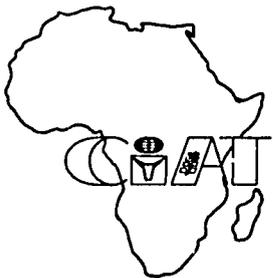


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Reseau de Recherche sur le Haricot en Afrique

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CIAT TRAINING IN AFRICA

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P R E F A C E

This volume is the second in a Working Documents series that serves research on common beans (*Phaseolus vulgaris*) in Africa. This publication series forms part of the activities of the pan-African bean research network, which aims to stimulate, focus and co-ordinate research efforts on this crop.

The network is organized by the Centro Internacional de Agricultura Tropical (CIAT) through three interdependent regional projects, for the Great Lakes region of Central Africa, for Eastern Africa and, in conjunction with SADCC, for the Southern Africa region.

Working Documents will include bibliographies, research reports and network discussion papers. These publications are intended to complement an associated series of Workshop Proceedings.

Support for the regional bean projects comes from the Canadian International Development Agency (CIDA), the Swiss Development Co-operation (SDC) and the United States Agency for International Development (USAID).

Further information on regional research activities on common beans in Africa, and additional copies of this publication, are available from:

Regional Coordinator, SADCC/CIAT Regional Programme on Beans in Southern Africa, P.O. Box 2704, Arusha, Tanzania.

Regional Coordinator, CIAT Regional Programme on Beans in Eastern Africa, P.O. Box 67, Debre Zeit, Ethiopia.

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CIAT TRAINING IN AFRICA

Introduction

The success of a bean research programme depends, to a very large extent, on the technical competency of the research staff involved. Systematic and continuous training, as part of the skills building and upgrading process, is central to the success of the programme. The steering committees of the three regional programmes in Africa have identified broad areas of training needs and a number of training activities have been organized, and indeed more are planned, to meet those needs. This paper describes those training activities carried out by CIAT either alone or jointly with other centres.

The original paper was prepared by R. A. Kirkby¹, J. B. Smithson², D. J. Allen³ and G. E. Habich⁴ and presented at a regional workshop on Training Needs for Agricultural Research in Eastern and Southern Africa, held at Arusha on 20-24 July 1987. The paper was revised by Jeff Mutimba⁵ to include statistics on training undertaken up to 1989.

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. An initial meeting of national bean researchers held in Malawi (CIAT, 1981) established priorities that have been adopted as objectives of CIAT's Bean Programme in Africa. The principal objective is to support national efforts in the areas of genetic improvement, the

1 Regional Coordinator, CIAT, Programme on Beans in Eastern Africa.

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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 cases, extend across 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 management of each regional programme is guided by a Steering Committee, which includes the coordinators of all national programmes 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, approves annual workplans and allocates regional funds to support research projects, training, workshops, consultancies, 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 pan-African workshops on special topics, training, visits to other national programmes and exchange of germplasm.

Training

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

Informal Training

Regional programmes conduct most research activities as part of the approved agenda of national research organisations, albeit often at greater depth than might be attempted within a single national programme. 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 exert an important informal training function on a daily basis. They

encourage an interdisciplinary problem-solving approach which is facilitated by the interdisciplinary structure of CIAT's Bean Programme (which in Africa includes several biological disciplines an economist and an anthropologist).

Regional and National Training Courses

(a) Field methods for research technicians

Regional staff have worked alongside 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 a 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

Three such courses were held in 1989 alone in the eastern and southern Africa regions. Two were in-country courses for Ethiopia and Uganda (some participants from Somalia were also included in the latter course). A third regional course, for lusophone countries, was organised in conjunction with IITA, ICRISAT and the Ford Foundation to cater for the wider needs of national research programmes that are responsible for beans, cowpeas and groundnuts.

Up to the end of 1989 a total of 173 staff from eleven national programmes in two regions (eastern and southern Africa) had received this form of short-term training (Table 2).

