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TRAINING AND COMMUNICATIONS SUPPORT PROGRAM

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Centro Internacional de Agricultura Tropical

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PART I

Operational Implications of Strategies for the 1990s

TRAINING

During the 1980s, CIAT trained NARDS partners mainly to do adaptive research and, to a lesser extent, transfer technology and carry out applied research. The NARDS, on the other hand, devoted their--generally more modest--efforts to downstream training for research and technology transfer.[1]

In the 1990s CIAT will move its research training toward applied and strategic research, expecting that the NARDS' training needs for adaptive research, for some applied research, and for technology transfer will be met by the national institutions themselves. To help the NARDS to become self-sufficient in these training activities, CIAT has added a new dimension to its training program: the training of NARDS trainers.

Training of researchers

The move toward more upstream research training implies that smaller numbers of highly selected candidates will be trained. Numbers of trainees will be smaller because, at this level of training, candidates will spend longer periods in training, and the trainer-trainee relationship will be more intensive, that is, more time-demanding on the part of the trainers. And, candidates will be highly selected because, due to the high investment of trainer time per trainee, the risk of training the wrong candidates must be minimized.

The selection of training candidates will, of course, be made in close interaction with our national partners and our own research programs and support units; but final admission is the responsibility of the TCSP.

Many different interests must be taken into account for admission of candidates: those of various institutions and commodities in one and the same country, those of various countries, and those of CIAT and its various programs. Therefore, interaction with the corresponding NARS program staff and leaders is necessary but not sufficient; to select the right candidates the NARS must be thoroughly known to us. To improve further the knowledge that CIAT already has of them, still closer and more systematic collaboration of all CIAT staff will be necessary. With the support of the research program leaders, and the permanent help of the Center's scientists, the TCSP expects to develop an inventory of relevant human resources in the NARS which will be fundamental for selecting training candidates and for designing human resources development and training programs.

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1. These statements refer to training related to the commodities in CIAT's mandate. They may not apply to other commodities.

In addition to the intensive trainer-trainee interaction during the training period, the preparation of highly customized training programs will also require a period of iterative interaction between each trainee and the TCSP for the design of the individual's program. In this process the training associates and education specialist will work as a team with the scientist who will assume the responsibility for the individualized subject matter content. Still closer interaction between research program scientists and TCSP staff than in the past will consequently be required. This, however, is a quantitative rather than a qualitative change. In kind, the necessary interaction has always taken place, but more of it will be vital in the future. This is another reason for having fewer but highly selected trainees.

In the same way as for individualized training programs, the design of group training events will become highly customized and therefore more labor-intensive in the preparatory stages. Again, the subject matter specialists, the training associates, and the education specialist will have to work as a close team to obtain the best NARS-enhancing results.

The advanced training of researchers also implies that many of them are, or will become, leaders in their field. Commodity research management will, therefore, be included in their training. This will not be research institute management, but the management of multidisciplinary commodity teams, and within them the management of specific areas such as, for instance, the organization and management of a crop breeding program.

Training trainers

In the area of training trainers for downstream research and for technology intermediaries, the main operational implications relate to the teaching and production of training materials on how to train, and to the teaching and production of training materials on subject matter content.

The expertise to convert agricultural professionals into able andragogues (adult educators), and for the production of materials to this end, has been added to the TCSP recently. The demand for this new function has been growing ever since its incorporation, to the extent that it is exceeding the capacity of a single person. This shows that the inclusion of the andragogic dimension met a genuine need; but it equally points out the need for additional human resources in this area, both for meeting the demand and overcoming the vulnerability of depending on one person alone to implement the strategy. Initially one, and eventually two associates are necessary to support the education specialist in designing curricula, teaching educational methods, and producing training materials on this subject.

The teaching of trainers in subject matter content will be a major responsibility of the training associates. This activity is

not new to them. To the contrary, during the 1980s they have gained much valuable experience in this area by training technology intermediaries in in-country courses. The change in strategy in their case is basically to switch from training technology intermediaries to training those who will do what they have been doing: training intermediaries.

In the past, scientists from the Center's research programs have participated in the training of technology intermediaries, albeit at a decreasing rate (with the possible exception of the Cassava Program, where senior scientists were much involved in in-country training). National researchers have increasingly taken their place, and this trend should grow stronger still, to the extent that training the trainers in subject matter content should essentially enter the realm of national researchers and CIAT training associates. Within this scenario, the close integration of the training associates with CIAT's commodity research programs is even more crucial than in the past. This, however, should not be more difficult than previously because, on one hand, the associates will continue to be physically located in the commodity programs, which are their information lifeblood; and secondly, their colleague trainers in the NARDS will be the colleague researchers of CIAT's scientists. Research-extension linkages should be strengthened as a result of this setup, as the trainers of technology intermediaries will themselves be trained by their country's researchers.

Another important feature of this model, in which NARS scientists and CIAT training associates train NARDS trainers of technology intermediaries, will be horizontal cooperation. Regional and subregional training programs will be developed or strengthened; and in single-country training events, NARS scientists from other countries will also be involved as subject matter specialists.

Training materials on subject matter content have been produced for many years at CIAT under the format of audiotutorials and training manuals. Production will continue for these materials to serve as training complements in the teaching of trainers as well as to serve trainees in their own training activities. The main changes in this respect will be a closer integration of training materials production with the training program, increased participation of training associates in the definition of the demand for training materials, and a more direct insertion of the materials into the NARDS training programs.

The training-the-trainers strategy is highly contingent on the NARDS being willing to develop or strengthen their own training systems, and on their making available the necessary resources for such an endeavor. If the NARDS do not decide to meet such requirements, CIAT's effort will revert to a bottom line which is similar to the 1980s in-country training baseline: rather than training the trainers for technology transfer, the

technology intermediaries would, again, be trained directly. In larger countries, this has the disadvantage that only a small proportion of those requiring training will actually be trained; and in both larger and smaller countries it would perpetuate the vulnerability of a non-self-sustainable mechanism. If those trained leave the system, the training effort is lost and needs to be started again. Of course, if the NARDS do not assume their own training responsibilities, the fundamental question would also have to be raised as to how long the IARCs in general, and CIAT in particular, should continue playing this gap-filling role.

Conclusion

In summary, the main operational implications of CIAT's training strategy for the 1990s are that there will be two lines of action: the direct training of researchers for more upstream research, and the training of trainers for the more downstream research and for technology transfer. The first line will be implemented by CIAT's researchers, with the support of the TCSP's training associates and education specialists. The second line will be implemented mainly by the TCSP's training associates, with the support of researchers from the NARS and, to a lesser extent, from CIAT. Both lines will be closely integrated with the Center's research programs and their national partners. Training materials will chiefly support the training-the-trainers strategy. The research training will be supported by the production of scientific publications, and with bibliographic information more than with training materials (see below).

One comment on the clientele of the training-the-trainers strategy may be conveniently made here. The strategy addresses human resources who fulfill a certain role: that of training researchers for downstream research or training technology intermediaries. The strategy, in contrast, does not make reference to a specific institutional clientele: it does not specify the extension services, or the universities, or the NGOs, or whoever, as its target. The trainers to be trained can belong to any and every one of them, and it is their function, rather than their institutional dependence, which makes them clients of our training efforts.

BIBLIOGRAPHIC INFORMATION

The TCSP has in place information and documentation systems to effectively and efficiently serve the needs of CIAT's scientists. It is a TCSP strategy to encourage our national partners' use of these resources, and to facilitate their access to CIAT's own bibliographic databases and document collections, as well as to information networks to which CIAT is linked.

Collection of information

For the collection of information, the Information Unit has the mechanisms and technology for scanning world literature, and for getting feedback from specific authors and institutions on the extent to which we hold their bibliographic production. There are types of information, however, which, because of being published in media of difficult access, escape these more traditional means of detection. They are usually referred to as gray literature. CIAT's Information Unit, with the permanent help of the Center's scientists, has been very effective in collecting this gray literature, as well as the more traditional bibliographic production.

The Unit will remain at the cutting edge of technology for collecting the relevant world scientific literature published through traditional channels. And, we are sure that the Center's scientists will continue to provide their support to collect the more elusive publications through their contacts with NARDS partners. It is this mechanism which gives the Center a comparative advantage for document collection.

Distribution of information

For the distribution of bibliographic information to our NARDS partners, the Information Unit relies heavily on commodity program scientists for the identification of individuals and institutions who ought to be served by the Unit. Distribution lists will be routinely submitted to program staff for updating. Eventually, on-line access to the distribution list will be provided; the faculty to alter the content will, however, be restricted to authorized TCSP staff.

In addition to distributing specific bibliographic products, and to offering search and documentation services, whole information systems will be transferred to information/ documentation centers in the NARDS. Two interrelated factors make this possible: on one hand, technological advances that allow massive amounts of information to be recorded on--and recovered from--highly compact and robust media; and on the other hand, the increasing availability in the NARDS of the necessary equipment to benefit from these modern technologies. The latter may seem paradoxical when we all know how libraries in the NARDS, within the present context of institutional poverty, struggle to retain, at best, a minimum of scientific journal subscriptions. However, modern technology is making information available at decreasing costs, and, furthermore, different international agencies are making information equipment available to the NARDS. This trend is likely to grow stronger. FAO, for instance, has decided to produce its AGRIS database on CD-ROM and to distribute the discs free of charge to national AGRIS centers. Simultaneously, the organization is surveying the equipment situation of these centers, and is seeking donors to provide the necessary hardware.

Similarly, CTA has recently installed CD-ROM workstations at 11 sites in Africa, the Caribbean, and Pacific islands, and provided them with a portfolio of CD-ROMs. Next year, the same project will be expanded to another 10-15 locations. Thus, even impoverished national institutions will have access to information and equipment, and our Information Unit will be able to build upon this groundwork.

Networking

Networking among strong information/documentation centers located in developing countries is the basis for strengthening the existing information grid. Weaker nodes in the network can be expected to gradually become stronger by their own means, and through diverse interinstitutional activities to this end. IARCs in Africa are working toward the establishment of such a network, into which we should be able to feed our information more effectively and efficiently than at present. In Latin America, the three CG-IARCs and IICA's Information and Documentation Center (CIDIA) are communicating fluidly to improve their already existing collaboration and to link up with national information/documentation centers. The IARCs' role model, their training capacity, and their leadership to foster compatibility of hardware and software will be fundamental for the implementation of the networking strategy to be followed in the coming years.

Conclusion

In brief, support from CIAT's scientific staff for collection and distribution of information; permanent technical modernization; and networking with other international, regional, and national information/documentation centers are operational cornerstones for the implementation of the TCSP's strategy of serving our national partners' bibliographic information needs.

PUBLICATIONS

A major strategic change in relation to CIAT's publications is to broaden their audience. From publications to serve NARS researchers, particularly those active in adaptive research, production will expand to making specialized materials to reach the whole range of upstream-to-downstream audiences, including technology intermediaries. Main operational implications of this change follow.

Research publications

Publications for the more upstream research in the NARS must be highly specialized and for small audiences (by commodity and by

discipline); timeliness in their delivery is crucial. Therefore, press runs will be small, and desktop publishing will often be preferred to the more formal production techniques, which will be reserved for the fewer major production jobs. The corresponding adjustments are mainly technological; they do not imply staffing changes beyond some retraining of existing human resources.

Publications for technology intermediaries

To specifically serve technology intermediaries is a fundamental change. In the past, members of this group have used CIAT's publications for researchers, probably more because of lack of publications addressing their specific needs, than because of the precise suitability of CIAT's publications to serve them. The TCSP's familiarity with the NARDS indicates that technology intermediaries will benefit most from publications specifically designed in content and format to meet their information needs.

Beyond the perception that the communication patterns of the new audience differ from those of our traditional clients, such patterns need to be characterized in more detail. For this, approval of a special project has already been obtained from, and a second one has been submitted to, a donor agency. The first one will allow us to do a survey of information needs and communication patterns of technology intermediaries. The second project is expected to produce multimedia materials adjusted to the findings of the first one, and to field-test them. The knowledge gained from both projects will be the guideline for future production of materials for technology intermediaries. Their contents will cover such topics as the diagnosis of production problems, production principles, new technologies, and new production opportunities. Their general validity will be the criterion for producing them, as CIAT has no comparative advantage in dealing with location-specific topics.

CIAT's publications staff have limited experience in communicating with the audience of technology intermediaries, and their production capacity is fully occupied. Consequently, this new task requires additional staff with specialized knowledge. Eventually, one agricultural writer[2] (or communicator) per commodity program will be required. These are associate level positions and, initially, they may be funded by special projects. As their products will be aimed at a very large audience--the professionals involved in production of CIAT's commodities worldwide--, press runs will be large and sales will probably become important. One may speculate, therefore, that the additional positions might be self-supporting through product revenues.

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2. These positions will not be devoted exclusively to this activity, however. They will also address horizontal communication between NARDS and CIAT (see below).

Networking and horizontal communication

With regard to network communications between CIAT and the NARDS, changes are envisaged both in the various commodity newsletters, which during the 1980s served this purpose, and in the media involved.

The communication approach will shift from a rather CIAT-centered one to a more participatory mode. That is, the members of the NARDS will play a more protagonic role in contributing input to CIAT media aimed at communicating to and among professionals involved in the generation and transfer of technology for the commodities in CIAT's mandate. It is fundamental, however, that the international dimension be kept in such communications. In the preservation of this broader perspective, and in convening the national contributions, CIAT has a comparative advantage over its NARDS partners. With this shift in approach, CIAT's communicators will need to have more direct contact with the NARDS than in the past. They not only will have to seek maximum interaction with NARDS members when they come to CIAT, but they will also have to become knowledgeable about the NARDS through periodic visits. They will have to know key persons and their environment, and witness their interaction with CIAT staff in situ.

The media for horizontal communication will continue to be newsletters and bulletins, but their contents will become more agile, their layout simpler, and their frequency higher. In addition to written materials, the use of audiovisual media is also envisaged.

Conclusion

To sum up, more specialized publications for researchers will require technological changes in production, and small press runs.

Publishing for technology intermediaries will be preceded by studies of the audience's communication patterns and its acceptance of prototype materials. And, it will require additional human resources at the associate level.

Greater participation will be given to NARDS members in the production of publications for communicating to and among professionals involved in the generation and transfer of technology for the commodities in CIAT's mandate. A more journalistic approach to production will be followed, and the frequency of communication will be increased.

Changes will be introduced gradually. The staff has already started to work in accordance with these guidelines; and as additional human resources (mentioned above in relation to serving technology intermediaries) become available, the TCSP will move progressively toward full implementation of the new model.

PUBLIC INFORMATION

The strategy of ensuring that CIAT's stakeholders and the public are kept informed on the Center's endeavors and achievements is an ongoing one, and production of the two well-established media, **CIAT Report** and **CIAT International**, will continue. At the operational level, changes in the intensity of delivering information, in the audiences to be reached, and in media to be used are foreseen. The three are interrelated.

Intensification of information delivery

As to the change in intensity, a more vigorous approach will be adopted to access the media in both donor and client countries. The periodicity of **CIAT International** will be increased. More press releases will be produced and delivered to more countries, especially client countries. For the diffusion of information to donor countries, in addition to practices established in past years, more intensive channeling of information through the CGIAR Secretariat's public information office will be pursued, above and beyond our participation in the CG-wide public awareness efforts that are already taking place.

Audience enlargement

The audience for public information will be broadened to include client countries, in addition to donor countries and CIAT's host country.

Expansion of media range

Printed media have been the almost exclusive channel to reach the public in the past (with the exception of some important radio broadcasts), and there is scope for increased use of audiovisual media for the same purpose.

Outside media will bee invited to produce and present audiovisuals about CIAT.

In-house production of audiovisuals on the Center in general, and its various programs in particular, will be undertaken to update and complement previous efforts such as CIAT's slide-sound show. This task will include the production of a portfolio of audiovisuals for use at the Center, and to also be made available to Center staff for use on their travels worldwide.

The expertise available at CIAT for the production of audiovisuals, other than audiotutorials, is limited. The expansion of the production of this kind of media will, therefore, require a reinforcement of such know-how, preferably at the senior staff level.

Conclusion

In brief, changes in CIAT's public information strategy attempt to broaden the audience--in order to reach client countries more effectively--, to invigorate the entire public information effort, and to expand the use of audiovisual media.

Part II

Activities Report for 1989

TRAINING

The change in training strategy, toward the model envisaged for the 1990s, is a gradual one that--in several aspects--has been insinuating itself over the last few years. The new model will be reached only through successive transitional stages in which characteristics of the past and future models will coexist to varying degrees. The characteristics of the future model will become progressively more prevalent while the features of the model of the 1980s will be waning gradually. The training activities of 1989 will be reported--and some of them highlighted--against this background of gradual transition from one model toward another. Presentation will be made by commodity programs, and other units and special projects.

BEANS

Training at CIAT

Over the last ten years, training in bean research/production at CIAT shifted from most trainees taking only an intensive research/production course to a large proportion of them taking such a course followed by a period of individualized disciplinary specialization, to increasing numbers of them coming to CIAT for individualized specialization only. This trend is clearly reflected in the 1989 training results.

Only four trainees attended the intensive production/research course without going on immediately into a period of disciplinary specialization. But even of those four, three--who are all Colombians--are receiving further in-service training through an ongoing research collaboration program with their mother institutions. Consequently, in fact only one trainee attended the production/research course exclusively, and in his case this was due to his institution not granting him permission to stay for a subsequent specialization because of staff shortage.

Sixteen trainees participated in the "package" course plus specialization; and 33 trainees went directly into a period of individualized specialization (average duration, 2.7 months).

As to the fields or disciplines in which participants were trained, the strong demand for "downstream" training of the last few years was, once again, obvious: 16 professionals participated in OFR training, and another six were trained in the agronomy of bean seed production. It is this effort, plus in-country training in the same fields (see below), that needs to be replaced by training trainers rather than training end users.

In the research disciplines, breeding, pathology, and entomology were the specialization subjects taken by about two-thirds of the trainees.

Seven professionals (11% of the trainees) worked on a higher degree thesis project; four of them at the Ph.D. and three at the M.Sc. level. All Ph.D. candidates and one of the M.Sc. students were from developed countries.

With regard to the geographic origin of the trainees, it is worth mentioning that ten came from African countries (17.5% of all trainees from developing countries). Two of them were trained in physiology, two in pathology, and the remaining six in breeding.

A comprehensive list of the persons trained in the Bean Program during 1989 is presented in Annex 1.

In-country training

In-country training efforts continued to concentrate on developing cadres of professionals (and occasionally technicians) capable of diagnosing and solving major production problems. Implementation has been in the form of OFR courses in three phases each, as described in previous reports. These courses addressed human resources development needs in this field in Central America (Nicaragua and Honduras) and in the Andean Region (Peru). In Paraguay, follow-up was given to the participants in a previous OFR course, in order to further strengthen their capacity to tackle bean disease problems.

Artisanal seed production courses complemented the OFR ones in order to overcome this specific constraint to increased bean production identified in most of the OFR events: the lack of an effective seed provision system. The implementation in phases (two phases rather than the typical three of OFR training) was also applied to seed production teaching over the last two years. This modality has become solidly established now, and it was applied this year in Central America (Honduras and Panama), in the Andean Region (Peru, and at two sites in Ecuador), and in Paraguay.

In the first phase, participants learn bean agronomy for seed production, and site and farmer selection. Action plans for the period between the first and second phases are prepared, and farmers are brought in at the end of the first phase to constitute professional-farmer teams, which then implement the actual production of seeds, usually of improved varieties that need multiplication.

