions, and the development of an integrated CIMMYT policy on production research and its institutionalization.

V. TRAINING MATERIALS AND METHODS

As our work in training expands there will be an increasing need for good training materials and methods. With few exceptions we have not put enough thought and effort in this area. We should clearly state our needs, and if there is the possibility that CIMMYT can get extra resources and/or consultants for this purpose there is even more reason to make explicit our requirements.

Listed below are several categories of training materials/methods that would be useful to us:

A. General, Introductory Materials

For introducing some general concepts to people who have little experience with OFR it would be helpful to have exercises, games, etc. that get people thinking along the right lines. These need have nothing to do with agriculture. A consultant might be able to guide us toward appropriate materials. Relevant concepts would include:

- i) Collaboration in problem solving; using different viewpoints and experiences to arrive at an answer to a problem.
- ii) Introduction to systems thinking; understanding interactions and trade-offs.
- iii) Setting priorities.

B. OFR Skills

There are a number of more specific skills that we try to teach by example. It may be that someone could help us to refine our teaching methods in these areas by combining our farming systems data and examples with some more imaginative teaching methods. These skills include:

- i) Using farmer interviews to understand a system; how to listen to what is said, make observations and think about what is going on at the same time; searching for key points, leads and contradictions.
- ii) Understanding compromises and trade-offs; simple games in which players try to utilize limited resources to maximize productivity.
- iii) Converting data into a coherent presentation; how to draw conclusions from the raw data of a farmer survey; how to set up and test hypotheses; how to summarize data; how to judge what is important and what is not in a mass of data. (We certainly share this training need with the production trainers, who have gone further than we have on this subject in their statistics classes. More materials on the use and mis-use of statistics could be well

utilized by all of the trainers.)

C. Case Study Material

We have talked about the necessity of developing, in conjunction with the production trainers, case study material for OFR. We are beginning to work on this, but perhaps a consultant or editor could help get a couple of cases into shape.

- i) Farming systems cases --Comprehensive (but not wordy) descriptions, data, and perhaps slides or other materials on a farming system that trainees could use to identify research opportunities, recommendation domains, etc.
- ii) Technology design cases --System descriptions and economic data that can be used for the design of on-farm experiments. Alternatively, systems description, economic data and the results of one year's experiments, to be used for designing a subsequent year's experimental work.
- iii) "Recommendations" cases --Summaries of experimental results over several years, brief description of relevant system characteristics and economic data which can be used for making recommendations, judging risks, restructuring recommendation domains, etc.

D. Programmed Learning or Modular Teaching Materials

There is a lot of interest in developing teaching materials (slide sets etc.) that can be presented to trainees. Several other Centers already have considerable experience in this. Much of what we try to teach in Economics would not seem to lend itself to this approach, at least not immediately. One possible exception is "Manual I" (partial budget analysis), which could probably be translated to some sort of programmed learning method that would not require the presence of an instructor.

E. Methods in Group Dynamics/Decision-Making

Group decision-making is an important part of "in-country" training,

and, to a lesser extent, in some of our other training activities. In the technology design phase, for example, participants are presented with survey and secondary data and asked to make decisions about appropriate experiments. The problem is how to manage a situation like this in which trainees have information and a set of decision rules and are expected to put them together in a logical fashion, without too much backstage manipulation on our part. There are probably teaching methods which would be useful to us here.

F. Classroom Teaching Methods

A consultant on instructional methods would be able to offer us valuable advice on improving our classroom techniques in production training, in-country training and workshops. The latter two in particular must depend on fairly basic chalk and blackboard methods, but I am sure there is a lot of room for improvement in our presentations and organization.