(b) Farming systems research methods

The Great Lakes Programme, which has been heavily involved since 1983 in biological and socio-economic research on farms to diagnose needs and to evaluate promising technology, collaborated with CIMMYT to organize 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 surveys, planning of on-farm trials, and management and analysis of on-farm trials. The other two regions have benefited from a similar course run annually at the University of Zimbabwe, which enabled Uganda, in particular, to provide follow-up training in the form of "hands on" practical experience (Table 3).

(c) Specialised country-specific training

Countries differ in their training priorities, and steering committees enable agreement to be reached on regional training programmes that take these priorities into account.

For example, Ethiopia's Institute for Agricultural Research (IAR) identified training for its agronomy research scientists as a new priority. Three in-country courses have been run covering aspects of the planning, management and analysis of different types of agronomy trials. In addition one weed management course has been run for Ethiopia and another for Uganda. A total of 187 participants had gone through specialised courses by the end of 1989 (Table 4). Resource persons and other support for these courses, which also benefit other commodity programmes in these countries, have been drawn from the national research departments, and from CIMMYT, ICRISAT and CIAT.

Training at CIAT, Colombia

Several breeders and pathologists from national programmes in Africa have spent periods of two to four months at CIAT. Visiting scientists, working directly with CIAT Bean Programme staff, update their techniques where necessary and acquire new techniques for specialized applications. This form of training is considered particularly 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 present level. So far, 30 scientists from nine programmes in eastern and southern Africa have benefited from this type of training (Table 5).

Postgraduate Training

Opportunities exist within each regional bean programme for postgraduate training. 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 either at local universities 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.

By the end of 1989, two Ugandans had successfully completed their M.Sc. studies under this scholarship programme, whilst another eleven M.Sc. and eleven Ph.D. scholars from ten national

programmes in the eastern and southern Africa regions were enrolled at various universities (Table 6).

Provision of Training Materials

(a) Audiotutorial units

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

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

- The biology and control of purple nutsedge
- The cultivated species of *Phaseolus*
- Morphology of the common bean plant
- Stages of development of the common bean plant
- Seed development and morphology
- Crossing of beans
- Principal diseases of beans in Africa
- Main insect pests of stored beans and their control
- Good quality bean seed
- Essential elements for successful seed programmes
- Principles of intercropping with beans
- Bean production systems in Africa
- Bean diseases caused by fungi
- The legume rhizobium symbiosis
- Bean common mosaic: screening for disease resistance

Work is in progress on other units, and CIAT would welcome suggestions for new topics.

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 is familiar 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 of slides, combining them with their own for illustrating a particular topic.

Other publications produced for training purposes include:

- The planning stage of on-farm research : identifying factors for experimentation (CIMMYT/CIAT)
- Standard system for the evaluation of bean germplasm

(b) Equipment for training

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

Workshops and Monitoring Tours

Pan-African Strategic Workshops and Working Groups

A series of strategic workshops and working group meetings have been held to assess the state of knowledge on a few selected problems of beans in Africa, and to design strategies for collaborative research likely to lead to their solution.

Participants in these meetings are invited for their experience and research interest, rather than to represent a particular country or institution. Nine such meetings have been held, covering topics in breeding (2), entomology (2), pathology, soil fertility, drought, nitrogen fixation and strategic planning. These were attended by 82 scientists from Africa and elsewhere (Table 7).

Multidisciplinary Regional Workshops and Seminars

These workshops bring together scientists from many disciplines working on common beans to exchange results, to document progress and to develop guidelines on research priorities and appropriate research methods. Because of their multidisciplinary nature these workshops are usually larger than strategic workshops and take the form of paper presentations followed by discussion groups to develop recommendations. More than seventeen workshops or seminars of this kind have been held in Africa since 1986 and these have attracted 270 participants from eastern and southern Africa (Table 8).

Some participants are invited to represent their countries and institutions whilst others are invited to inform colleagues on their research programmes or projects. Steering committees have used workshop discussions on regional project presentations in evaluating applications for renewed support.

