TRAINING IN CIAT REGIONAL BEAN PROGRAMMES IN AFRICA

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Objectives, Organisation and Management of CIAT's Bean Programme in Africa

Production of common bean, Phaseolus vulgaris L., in Eastern, Central and Southern Africa is estimated to be between 2.0 and 2.5 million tons annually. Almost all producers of beans are small-scale farmers, for whom this crop provides both dietary energy and protein. Cash is also generated, from sales principally to the urban poor. In addition to energy, beans contribute about 45% of total protein consumed in Burundi and Rwanda, and at least 10% in several other countries.

Several national bean research programmes have a long history, and some are able to demonstrate that farmers have adopted on a wide scale the results of their research; other countries are less fortunate. An initial meeting of national bean researchers held in Malawi in 1980 (CIAT, 1981) established priorities that have been adopted as the objectives of CIAT's Bean Programme in Africa. These are being approached by supporting national efforts especially in the areas of genetic improvement, the development of more productive, sustainable cropping systems and staff training.

From a beginning in 1983 in the francophone countries of the Great Lakes Region, three separately funded regional bean programmes have been developed. Their organization and staffing are summarised in Table 1. In each case, CIAT staff are assigned by agreement to work with a host national programme while retaining regional responsibilities which, in some case, extend across sub-regions. These programmes are organised and managed in a manner that is intended to combine advantages of decentralisation (daily contact with a large number of national programmes and agroecological zones, and smaller groups of expatriates less likely to dominate national programme decisions) with those of centralisation (easier interdisciplinary teamwork and a critical mass). The decentralised model is felt to be particularly appropriate to Eastern Africa, where national programmes are generally more developed than in the other two regions.

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Table 1. Organization and staffing of CIAT Regional Bean Programmes

Region	Country	Donor	Staff	Disciplines
Gt. Lakes	Rwanda	SDC	5	Breeder*, Pathologist, Agronomist, Anthropologist, Food Scientist.
E. Africa	Ethiopia	CIDA/	1	Cropping Systems Agronomist*.
	Uganda	USAID	3	Breeder, Agronomist, Economist.
SADCC	Tanzania	CIDA	4	Pathologist*, Breeder, Agronomist, Entomologist.
	Malawi		1	Breeder/Agronomist

* Regional Coordinators

The management of each regional programme is guided by a Steering Committee, which includes the coordinator of each national programme in the region and CIAT's regional coordinator. A representative of SACCAR is also a member of the Southern Africa steering committee, and donor representation on committees is common. Each committee selects research priorities having regional application and approves funding from the regional budget for annual work plans, consultancies, training, workshops, equipment and other activities that contribute to a regional network.

Some activities are integrated across regional boundaries so as to achieve greater efficiency and effectiveness. These activities include Africa-wide workshops on special topics, training, visits to other national programmes and exchange of germplasm.

Training

Training is an integral part of these projects and it is carried out with the aim of developing sustainable national programmes i.e. programmes that continue to be effective after the withdrawal of the external support. This paper describes the various types of training made available for this purpose.

a) Informal

In the Southern and Eastern African regional programmes no separate field trials are run. Instead, every effort is made to support national teams in conceptualising, planning and carrying out field research for which each national team, of course, has full responsibility and gets the credit for its actions.

Regional staff working alongside national scientists in these countries exert an important informal training function on a day-to-day basis. They encourage an interdisciplinary problem-solving approach which is facilitated by the interdisciplinary structure of CIAT's Bean Programme which in Africa includes biological disciplines as well as an economist, another social scientist and a human nutritionist.

b) Regional and National Training Courses

(i) Field methods for research technicians

Regional staff have worked alonside experienced national scientists to conduct a series of training courses in field methods for research technicians and young research scientists. Each two-week course covers the following topics generally by alternating sessions in the classroom and in the field:

Organisation of the national bean improvement programme, including the system for germplasm advancement
Morphology and growth of the bean plant
Preparation of land, field books and seed for trials
Agronomy and protection of the bean crop
On-farm research
Data collection on trials
Data handling and analysis.

This series is organised regionally or nationally according to demand, and each course usually caters for about 20 trainees. Four courses have been held in the past year: two were in-country courses for Ethiopia and Uganda (some participants from Somalia were also included in the latter course), and two were regional courses for the Great Lakes and for Southern Africa. Both regional courses were held in conjunction with IITA in order to cater to the wider needs of national research programmes that are responsible for beans, cowpeas and other grain legumes.