The second phase takes place at harvest time. Theoretical and practical aspects of the harvest itself, and of post-harvest treatment of seeds, are discussed, yields and costs are analyzed, and alternatives for seed distribution are evaluated.

All bean in-country training events are collaborative efforts among NARDS institutions, CIAT's Regional Bean Projects, the Bean

Program, and the TCSP. In the seed courses, one further protagonist must be added to this list: CIAT's Seed Unit, which contributes the specific seed technology know-how of its members, and their growing experience with alternative seed systems for small farmers.

One in-country event deserves special highlighting: the first CIMMYT/CIAT maize-bean OFR course in phases started in Costa Rica. This is an effort to establish joint training activities with our sister Center to address farming systems in which maize and beans are produced in association.

Also in Costa Rica, another collaborative course--this one on bean agronomy--was carried out with CATIE and several Costa Rican institutions: the Ministry of Agriculture (MAG), the Production Council (CNP), the University of Costa Rica (UCR), and the National University (UNA). Participants were from Mexico, five Central American countries, and the Dominican Republic.

As mentioned above, one component of the strategy for the 1990s is to help the NARDS to substitute for CIAT in the more downstream training of researchers. In this direction, assistance was given to Brazil's NARI, EMBRAPA,, (at its request), to strengthen a bean production course for researchers, which it has been offering, for several years now, at the National Research Center for Rice and Beans, CNPAF. Assistance was provided in three areas: the organization of training events, principles of adult education, and subject matter expertise in virology, entomology, and pathology.

CASSAVA

Cassava training, both at CIAT and in-country, has concentrated, during the last few years, on the development of human resources for integrated cassava projects, and on enhancing national IPM capacity. At CIAT, training in the various research disciplines was--naturally--also provided.

Training at CIAT

Two group training events carried out at CIAT are to be highlighted: an Intensive Cassava Research Course for Members of the Asian Cassava Research Network, and a Course on Integrated Pest Management in Cassava and Other Crops.

The course for Asian researchers was the third of its kind. The previous ones took place in 1978 and 1985. Participants (27) came from India (2) Indonesia (3), Laos (2), Malaysia (1), the Philippines (5), the People's Republic of China (4), Sri Lanka (1),Thailand (6), and Vietnam (3). The event was one month long, and seven participants (those from China and Vietnam) stayed for another month thereafter, for additional specialization in breeding or agronomy.

The Cassava Program's staff outposted in Bangkok very carefully selected the participants to ensure that the expenses of bringing them to CIAT from so far away would be a sound investment by training capable and committed cassava researchers.

The expected effects of this training vary between countries according to their NARS' state of development, the support given to cassava research, and their political stability. In the case of the Thai participants, the course contributed to enhancing the research know-how of members of an already well-established research program. For China, Vietnam, and Indonesia, the course meant further consolidating their cassava research programs and a sizeable improvement of their research capacity, which is likely to yield results forthwith. In other countries, the expression of the participants' increased research potential is more contingent on the research environment's improvement, official support for cassava development, and even the continuity of external funding of research (Laos).

The course on IPM was for experienced scientists who actively pursue research in this field. It was three weeks long, and participants came from Argentina (1), Brazil (4), Colombia (4), Ecuador (1), Nicaragua (1), Panama (1), and Paraguay (1).

This event is part of the shift toward more upstream training, as well as to strengthen the NARDS' training capacity. For the latter, the participants worked in groups to produce a total of four training units that they will test in their countries. The findings will be reported back to the TCSP to be used in improving the original materials.

Other noticeable features of this event were the participation--as resource persons--of specialists from four different Colombian research institutions, and the collaboration of the entomologists from all four CIAT commodity research programs. Both were not isolated or sporadic occurrences; rather, they were expressions of the TCSP's cooperation strategy, which involves the NARDS, sister Centers, and other regional or international institutions, and--of course--CIAT's own programs.

One other quite different event also deserves special mention: a two-week meeting of policy-makers from northeastern Brazil, who were invited to CIAT as part of the ongoing, UNDP-funded project for Human Resources Development for Generation and Transfer of Root and Tuber Crops Technology. This meeting followed a successful model developed in late 1987, when Brazilian cassava researchers and extensionists were invited to CIAT for up-dating on the Center's research, and to develop integrated cassava projects; and where in the final stages of the discussions policy-makers from relevant Brazilian institutions were also invited to participate. This feature thereafter facilitated substantially the implementation of the Cassava Project for the state of Ceará and the advances toward establishing similar projects in the other northeastern states.

The new event was to further improve the policy environment for cassava research and technology transfer in northeastern Brazil. The 19 participants were given ample opportunity to interact with CIAT's scientists and management, and to obtain first-hand acquaintance with the integrated cassava projects in Ecuador and on Colombia's Atlantic Coast.

The list of events at CIAT related to integrated projects is completed with a three-day seminar on quality parameters and marketing strategies for dried cassava, which gathered 45 persons from 10 Colombian institutions involved in cassava-based development.

The list of NARS-enhancing events, in its turn, is completed with a one-week workshop for the discussion of cassava field experiments with 20 researchers from Colombia's ICA.

Individualized specialization at CIAT was provided to 14 scientists from six countries (Annex 2); five of them work in Ecuador's cassava projects, and another five are Brazilian pathologists.

Eight scientists have been doing higher degree thesis research, four at the Ph.D. and four at the M.Sc. level. Two from each group worked under the supervision of outposted staff in Southeast Asia (three from Thailand and one from the Philippines); the other four worked in Colombia (two from Denmark and two from the Federal Republic of Germany) (Annex 2).

In-country training

In-country events related to integrated projects covered:

* Rapid multiplication of seed materials, Ecuador;
* Cassava production and marketing, Colombia;
* Advances in cassava production, processing, and utilization, Ecuador; and the
* First Latin American Seminar on Production and Utilization of Cassava Starch, Brazil.

IPM-related in-country events were:

* A third follow-up phase on Cyrtomenus bergii; and
* An IPM course with EMBRAPA which is in execution in Brazil at the time this report is being written.

RICE

Training at CIAT

Training at CIAT was offered to NARS scientists in three ways: the intensive research/production course plus

individualized specialization; individualized specialization; and higher degree thesis research.

The eight-week research/production course was taken by 12 professionals from Brazil (1), Colombia (3), Cuba (1), Ecuador (1), Guatemala (1), Mexico (2), Nicaragua (1), and Venezuela (2). Eleven of them continued for a period of individualized specialization in either breeding, entomology, pathology, or agronomy, for an average of one and a half months.

Fifteen professionals came directly for disciplinary specialization. Their countries of origin were Brazil (3), Colombia (3), the Dominican Republic (2), Ecuador (1), Mexico (4), and Venezuela (2). They too specialized in breeding, entomology, pathology, or agronomy, except two who were trained in economics and rice seed production, respectively.

As part of their training, breeders selected segregating materials for testing them in their home countries; and trainees in the other disciplines elaborated collaborative action plans to be carried out upon returning to their institutions.

One scientist from Peru engaged in a research project for a Ph.D. thesis.

The complete list of persons trained at CIAT is presented in Annex 3.

In-country training

In-country activities focused especially on Ecuador and the Dominican Republic; follow-up was given to earlier activities in Chile; and Venezuela was included for the first time in the in-country training program.

Progress in Ecuador--which has been very encouraging--will be highlighted.

During the 1980s, 18 professionals from Ecuador were trained at CIAT: five in breeding, two in pathology, six in agronomy; three took the research/production course; and ad hoc interdisciplinary programs were designed for two of them. Six of them were since "lost": one breeder became coordinator of the national legume program; another one joined the national seed service; one pathologist converted to rice entomology; another one became an experimental station director; and two agronomists went to work in the private sector. Thus, a core of 12 CIAT-trained rice researchers remained active.

In 1987--following an analysis of the Ecuadorian rice production situation, elaborated by the Ministry of Agriculture (MAG) and INIAP (the Ecuadorian NARI) with the assistance of CIAT's Rice Program--, a course to train MAG and INIAP officers

was held to strengthen their capacity to tackle the priority problems identified in the diagnosis. Of the seventeen participants, four had already been trained at CIAT before. Twice in 1988, and once again in 1989, follow-up was given to this event to evaluate trial plots sown by the trainees. The first generation of plots served especially as additional training for the participants. The following two were used for demonstrations to 800 farmers, at ten locations, of how production costs can be reduced by 15% to 30% (about one metric ton yield equivalent).

One more training workshop was held this year to further strengthen the National Rice Program's members' capacity for integrated crop management in response to the aforementioned diagnosis. A subgroup of participants, which will provide leadership in training other professionals involved in the implementation of the National Rice Program, was selected and given initial training in adult education methods.

Thus, Ecuador's capacity for rice research and technology transfer has been enhanced in all its components--research, transfer, and training--in an integrated manner. Research-extension linkages have been strengthened, and NARDS-CIAT cooperation has been firmly established. It goes without saying that all this was done in close collaboration between the Rice Program and the TCSP. Assistance to Ecuador's inter-institutional National Rice Program will continue to be provided in the immediate future, aiming at consolidating a self-sustaining rice technology generation/transfer and training system. With this purpose, a more ambitious program of training trainers has just been started. Details about it are presented in the Rice Program's Annual Report.

Another major effort for strengthening a national rice research and technology transfer system, through technical support and training, was carried out in the Dominican Republic. Dominican researchers were trained at CIAT; an in-country rice production course was held for technology transfer professionals; and a group of participants from the production course was selected as an initial core of trainers to be trained. These were then trained both in subject matter content (rice production) and in how to train others in the same subject. Their initial training as andragogues included the preparation of training units, which they were to utilize immediately thereafter in the fulfillment of their training duties. This attempt was a failure. The units were not finished during the event, and when they were received at CIAT later on through the mail, they were found to be of very poor quality.

Five months later, the group of trainers was gathered again. On this occasion they received additional training in both subject matter content and teaching skills. And immediately thereafter, they participated in an event in which an additional group of trainers-to-be was given rice production and initial andragogic training. Here, they acted as co-instructors with

CIAT's staff and a new set of training materials was developed. This time the attempt succeeded. Thus, the trainers not only trained other professionals in rice production technology but also in how to teach this knowledge. In other words, they not only had become active as trainers and producers of training materials, they had also started to act as trainers of trainers! This effort will continue because, naturally, one or two short, in-country events are not sufficient to form fully fledged trainers.[1] But, in the process of training these trainers, impact is obtained early on regarding trained persons and training materials. More details about the model followed for training trainers--developed on the basis of the experience accumulated during the year in Ecuador, the Dominican Republic, and elsewhere--can be found in the companion Rice Program's Annual Report.

A rice seed production course was also held in the Dominican Republic. This, however, was for the Caribbean, rather than specifically for the Dominican Republic, but the host country certainly benefitted substantially from the event, particularly because of a strong participation of local professionals (12), in addition to one professional each from Belize, Guyana, Haiti, Surinam, and Trinidad and Tobago.

The institutional setting of the Dominican effort also deserves mentioning: a whole host of institutions and components are cooperating in it. CIAT's headquarters contributes the Rice Program's scientists, the TCSP's education specialist and training associates, and staff from the Seed Unit. Their main link with the Dominican institutions is the Caribbean Rice Improvement Network (CRIN). And at the Dominican end of this continuum are CEDIA (Centro de Investigaciones Arroceras) and CENACA (Centro Nacional de Capacitación Arrocera) of the Ministry of Agriculture (Secretaría de Estado de Agricultura).

Finally, the program in the Dominican Republic is not restricted to that country alone: trainees from other countries--Haiti, Trinidad and Tobago, and Cuba--have also participated in the various events. Eventually, the Dominican institutions might not only establish a rice training program to serve their own needs but they might also address training needs of other Caribbean countries.

In Venezuela, CIAT became involved in training in rice production for the first time. An interesting feature of this new enterprise was the participation of the private sector (APROSCELLO, Asociación de Productores de Semilla Certificada de

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1. This approach can be compared with the in-country training in seed production followed by the Bean Program, where professionals and farmers are trained in seed production, and where high-quality seed of improved varieties is obtained as part of the training activity.

los Llanos Occidentales; APROSELLAC, Asociación de Productores de Semillas de los Llanos Centrales; and FUDECO, Fundación para el Desarrollo de la Region Centro Occidental), which instilled new dynamism into the national public sector partner, FONAIAP, and facilitated CIAT's participation in this collaborative effort.

TROPICAL PASTURES

Training at CIAT

Thirty-two professionals from 10 countries were trained in 10 different disciplinary areas at CIAT headquarters and at decentralized locations (Annex 4).

The intensive research/production course and the subsequent individualized specializations were the center of this year's training: 23 of 32 trainees participated in this program. Five of them only took the course; the remaining 18 completed the "package": course plus specialization.

Only four professionals came directly for individualized specialization; another four worked on M.Sc. thesis projects, and one worked on his Ph.D. research project. The higher degree students were all from developing countries: two Peruvians, two Colombians, and one Argentine.

In-country training

In-country events were supported exclusively in Colombia. There were three of them: one to facilitate the diffusion of the new pastures technology in the Eastern Plains; and two to foster pastures seed production. In addition to helping our various Colombian partner institutions to achieve direct technology diffusion and to train human resources involved in this endeavor, these events were pilot schemes. They explored models to be followed later in the more downstream tropical pastures activities in other countries.

The training workshop on pastures establishment and development for the Eastern Plains was implemented by CIAT; ICA's CRECED (Regional Extension, Training, and Technology Diffusion Center) in Puerto López, Meta; and the Livestock Bank (Banco Ganadero). Its audience was 29 professional technical advisors from public and private institutions active in the Eastern Plains.

In a first phase, one week at the National Research Center (CNIA) Carimagua was devoted to improving the participants' knowledge and skills on pasture establishment and development. Conferences, round tables, and field demonstrations were means to this end.

A second week was dedicated to the on-farm practice of pasture establishment (land preparation, calibration of equipment, seed inoculation, fertilization, and planting).

In the second phase, 90 days later, participants evaluated the first phase and the field results.

The seed events were study-tours for professionals from seed companies and institutions related to the seed sector. They included visits to seed multiplication sites--to give participants the opportunity to inspect multiplication plots of approved cultivars and promising grass and legume materials-- and conferences and discussions aimed at coordinating seed multiplication and distribution activities among the seed companies and the other seed-sector institutions. One of the tours took 23 participants and 10 CIAT staff to Meta (Puerto López-Villavicencio); the other, with 11 participants and four CIAT staff, went to Cesar Department (Valledupar-Codazzi), a major seed production area.

SEED UNIT

Training at CIAT

At the Seed Unit, one major course was held, and 12 professionals received individualized training (Annex 5).

The course--the first of its kind--was on Seed Systems for Small Farmers. It included the role of seeds in agricultural development; seed quality and quality control; seed humidity, and appropriate drying methods and equipment; seed production and distribution, with emphasis on small-farmer needs, and seed production by small farmers; and communication with small farmers.

Participants (Annex 5) came from Mexico (1), Guatemala (3), El Salvador (1), Nicaragua (1), Honduras (2), Costa Rica (1), Panama (1), the Dominican Republic (1), Haiti (1), Venezuela (1), Colombia (5), Ecuador (5), Peru (4), Bolivia (1), Argentina (1), and Brazil (5).

In-country training

In-country training followed three lines of action: the development of human resources for alternative seed systems for small farmers; the development of national seed-training capacity; and the strengthening of seed supply systems for bean and rice seeds. Some individual events had a bearing on more than one of these lines.

A course on bean seed production systems for small farmers held at CIAT's Seed Unit deserves highlighting. Despite the venue, this was an in-country course--in Colombia as it were--and this is one of its characteristics to be mentioned: it was organized by ICA, and CIAT's facilities were made available to the organizers for this purpose. The ICA instructors had been trained in CIAT's First Advanced Course for Trainers in Seed Technology, 1988, and in this year's course on Seed Systems for Small Farmers. Thus, this event was already an outcome of the training-the-trainers strategy, and it dealt with the strategically new subject of developing alternative seed systems for small farmers, particularly for the provision of bean seed. And furthermore, it was the first event in which ICA assumed the leadership for its implementation. Participation of CIAT instructors, admittedly, was still rather important in the course, but the event undoubtedly was a step in the right direction.

Another event carried out at CIAT but organized by others--which is to be counted as an in-country event--was a course on internal quality control under the auspices of ASCOES (the Colombian Association of Seed Specialists). In this case, leadership was again assumed by a national organization, and here too, Seed Unit involvement in the implementation was still quite substantial. But the process has started to move toward handing over these activities to national organizations, and in the special case of Colombia, toward a certain level of sharing the Seed Unit facilities with them.

Within the line of training for the development of alternative seed systems for small farmers, a course on this subject was supported in Fortaleza, Ceará, Brazil. It was sponsored by SUDENE (Superintendencia de Desarrollo del Nordeste), and similarly to the event organized by ICA at CIAT, it was organized by alumni of the First Advanced Course for Trainers in Seed Technology, 1988. Here again, additional support by CIAT staff was still necessary to cover some aspects, weaknesses were identified with the organizers, training was offered for selected candidates to overcome some of these weaknesses, and the need for the national system to become self-sufficient was stressed.

Within the line for strengthening seed supply systems for beans and rice, the Seed Unit supported the in-country courses on artisanal bean seed production and the training workshop on rice seed production for the Caribbean held in the Dominican Republic, already described under **BEANS** and **RICE**.

BIOTECHNOLOGY RESEARCH UNIT

The BRU hosted an **International Course on Advances and Problems of Plant Cell and Tissue Culture** organized by UNESCO, FEDECAFE and CIAT. Participants were from Argentina (1), Bulgaria (1),

Colombia (6), Costa Rica (1), Cuba (1), Chile (1), Ecuador (1), Guatemala (1), Iran (1), Mexico (2), Peru (2), and Venezuela (2).

Guest speakers came from the Federal Republic of Germany, Canada, Colombia, Costa Rica, France, Mexico, Peru, and the USA.

Two trainees passed a period of individualized specialization at the Unit, and another two worked on Ph.D. thesis projects (one of them from Lebanon, and the other from Colombia).

SPECIAL PROJECT ON FARMER PARTICIPATION IN TECHNOLOGY DESIGN AND TRANSFER

Logistic support was given by the TCSP to two training events held by this Project. One was an intensive one-week course on Planning On-farm Trials with Small Farmers; the other was a two-week module on Training Trainers. In the latter, the method of having trainers-to-be developing their own "Learning Units" as part of their training, was applied for the first time by the TCSP's education specialist. As mentioned above (in relation to training rice-trainers in Ecuador and the Dominican Republic), this model is becoming an important tool in the implementation of the training the trainers strategy. Detailed information on training and training materials development in this Project can be found in its Annual Report.