Monitoring Tours

Monitoring tours are essentially "travelling workshops". Their objectives vary but the essential intention is to familiarise scientists with what is happening in other locations, and to determine possible strategies for intervention. Visits are made to collaborative research projects being undertaken by national programme scientists on behalf of a region. These informal visits often serve to train others having similar interests. By the end of 1989 four such tours had been undertaken involving 27 scientists from seven national programmes (Table 9).

Collaboration among International Centres in Training

This account of CIAT's training activities includes several good examples of collaboration among 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 many 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-farm 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.

Potential for Further Collaboration

Further collaboration among IARCs within the region could increase the efficiency and the effectiveness with which available resources are used. Potential areas for collaboration include the following:

(a) On-farm research

Commodity-based IARC regional programmes need to encourage systems perspectives and methods in national commodity research programmes. The approach is similar for a wide range of commodities but some details of application are commodity-specific. Achieving an overall systems approach within a country through collaboration among commodity programmes can be fostered when the different IARCs working with them do so in a coordinated manner.

(b) Agronomy

Much of the training required for agronomic research (including weed management) is common to annual food crops and forage crops. Crop rotations, intensification through multiple cropping, and certain cultural aspects of weed management require a good understanding of several crops.

(c) Biometry and trials management

Training in statistical design and procedures in field experimentation, when tackled at the national level across crops rather than at the regional level by crop, can be focused at an appropriate level related to local proficiency (since national universities differ in the importance they give to teaching in this area.

Similar considerations of effectiveness apply in training assistant staff in field trial techniques.

(d) Research station management, seed production and extension

The initiative taken by the SADCC/ICRISAT Sorghum and Millets Programme in regional training for research station managers is

potentially of benefit to all commodities, and deserves further support.

Both seed production and extension training have many similarities across crops, and the same person tends to work across commodities.

Mechanisms for Collaboration in Training

Ways of improving the collaboration in regional training that already exists among IARCs in Africa would vary according to the circumstances and available resources. Jointly organised courses are appropriate for some topics, but require particularly intensive coordination at an early stage in their planning. Other, and sometimes simpler, forms of collaboration would also be very useful.

Routine sharing of information on local courses, training materials and trainees would help avoid duplication of effort and enable suitable candidates to be sponsored to relevant courses run by 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 follow-up to reinforce a previous training course, particularly in a field such as agronomy, can sometimes be done more cost-effectively by staff of another regional programme that is working more closely with the home station of a particular trainee.

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

However, specific opportunities for collaboration among IARCs are probably most easily recognized by leaders of national research and training institutions.

Summary

CIAT's training activities in Africa have been increasing steadily - from only two Ugandan scientists who went to CIAT headquarters in 1984 to 393 national staff from the eastern and southern African regions who received training, mostly within Africa, in 1989. During a five-year period 793 scientists and technicians from the two regions have participated in CIAT training courses and workshops, while another 22 are receiving support for academic studies. In Ethiopia and Uganda almost all bean researchers and technicians have received training in the core competency areas identified so far, and demand from the other national programmes is increasing. There is an urgent need to strengthen the capacity of national programmes to carry out their own training, and for this reason emphasis will also be

given to the training of trainers.

The training activities described here have also been catalytic in creating linkages - linking national institutions and also linking international centres across the main grain legume crops in Africa. These scientific contacts are providing rich ground for exchange of knowledge, skills and experience. Whenever possible, resource persons are drawn from national institutions and some of the courses are sponsored and run jointly with other international centres.

Reference

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. 217 p.

Table 1. Organisation and staffing of CIAT Regional Bean Programmes (revised August 1989)

Region	Country	Donor	Principal Scientists	Disciplines
Great Lakes	Rwanda	SDC	3	Breeder, Cropping Systems Agronomist,* Anthropologist
Eastern	Ethiopia	CIDA/ USAID	2	Cropping Systems Agronomist,* Training Officer
	Uganda	"	3	Breeder, Economist, Cropping Systems Agronomist
Southern	Tanzania	CIDA	4	Pathologist,* Breeder Agronomist, Entomologist
	Malawi	"	1	Breeder (vacant)

* Regional Coordinators

Table 2.