A total of 80 staff from 13 national programmes have received this form of short-term training.

(ii) Farming systems research methods

The Great Lakes programme, which has been heavily involved since 1983 in biological and socioeconomic research on farms to diagnose needs and to evaluate promising technology, collaborated with CIMMYT to organise training workshops on farming systems research methods, principally for Rwanda and Burundi. These workshops have followed the general approach developed earlier by CIMMYT, comprising a phased series of "calls" that cover the stages of diagnostic survey planning of on-farm trials, and management and analyses of on-farm trials.

(iii) Specialised country-specific training

Countries differ to some extent in their training priorities, and the steering committee mechanism facilitates agreement on a regional training programme that takes this aspect into account.

Ethiopia's Institute for Agricultural Research (IAR) identified training for its agronomy research scientists as a new priority. A two-week in-country course was organised by IAR for about 45 scientists to cover aspects of the planning, management and analysis of different types of agronomy trials. Resource persons and financial support were drawn from IAR, CIMMYT, CIAT and others.

In response to a specific request from Uganda, an in-country course in weed management principles and methods is planned. This course also is expected to benefit several different commodity programmes in that country.

c) Training at CIAT, Colombia

(i) Short courses

The only headquarters course for group training that has been used for scientists from this region is the Seed Production and Technology Course. This course has been offered occasionally in English but, like other headquarters courses, its orientation is primarily for Latin America.

(ii) Individual Training for Visiting Scientists

Several breeders and pathologists from national programmes of the region have spent periods of two-four months at CIAT. Working directly with CIAT Bean Programme staff, visiting scientists update their techniques where necessary and acquire new techniques for specialised applications. This form of training is considered appropriate for senior breeders, pathologists and entomologists. However, only about six scientists per year can be managed, and national programmes are obliged to define a particular need in each instance. In view of the expense and limited range of relevance for Africa of training at CIAT headquarters, there are no plans to expand this activity beyond its prsent level.

d) Postgraduate Training

Opportunities exist within each regional bean programme for postgraduate training of scientists from national programmes. These scholarships are available to scientists of all disciplines important to the improvement of bean production, in accordance with each national programme's priorities; as in the case of short courses, approval by the Steering Committee is necessary.

Scholarships are tenable at local universities or at other unversities in the region or overseas. Thesis research conducted locally and on relevant issues is encouraged, and CIAT's dispersion of regional scientists in a range of disciplines to five locations in Africa increases the opportunities for local supervision. Thesis research at CIAT headquarters is also possible.

At present, a Ugandan bean entomologist is undertaking coursework towards an M.Sc. degree at Sokoine University of Agriculture, and thesis research will probably be conducted in association with the SADCC/CIAT Southern Africa Programme. An Ethiopian entomologist, whose coursework towards a PhD degree from Simon Fraser University, Canada was supported by IDRC, receives regional programme support to conduct thesis research in Ethiopia on the management of beanfly.

Several other candidates are awaiting acceptance at a university.

e) Provision of Training Materials

(i) Audiotutorial Units

CIAT's Communications Section produces audiotutorial units comprising colour transparencies, a guidebook, a commentary on sound cassette and a transcript of the commentary.

The following units are avilable, through the regional programmes, to the principal research and training institutions of the region:

- The cultivated species of Phaseolus
- Morophology of the common bean plant
- Stages of development of the common bean plant
- Seed morphology and development
- Bean diseases caused by fungi and their control
- Principal diseases of beans in Africa
- Main insect pests of stored beans and their control
- The biology and control of purple nutsedge
- Good quality bean seed
- Essential elements for successful seed programmes
- Principles of intercropping in beans
- Bean production systems in Africa

Work is in progress on two new units:

- Crossing in beans
- On-farm research for bean improvement

These units can be used for self-teaching. However, experience with their use in training courses in the region indicates that the taped commentary is better replaced by a teacher who has first familiarised himself or herself with the content of the slides and guidebook, and a copy of the guidebook should be provided to each student. Programme leaders or university staff may also find it useful to select among the set for slides, combining them with their own for illustrating a particular topic.

Suggestions for future preparation of new units would be welcomed.

(ii) Equipment for training

Slide projectors, overhead projectors and hand-held calculators have been made available through the regional programme to local institutitons for use in collaborative courses and in their followup.