ANNEXES

ANNEX 1

BEANS

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
RESEARCH/PRODUCCTION COURSE (RPC)				
ALZATE DUQUE JOSE HEREIBERTO	COLOMBIA	FEDECAFE	INTERDISCIPLINARY	1.4
MEJIA JARAMILLO EDUARDO	COLOMBIA	FEDECAFE	INTERDISCIPLINARY	1.4
MOLINA CATANEDA ALBEIRO	COLOMBIA	CIAT	INTERDISCIPLINARY	1.4
ORDONEZ B JOSE LUIS	GUATEMALA	ICTA	INTERDISCIPLINARY	1.5
RIVERA COBO ARMANDO	COLOMBIA	CVC	INTERDISCIPLINARY	1.4
RPC + INDIVIDUALIZED SPECIALIZATION				
AYBAR PEVE LEANDRO JOEL	PERU	INIAA	GENETIC RESOURCES	5
BLANCO BETETA FRANCISCO JOSE	NICARAGUA	MIDINRA	PHATOLOGY	5.1
CANTORAL QUISPE ELADIO	PERU	INIAA	SEED PRODUCTION	5
CHOW WONG ZILDGHEAN G	NICARAGUA	MIDINRA	SOILS	5
DUQUE VALLEJO WASHINGTON R	ECUADOR	MINISTERIO DE AGRICULTURA	SEED PRODUCTION	4.8
ESCOTO GUDIEL NORMAN DANILO	HONDURAS	SECRETARIA DE RECURSOS NATURALES	PHATOLOGY	5.3
GARCIA BLANDON TOMAS ALFONZO	NICARAGUA	MIDINRA	SEED PRODUCTION	5
HIDALGO B EMILIO RAFAEL	COLOMBIA	ICA	OFR/FSR	3.2
MORROS C MARIA ELENA	VENEZUELA	FONAIAP	OFR/FSR	3.2
MUNOZ LOPEZ OMAR JOSE	COLOMBIA	ICA	OFR/FSR	3.1
POLANCO LOAIZA DELIA FRANCISCA	VENEZUELA	FONAIAP	OFR/FSR	3.2
RODAS ARGUELLO CLOTILDO	PARAGUAY	MINISTERIO DE AGRICULTURA	PHATOLOGY	5.3
SANTILLANA V NERY LUZ	PERU	UNIV. SAN CRISTOBAL DE HUAMANGA	SOILS MICROBIOLOGY	3.6
TATES FERNANDEZ JOSE ANTONIO	ECUADOR	MINISTERIO DE AGRICULTURA	SEED PRODUCTION	4.8
TENORIO B VALENTIN F	PERU	INIAA	SEED PRODUCTION	5
VIVAR ARRIETA MARCO ANIBAL	ECUADOR	INIAP	OFR/FSR	3.2
INDIVIDUALIZED SPECIALIZATION				
ARIAS CARLOS ANTONIO	EL SALVADOR	CENTA	ENTOMOLOGY	1.4
ARITA PINEDA JOSE MANUEL	HONDURAS	SECRETARIA DE RECURSOS NATURALES	ENTOMOLOGY	4.1
ARQUINO HUERTA MARTHA	PERU	INIAA	SOILS	6.9
BERGER PAULO GERALDO	BRAZIL	EPABA	BREEDING	1.9
CABRERA CORTES OTTO RENE	GUATEMALA	DIGESA	OFR/FSR	1.8
CALIENGUE ERMELINDA DA C	ANGOLA	FACULTAD DE CIENCIAS AGRARIAS	PHATOLOGY	3.3
CONTRERAS NANCY JOSEFINA	VENEZUELA	FONAIAP	PHATOLOGY	0.4
ESCOBAR CARCAMO RAMON ARTURO	HONDURAS	ESCUELA AGRICOLA PANAMERICANA	ENTOMOLOGY	4
FRANCISCO ANTONIO CASTAME	ANGOLA	INSTITUTE FOR AGRONOMIC RESEARCH.	BREEDING	2.2
HAILE KEFENE JORRO	ETHIOPIA	IAR AWASA CENTER	BREEDING	2.9
HENRIQUEZ CH GERMAN RAUL	EL SALVADOR	MINISTERIO DE AGRICULTURA	ECONOMICS	1.1
IRERI LYDIA WANJA	KENYA	KENYA AGRICULTURAL RESEARCH INSTITUTE	BREEDING	2.9
JARAMILLO P JAIRO ALBERTO	COLOMBIA	ICA	OFR/FSR	1.7
MENGISTU LEMMA WORKINEH	ETHIOPIA	ALEMAYA UNIVERSITY OF AGRICULTURE	BREEDING	2.9
MKANDAWIRE ALEXANDER B C	MALAWI	UNIVERSITY OF MALAWI	PHISIOLOGY	1.2
MONARPARVARAN MOHAMMAD ALI	IRAN	SEED AND PLANT IMPROVEMENT INSTITUTE	BREEDING	3.1
MORENO RAMIREZ WENCESLAO	EL SALVADOR	MINISTERIO DE AGRICULTURA	OFR/FSR	1.8
ORELLANA GIRON LUIS VICTORINO	GUATEMALA	DIGESA	OFR/FSR	1.7
PALACIOS ALDANA JOSE MANUEL	GUATEMALA	INSTITUTO NACIONAL DE COOPERATIVAS	OFR/FSR	1.8
PINDJI MUKISHI-MULENDA	ZAIRE	INST NAL POUR L'ETADE ET LA RECH AGRONOM	PHATOLOGY	2.9

ANNEX 1 (Cont.)

BEANS

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
QUADROS RIBEIRO WALTER	BRAZIL	EMGOPA	SOILS MICROBIOLOGY	4
RACHIER GEDION OPIYO	KENYA	KENYA AGRICULTURAL RESEARCH INSTITUTE	BREEDING	3
RAMOS GEROSA MARIA LUCRECIA	BRAZIL	EMGOPA	SOILS MICROBIOLOGY	4
RODRIGUEZ R JOSE JOAQUIN	COSTA RICA	CONSEJO NACIONAL DE PRODUCCION	OFR/FSR	2.4
RONO WILSON KIPRUTO	KENYA	KENYA AGRICULTURAL RESEARCH INSTITUTE	BREEDING	2.9
SAGASTUME A HECTOR B	GUATEMALA	DIGESA	OFR/FSR	1.8
SCHMIT VERONIQUE	BELGIUM	UNIV. DE GEMBLOUX	BREEDING	1.9
SERENO CASTRO M JOSE ADALBERTO	ANGOLA	INSTITUTE FOR AGRONOMIC RESEARCH	PHISIOLOGY	4.1
VALENZUELA S ALFONSO MARIO	CHILE	INIA	BREEDING	5.8
VARGAS C HERNEY	COLOMBIA	CIAT	OFR/FSR	1.7
VARGAS CASTRO ELIDIER EDUARDO	COSTA RICA	CONSEJO NACIONAL DE PRODUCCION	ECONOMICS	0.6
VASQUEZ GALLO LUZ ADRIANA	COLOMBIA	ICA	SOILS MICROBIOLOGY	3.6
YOUNG BUSTILLO ROBERTO ANTONIO	HONDURAS	ESCUELA AGRICOLA PANAMERICANA	BREEDING	1.3
ZAVALA ARIAS ROBERTO AMERICO	HONDURAS	SECRETARIA DE RECURSOS NATURALES	OFR/FSR	1.8
VIVAR ARRIETA MARCO ANIBAL	ECUADOR	INIAP	SEED PRODUCTION	1.8
M.SC. THESIS				
BAIER ANN HEATHER	UNITED STATES OF AM.	UNIV. DE CALIFORNIA	OFR/FSR	0.2
GUZMAN ALBUREZ MARCIAL ERNESTO	GUATEMALA	ICTA	PHATOLOGY	6.4
OSPINA MARCO TULIO	COLOMBIA	UNIV. DE PENNSYLVANIA	ECONOMICS	3.7
VIANA ABELARDO	EL SALVADOR	ICTA	ECONOMICS	12
PH.D. THESIS				
BERTRAND ANNICK MARIE A	CANADA	UNIVERSITE LAVAL	PHISIOLOGY	6.9
MULLIN BARBARA ANNE	UNITED STATES OF AM.	UNIV. CORNELL	PHATOLOGY	9.8
STONEHOUSE JOHN MICHAEL	UNITED KINGDOM	IMPERIAL COLLEGE UNIV. OF LONDON	OFR/FSR	10.

ANNEX 2

CASSAVA

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
RESEARCH/PRODUCCTION COURSE (RPC)				
BACUSMO JOSE	PHILLIPINES	VISAYAS STATE COLLEGE OF AGRICULTURE	INTERDISCIPLINARY	0.9
BANDARA WELLAKKATTU M.	SRI LANKA	CENTRAL AGR. RESEARCH INST.	INTERDISCIPLINARY	1
BASUKI NUR	INDONESIA	AGRICULTURAL FACULTY BRAWIJAYA UNIV.	INTERDISCIPLINARY	1
BOUNTHALA SISAMUT	LAOS	THAGNONE FEEDMILL ENTERPRISE	INTERDISCIPLINARY	1
CS.EASWARI AMMA	INDIA	CENTRAL TUBER CROPS RESEARCH INSTIT.	INTERDISCIPLINARY	1.2
EVANGELIO FERNANDO A	PHILLIPINES	PHILIPPINE ROOT CROP RES.& TRAIN. CENTER	INTERDISCIPLINARY	1
HENDROATMODJO KOES HARTOJO	INDONESIA	MALANG RESEARCH INSTITUTE FOR FOOD CROPS	INTERDISCIPLINARY	1
KATONG SOMPONG	THAILAND	RAYONG FIELD CROP CENTER	INTERDISCIPLINARY	1
KEOPSEUTH BOON GNEM	LAOS	NATION AGRICULTURAL RESEARCH CENTER	INTERDISCIPLINARY	1
KERDTTHAM CHATCHAWARN	THAILAND	FIELD CROPS RESEARCH INSTITUTE	INTERDISCIPLINARY	1
LORETO ALAN B	PHILLIPINES	PHILIP. ROOT CROP RES. & TRAINING CENTER	INTERDISCIPLINARY	0.9
NAYAR NAYAR T.V.R.	INDIA	CENTRAL TUBER CROPS RESEARCH INST.	INTERDISCIPLINARY	1
POESPODARSONO GOEMARJO	INDONESIA	UNIV. BRAWIJAYA	INTERDISCIPLINARY	1
POOLSANGUAN PIYAWUTI	THAILAND	UNIV. KASETSART	INTERDISCIPLINARY	1
PORNPROMPRATAN VUDHISAK	THAILAND	FIELD CROP RESEARCH INSTITUTE	INTERDISCIPLINARY	1
ROA JULIETA RODAS	PHILLIPINES	VISAYAS ESTATE COLLEGE OF AGRICULTURE	INTERDISCIPLINARY	0.9
SAJISE GODOFREDO JR	PHILLIPINES	UNIV. OF THE PHILIPPINES AT LOS BANOS	INTERDISCIPLINARY	1
SITTIBUSAYA CHOTE	THAILAND	DEPARTMENT OF AGRICULTURE	INTERDISCIPLINARY	1
SUPARHAN DANAI	THAILAND	RAYONG FIELD CROP CENTER	INTERDISCIPLINARY	1
TRAN NGOE NGOAN	VIETNAM	AGRICULTUAL COLLEGE NO. 3	INTERDISCIPLINARY	1.5
RPC + INDIVIDUALIZED SPECIALIZATION				
NORONHA ALOYSEIA C	BRAZIL	EMBRAPA	ENTOMOLOGY	3.3
FANG BAIPING	PEOPLE S REP. CHINA	UPLAND CROPS RESEARCH INSTITUTE	INTERDISCIPLINARY	1.7
HUANG NING	PEOPLE S REP. CHINA	GUANGXI STATE FARM BUREAU	INTERDISCIPLINARY	1.7
LI KAI MIAN	PEOPLE S REP. CHINA	SOUTH CHINA ACADEMY OF TROPICAL CROPS	INTERDISCIPLINARY	1.7
LIAW HIEW LIAN	MALAYSIA	AGRICULTURE RESEARCH CENTER	INTERDISCIPLINARY	1
NGUYEN HUU HY	VIETNAM	INSTITUTE OF AGRICULTURE TECHNOLOGY	INTERDISCIPLINARY	1.7
TRUONG NGA	VIETNAM	INSTITUTE OF AGRICULTURE TECHNOLOGY	INTERDISCIPLINARY	1.7
YE KAI FU	PEOPLE S REP. CHINA	GUANGXY INSTITUTE OF SUBTROPICAL CROPS	INTERDISCIPLINARY	1.7
INDIVIDUALIZED SPECIALIZATION				
ANCHUNDIA A SIMON BOLIVAR	ECUADOR	FUND. ADELANTO COMUNITARIO ECUATORIANO	UTILIZ/PROCESSING	0.7
ARAUJO LIMA HENRIQUE	BRAZIL	EMATERCE	PHATOLOGY	1.1
BODE PAUL FM	HOLLAND	MINISTERIE VAN SOCIALE ZAHEN	ECONOMICS	1
CANTOS MADRID DAVID BRUNO	ECUADOR	UAPPY	UTILIZ/PROCESSING	0.7
DOMINGOS DE CRISTIANE	BRAZIL	IPA	PHATOLOGY	1.4
ESTIGARRIBIA M JUAN CARLOS	PARAGUAY	SERVICIO DE EXTENSION AGRICOLA GANADERA	AGRONOMY	1.9
GONCALVES JOSE ARIMATEA	BRAZIL	EPACE	PHATOLOGY	1.1
MAHNERT EKKEHARD	GERMANY RD	UNIV. LEIPZIG	UTILIZ/PROCESSING	5.5
NAVARRETE PALMA VICTOR ENRIQUE	ECUADOR	ASOCIACION PRODUCTORES PROCESADORES YUCA	UTILIZ/PROCESSING	0.7
PIMENTEL MENA JOSE JUAN	DOMINICAN REPUBLIC	SECRETARIA DE AGRICULTURA	TISSUE CULTURE	2
RUIZ CHEVEZ VICENTE S	ECUADOR	UAPPY	UTILIZ/PROCESSING	0.7
S CAVALCANTE MARIA LUZIA	BRAZIL	EPACE	PHATOLOGY	1.1
TELES CICERO	BRAZIL	EMATERCE	PHATOLOGY	1.1

ANNEX 2 (Cont.)

CASSAVA

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
VEGA VILLALBA GERVASIO MOISES	PARAGUAY	SERVICIO DE EXTENSION AGRICOLA GANADERA	UTILIZ/PROCESSING	1.2
ZIPPA INTRIAGO FRANCISCO A	ECUADOR	UAPPY	UTILIZ/PROCESSING	0.7
M.SC. THESIS				
PUTTHACHAROEN SOMYOS	THAILAND	SRIRACHA RESEARCH STATION	AGRONOMY	5.9
RIIS LISBETH	DENMARK	DEN KGL VETERINER-OG LANDBOHOJSKOLE	ENTOMOLOGY	6.7
SARAWAT VINAI	THAILAND	FIELD CROPS RESEARCH INSTITUTE	BREEDING	12
THINGSTRUP IDA	DENMARK	UNIV. OF COPENHAGEN	PHATOLOGY	12
PH.D. THESIS				
GAIGL ANDREAS	GERMANY RF	UNIV. DE HOHENHEIM	ENTOMOLOGY	8.7
MARISCAL ALGERICO	PHILLIPINES	VISAYAS STATE COLLEGE AGRIC.	BREEDING	4.3
REINING LUDGER	GERMANY RF	UNIV. DE HOHENHEIM	SOILS	3.2
SARAKARN SUPACHAI	THAILAND	RAYONG FIELD CROP CENTER	BREEDING	6
OTHERS COURSES				
COURSE ON INTEGRATED PEST CONTROL FOR CASSAVA				
AYALA OSCAR ROLANDO	ARGENTINA	MINISTERIO DE AGRICULTURA Y GANADERIA	ENTOMOLOGY	0.6
CALDERON CORRAL MARIO ANTONIO	COLOMBIA	UNIV. NACIONAL	ENTOMOLOGY	0.6
FREIRE D'AGUIAR ZULEIKA	BRAZIL	EPABA	ENTOMOLOGY	0.6
GARCIA ROA FULVIA	COLOMBIA	ICA	ENTOMOLOGY	0.6
GORDON MENDOZA ROMAN	PANAMA	IDIAP	ENTOMOLOGY	0.6
HERRERA SEVILLA CANDIDA ROSA	NICARAGUA	DGTA	ENTOMOLOGY	1.1
PEGORARO RENATO A	BRAZIL	EMPASC	ENTOMOLOGY	0.6
ROJAS ALMADA GERARDO	PARAGUAY	SERVICIO DE EXTENSION AGRICOLA GANADERA	ENTOMOLOGY	1
SIQUEIRA C MARIA LUZIA	BRAZIL	EPACE	ENTOMOLOGY	0.8
TORRECILLAS SONIA MARTINS	BRAZIL	IAPAR	ENTOMOLOGY	0.8
VALAREZO CELY GONZALO OSWALDO	ECUADOR	INIAP	ENTOMOLOGY	0.6
YEPES RODRIGUEZ FRANCISCO C	COLOMBIA	SECRETARIA DE AGRICULTURA DE ANTIOQUIA	ENTOMOLOGY	0.6
ZULUAGA CARDONA JOSE IVAN	COLOMBIA	UNIV. NACIONAL	ENTOMOLOGY	0.6

ANNEX 3

RICE

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
RESEARCH/PRODUCCTION COURSE (RPC)				
AGUIRRE ALVAREZ EDUARDO	MEXICO	INIFAP	INTERDISCIPLINARY	1.7
RPC + INDIVIDUALIZED SPECIALIZATION				
BARCELO AVILA JUAN CARLOS	CUBA	INSTITUTO DE INVESTIGACIONES DEL ARROZ	PHATOLOGY	0.5
CASTILLA LOZANO LUIS ARMANDO	COLOMBIA	FEDEARROZ	ENTOMOLOGY	3.8
CASTRO PORTILLA NOEMI ELIZABETH	ECUADOR	MINISTERIO DE AGRICULTURA	AGRONOMY	3.8
GARCIA VASQUEZ CARLOS OTONIEL	GUATEMALA	ICTA	AGRONOMY	3.8
HUERTAS CRUZ EUCLIDES	COLOMBIA	FEDEARROZ	AGRONOMY	4.7
LOPEZ LOPEZ RUTILO	MEXICO	INIFAP	AGRONOMY	3.8
MORENO SANCHEZ CARLOS RAMON	VENEZUELA	APROSCELLO	AGRONOMY	3.8
OSORIO CARDONA JAIRO ANTONIO	COLOMBIA	ICA	PHATOLOGY	3.8
PEREZ ROJAS MIGDALIA J	VENEZUELA	APROSCELLO	BREEDING	3.9
TOLEDO RICCI MARIA T DE	BRAZIL	EMPA MATOGROSSO	BREEDING	3.8
TOLEDO UMANZOR FIDENCE	NICARAGUA	MIDINRA	BREEDING	4
INDIVIDUALIZED SPECIALIZATION				
BURGO VALERIO MARIA DE GRACA	BRAZIL	IRGA	BREEDING	1.4
CASTELLANOS B CARLOS HUMBERTO	COLOMBIA	INTENDENCIA NACIONAL DE ARAUCA	PRODUCTION	0.4
CORTAZAR RIOS MATILDE	MEXICO	INIFAP	BREEDING	1.8
COSTA JEFFERSON LUIS	BRAZIL	MEBRAPA	PHATOLOGY	0.6
FONSECA JAIME ROBERTO	BRAZIL	EMBRAPA	SEEDS	0.8
GARCIA ANGULO JOSE LUIS	MEXICO	INIFAP	PHATOLOGY	1.9
MALDONADO A LUIS EDUARDO	ECUADOR	INIAP	ENTOMOLOGY	2
MARQUEZ CABRERA FERNANDO	MEXICO	INIFAP	PRODUCTION	0.4
MELENDEZ D JOSE ANTONIO	COLOMBIA	INTENDENCIA NACIONAL DE ARAUCA	PRODUCTION	0.4
QUEZADA PETRONILA	DOMINICAN REPUBLIC	SECRETARIA DE ESTADO DE AGRICULTURA	ENTOMOLOGY	1.9
QUINTERO SEOANE HOMERO	MEXICO	INIFAP	PRODUCTION	0.4
ROJAS GUTIERREZ GERMAN ERNESTO	COLOMBIA	INTENDENCIA NACIONAL DE ARAUCA	PRODUCTION	0.4
SOTO URENA FRANCIA I	DOMINICAN REPUBLIC	SECRETARIA DE ESTADO DE AGRICULTURA	ECONOMICS	1
VALENZUELA MARIA T DE	VENEZUELA	APROSCELLO	ENTOMOLOGY	0.6
VIVAS CARMONA LUIS ENRIQUE	VENEZUELA	FONAIAP	ENTOMOLOGY	0.5
PH.D. THESIS				
BRUZZONE C CARLOS B	PERU	INIAA	BREEDING	9.6