FIELD METHODS COURSES FOR RESEARCH TECHNICIANS*

Course Title	Location	Duration	Number of Participants by Country													TOTAL		
			AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD		ZA	ZW
Lowland Pulses Research Methods Course for Technical Assistants	Nazreth Ethiopia	Sep 25-Oct 5 1986			16													16
Grain Legume Research Methods Course for Research Technicians	Lilongwe Malawi	March 14-28 1987		2		1			4			8			4	2		21
Field Research Techniques for Research Technicians	Mukono Uganda	June 1-12 1987									2		18					20
Grain Legume Research	Nazreth Ethiopia	Aug 15-Sep 18 1987									2							2
Bean Research Methods Course for Research Technicians	Arusha Tanzania	May 23-Jul 1 1988		2		1			1			3			2			9
Pulse Research Methods	Holetta Ethiopia	Oct 3-7 1988			25													25
Grain Legume Research Methods Course for Research Technicians	Maputo Mozambique	March 9-23 1989	9					18										27

Table 3.

FARMING SYSTEMS RESEARCH TRAINING*

Course Title	Location	Duration	Number of Participants by Country														
			AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD	ZA	ZW
Practical Training in OFR	Great Lakes	Sept-Oct 1986											1				1
Diagnostic Survey Field Practice	Kabale Uganda	April 1987											5				5
OFR Methods for Extension Staff	Mukono Uganda	Feb 29-Mar 4 1988											24				24
Exploratory Research on Banana/Bean Cropping	Mpigi/Rakai Uganda	May-July 1988											2				2
Economics/FSR Training Workshop	Holetta Ethiopia	Jan 24-25 1989			13												13
OFT Management for Extension Staff	Kabale Uganda	Feb 15-16 1989											10				10
OFR Experimental Phase	University of Zimbabwe	Aug 28-Sep 9 1989											1				3
Survey on Bean/Banana Intercropping	Makerere Uganda	1989											2				2
Survey on Bean Storage	Uganda	1989											4				4
TOTAL					14	1							49				64

* Data from the Great Lakes Region not included.

Table 4.

SPECIALIZED COUNTRY-SPECIFIC COURSES*

Course Title	Location	Duration	Number of Participants by Country															
			AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD	ZA	ZW	TOTAL
Weed Management	Debre Zeit Ethiopia	April 1987			20													20
Agronomy	Nazreth Ethiopia	Sept 2-12 1987			49													49
M-Stat	Morogoro Tanzania	Oct 6-10 1987											2					2
Statistical Analysis and Computer Applications	Addis Ababa Ethiopia	April 12-22 1988			23													23
Agronomy and Soils Training Workshop	Holetta Ethiopia	Feb 20-25 1989			49													49
Weed Management	Makerere Uganda	March 20-30 1989			3								22					25
Trial Data Analysis	Manzini Swaziland	June 5-16 1989											2			1		3
Experimental Design Analysis and M-Stat	Makerere Uganda	July 3-14 1989											16					16
TOTAL					121							2	40		1		187	

* Data from the Great Lakes Region not included.

Table 5.

VISITING SCIENTISTS AT CIAT HEADQUARTERS, COLOMBIA*1984 - 1989

Course Title	Number of Participants by Country															
	AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD	ZA	ZW	TOTAL
Agronomy	1					1										2
Breeding	1		4	3					1		3	4			1	17
Entomology			1						1			1				3
Pathology	2		3									1				6
Physiology								1								1
Seed Production and Technology			1													1
TOTAL	4		9	3		1		1	2		3	6			1	30

* Data from the Great Lakes Region not included.

Table 6.