Workshops and Monitoring Tours

a) Africa-Wide Strategic workshops

A workshop on Beanfly was organised by CIAT in Arusha, Tanzania in November, 1986. This workshop united bean entomologists and others from Africa and else-

where to assess the state of knowledge concerning the principal insect pest of this crop in Africa, and to design a strategy for collaborative research leading to its control. Participants were invited for their experience and research interest rather than to represent a particular country or institution. The proceedings of the workshop are expected to serve several purposes, including training in species identification and planning research strategies.

A second workshop in this series, on the topic of Bean Diseases, will be held in Rwanda in November, 1987 under the auspices of the Great Lakes bean programme. A third workshop, dealing with issues in agronomy, is planned for an Eastern Africa location in 1988.

b) Multidisciplinary Regional Workshops

A regional workshop for scientists working on beans in Eastern Africa was held in June, 1987, and will be repeated after two years. A similar francophone workshop is held for the Great Lakes region annually.

c) Monitoring Tours

Three members of the Uganda programme made visits to the Rwanda programme which hosts CIAT's Great Lakes regional programme. Advantage was taken of the similarity in environmental conditions between the two countries to select germplasm in the field and to discuss varietal improvement and on-farm research approaches that have been found useful in Rwanda. Other tours are planned, including visits to collaborative research projects undertaken by national programme scientists on behalf of a region, some of which will serve a formal or informal training function for others with similar interests.

Collaboration among International Centres in Training

This account of CIAT's training activities includes several good examples of collaboration between International Agricultural Research Centres (IARC) for the benefit of national programmes. CIAT and IITA have run joint training courses on field methods for grain legume research not only because beans and cowpeas require rather similar research techniques but also because most countries treat both crops within a grain legume research programme. CIAT's Bean Programme collaborates with CIMMYT's Economics Programme because many bean researchers, both national and regional, carry out part of their work on farms and wish to encourage a farmer orientation in research; the combination of the skills and experience accumulated in both regional programmes probably provides better teaching resources than either could readily mount alone.

Further collaboration among IARC's within the region could increase the efficiency and the effectiveness with which available resources are used. Fruitful areas for collaboration might include the following:

a) On-Farm Research - commodity-based IARC regional programmes need to encourage a systems perspective and methodology in national commodity

research programmes; the approach is similar to a wide range of commodities but the details of application are commodity-specific; collaboration among national commodity programmes to achieve an overall systems perspective may be made easier if different IARC's work with them in a coordinated manner.

b) Agronomy (including Weed Management) - much of the training required for agronomy research is common across annual food crops and forage crops; crop rotations, intensification through multiple cropping, and certain cultural aspects of weed management require an understanding of other crops.

c) Biometry - Training in statistical designs and procedures in field experimentation, if handled at the national level across crops rather than at the regional level by crop, could be focussed at an appropriate level related to local proficiency and the national university's teaching ability in this area.

d) Field Trial Techniques for Assistant Staff - similar considerations of effectiveness apply as in (c) above.

e) Research Station Managmeent - the excellent initiative taken by the SADCC/ICRISAT Sorghum and Millets Programme in regional training in this area is potentially of benefit to all commodities, and deserves further support.

f) Seed Production, and Extension Training - both fields have many similarities across commodities, and the same person tends to work across commodities.

Potential mechanisms for collaboration among IARCs in training activities would vary according to the objectives and the resources available. Routine sharing of information on local courses, training materials and trainees would help avoid duplication of effort and suitable candidates could be assisted to attend relevant courses of another IARC. Pooling of regional resource personnel, training materials and other forms of support for collaborative courses can improve the quality of courses while sharing out the workload. Local followup to reinforce a previous training course may often be done more cost-effectively by another regional programme's staff that is working more intensively with the home station of a particular trainee.

Opportunities for local supervision of postgraduate theses would be increased if IARC regional staff are available to help supervise theses in their own disciplinary area of competence, rather than restricting opportunities to those local researchers working on their institution's mandated crop.

Specific opportunities for collaboration among IARc are probably most easily recognised by leaders of national research and training institutions. This workshop has an important potential role in identifying these areas in some detail.

References

CIAT. 1981. Potential for Field Beans in Eastern Africa. Proceedings of a Regional Workshop held in Lilongwe, Malawi, 9-14 March 1980. Centro Internacional de Agricultura Tropical, Cali, 217p.