ANNEX 4

TROPICAL PASTURES

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
RESEARCH/PRODUCCTION COURSE (RPC)				
CASTRO ARDILA HERNANDO	COLOMBIA	ICA	INTERDISCIPLINARY	2
CORADO ORELLANA CARLOS ALBERTO	GUATEMALA	DIGESA	INTERDISCIPLINARY	2.1
ESTUPINAN CRUZ BLANCA LUPE	COLOMBIA	ICA	INTERDISCIPLINARY	2.1
MOTOCHE C ANGEL PORFIRIO	ECUADOR	MINISTERIO DE AGRICULTURA	INTERDISCIPLINARY	2.1
PARDO BARBOSA OSCAR	COLOMBIA	ICA	INTERDISCIPLINARY	2.1
RPC + INDIVIDUALIZED SPECIALIZATION				
ANZULES SANCHEZ ANGEL ARISTIDES	ECUADOR	INIAP	AGRONOMY	6.4
BLANCO C JOSE ANTONIO	BOLIVIA	IBTA	AGRONOMY	7.1
BUSTAMANTE G ALEJANDRO	MEXICO	INIFAP	PASTURE MGMT-QUALIT	6.2
CASTELLANOS H. OSCAR ARTURO	MEXICO	INIFAP	AGRONOMY	6.8
DAVILA CALDERON FLORENCIO	PERU	INIAA	SOILS	6.2
ESCOBAR B JOSE ALFONSO	BOLIVIA	SEFO EMPRESA SEMILLAS FORRAJERAS	SEED PRODUCTION	4.1
FLORES FLORES JOSE MARIA	HONDURAS	SECRETARIA DE RECURSOS NATURALES	PASTURE MGMT-QUALIT	4.9
GARCIA FRANCISCO S.	HONDURAS	SECRETARIA DE RECURSOS NATURALES	SEED PRODUCTION	4.9
GOMEZ AVILA BERTHA MARINA	HONDURAS	SECRETARIA DE RECURSOS NATURALES	AGRONOMY	6.5
JIMENEZ GUILLEN REGULO	MEXICO	INIFAP	PASTURES DEVELOPMEN	7.1
LARA DEL RIO MANUEL JESUS	MEXICO	INIFAP	AGRONOMY	4.7
MATEUS E. HENRY	COLOMBIA	ICA	OFR/FSR	5
PARADA JAIMES JESUS	COLOMBIA	SECRETARIA DE DESARROLLO AGROPECUARIO	OFR/FSR	5
PASSONI TELLES FERNANDO JESUS	PERU	CONVENIO INIAA IVITA CIAT	AGRONOMY	3.2
RAMIREZ D. FEDERICO S.	PERU	UNIV. NACIONAL AGRARIA LA MOLINA	SOILS	4.2
RINCON CASTILLO ALVARO	COLOMBIA	ICA	SEED PRODUCTION	4.2
RIVERO MELECIO MARCIANO A.	VENEZUELA	FONAIAP	PASTURE MGMT-QUALIT	6.2
VASQUEZ ROMERO BENJAMIN	COLOMBIA	ICA	ENTOMOLOGY	3.2
INDIVIDUALIZED SPECIALIZATION				
ASAKAWA NEUZA MAS	BRAZIL	SIN INSTITUCION	SOILS	5.5
CRUZ ENIEL DAVID	BRAZIL	EMBRAPA	GENETIC RESOURCES	1.6
LEMUS ALARCON LAZARO HUGO	COLOMBIA	UNIV. TECNOLOGICA DE LOS LLANOS	PHISIOLOGY	1.5
SCHULZ LUIS ANDRE	BRAZIL		AGRONOMY	0
TAKAO KARIA CLAUDIO	BRAZIL	CPAC	PASTURES DEVELOPMEN	1.9
M.SC. THESIS				
BRAUL GOMERO EDGARDO LEONCIO	PERU	MINISTERIO DE LA PRESIDENCIA	SOILS	7.5
CARULLA F JUAN E	COLOMBIA	UNIV. DE NEBRASKA	PASTURE MGMT-QUALIT	11.
ROIG CARLOS ANTONIO	ARGENTINA	INTA	AGRONOMY	9
TORO ORREGO MARIA NURY	COLOMBIA	CATIE	PASTURE MGMT-QUALIT	12
PH.D. THESIS				
MALDONADO V HERNAN	PERU	CIAT	PASTURES DEVELOPMEN	7.1

ANNEX 5

SEEDS

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
FIRST ADVANCED COURSE ON SEED SYSTEMS FOR SMALL FARMERS				
ALMENDARES O CARLOS ALBERTO	HONDURAS	SECRETARIA DE RECURSOS NATURALES		1.3
ARIAS GUILLEN JOSE ALBERTO	HONDURAS	SECRETARIA DE RECURSOS NATURALES		1.3
BAYAS VILLEGAS WASHINGTON O	ECUADOR	INIAP		1.3
BOTERO E MARIA ELENA	COLOMBIA	ICA		1.3
CAMACHO NAIRA ALINA	PANAMA	COMITE NACIONAL DE SEMILLAS		1.5
CANTORAL QUISPE ELADIO	PERU	INIAA		1.3
CARVALHO M EVODIO	BRAZIL	COOP. AGROP. MISTA REGIONAL IRECE LTDA		1.3
CENTES LOPEZ MARIO ROLANDO	GUATEMALA	DIGESA		1.3
CEVALLOS NOBOA MANUEL EDMUNDO	ECUADOR	INIAP		1.3
DE CARVALHO S IVAN REIS	BRAZIL	SEPLAN		1.3
ESPINDOLA F PAULO CESAR	BRAZIL	EMBRAPA		1.3
FUENTES C CLAUDIO ERNESTO	COLOMBIA	ICA		1.3
GARCIA BARRIOS MARIO GILBERTO	GUATEMALA	DIGESA		1.6
GARCIA BLANDON TOMAS ALFONSO	NICARAGUA	MIDINRA		1.3
GUEVARA F ANA LORENA	COSTA RICA	OFICINA NACIONAL DE SEMILLAS		1.3
GUEVARA ORTIZ RICARDO B	EL SALVADOR	CENTA		1.3
HERAZO PINERES FERNANDO	COLOMBIA	ICA		1.3
LIMA MOREIRA LUIZ GONZAGA	BRAZIL	EMPARN		1.3
LOPEZ MELENDEZ CESAR EXEQUIEL	GUATEMALA	DIGESA		1.3
PAQUIOT KETTY	HAITI	ORGANISMO DE DESARROLLO DEL VALLE DE ART		1.3
POLANCO LOAIZA DELIA FRANCISCA	VENEZUELA	FONAIAP		1.3
RAMOS CALDERON JOSE CASIMIRO	DOMINICAN REPUBLIC	SECRETARIA DE ESTADO DE AGRICULTURA		1.3
RESTREPO M JOSE	COLOMBIA	FUNDAEC CALI		1.3
RODRIGUEZ B ALEJO	MEXICO	INIFAP		1.3
RUBIOLO OSCAR JUAN	ARGENTINA	UNIV. NACIONAL DE CORDOBA		1.3
SANCHEZ ORTEGA JAIME	PERU	INIAA		1.3
SEMPERTEGUI C FREDDY GASTON	BOLIVIA	UNIDAD DE PRODUCCION DE SEMILLA DE PAPA		1.3
SOARES FREITAS CLOVES	BRAZIL	EMATER		1.3
TARAZONA B CARLOS ARIEL	COLOMBIA	ICA		1.3
TATES FERNANDEZ JOSE ANTONIO	ECUADOR	MINISTERIO DE AGRICULTURA		1.3
TENORIO B VALENTIN F	PERU	INIAA		1.3
VIVAR ARRIETA MARCO ANIBAL	ECUADOR	INIAP		1.3
YEPEZ CHACON YNGRITH	PERU	INIAA		1.3
INDIVIDUALIZED SPECIALIZATION				
ARREGUI POTO NESTOR ELADIO	ECUADOR	INIAP	SEEDS	1.1
CUBAS MORALES EDDIE MARIO	PERU	EMP. COMERCIAL DEL ARROZ S.A.	QUALITY CONTROL	2
DEL VILLAR V. JAVIER	PERU	EMP. COMERCIAL DE ARROZ S.A.	QUALITY CONTROL	2
ESTRADA SALAZAR EDGAR IVAN	COLOMBIA	UNIV. NACIONAL	TECHNOLOGY	1.9
GORDON MONICA	JAMAICA	CARDI	QUALITY CONTROL	1
HERAZO PINERES FERNANDO	COLOMBIA	ICA	SEED PRODUCTION	1.7
MONTOYA VERNAZA ORLANDO V	PERU	EMPRESA COMERCIALIZADORA DE ARROZ	QUALITY CONTROL	2
MORA VERA SHIRLEY PETITA	ECUADOR	MINISTERIO DE AGRICULTURA	SEEDS	2
PEIRETTI DANIEL ANTONIO	ARGENTINA	UNIV. NACIONAL DE CORDOBA	SEED PRODUCTION	1.5

ANNEX 5 (Cont.)

SEEDS

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
PINZON RAMIREZ HERNAN	COLOMBIA	ICA	SEEDS	1.3
SHERAN COLLINS CARLOS FEDERICO	HONDURAS	SECRETARIA DE RECURSOS NATURALES	SEED PRODUCTION	1.8
SUAREZ PEREZ DEMETRIO	CUBA	INSTITUTO INVESTIGACIONES DEL ARROZ	SEED PRODUCTION	1.9
ZIME ELIAS ROGERIO	MOZAMBIQUE	CONSELHO CRISTAO DE MOZAMBIQUE-CC.M.	SEED PRODUCTION	2.2

ANNEX 6

BIOTECHNOLOGY, PARTICIPATORY RESEARCH AND OTHERS.

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
INDIVIDUALIZED SPECIALIZATION				
AMADOR GENE MARIA MAGALY	CUBA	INSTITUTO INVESTIGACIONES DEL ARROZ	DATA PROCESSING	1
AYALA VALENCIA RODRIGO	COLOMBIA	CVC	SOILS	0.8
CANO SAAVEDRA CESAR AUGUSTO	COLOMBIA	CVC	SOILS	1.2
CASAS CARRILLO GABRIELA	MEXICO	COLEGIO DE POSTGRADUADOS	BIOTECHNOLOGY	1.9
CHAVEZ LEANDRO ABNER	PERU	UNIV. NACIONAL HERMILIO VALDIZAN	GENETIC RESOURCES	3.9
COMBARIZA CRUZ MARFA RUTH	COLOMBIA	ICA	PARTIC.RESEARCH	1.8
CUESTO CASTELL JESUS M	COLOMBIA	ICA	GENETIC RESOURCES	0.5
GOMES BARROS LEILA MARIA	BRAZIL	EMBRAPA	BIOTECHNOLOGY	0.7
GUTIERREZ GOMEZ JESUS HERNANDO	COLOMBIA	ICA	PARTIC.RESEARCH	1.8
HOYOS PALACIOS PATRICIA	COLOMBIA	ICA	GENETIC RESOURCES	0.5
MONTEALEGRE ORLANDO	COLOMBIA	ICA	GENETIC RESOURCES	0.5
RIVERA MARTHA CECILIA	COLOMBIA	ICA	TRAINING TRAINERS	1.8
SOTO MELO FABIO	COLOMBIA	CVC	SOILS	2.3
UBALDINI STEFANIA	ITALY	CENTRO INTERNAZIONALE CROCEVIA	SOILS	1.1
URBANO MELLADO WILFREDO	VENEZUELA	FONAIAP	BREEDING	3.4
VERNOOY GERARDO	HOLLAND	SIN INSTITUCION	TRAINING TRAINERS	1.8
ZABALA MENDEZ GUSTAVO	COLOMBIA	FOSFATOS DE COLOMBIA, S.A.	SOILS	1
PH.D. THESIS				
KORBAN MARTINE	LIBANO	UNIV. MCGILL	BIOTECHNOLOGY	1.5
MEJIA JIMENEZ ALVARO	COLOMBIA	UNIV. DE BONN	BIOTECHNOLOGY	12
OTHERS COURSES				
COURSE ON PARTICIPATORY RESEARCH IN AGRICULTURE				
CAMPO RAMIREZ HERNAN ELIAS	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
CARDONA A JORGE HUMBERTO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
CHAPARRO ANAYAQ OSCAR	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
DUARTE TORRES OSCAR ALBERTO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
GALLO BOHORQUEZ JORGE EDUARDO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
GOMEZ G FERNANDO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
GOMEZJURADO H JAIME	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
GONZALEZ G PEDRO MIGUEL	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
HERNANDEZ S RAMIRO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
HERNANDEZ S YEZID ERNESTO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
INSUASTY B ORLANDO I	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
LOBATON G VALENTIN	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
LOPEZ VALENCIA GUSTAVO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
MIRANDA L DIEGO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
MORENO DAZA ESTHER	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
MUNOZ A RODRIGO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
ORREGO URIBE ALBERTO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1

ANNEX 6 (Cont.)

BIOTECHNOLOGY, PARTICIPATORY RESEARCH AND OTHERS.

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
REY BOLIVAR LEONARDO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
RINCON MEZA SANTOS ERNESTO	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
RIOS GOMEZ JOSE WALTER	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
RODRIGUEZ M MANUEL JOSE	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
SACIPA R DORIS YOLANDA	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
TOBON CARDONA JOSE HIRIAM	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
URBINA ROJAS NICOLAS	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
VILLAR SUAREZ HERNAN JOSE	COLOMBIA	ICA	PARTIC.RESEARCH	0.1
OTHERS COURSES				
INTERNATIONAL COURSE ON ADVANCES AND PROBLEMS OF PLANT CELL AND TISSUE CULTURE				
ACUNA ZORNOSA JOSE RICARDO	COLOMBIA	FEDECAFE	BIOTECHNOLOGY	0.4
ALEGRIA SOTO ALVARO HERNAN	COLOMBIA	UNIV. DEL VALLE	BIOTECHNOLOGY	0.4
ARCE MONTOYA MARIO	MEXICO	CENTRO DE INV. CIENTIFICA DE YUCATAN	BIOTECHNOLOGY	0.4
DEL CORRAL E ANA MERCEDES	COLOMBIA	EXPORTACIONES BOCHICA	BIOTECHNOLOGY	0.4
DIMITROV DIMITAR DIMANOV	BULGARIA	IIPR K. MOLKOV	BIOTECHNOLOGY	0.4
ECHEVARRIA F JORGE OSWALDO	PERU	UNIV. DE TUMBES	BIOTECHNOLOGY	0.4
FRANCO GOMEZ MA CECILIA	COLOMBIA	ICA	BIOTECHNOLOGY	0.4
GUERRERO F EDUARDO ANTONIO	COLOMBIA	UNIV. JAVERIANA	BIOTECHNOLOGY	0.4
HONARNEJAD RAHIM	IRAN	GILAN UNIVERSITY	BIOTECHNOLOGY	0.4
INFANTE E RODRIGO ARTURO	CHILE	UNIV. DE TALCA	BIOTECHNOLOGY	0.4
LONDONO R LINA CLEMENCIA	COLOMBIA	CENICAFE	BIOTECHNOLOGY	0.4
MARROQUIN T CLAUDIA GISELA	GUATEMALA	UNIV. DEL VALLE DE GUATEMALA	BIOTECHNOLOGY	0.4
MARULANDA ANGEL MARTA LEONOR	COLOMBIA	CENICAFE	BIOTECHNOLOGY	0.4
MENENDEZ YUFA ANDREA	VENEZUELA	UNIV. CENTRAL DE VENEZUELA	BIOTECHNOLOGY	0.4
MOLINA GUEVARA PEDRO ROBERTO	CUBA	CENT.INGENIERIA GENETICA Y BIOTECNOLOGIA	BIOTECHNOLOGY	0.4
PANICK DE G CLAUDIA BETINA	ARGENTINA	TECNO PLANT S.A.	BIOTECHNOLOGY	0.4
RODRIGUEZ CUEVA JAIME IVAN	ECUADOR	UNIV. CENTRAL DEL ECUADOR	BIOTECHNOLOGY	0.4
SANCHEZ CABRERA IRMA	MEXICO	COLEGIO DE POSGRADUADOS	BIOTECHNOLOGY	0.4
SANDOVAL F JORGE ARTURO	COSTA RICA	CATIE	BIOTECHNOLOGY	0.4
SIGUENAS C CARMEN	PERU	CENTRO INTERNACIONAL DE LA PAPA	BIOTECHNOLOGY	0.4
ZAPATA CARRERO CARMEN CECILIA	VENEZUELA	INST.INTERNACIONAL DE ESTUDIOS AVANZADOS	BIOTECHNOLOGY	0.4
OTHERS COURSES				
TRAINING FOR TRAINERS COURSE				
CANALES RIVERA NORMA ADELA	PERU	GRUPO YANAPAI	TRAINING TRAINERS	0.6
GUERRERO ARANGO MARIA DEL PILAR	COLOMBIA	CIAT	TRAINING TRAINERS	0.5
HERNANDEZ S RAMIRO	COLOMBIA	ICA	TRAINING TRAINERS	0.5
INSUASTY B ORLANDO I	COLOMBIA	ICA	TRAINING TRAINERS	0.5
MIRANDA L DIEGO	COLOMBIA	ICA	TRAINING TRAINERS	0.5
MORENO DAZA ESTHER	COLOMBIA	ICA	TRAINING TRAINERS	0.5
OLIVERA HURTADO EDGAR ERNESTO	PERU	GRUPO YANAPAI	TRAINING TRAINERS	0.6
QUIROS TORRES CARLOS ARTURO	COLOMBIA	CIAT	TRAINING TRAINERS	0.5

ANNEX 6 (Cont.)

BIOTECHNOLOGY, PARTICIPATORY RESEARCH
AND OTHERS.

TRAINEE	COUNTRY	INSTITUTION	DISCIPLINE	PERSON MONTHS
RIVERA PARDO MARTHA CECILIA	COLOMBIA	ICA	TRAINING TRAINERS	0.5
ROA VELASCO JOSE IGNACIO	COLOMBIA	CIAT	TRAINING TRAINERS	0.5

CONFERENCES

This year's conferences were marked by CIAT's strategic planning for the 1990s. There were five consultations with key NARDS members on their views about CIAT's role in the coming decade. Two of the meetings were about cassava, and the remaining three were on each one of the other commodities in CIAT's mandate. One further consultation--on Tropical Pastures--was held in the Phillipines. Details about these can be found in the Annexes to CIAT's strategic plan.

There was an **International Conference on Snap Beans in the Developing World** for:

* Presentation of multidisciplinary information on the current situation of snap beans in LDCs.
* Discussion of present constraints on snap bean production and marketing, and potential strategies for improvement.
* Discussion of the relevance of snap bean research for CIAT.
* Reaching a consensus on possible future research strategies, and their priorities and organization at CIAT.

Participants came from 19 countries: Angola (1), Argentina (1), Brazil (3), Chile (1), Colombia (11), Costa Rica (1), Egypt (1), Ethiopia (2), India (2), Indonesia (1), Iran (1), Kenya (4), the Netherlands (4), the People's Republic of China (1), the Philippines (1), the Republic of China (1), Spain (1), Turkey (2), and the USA (4). FAO's Regional Office for Latin America and the Caribbean was also represented.

