ANNUAL REPORT

SEPTEMBER, 1984 - DECEMBER, 1985

CHAPARE REGIONAL DEVELOPMENT PROJECT

EXPERIENCE, INCORPORATED

CONTRACT NUMBER	511-0543-C-00-4214
PROJECT NUMBER	511-0543

GERALD P. OWENS	Coordinator
ALFREDO ALVARADO	Soils Managment
JOHN BIEBER	Cropping Systems
JOE LOPEZ	Agricultural Extension
JOSE MONDOÑEDO	Tropical Horticulture
MERRITT TAYLOR	Farm Management

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CHAPARE REGIONAL DEVELOPMENT PROJECT 511-Ø543

EXPERIENCE, INCORPORATED

INTRODUCTION

This AID funded project is designed to improve the agricultural and forestry systems of farmers in the Chapare region of Bolivia. The project also includes marketing, agroindustry, and credit components. Community improvement and rural road construction and improvement activities are included in the overall development scheme. It is expected that this project will facilitate a reduction in coca production in the Chapare region.

The Experience, Incorporated (EI) contract is for the purpose of providing technical assistance to the Government of Bolivia's Instituto Boliviano para Tecnologia Agropecuaria (IBTA). A special unit of this organization has been set up for the Chapare (IBTA/Chapare) with a Director General, two experiment station Directors and about thirty technicians. Experience, Incorporated, under its contract dated July 5, 1984, provides a coordinator and five consultants to assist IBTA/Chapare in technical and institutional matters.

The major IBTA/Chapare activities can be categorized as follows:

- Agricultural Extension
- Agricultural Research
- Introduction of new genetic material
- Production of seeds and plants for distribution to Chapare farmers.
- Training for IBTA technicians, paratechnicians (promotors) and Chapare farmers.

Since a significant amount of technology is available for the Chapare region, extension activities recieve a high priority. Because of the dangers associated with drug production, IBTA/Chapare and EI work at the invitation of farmer organizations, usually at community level.

Research efforts are directed primarily toward development of cropping systems and adapting new varieties to Chapare conditions.

Seed and plant production is a very important element as there is considerable demand. High-value crops are important as alternatives to coca.

The project emphasizes procurement of new genetic material, especially exotic, high-value species.

The project training program emphasizes formal in-country training for technicians, paratechnicians (promotors) and farmers. The project also includes short and long term training abroad for IBTA/Chapare personnel and on-the-job training by EI consultants.

CHRONOLOGY

5 July 1984	Contract 511-Ø543-C-ØØ-4214 signed by AID contracting officer and EI
1 Sept. 1984	Ing. Francisco Zannier appointed Director General, IBTA/Chapare
3 Sept.1984	Contract activities initiated with the arrival in Bolivia of EI Senior Vice President and Project Coordinator
15 Oct. 1984	Patricia Violand employed as Administrative Assistant, EI/Bolivia
25 Oct. 1984	The initial IBTA/Chapare budget request was submitted to USAID and the GOB MINFIN
1 Nov. 1984	Arrival of EI Farm Management Specialist and Extension Advisor

12-16 Nov. 1984	IBTA/Chapare Director General Francisco Zannier and two technicians attended EMBRAPA research review meetings in Belem, Brazil
28 Nov. 1984	USAID/Bolivia authorized purchase of household furniture and appliances for EI consultants
1Ø Dec. 1984	IBTA/Chapare received the first disbursement of project funds from USAID. $ 14Ø,454
Dec. 1984	USAID sponsored seminar "Land Use in the Chapare"
Dec. 1984	IBTA/Chapare had a total of 41 employees, including 13 technicians, at years end.
11 Jan. 1985	Experience, Incorporated long-term staffing completed
Jan. 1985	IBTA/Chapare work plans for 1985 completed
Jan. 1985	Field days for Chapare farmers held at La Jota and Chipiriri experiment stations
4-8 Feb. 1985	First cycle of formal training program (for IBTA/Chapare technicians) held at La Jota experiment station
11 Feb. 1985	IBTA/Chapare and EI occupied liaison office in Cochabamba
March 1985	IBTA/Chapare staffing at full strength by end of first quarter, 1985, with a total of 78 employees including 34 technicians
7-17 April 1985	First nine demonstration farms (PDUs) initiated in Chapare
14 April 1985	All EI personnel moved into houses rented by USAID
16-2Ø April 1985	EI Consultans Owens and Taylor accompanied USAID Project Manager John Fasullo and Owaldo Antezana to Peru to review upper Huallaga and Chapare projects with USAID/Lima

23 April 1985	Formal presentation of IBTA/Chapare "Plan Operativo" to USAID/Bolivia.
27 April 1985	EI household furniture delivered
29 April 1985	EI consultant Thomas Gardiner arrived in Bolivia to assist in the design and evaluation of the IBTA/Chapare training program
Aug. 1985	New introductions of black pepper, macadamia and cardamon planted on La Jota experiment station
26-30 Aug. 1985	Second cycle of formal in-country training program held at La Jota experiment station
9 Oct. 1985	EI household appliances delivered
22 Oct. 1985	First vehicle for EI team received from USAID
29 Oct. 1985	EI/Washington project manager and Senior Vice President Bob Delemarre arrived Bolivia to review project
2-6 Dec. 1985	Third cycle of formal in-country training program begun in Chapare

II. ADMINISTRATIVE AND INSTITUTIONAL

A. Budget

The Chapare Regional Development Project budget, as originally set forth in the Project Paper, totals $36,263,000 over its project life of five years. Of this total, sixty percent originates in the host country, mostly from PL480 and private sector sources.