ACADEMIC SCHOLARS SUPPORTED BY CIAT*

Name of Candidate	Sex	Country	Degree	Research Topic or Major	Location	Duration
Tsedeke Abate	M	ET	Ph.D	Beanfly in Ethiopia	Ethiopia (thesis only)	Aug 86 Aug 90
O.S. Mbuya	M	TZ	M.Sc	Intercrop Physiology	Gainesville, FL, USA	Jun 86 Dec 89
E.M.K. Koinange	M	TZ	Ph.D	Genetic Diversity and Breeding Methods	Davis, CA, USA	Sep 88 Sep 91
O. Mukoko (nee Verge)	F	ZW	Ph.D	BCMV Resistance Breeding	Cambridge, UK	Jan 89 Dec 91
G. Mmope (nee Maphanyane)	F	BD	Ph.D	Plant Breeding	Cornell, NY, USA	Jan 89 Dec 91
H. Mloza Banda	M	MW	Ph.D	Weed Science	Iowa State, USA	Jan 89 Dec 91
M.L. Pomela	F	LO	Ph.D	Entomology	Idaho, USA	Aug 89 Jul 92
C. Camarada	M	AN	M.Sc	Tropical Agricultural Development	Reading, UK	Jun 89 Sep 90
M. Amane	M	MO	M.Sc	Plant Breeding	Wageningen, Netherlands	Sep 90 Aug 92
Amos Oree	M	UG	M.Sc	Beanfly in Tanzania	Sokoine Tanzania	Jan 87 Mar 89
Jane Kisakye	F	UG	M.Sc	Intercropping	Gainesville, FL, USA	Aug 87 Jun 89

Table 6. (Continued)

Name of Candidate	Sex	Country	Degree	Research Topic or Major	Location	Duration
Amare Belay	M	ET	M.Sc	Intercropping	Alemaya Ethiopia	Aug 88 Dec 90
Melaku Ayele	M	ET	M.Sc	Breeding	Alemaya Ethiopia	Aug 89 Aug 91
Mohamed Handulle	M	SO	M.Sc	Breeding	Wageningen Netherlands	Jan 90 Dec 91
Ahmed H. Hussein	M	SO	M.Sc	Agronomy	Nairobi Kenya	Dec 89 Aug 91
Senait Yetneberk	F	ET	M.Sc	Hard-to-cook Phenomenon	Mysore India	Aug 89 Aug 91
Amare Abebe	M	ET	Ph.D	Breeding for Drought Resistance in Ethiopia	Colorado USA/Ethiopia	Aug 89 Aug 92
Habtu Assefa	M	ET	Ph.D	Pathology	Wageningen Netherlands	Apr 89 Mar 92
Michael Adrogu	M	UG	M.Sc	Agronomy	Cornell NY, USA	Aug 89 Aug 91
Fina Opio	F	UG	Ph.D	Pathology	Sokoine Tanzania	Sep 89 Aug 92
Beatrice Male-Kayiwa	F	UG	Ph.D	Breeding	Dar-es-Salaam Tanzania	Oct 89 Sep 92
Sophy Musaana	F	UG	Ph.D	Breeding	Dar-es-Salaam Tanzania	Oct 89 Sep 92
Ferede Negasi	M	ET	M.Sc	Entomology	Alemaya Ethiopia	Sep 89 Aug 9

* Those from the Great Lakes Region not included.

Table 7.