Several events reported under cassava training could have equally been reported here. This is another feature that will become more frequent in the years ahead: the borderline between training events and conferences will frequently be blurred, and the classification into one or another category will be a rather arbitrary one.

Finally, the **Central American Workshop on the Production and Distribution of Bean Seed for Small Farmers** was held in Jutiapa, Guatemala. Subjects discussed were appropriate technology and alternative seed systems. The participants prepared action plans, and follow-up to these was planned. The 46 participants were from Costa Rica, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, and Panama.

TRAINING MATERIALS

Production

Nineteen training materials were published this year at CIAT: thirteen in Spanish, two in English, and four in French. These materials consisted of sixteen audiotutorial and three videotutorial units. They are as follows:

In Spanish
1. Desarrollo del Manejo Integrado de Plagas del Cultivo de Arroz.
2. El Cultivo de Anteras en el Mejoramiento del Arroz.
3. Información Básica Sobre la Competencia Entre las Malezas y los Cultivos.
4. Manejo Integrado de Erinnyis ello L. Gusano Cachón de la Yuca.
5. Método Modificado de Cruzamiento de Arroz.
6. Las Malezas en el Cultivo de Frijol en América Latina.
7. El Lorito Verde del Frijol (Empoasca kraemeri Ross & Moore) y Su Control.
8. Principios Básicos para el Manejo de las Malezas en los Cultivos.
9. Principios Básicos para el Manejo y Control de Malezas en las Praderas.
10. Control Biológico del Gusano Cachón de la Yuca Mediante el Virus de la Granulosis (Video).
11. Evaluación de la Calidad Culinaria y Molinera del Arroz.
12. Evaluación de la Calidad del Arroz: Métodos de Laboratorio (Video).
13. Nivelación de Lotes para la Producción de Arroz de Riego (Video).

In English
1. Conservation of Cassava Roots in Polythene Bags.
2. Natural Drying of Cassava Roots on Concrete Floors.

In French
1. Amelioration du Haricot par Introduction et Sélection.
2. Croisement du Haricot.
3. Developpement et Morphologie de la Graine.
4. Diversité Génétique Dans le Genre Phaseolus.

Of these training materials, six related to rice, six to beans, four to cassava, two to weeds, and one to tropical pastures.

A training manual related to cassava was jointly produced by the Training Materials Section and the Instituto Nacional de Investigaciones Agropecuarias (INIAP). This manual titled "Manual de Referencia para la Promoción de Asociaciones de Productores y Procesadores de Yuca" was published by the Fundación para el Desarrollo Agropecuario (FUNDAGRO) in Ecuador.

In addition to published training materials, the Training Materials Section also produced two training manuals for internal use in 1989. These are:

1. Manual de Diseño y Producción de Unidades Audiotutoriales, and
2. Planeación, Preparación y Realización de Conferencias Utilizando Ayudas Visuales: taller para los participantes en los cursos intensivos de investigación del CIAT.

Productivity was made considerably more efficient this year with desktop publishing and the preparation of camera-ready copy within the section. The Training Materials Section has rapidly become adept in the use of microcomputers, moving from basic wordprocessing skills to desktop publishing and computer generated graphics. Progress was made in the production of video training materials with the acquisition of new technology enabling computer generated graphics and text to be produced in the National Television Standards Committee (NTSC) format thus permitting compatibility between the computer and video media.

Distribution

Over 900 audiotutorial and videotutorial units and more than 6500 study guides were distributed this year to developing countries (38 and 4, respectively, to developed countries).

Within CIAT, training materials were distributed to the various programs during the course of the year as follows:

Program	# Units Purchased
Beans	118
Training and Conferences	76
Tropical Pastures	24
Library	19
Rice	14
Cassava	13
Other (Biotechnology, Genetic Resources, Field Operations)	9
Seeds	4
Total	268

Evaluation

This year the Training Materials Section undertook a study and began an ongoing process to evaluate training materials.

A mailed survey was conducted in April to collect data on the utilization, effectiveness, and impact of CIAT training materials. Four hundred and ninety-two surveys were sent to individuals and institutions who have acquired CIAT training materials and 233 responses (47.35%) were received from 173 different institutions in 31 different countries.

The data show that CIAT audiotutorials are used primarily in Latin America by research, extension, and teaching institutions. Forty-three percent of the respondents are priority institutions of the Training and Communication Support Program.

The responding institutions carry out their own training programs, most of them on a regular basis, and they train their own staff, people from other institutions, and farmers. One third of them conduct formal courses. The main users are technicians, followed by undergraduates and farmers. The audiovisual component (slides and tape) is the most frequently used part of the unit, and it is used primarily during technology transfer activities and occasional seminars, complemented by group discussion and/or laboratory or field practicals.

Ninety-five percent of the institutions rated CIAT training materials as important to very important in their training activities. They rated the materials very effective for supporting or complementing educational or training programs, and effective for self-learning, indicating that students enjoy the materials, pay attention during their use, and find the level of difficulty and duration of the units adequate.

The materials were rated very efficient in making instructors' work more effective; and efficient in reinforcing learning, teaching a larger number or people, and decreasing learning time. They are least efficient in studying subjects in depth.

Institutions would like future training materials on production technologies and field problem diagnoses, directed to technicians, professionals, and farmers (medium and small scale, technified). In addition to audiotutorial equipment, most institutions have equipment for using overhead transparencies and video, and more than half have filmstrip projectors and microcomputers as well. Audiotutorials were indicated as the most useful type of training material followed by videos with study guides.

In addition to the mailed survey on training materials, a second instrument was developed to evaluate individual training materials in an ongoing process and solicit feedback as each training material is distributed and used. This evaluation form, which folds for self mailing, has been packaged with each training material distributed since September 1989. It should yield useful data for compilation next year.

Training

Apart from the production of training materials and the evaluation surveys undertaken in 1989, the Training Materials Section participated in the training activities of the TCSP. In the intensive commodity training courses on rice, beans, and tropical pastures, the Training Materials Section organized and presented a workshop on planning, preparing, and making presentations using visual aids. The final presentations in these workshops were videotaped enabling participants to evaluate their own presentations.

PUBLICATION UNIT

1. Publications:

Twenty three titles were published by the Unit during the year and 18 other are in process of editing-production (Annex 2). Those published are listed below by commodity programs and under Management and TCSP.

Tropical pastures:

Manejo de explotaciones ganaderas en las sabanas bien drenadas de los Llanos Orientales de Colombia, Serie Boletines Técnicos No. 2, R. Botero B., 100 pags., 500 ejs.

La demanda de carnes en países seleccionados de América Latina y el Caribe, Proyecto colaborativo FAO-RLAC-CIAT, L. Rivas, C. Seré, L. R. Sanint, J. L. Cordeu, 196 pags., 1500 ejs.

Andropogon gayanus Kunth. **Un pasto para los suelos ácidos del trópico**, J. M. Toledo, R. Vera, C. Lascano, J. M. Lenné (eds.), 406 pags., 800 ejs.

1989 World Catalog of Centrosema Germplasm/Catálogo Mundial 1989 de Germoplasma de Centrosema, R. Schultze-Kraft, R. J. Williams, L. Coradin, J. R. Lazier, A. E. Kretschmer, Jr., 322 pages, 300 copies.

Pasturas tropicales, tres ediciones: Vol. 10:3, Vol. 11:1 y 2, A. Ramírez, ed., publicación periódica, pags. var., 2000-2300 ejs. por edición.

La demanda de carnes . . ., volante de promoción.

Beans:

Bean production problems in the tropics, H. F. Schwartz, M. Pastor C. (eds.), 654 pages plus color supplement, 1500 copies.

Beans production problems . . . promotional flyer.

Progreso en la investigación y producción del frijol común (Phaseolus vulgaris L.)/**Advances in bean** (Phaseolus vulgaris) **research and production**, 462 pags., 500 ejs.

Bean common mosaic. Screening for disease resistance, F. J. Morales, 28 pages, 500 copies (translation of **El Mosaico Común del Frijol . . .**).

Cassava:

Superbrotamento ou 'Floco' da mandioca. Identificação e Contrôle, EMATERCE-EPACE-CIAT, plegable de extensión, 20.000 ejs.

La yuca, nuevo potencial para un cultivo tradicional, J. H. Cock (traducción de **Cassava, new potential for a neglected crop**), 240 pags., 600 ejs.

Metodologías aplicadas a Proyectos Integrados de Yuca, C. A. Pérez Crespo (ed.), 120 pags., 800 ejs.

Harina de Yuca . . . volante promocional.

Management:

Program plans and funding requirements 1990-1993. Funding request for 1990, 26 pages, 500 copies.

CIAT in the 1990s: A Strategic Plan (revised draft September 1989), 54 pages, 60 copies.

CIAT in the 1990s: A Strategic Plan, 58 pages, 300 copies.

TCSP:

Keep up-to-date . . ., promotional brochure.

Selección bibliográfica sobre comunicación agrícola, 42 pags.

Nuevos materiales de capacitación. Suplemento 1989 del Catálogo Audiotutoriales 1988, 6 pags., 1500 ejs.

Trabajos publicados por personal del CIAT en 1988/Publications by CIAT Staff in 1988, 54 pags., 1000 ejs.

2. Additional editing support:

In addition to working on the publications listed and in process, PU editors gave support to Programs and staff with editing of papers, journal articles, and other materials. This work comprised 42 items in English totalling 281 pages.

3. Translations:

Spanish-English: 38 items totalling 663 pages.

ENGSPAN (English-to-Spanish translation program): 248 items totalling 4020 pages of post-edited translation. This work

included two publications requested by ISNAR (Annual Report 1988) and CGIAR (Gene Banks and the World's Food).

4. Communications training:

Support to CIAT training courses on beans, rice and tropical pastures was given by four editors with presentations on editorial principles and style, extension-type publications, structure and style of scientific articles.

The head of Unit participated in the organization and presentation of the seminar on training and communications for root and tuber professionals (Activity 5 of the UNDP Project). The three Andean countries represented integrated teams of researchers, trainers or extensionists, and communicators working on roots and tubers. These teams are expected to work as such in their countries to help transfer root and tuber technology. In addition to seminar design and teaching, this Unit contributed written materials on communication topics. This activity required two trips to Lima, Peru, during 1989.

5. Consultancy at CATIE (Costa Rica)

Advisory support was given by the head of Unit to the head of CATIE's Communication Media Production in preparing topics and guidelines for a seminar on the structure, strategies, and operational aspects of a communication system for CATIE. The seminar, which took place the week following the consultancy, recommended the implementation of a Communication System for CATIE along the lines suggested.

6. Communication and technology transfer

Two research projects were presented to the Communication Division of IDRC, Bogotá, on Communication and technology transfer: a survey and analysis of communication patterns of technology transfer intermediaries and their links with research organizations; and Communication media for technology transfer: design and field testing. The first one was already approved, and funds for implementation of the project in 1990 are forthcoming.

These projects should provide information on communication with and for technology intermediaries, an audience CIAT intends to reach more systematically in the future.

Annex 1: Distribution of publications and audiotutorials in 1989.

Annex 2: Titles published and in process in 1989.

ANNEX 1. Distribution of publications and audiotutorials in 1989

Subscriptions

Newsletters

Title	Institutions	Individuals	Copies distributed
1. Arroz en las Américas	402	678	2304
2. Hojas de Frijol	442	980	1469
3. Bean Newsletter	187	411	621
4. Yuca Boletín Informativo	483	1101	2450
5. Cassava Newsletter	607	1177	1784
6. Manioc bulletin d'information	286	140	426
6. Semillas para América Latina	552	1224	1900
7. CIAT Internacional	1893	2703	4620
8. CIAT International	2866	1419	4290
9. Boletín Bibliográfico	212	126	1168
		Total:	21032

Magazine

1. Pasturas tropicales	609	1647	4590

Abstract journals

1. Resúmenes Analíticos sobre Frijol	174	115	764
2. Abstracts on Field Beans	178	157	922
3. Resúmenes Analíticos sobre Yuca	163	73	577
4. Abstracts on Cassava	160	53	588
5. Resúmenes Analíticos sobre Pastos Tropicales	270	202	1053
		Total:	3904

Annual reports

Title	Institutions	Individuals	Copies distributed
1. CIAT Report	1475	910	2585
2. Informe CIAT	1294	1449	3033
3. Informe Anual Programa de Frijol	249	559	808
4. Bean Program Annual Report	309	462	793
5. Informe Anual Programa de Pastos Tropicales	180	333	514
6. Tropical Pastures Program Annual Report	251	137	421
7. Cassava Program Annual Report	320	260	583
		Total:	8737

Pages of content

Topic	Institutions	Individuals	Copies distributed
1. Agropecuaria General	156	198	4248
2. Fisiología Vegetal	131	155	3432
3. Protección de Plantas	138	175	3756
4. Suelos y Nutrición de Plantas	132	148	3360
5. Pastos, Prod. Animal y Nutrición	128	134	3144
6. Economía Agrícola	148	93	2892
		Total:	20832

Sales of publications

	No. copies	Revenues in US$
At CIAT		
Developing countries	4771	31.318.78
Developed countries	101	1.028.49
Through distributors		
Developing countries	734	1.845.22
Developed countries	356	3.659.73

Total publications sold in developing countries: 5505 (US$ 33.164.00)
Total publications sold in developed countries: 457 (US$ 4.688.22)

Sales of audiotutorials

At CIAT		
Developing countries	600	70.020
Developed countries	18	1.800
Through distributors		
Developing countries	200	12.259
Developed countries	20	1.217

Sales of study guides

	No. copies	Revenues in US$
At CIAT		
Developing countries	4528	8.467.36
Developed countries	0	0.00
Through distributors		
Developing countries	1989	3.699.54
Developed countries	4	7.44

Total audiotutorials sold in developing countries: 800 (US$ 82.279.00)
Total audiotutorials sold in developed countries: 38 (US$ 3.017.00)
Total study guides sold in developing countries: 6517 (US$ 12.166.90)
Total study guides sold in developed countries: 4 (US$ 7.44)

Donations to African and Latin American countries

Publications	Study guides
100	10

ANNEX 2. Titles published and in process, January-November 1989

No.	Title	Editor	Trans.	Editing	Author	Correct.	Typeset.	Pasteup	Photomec.	Printing	Distrib.
1	Manejo Expl. Ganaderas	A.L. García		27 May 88	July	Aug.	Sept.	Oct.	Jan.89	Feb.	15 Feb.
2	Superbrotamento cu Floco	C. Lozano/ S. Amaya		9 Feb.89	Feb.	Feb.	Feb.	Feb.	Feb.	Feb.	28 Feb.
3	Pasturas tropicales 10:3	A. Ramírez		Aug.88	Oct.	Dec.	Jan.89	Feb.	Feb.	Feb.	8 Mar.
4	La Yuca: Nuevo Potencial...	A.L. García	C. Lozano	July 88			Aug.	Oct.	Jan.89	Feb.	8 Mar.
5	Metodol. Proy. Integr. Yuca	C. Pérez/ A.L. García		July 88	Sept.	Sept.	Oct.	Jan.89	Feb.	Feb.	31 Mar.
6	Demanda Carnes en A. L.	A. Jiménez S. Amaya		Apr.88	June	July	Sept.	Oct.	Nov.	Mar.89	14 Apr.
7	Keep up-to-date (brochure)	E. Umaña/ B. Hardy		Mar.89		Mar.	Mar.	Mar.	May	May	25 May
8	Selección Bibliogr. Comunic.	N. Rizo/ S. Amaya		Apr.89			May			May	25 May
9	Demanda Carnes en A. L. (flyer)	E. Umaña/ S. Amaya		May 89			May			June	21 June
10	Pasturas tropicales 11:1	A. Ramírez		Feb.89	Mar.	Mar.	Apr.	May	June	June	30 June
11	Funding Requir. for 1990	F. Kramer/ B. Hardy		May 89	June		June	June	June	July	21 July
12	Bean Prod. Probl. (flyer) (print. & distr.: Agribookstore)	E.L. Páez		June 89		July	July	July	Aug.		4 Aug.

No.	Title	Editor	Trans.	Editing	Author	Correct.	Typeset.	Pasteup	Photomec.	Printing	Distrib.
13	Materiales de Capacit. (catalog)	C. Gómez/ S. Amaya		7 July			July	Aug.	Aug.	Aug.	5 Sept.
14	CIAT in the 1990s (prel. version)	E.L. Páez/ S. Amaya		25 Aug.	Aug.		Aug.	Sept.	Sept.	Sept.	6 Sept.
15	Bean Production Problems in the...	H. Schwartz/ E.L. Páez		June 86	1987-88		Sept.88	Apr.89	June	June	11 Sept.
16	A. gayanus: un pasto...	F. Motta	A. Jiménez	June 87	Jan.88		Oct.88	Feb.89	June	Aug.	13 Sept.
17	Harina de yuca (flyer)	S. Amaya		June 89	July		July		Sept.	Sept.	20 Sept.
18	CIAT in the 1990s (final)	E.L. Páez		5 Oct.89			Oct.	Oct.	Oct.	Oct.	20 Oct.
19	Publ. Pers. CIAT (catalog)	S. Gómez/ F. Motta		27 Apr.89	May	June	July	July	Aug.	Sept.	14 Nov.
20	Pasturas tropicales 11:2	A. Ramírez		June 89	June	Aug.	Aug.	Sept.	Oct.	Oct.	14 Nov.
21	Centrosema 1989 World Catalog	E.L. Páez/ F. Motta	ENGSPAN	July 89			Sept.			Sept.	15 Nov.
22	Progresos Invest. Prod. Frijol	F. Motta/ E.L. Páez		June 88	Sept.		Feb.89	June	Nov.	Nov.	30 Nov.
23	Bean Common Mosaic	F. Morales/ B. Hardy	F. Morales	Apr.89	May	June	Sept.	Oct.	Nov.	Nov.	30 Nov.
24	La Yuca en la Alimen. Animal	A.L. García		Mar.87	June 88	Nov.88	May 89	Aug.			
25	A. gayanus: a grass...	N. Molzan/ F. Motta		Jan.87	June		May 88	Sept.89			

No.	Title	Editor	Trans.	Editing	Author	Correct.	Typeset.	Pasteup	Photomec.	Printing	Distrib.
26	Sorgo para Suelos Acidos	F. Motta		Feb.88		May 89	Aug.	Nov.			
27	Mejoram. Genét. Yuca en A. L.	A.L. García/ C. Hershey		June 87	Feb.88	Sept.89	Oct.				
28	Root Rot Diseases of Beans	M.P. Corrales/ E.L. Páez	ENGSPAN	Apr.89	Aug.		Nov.				
29	Catálogo Publicaciones CIAT/CIAT Publications Catalog	E. Umaña/ S. Arraya		Sept.87	Dec.	July 88	Nov.89				
30	Centrosema: Biology...	R. Schultze-K. E.L. Páez		Oct.87	Jan.88		Nov.89				
31	Pasturas tropicales 11:3	A. Ramírez		Aug.89	Oct.	Nov.	Nov.				
32	Manual Práctico Yuca	A.M. López/ S. Arraya		May 88	July	July 88					
33	Common Beans: Research...	O. Voysest/ B. Hardy	July 88	Mar.89	Mar.	Sept.					
34	Cultivo de Tejidos en la Agricultura	W. Roca/ F. Motta		Mar.86	Dec.86	Oct.89					
35	Malezas del Arroz	E. Tascón/ A.L. García		Mar.89	Mar.						
36	Pasturas tropicales (special issue)	A. Ramírez		Aug. 89	Oct.						
37	Probl. Produc. Frijol en Trop.	H. Schwartz/ A.L. García	ENGSPAN	Dec.88							

No.	Title	Editor	Trans.	Editing	Author	Correct.	Typeset.	Pasteup	Photomec.	Printing	Distrib.
38	Integrated Cassava Proj.	C. Pérez/ B. Hardy	June 89	June 89							
39	Forage Germplasm under...	E.L. Páez	G. Ayerbe	Sept.89							
40	CIAT Report 1990	S. Amaya		Oct.89							
41	Gene Banks and the World...		ENGSPAN								

PUBLIC INFORMATION

1. Newsletters published:

CIAT International, Vol. 8 No. 1, July 1989
CIAT Internacional, Vol. 8 No. 1, November 1989

Bean Newsletter, Vol. 10 No. 2, December 1988
Hojas de Frijol, Vol. 10 No. 2, Diciembre 1988

Cassava Newsletter, Vol. 12 No. 2, December 1988
Vol. 13 No. 1, September 1989
Yuca, Boletín informativo, Vol. 12 No. 2, Diciembre 1988
Vol. 13 No. 1, Agosto 1989
Manioc, bulletin d'infomation, Vol. 12 No. 2, May 1989

Arroz en las Américas, Vol. 9 No. 2, Diciembre 1988
Vol. 10 No. 1, Agosto 1989

2. Publication:

CIAT Report 1989, Informe CIAT 1989, 98 pages, 4000 copies each.

3. In-house newsletter:

ARCOS, six issues, 1200-1500 copies each.
ARCOS noticias (weekly news flyer), 44 issues.

4. Press:

Newspapers articles appearing in Colombian newspapers about CIAT: 42, of which 20 submitted by CIAT

Magazine articles appearing in international and Colombian publications: 16, of which 10 submitted by CIAT.

INFORMATION UNIT

Accomplishments

This year, and particularly the past four months, has been a time for change in the Information Unit. It has been a time for evaluation and restructuring of internal processes and a time for planning new services and technological innovations for the future.

The new Unit Head and Unit supervisors jointly developed a mission statement, goals and objectives and an action plan for the Information Unit for the last quarter of 1989 and for 1990. Most of the accomplishments and new projects described below are directed by the goals in the planning document.

Current activities and accomplishments reflect the broad mission and varied audience of the Information Unit and range in scope from participation in international networks to improvements in basic levels of service for CIAT Staff. These accomplishments fall into four broad categories: technological enhancements to improve operations and services, direct services to CIAT and other users, networking and external relations, and internal improvements.

Technological enhancements

In 1989, the Information Unit automated several functions in order to improve the delivery or processing of information. These icluded a simple circulation system which will provide statistics on use and generate overdue notices; use of electronic mail and fax trasmission for improved response time on photocopy requests; and the development of a microcomputer-based serials database containing the bibliographic and holdings information for approximately 3,200 current journals received at CIAT. The latter will soon be available for consultation in the Reading Room. The Unit also offered direct online access to the Information Centers commodity database to the users in the Reading Room. Within a month, CIAT scientists will be able to access this database of 37,000 records directly from the Program offices. The Unit also made improvements in administrative accounting procedures for the acquisitions function. There was an attempt to develop microcomputer-based systems for tracking workload statistics for the photocopy service, reference, and circulation, but these were only partially sucessful and did not result in reliable data. An integrated system for all of the Unit's administrative statistics and reporting needs will be designed for 1990.

Services to CIAT and other users

In response to recommendations from Program staff, the Unit extended its operating hours evenings and Saturdays (a total of

14 extra hours), provided private study rooms for research and writing, and is now experimenting with a weekly pages of contents service in order to provide faster service to the Units's journal collection. Another current awareness service, the "Bibliographic Bulletin" announcing new acquisitions, was completely revised and appeared in its new format in March. Many of these new acquisitions are displayed in the Reading Room in a "New Book Shelf" which is updated weekly with the latest arrivals.

Regarding access to database services, the Unit offered reference searches of the CINFO commodity databases from the Reading Room. In 1989 there was a vast increase in the number of searches from these databases over 1988. In the case of tropical pastures, searches doubled, for cassava they tripled, and for beans the searches quadrupled. Access to searches from the Reading Room, in addition to searches from the Information Centers, contributed substantially to the increased use of this service. The Unit developed another database of interest to users known as BICIAT. It is a comprehensive bibliography of all publications by CIAT Staff from all sources. The Reference Staff and the Publications Unit recently collaborated on the publication of a 1988 Directory which was derived from this database of over 4,000 citations. With the BICIAT database as a resource, the annual publication of these directories or similar bibliographies for the CIAT or Program annual reports should be greatly simplified. The Information Unit also keeps a backup copy of every publication listed in the database for reference.

Finally, the Reading Room was reorganized and a Special Collections Reading Room was established on the 3rd floor. This change resulted in better maintenance, control, staffing, and service of all audiovisual and specialized collections including audiotutorials, microfiche, maps, documents, and monographic serials.

Networking

A key goal of the Information Unit is to participate in agricultural information networks locally, regionally, and worldwide. In 1989 the Unit was involved in projects at all three levels. Locally, the Unit completed Phase 1 of the COLCIENCIAS/PROCADI project to create a bibliographic database of Colombian Agricultural Information. CIAT contributed 10,000 bibliographic records to this project. We are continuing to participate in Phase 2 which will involve linking 11 Colombian institutions, including CIAT, by electronic mail for the exchange of agricultural information from their respective databases. The Unit has also been participating in the local chapter of SNICA with the goal of cooperating on projects of mutual interest and sharing local resources more effectively.

Within the CGIAR system, the Unit participated in two projects. We contibuted a database of over 2,300 journal records to a union list of IARC serials being compiled by ICRISAT. The project resulted in the automation of all our journal holdings information and by June of 1990 we will also be able to electronically access the journal collections of most of the other IARC libraries. This will be an invaluable tool for resource sharing and document delivery. For the CGIAR Preservation and Dissemination Project, the Information Unit was designated as an evaluation site to test the prototype compact disk containing the full text of 20 selected CGIAR publications. CD-ROM disk drives were ordered and the evaluation is proceeding at this time.

On the international level, the Information Unit continues to participate in the AGRIS database of the Food and Agricultural Organization by inputting indexing records of CIAT publications. The rate of input dropped by half between 1985 and 1988, (from 144 to 68) but in 1989 it more than doubled the rate of 1988, (up from 68 to 161). The Unit plans to expand the definition and scope of CIAT's indexing input in 1990 in order to increase participation in this important international database for agricultural information. Also on the level of international networking, the Unit collaborated with ISNAR on a project to develop depository libraries for CGIAR publications in all the developing countries. In particular, the Unit worked with CIP and CIMMYT information staff to identify for ISNAR key institutions in all Latin American and Caribbean countries which might serve as depository libraries. This project will be carried over to 1990.

Internal operations

The activities reported in this Section deal with the Unit's attempt to make more efficient use of existing space and to conserve , preserve, or miniaturize the collection, where necessary. To accommodate growth in the collections, new bookstack shelving was installed which increased the available shelving space by 50%. The entire book and journal collections were physically reorganized in the process.

In an effort to conserve space and focus the collection on CIAT priorities the Unit planned a complete inventory of the collection - the first in five years - to take place during December. The physical inventory will be followed by an evaluative inventory and weeding of the collection. This will be an annual event in the future and will be guided by a collection development policy which the Unit is drafting at this time.

In another effort to better utilize existing resources, an Information Unit committee completed an analysis of space vis-a-vis collection, service, and staff office needs. The committee is drafting a plan for reorganization of space and will

present it to management for approval in December. A key recommendation in this plan involves a physical reorganization of the photocopying service, the Unit's most heavily used service, to provide more administrative control and more responsive service to users.

Finally, in the area of preservation or miniaturization of the collection, the Unit initiated a massive project to microfilm the Information Center Document Collection with grant money provided from IDRC. To date, 2,337 documents from the Cassava Information Center have been filmed into microfiche. Due to the default of the Colombian microfilm contractor, bids are now being solicited from four contractors in the United States in order to proceed with the project. An additional $150,000 will have to be raised in 1990 to complete the filming of the 37,000 documents.

Future Plans

The plan for 1990 will focus on three major areas: implemention of new information technologies, expanded outreach programs, and networking. These programs are outlined in the Units's planning document and their development will be guided by the answers to key questions, such as, who are the Unit's users and what are their information needs. This will also involve an evaluation of the Units's current products and services.

New technologies

The Information Unit has a critical need to integrate its acquisitions, cataloguing, indexing, and reference functions. The goal is to automate the card catalog (40,000 bibliographic records) and to make this database, as well as the CINFO document database, available to CIAT scients via the mainframe. The plan is to test CDS/MICROISIS sofware for its feasibility and compatibilility with the mainframe version of ISIS and to convert the 40,000 records into machine readable form. Once the collection is in magnetic form, we can look at alternative methods for packaging and disseminating some or all of this information for our research partners and other user groups.

Secondly, to augment existing reference services, the Unit will install compact disk drives and implement search services on compact disk databases. This service will be offered immediately upon arrival of the equipment and disk subscriptions and will exponentially expand CIAT's access to the scientific and agricultural literature.

Further, the Unit will make more use of commercially available bibliographic databases for rapid retrieval of scientific information including electronic ordering and delivery of photocopy requests.

Finally, the Unit would be willing to serve as a test site for a CIAT local area network, should one be developed, serving the network with remote access to databases maintained or located at the Library.

Outreach

The Unit plans to continue working on public relations not only within CIAT but externally as well. Activities planned include developing a brochure describing products and services and an exhibit structure, possibly in conjunction with CIP and CIMMYT, to use at conferences and meetings. The purpose is to create a greater awareness among users and potential users of agricultural information resources in Latin America.

Other information products being planned along publications lines are a new series of informal "quick" bibliographies on current topics of interest to CIAT programs and research partners and a series of "national" bibliographies. The former would be derived from internal and external databases and would be for current awareness and research support. The latter would be derived from the internal commodity databases and would be used to document CIAT's holdings of a country's publications and more importantly to solicit, through gift and exchange, the publications that are missing.

Still another information product that the Unit plans to develop is a training module on the use of library and information services for CIAT trainees. Such a unit would be automatically incorporated into long-term (2-6 months) training offered by the Program.

An integral part of outreach and public relations is the evaluation of user needs as well as an evaluation of existing information products. The Unit plans to conduct such a study. One of the key reasons for doing this is to establish a new pricing policy for publications and services.

Networking

Most of the networking activities already reported for 1989 will carry over to 1990. In additon to these, the Unit will be involved in two additional projects. On the regional level, the Unit will work closely with the Rice Program to collect, index, and provide bibliographic support to the Latin American literature on rice. This also involves working closely with IRRI to share the results.

On the international level, we have offered to cooperate in the Cornell University/Rockefeller Foundation funded project to collect and index the core agricultural literature of the world and to provide full text access to the entire "library" on

compact disk. CIAT has offered the help with the selection and review of the literature on rice, beans, cassava, and tropical pastures in tropical areas, particularly in Latin America.

Finally, on the local level, the Unit will attempt to work much closer with Program Staff, both outposted and at CIAT, to cooperate on projects of mutual interest, to lend information support, and very importantly to enrich our database resources by obtaining copies of publications, especially the fugitive literature such as local publications, which might otherwise be impossible to get.

Miscellaneous Publications by Information Unit Staff

Amaya, S.; Rizo, N., comps. Selección bibliográfica sobre comunicación agrícola. Cali, Colombia: CIAT, 1989. 42p.

Gómez, S.; Amaya, S., comps. Trabajos publicados por personal del CIAT en 1988. Cali, Colombia: CIAT, 1989. 53p.

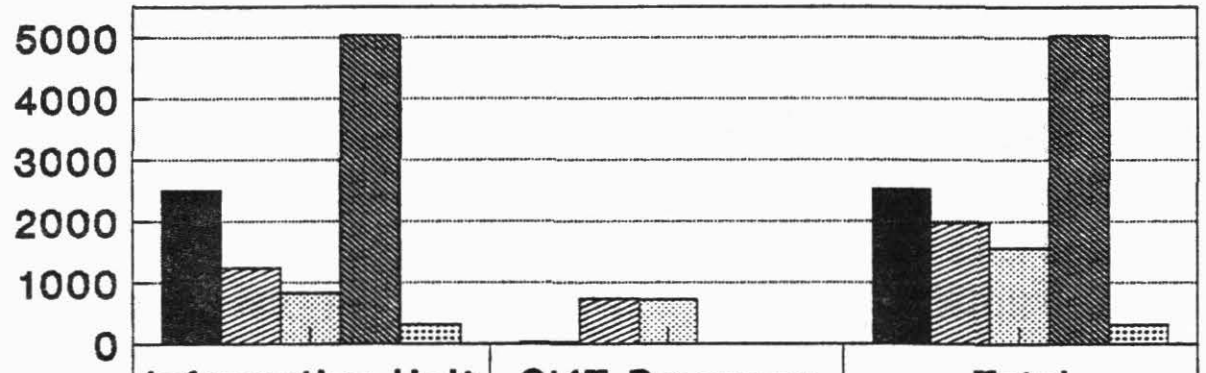
López, J. Snap Beans: Present Status in the Developing World and Bibliography of Research. Supplement to the Bibliography, 1989. Cali, Colombia: CIAT, 1989. 99p.
(Working document compiled by the Bean Information Center for the International Conference on Snap Beans in the Developing World, CIAT, October 16-20. 1989)

Mejía, M. Pasturas Tropicales; índices de autores y materias 1979-1989. Cali, Colombia: CIAT, 1989. (Draft)
(Cumulative subject and author index to 10 volumes of the journal Tropical Pastures)

Sere, C,; Rizo, N.; Gómez, S., comps. Investigaciones sobre economía realizado por el personal científico del CIAT en 1988. Cali, Colombia: CIAT, 1989. 30p.

Table 2

Information Unit
Acquisition of bibliographic materials 1989

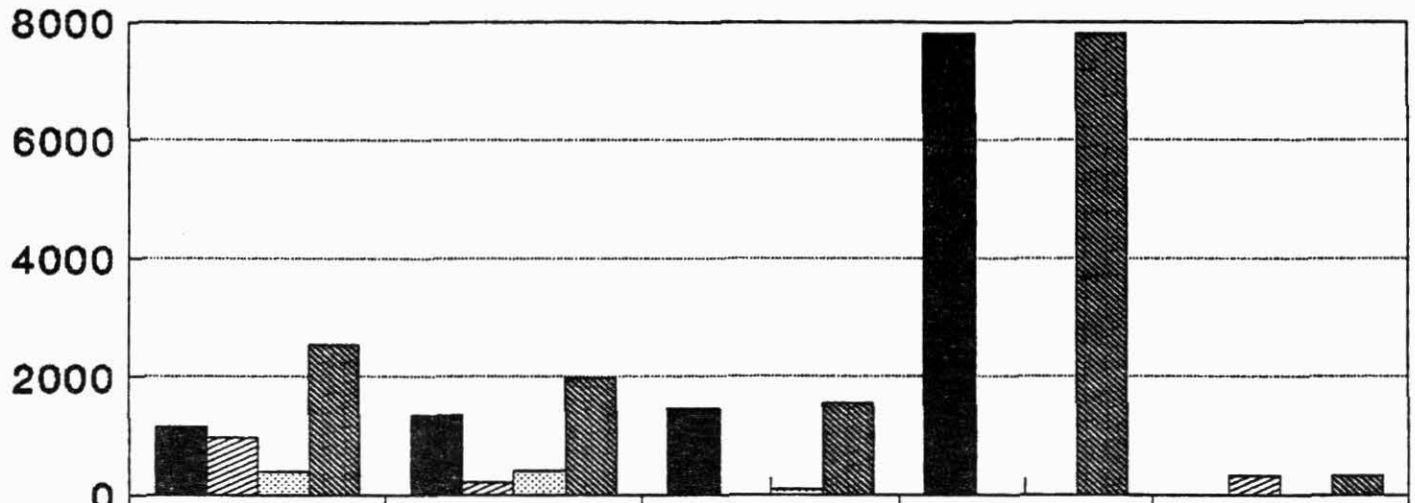


	Information Unit	CIAT Programs	Total
Journals	2505	27	2532
Books	1243	732	1975
Photocopies	828	728	1566
Microforms	5033		5033
Monographic series	323		323

Journals Books Photocopies
Microforms Monographic series

Table 3

Information Unit
Acquisition by source 1989



	Journals	Books	Photocopies	Microforms	Monographic series
Purchase	1170	1351	1458	7806	
Exchange	973	220	8		323
Donation	389	404	90		
Total	2532	1975	1556	7806	323

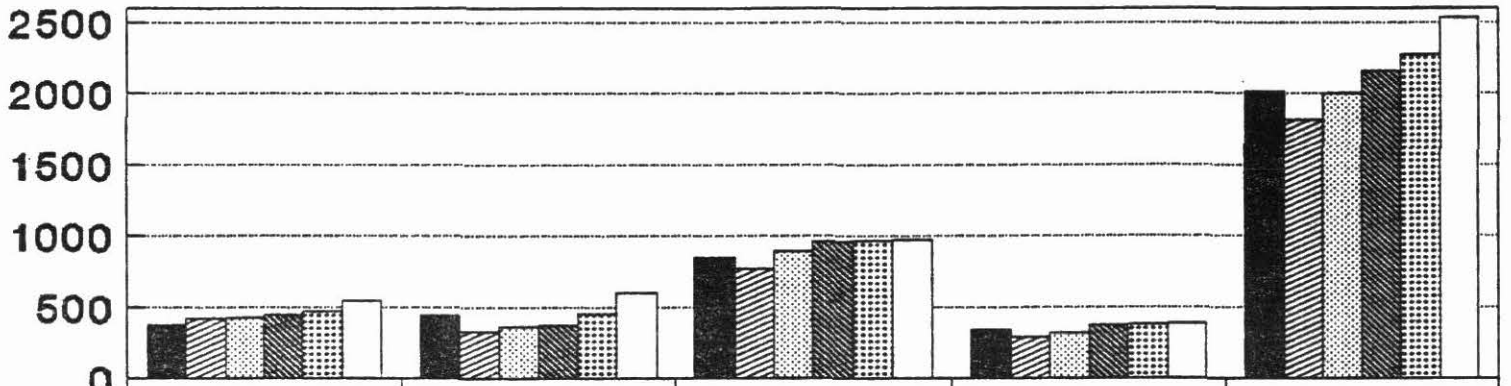
Purchase Exchange Donation Total

Table 4

Information Unit

Journals acquired by source

1984 - 1989



	Purchase Fax	Purchase Publisher	Exchange	Donations	Total
1984	375	447	847	344	2013
1985	418	330	773	293	1814
1986	424	363	898	319	2004
1987	448	378	962	373	2161
1988	473	456	967	379	2275
1989	543	601	972	389	2532