STRATEGIC WORKSHOPS AND WORKING GROUP MEETINGS*

Title	Location	Duration	Number of Participants													TOTAL		
			AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD		ZA	ZW
African Beanfly	Arusha Tanzania	Nov 16-20 1986			1	1							1	1		1		5
Bean Breeding	Cali Colombia	Oct 19-21 1987											1					1
Bean Pathology	Kigali Rwanda	Nov 14-16 1987		1	1					1			3	3		1		10
Drought Working Group	Harare Zimbabwe	May 9-11 1988	1	1	2		1			1						1	1	8
Soil Fertility in Cropping Systems	Addis Ababa Ethiopia	Sep 5-9 1988	1		4	2				1			8	2		2	2	22
Nitrogen Fixation	Rubona Rwanda	Oct 1988			1					1			1	1			1	5
Bean Breeding	Maseru Lesotho	Jan 30-Feb 2 1989	1		2		3	1	1	1		1	3	2	1	1	1	18
Bean Programme Strategic Planning	Cali Colombia	May 1-5 1989												1				1
Bean Entomology Working Group	Nairobi Kenya	Aug 7-9 1989			2	2	1			1	1		2	1		1	1	12
TOTAL			3	2	13	5	5	1	1	6	1	1	19	11	1	7	6	82

* Data from the Great Lakes Region not included.

Table 8.

MULTIDISCIPLINARY WORKSHOPS AND SEMINARS*

Title of Workshop	Location	Duration	Number of Participants														
			AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD	ZA	ZW
Tanzania/Southern Africa Bean Research	Sokoine Tanzania	Sept 9-11 1986		1			1	2				3	1		1		9
Eastern Africa Bean Research	Mukono Uganda	June 22-25 1987			6	1					3	1	18				29
National Agronomy and OFR Coordination	Holetta Ethiopia	Sept 16-18 1987			25												25
Tanzania/Southern Africa Bean Research	Sokoine Tanzania	Oct 1-3 1987							1			6	1				8
International Bean Trials	Cali Colombia	Oct 12-16 1987			1	1							1				3
Great Lakes Bean Research	Kigali Rwanda	Nov 18-21 1987											1				1
Groundnut/Legumes Seminar**	Mfuwe Zambia	Mar 9-11 1988														1	1
On-Farm Research	Butare Rwanda	May 1988											1				1
Agronomy, Physiology, FSR Projects Planning	Nazreth Ethiopia	Sept 19-24 1988			38												38
Tanzania/Southern Africa Bean Research	Morogoro Tanzania	Sept 28-30 1988	1									4				1	6

Table 8. (Continued)

Title of Workshop	Location	Duration	Number of Participants															
			AN	BD	ET	KE	LO	MO	MR	MW	SO	SU	TZ	UG	WD	ZA	ZW	TOTAL
Research Methods for Cereal/Legume Intercropping	Lilongwe Malawi	Jan 23-27 1989	1		5	5		1		3		5				1		21
National OFR Coordination	Kampala Uganda	Feb 29-Mar 3 1989											39					39
Soil Survey for Land Use Management**	Nairobi Kenya	Mar 13-25 1989			1													1
SADCC Regional Bean Research	Mbabane Swaziland	Oct 4-7 1989	1	1			2	1		7		10		6	9	2		39
International Snap Bean Conference	Cali Colombia	Oct 1989	1		2	4												7
Bean Improvement Cooperative**	Toronto Canada	Nov 7-11 1989											1					1
National OFR Orientation	Mukono Uganda	Nov 13-16 1989											41					41
		TOTAL	4	2	7	11	3	4		11	3	29	104	6	12	3		270

* Data from the Great Lakes Region not included.

** Workshop not sponsored by CIAT

Table 9.

MONITORING TOURS*

Locations Visited	Duration	Number of National Participants								
		ET	KE	MO	MW	TZ	UG	ZA	TOTAL	
Research Sites in Malawi, N. Zambia and S.Tanzania	March 1988				3	1		1	5	
Four Research Stations in Ethiopia	Sept 4-10 1988	5	1		1	1	1	1	10	
Research Sites in Mozambique	April 1989			5					5	
Kagera Basin (western Tanzania, south-west Uganda and Rwanda)	Nov 12-21 1989					4	2		6	
Coordination of Bean Rust Sub-project at Kawanda (UG) & Thika(KE)	Dec 1989	1							1	
	TOTAL	6	1	5	4	6	3	2	27	

*Data from the Great Lakes Region not included.