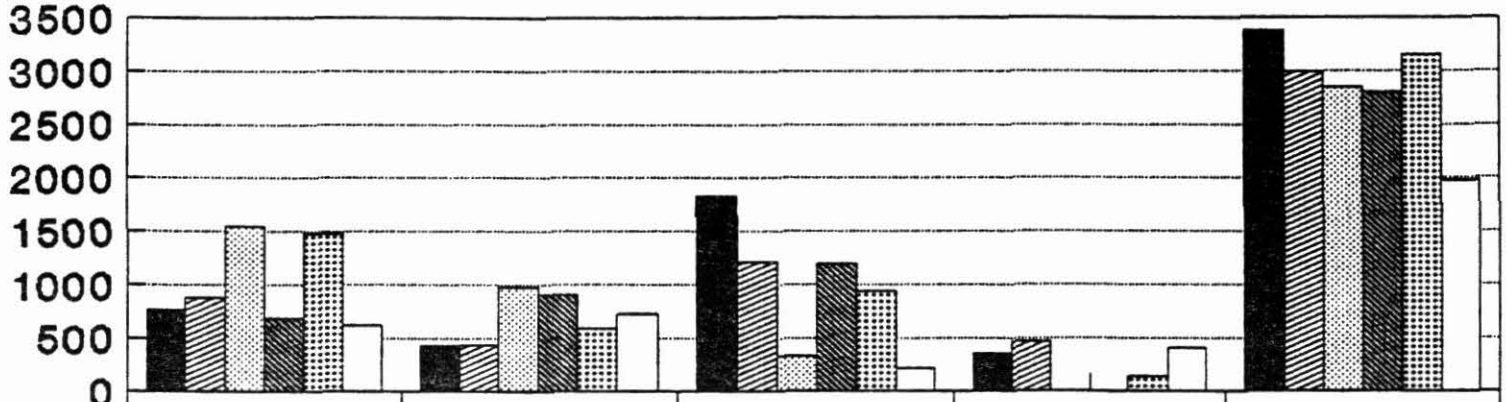
1984 1985 1986 1987 1988 1989

Table 5

Information Unit

Books acquired by source

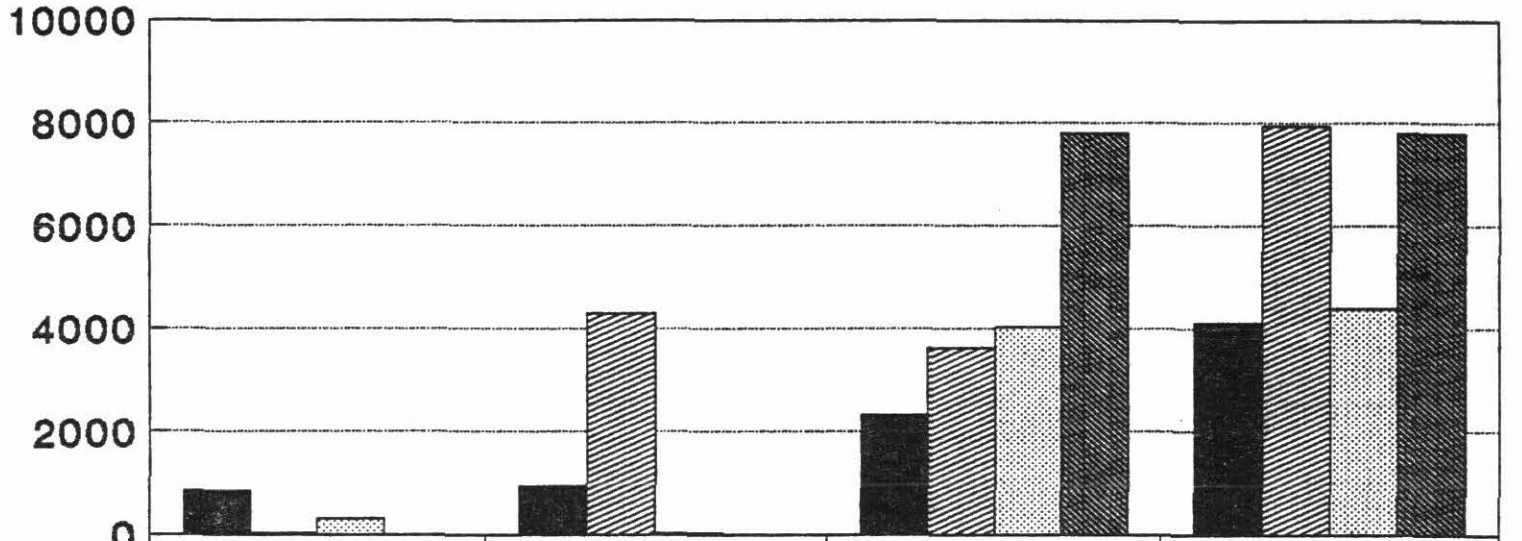
1984 - 1989



	Purch.Inf.Uni.	Purch. CIAT Pro.	Exchange	Donations	Total
1984	764	435	1831	352	3382
1985	878	437	1210	465	2990
1986	1545	976	328		2849
1987	691	912	1197	5	2805
1988	1482	585	941	144	3152
1989	622	729	220	404	1975

Table 6

Information Unit
Microforms acquired 1986 - 1989



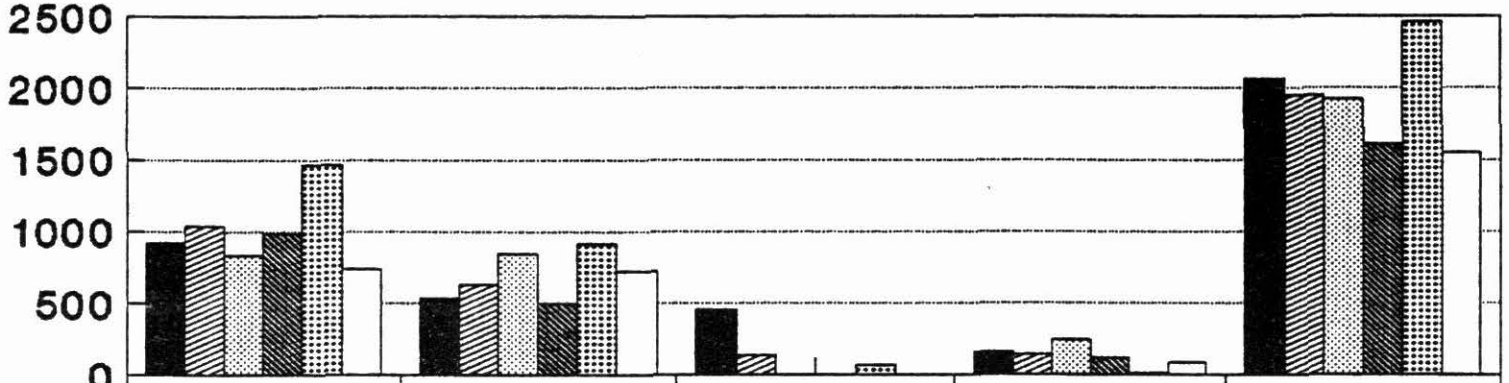
	Books	Journals	Documents	Total
1986	851	938	2315	4104
1987	29	4286	3622	7937
1988	317	30	4033	4380
1989			7806	7806

1986 1987 1988 1989

Table 6A

Information Unit

Photocopies of documents acquired by source 1984 - 1989

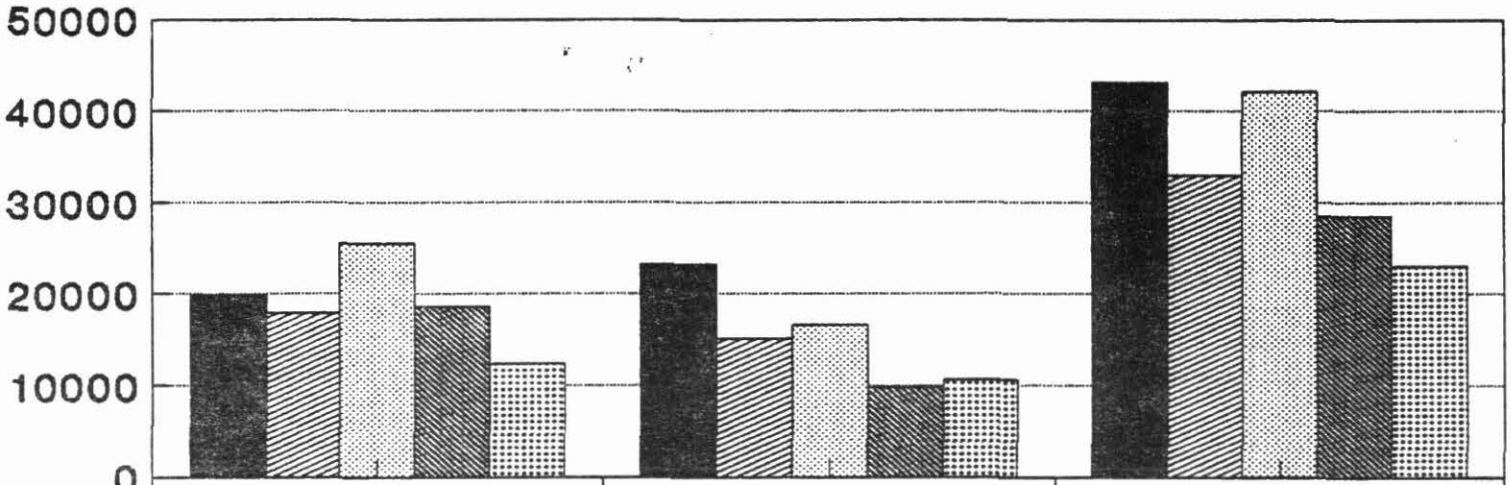


	Purch.Inf.Unit	Purch.CIAT Pro.	Exchange	Donations	Total
1984	924	532	455	161	2072
1985	1039	631	136	146	1952
1986	833	845		245	1923
1987	989	500		120	1609
1988	1462	916	68	14	2460
1989	738	720		90	1548

Table 7

Information Unit

No. of documents photocopied 1985 - 1989

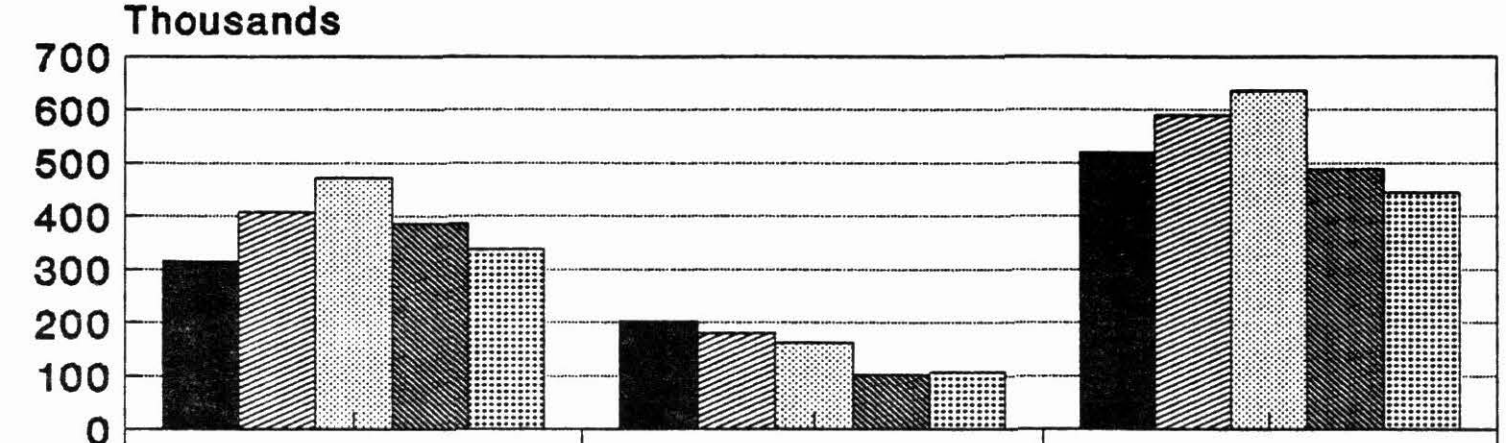


	CIAT users	External users	Total
1985	19877	23217	43094
1986	17912	15115	33027
1987	25480	16628	42108
1988	18677	9851	28528
1989	12393	10658	23051

Table 8

Information Unit

No. of pages photocopied 1985 - 1989



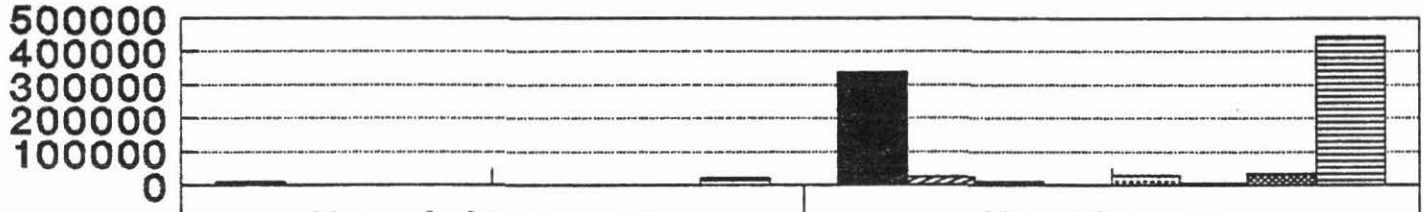
	CIAT users	External users	Total
1985	316.529	202.113	518.642
1986	408.362	180.717	589.079
1987	472.241	162.684	634.925
1988	386.277	102.752	489.029
1989	337.744	107.355	445.099

Users

1985 1986 1987 1988 1989

Table 9

Information Unit
Distribution of documents copied in 1989 by type of requester

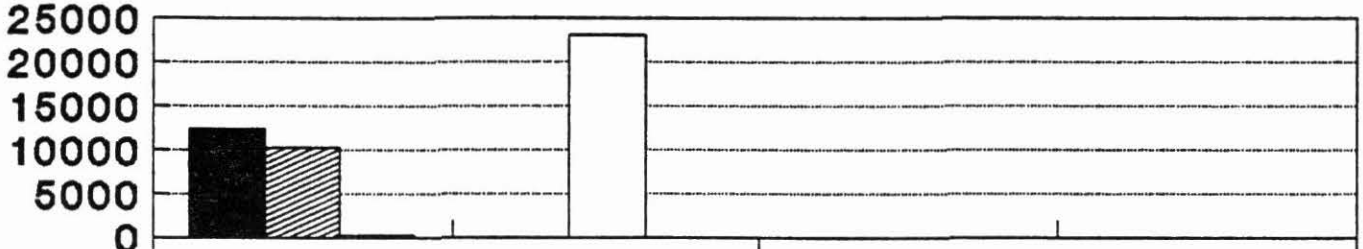


	No. of documents	No. of pages
CIAT res.	12393	337744
Researcher	2562	25609
Agri prof.	1451	11487
Univ. lec.	146	863
Librn.	3787	29138
Agro ind.	747	4909
Students	1965	35349
Total	23051	445099

CIAT res. Researcher Agri prof. Univ. lec.
Librn. Agro ind. Students Total

Table 10

Information Unit
Geographic distribution of documents copied in 1989

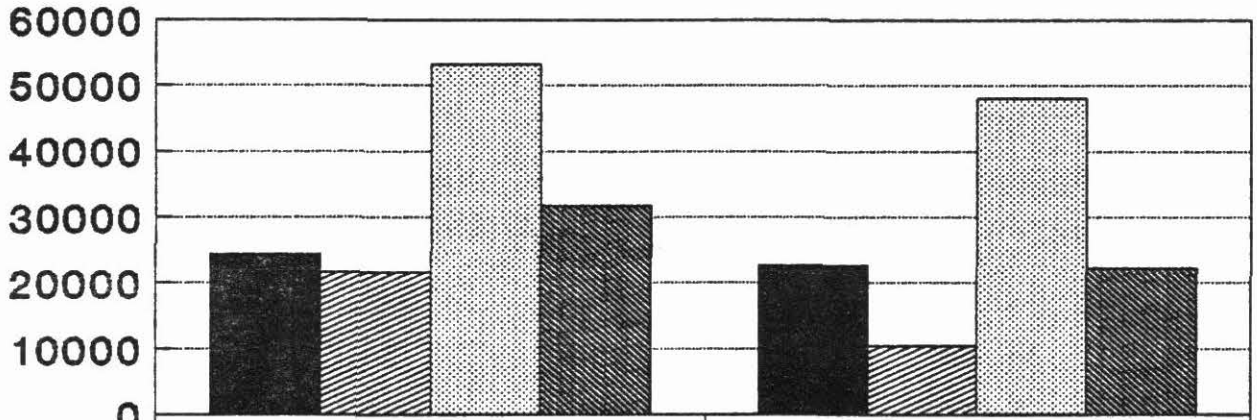


	No.of documents	Per cent
CIAT	12393	
Latin Amer.	10253	90
Africa	273	
Asia	22	
USA,Eur.Can.	110	
Total	23051	
AGLINET	15	

Colombia represented

Table 10A

Distribution of photocopies (pages)
by selected sources of requests in 1989



	Ciat staff	External
Pages of contents	24310	22691
Abstr.journals	21598	10454
Serials	53248	48028
General collection	31729	22248

Table 11

INFORMATION UNIT
BIBLIOGRAPHIC SEARCHES IN THE CINFO COMMODITY DATABASES IN 1989 BY CATEGORY OF USER

Labor category	Beans	Tropical Pastures	Cassava	Total	%
CIAT trainee	34	42	13	89	12.66
Researcher	104	69	37	210	29.87
Agri-professional	7	15	10	32	4.55
University lecturer	15	20	14	49	6.97
Undergraduate student	16	47	24	87	12.38
Undergraduate-Thesis at CIAT	40	28	33	101	14.37
Postgraduate student	7	4	6	17	2.42
Postgraduate-Thesis at CIAT	13	10	7	30	4.27
Documentalists/Librarians	6	11	5	22	3.13
Agro-industrialist	1	2	5	8	1.14
Agri-producer	2	12	8	22	3.13
Others	20	3	13	36	5.12
Total	265	263	175	703	100.00

Table 12

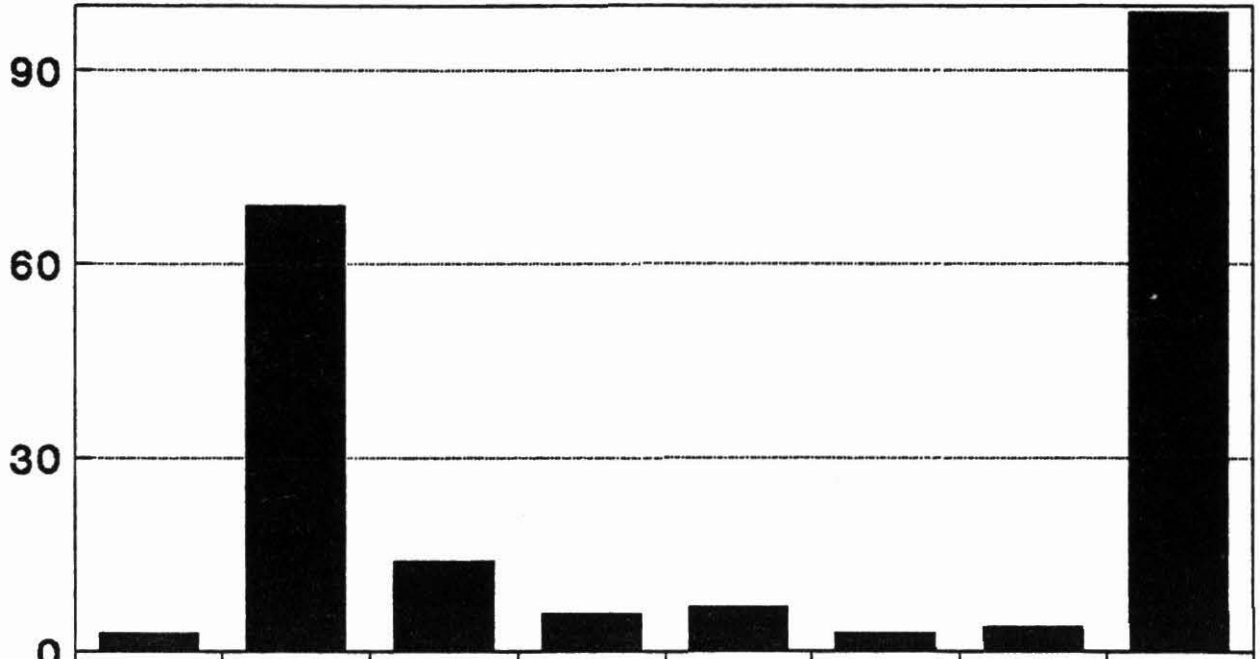
INFORMATION UNIT
BIBLIOGRAPHIC SEARCHES IN THE CINFO COMMODITY DATABASES IN 1989 BY GEOGRAPHIC ORIGIN

Country	Beans	Tropical Pastures	Cassava	Total
Colombia	121	153	89	363
CIAT	43	47	31	121
Mexico	8	12	2	22
Tanzania	18			18
Brasil	5	2	9	16
Peru	4	8	4	16
Venezuela	5	5	3	13
Honduras	2	6	1	9
Nigeria	1	3	5	9
Zimbabwe	9			9
Zambia	7			7
Etiopia	5	1	1	7
India	5	1	1	7
Ecuador		3	3	6
Australia	3	2	1	6
Ruanda	5			5
Guatemala		3	2	5
Bolivia	5			5
Uganda	4			4
Alemania	1		3	4
USA	3		1	4
Costa Rica	1	3		4
Holanda		2	1	3
Panama		2	1	3
Nicaragua	3			3
Paraguay	1	1	1	3
Rep. Dominicana	1		1	2
Kenia	2			2
Zaire	1		1	2
Cuba	2			2
Filipinas			2	2
Surinam		1	1	2
El Salvador	1	1		2
Guyana			2	2
Malawi	1		1	2
Cameroon	2			2
Burkina Faso		1		1
China			1	1
Rep. C. Africa.			1	1
Ghana			1	1
Puerto Rico		1		1
Francia	1			1
Papua NG			1	1
Belize		1		1
Samoa			1	1
Espana	1			1
Chile		1		1
Total	271	260	172	703

Table 13

Information Unit

Reference requests answered in 1989 by category of user

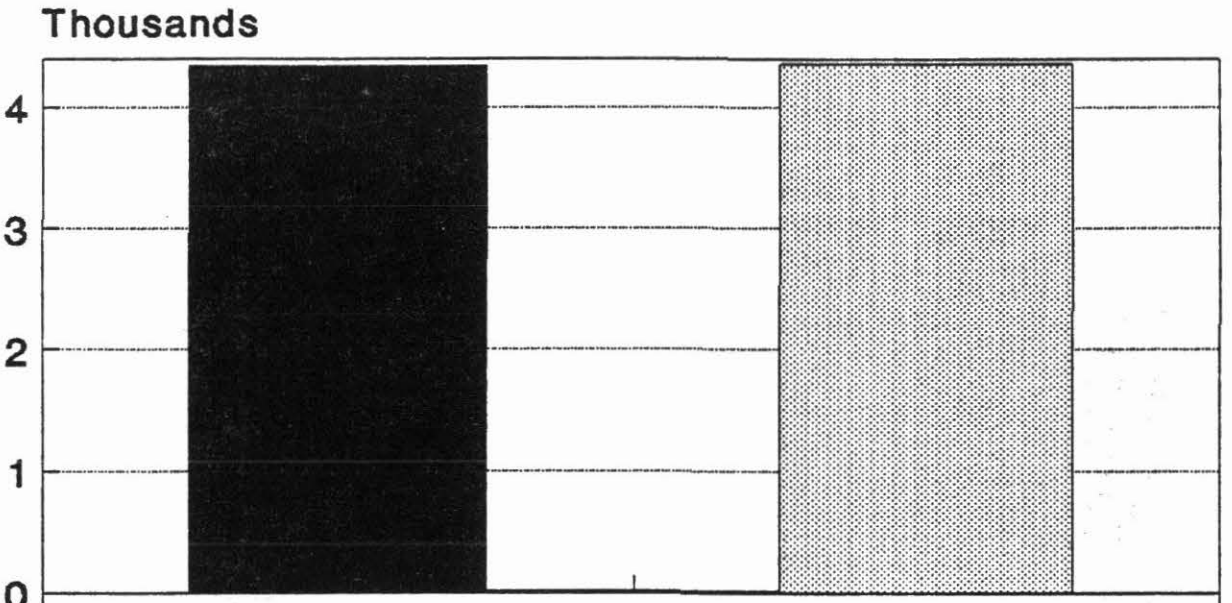


	C.tr.	Res.	Agr.pr.	U.lec.	U.t.C.	P.t.C.	Lib.	Total
No. of request	3	69	14	6	7	3	4	99

No. of request

Table 14

Information Unit
Books loaned in 1989



Internal (CIAT)	4.347
Interl. loan	0.012
Total	4.359

Internal (CIAT) Interl. loan Total

*Books are normally loaned only to CIAT

Table 15

INFORMATION UNIT
GEOGRAPHIC DISTRIBUTION OF SUBSCRIPTIONS TO CIAT'S
COMMODITY ABSTRACT REVIEWS IN 1989

AREA	CASSAVA		BEANS		TROPICAL PASTURES	
	Freq.	%	Freq.	%	Freq.	%
TOTAL = 1542	450	29.18	618	40.08	474	30.74
Latin America and Caribbean	250	55.56	304	49.19	373	78.69
Africa	54	12.00	163	26.38	15	3.16
Asia	42	9.33	23	3.72	10	2.11
Developed Countries	104	23.11	128	20.71	76	16.04
CIAT/Total	45	10.00	55	8.90	74	15.61
Colombia (not CIAT)/Total	55	12.22	54	8.74	93	19.62

Table 16

INFORMATION UNIT
GEOGRAPHIC DISTRIBUTION OF SUBSCRIPTIONS TO CIAT'S BOLETIN BIBLIOGRAFICO IN 1989

COUNTRY	FREQUENCY	PER CENT
TOTAL = 386		
Latin America and Carribbean	319	82.64
Africa	46	11.92
Developed Countries	19	4.92
Other Countries	2	.52
CIAT/Total	61	15.80
Colombia (not CIAT)/Total	77	19.95

Table 17

INFORMATION UNIT
GEOGRAPHIC DISTRIBUTION OF SUBSCRIPTIONS TO CIAT'S
PAGES OF CONTENTS IN 1989

COUNTRY	FREQUENCY	PER CENT
TOTAL = 561		
Latin America and Caribbean	448	79.86
Africa	91	16.22
Asia	9	1.60
Developed Countries	13	2.32
CIAT/Total	111	19.79
Colombia (not CIAT)/Total	166	29.59

Table 18

Information Unit

Documents indexed and abstracted for CINFO databases in 1989

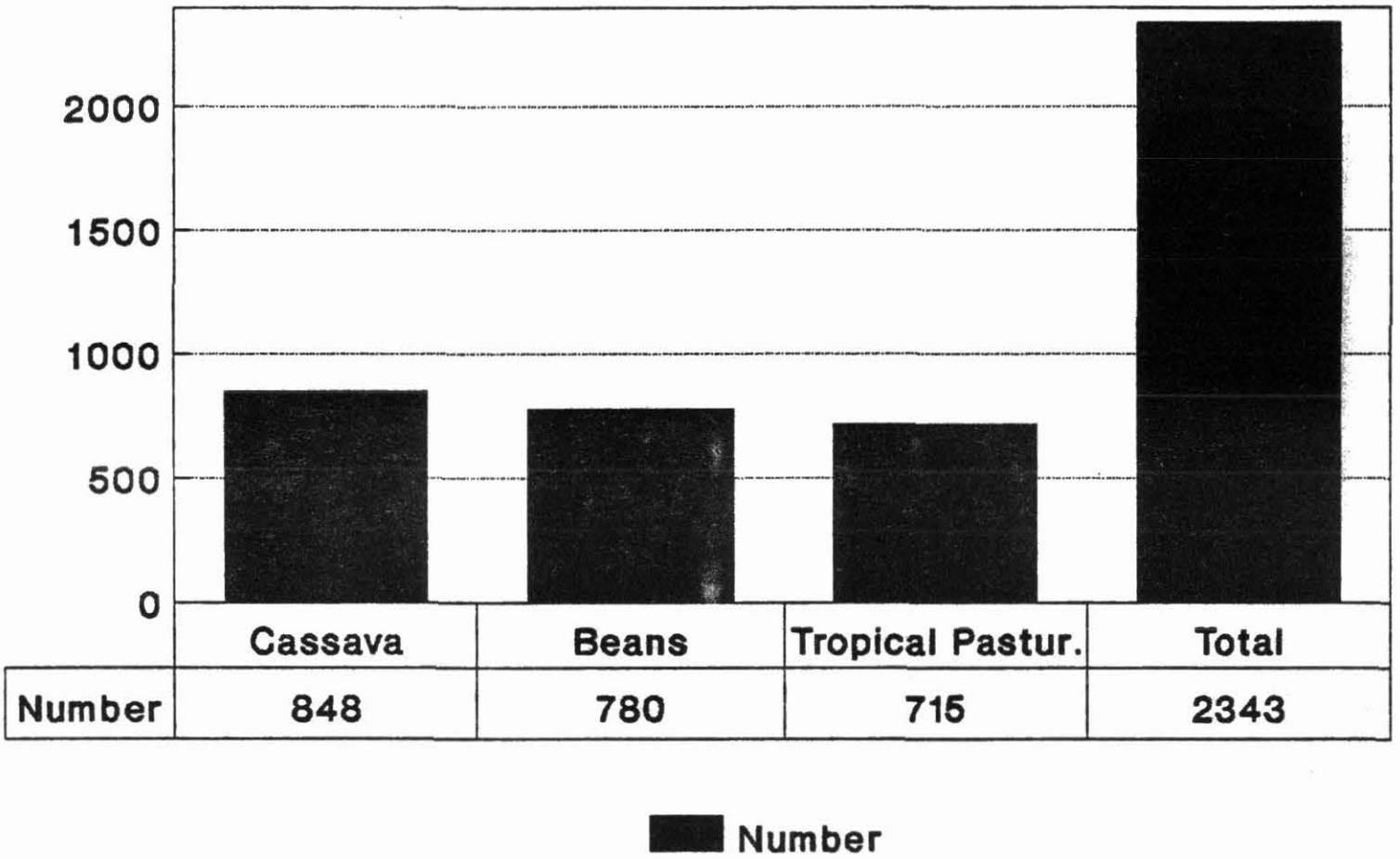
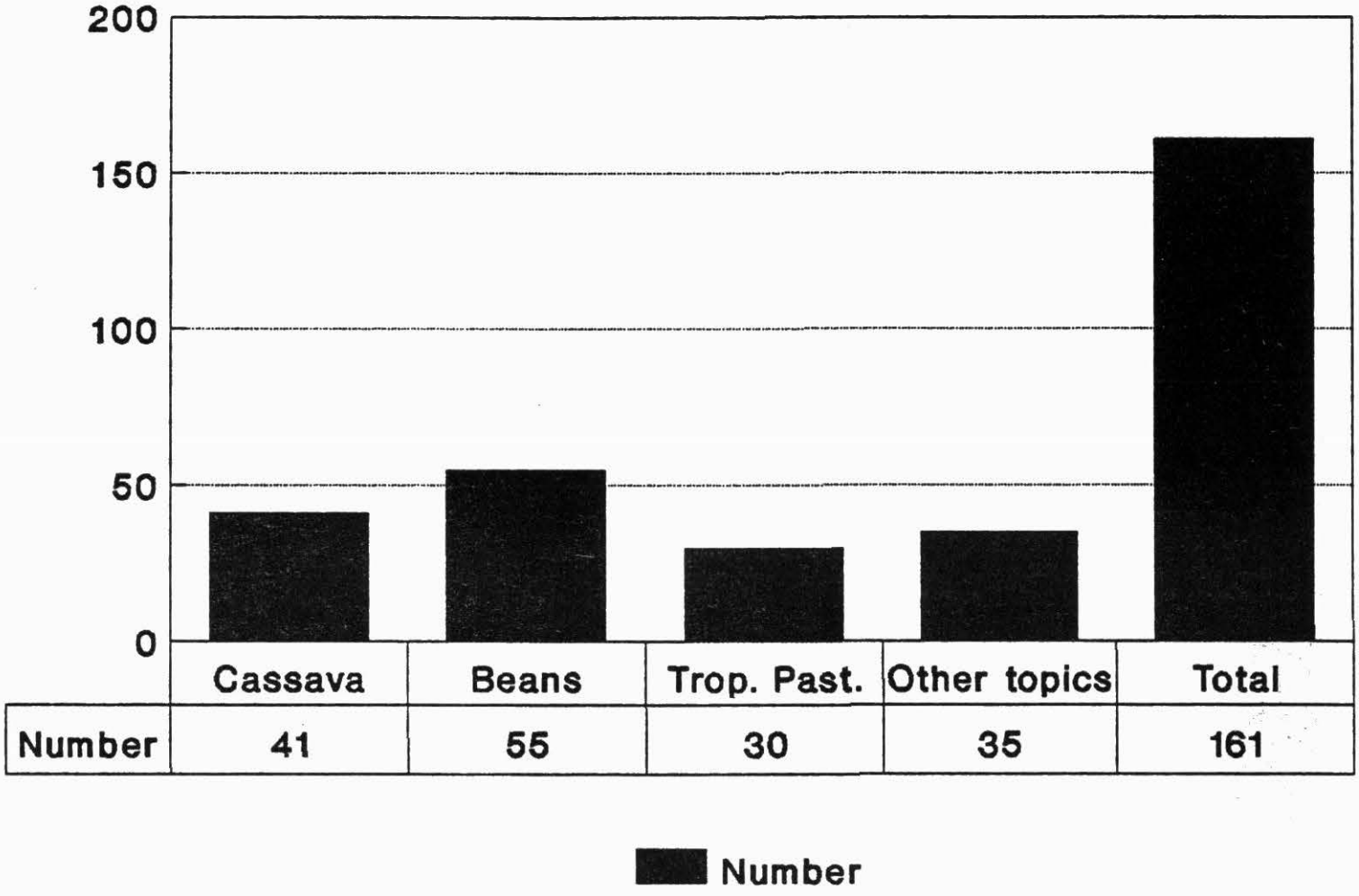


Table 19

Information Unit

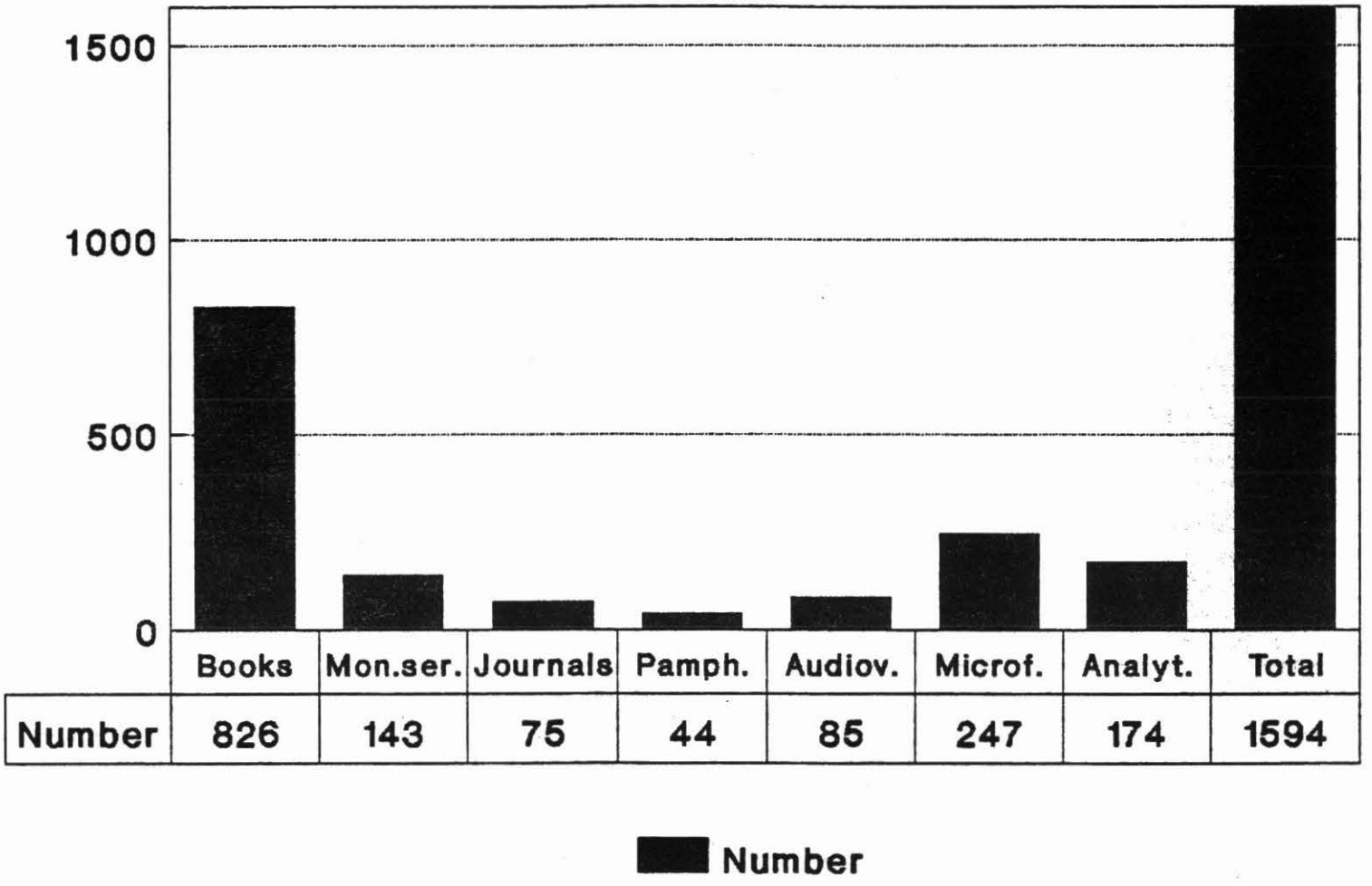
Records input into FAO's AGRIS Database*



*Includes official CIAT publicat. only

Table 20

Information Unit
Items cataloged in 1989



	Books	Mon.ser.	Journals	Pamph.	Audiov.	Microf.	Analyt.	Total
Number	826	143	75	44	85	247	174	1594

GRAPHIC ARTS UNIT

The Graphic Arts Unit has had a marked increase in the number of printed copies and photocopies made in comparison with last year's volume. By the same token, and starting this year, the number of computer-generated slides handled by the Graphic Arts Production Assistant's office helped significantly to lighten the workload handled in previous years by the Art Section. This allowed the Art Section to paste up a larger amount of camera-ready work this year, without increasing the number of art personnel.

For the first time in ten years it was necessary to contract some typesetting outside because of the tremendous amount of text handed in by the Publication Unit and also because of failure in our typesetting equipment due to voltage variation and contaminated air. This problem has been taken care of and we expect normal operations from now on.

Production figures for 1989 and percent increase over 1988 are the following:

Print Shop	1989	1988	Increase
No. of impressions	4,569,831	3,937,587	16%
Photocopies	3,130,076	2,740,949	14%
Typeset pages	4,665	2,362	50%
Camera-ready pages (typeset & direct image)	8,163	4,595	44%
Camera-ready (film) pages	4,665	2,362	49%
Photography			
Slides	66,851	58,217	19%
B/W copies and color (Cibachrome)	4,749	4,928	(1)%
Photographic studio sessions	285	167	41%