The AID contribution (the remaining forty percent) is about 30 percent grant and 70 percent loan. The budget covers three major activities: Institutional Development - 6 %, Agricultural Production - 52%, and Marketing/Agroindustrial Development - 42%.

The IBTA/Chapare budget totals $ 5,966,ØØØ, of which 88% is from AID. The AID portion is 51% grant and 49% loan.

The disbursement schedule in the Project Paper calls for 37% of the IBTA/Chapare funds to be disbursed by the end of 1984, 6Ø% by end of 1985, 73% by end of 1986, 86% by end of 1987 and 1ØØ% at end of project in 1988.

IBTA/Chapare was more than one year late getting started, as the Director General, Ing. Francisco Zannier, was not appointed until September, 1984. No funds were received until mid December, 1984. By this reckoning, 1985 would be the first year of the project, at the end of which the disbursement schedules calls for the expenditure of slightly over two millon dollars. TABLE I shows that about 9Ø percent of funds budgeted were spent, and that GOB has exceeded its committment by about 9Ø percent.

B. Staffing

The project officially got underway with the appointment of the Director General in September, 1984. The first of the technical assistance team arrived in Bolivia on 3 September. Two additional members of the technical assistance team, Taylor and Lopez, arrived on 1 November.

Dr. Alfredo Alvarado, Soils, and Dr. John Bieber, Agroforestry Systems, arrived on 1Ø January. The technical assistance team was completed on 12 January, 1985, with the arrival of Dr.Jose Mondoñedo, Horticulturist.

TABLE I BUDGET PERFOMANCE. IBTA/CHAPARE BUDGET AND EXPENDITURES - 1985.

US DOLLARS

SOURCE OF FUNDS	FOREIGN EXCHANGE		LOCAL CURRENCY	
	BUDGETED (PROJECT PAPER)	RECEIVED/ EXPENDED	BUDGETED (PROJECT PAPER)	RECEIVED/ EXPENDED
GRANT	646,ØØØ	643,695*		
LOAN	553,ØØØ	337,658**	712,ØØØ	452,Ø42
GOB			288,ØØØ	547,784***
TOTAL	1,199,ØØØ	981,353	1,ØØØ,ØØØ	999,826

* Experience, Incorporated contract. At end of 1985, EI had submitted vouchers to USAID totaling $ 757, 881.

** USAID reports spending $ 337,658 on behalf of IBTA/Chapare, which includes furniture and appliances for Experience, Incorporated, which should have been paid for by grant funds. IBTA/Chapare has received $299.429,57, including the value of vehicles, extension equipment, office equipment, parts and tools.

*** Includes $ 116,784 for salaries and fuel, and $ 231,ØØØ as estimated value of tractors, trucks, equipment and supplies received through the BID/IBTA Loan. Also included is $ 2ØØ,ØØØ as a provisional estimate of land, buldings and vehicles assigned to IBTA/Chapare by GOB at the beginning of the project.

IBTA/Chapare began recruiting in earnest about 1 January, 1985, shortly after receiving the first disbursement of project funds. They had 41 employees at end of year, 1984.
By end of March, 1985, IBTA/Chapare was near full strength with 78 employees, as follows:

Director General	1
Technical personnel	35
Administrative Personnel	3
Secretarial	3
Support personnel	17
Laborers	19
	78

The IBTA/Chapare personnel situation as of end of this reporting period (31 December, 1985) follows:

Director General Francisco Zannier	1
Experiment Station Directors	2
Administrative officer	1
Assistants - Administration	4
Secretaries	3
Technicians	34
Arquitect	1
Chauffers	3
Tractor drivers	2
Mechanics	3
Mechanics Assistants	2
Warehousemen	2
Herdsmen	2
Other Support personnel	11
Laborers	17
	88

The Experience, Incorporated team at end of reporting period counted six expatriates and four local hire employees.

Gerald P. Owens	-	Coordinator
Merritt J. Taylor	-	Farm Management Specialist/ Assistant Coordinator
Alfredo Alvarado	-	Tropical Soils Specialist
John Bieber	-	Agroforestry Systems Specialist
Joe David Lopez	-	Extension Specialist
Jose Mondoñedo	-	Tropical Horticulture Specialist
Patricia Violand	-	Administrative Assistant
Rosa Zegarra	-	Secretary/Computer Operator
Carlos Tejada	-	Driver/Mechanic
Ricardo Paniagua	-	Staff-House Manager

C. Logistics.

IBTA/Chapare inherited the properties and some of the equipment formerly used by PRODES. In general, the buildings and equipment were in poor condition and the properties were overgrown with vegetation because of a two-year lapse in responsibility. A partial list of properties and equipment "inherited" from PRODES follows:

Land and Buildings - La Jota Experiment Station	98 Ha.
Land and Buildings - Chipiriri Experiment Station	350 Ha.
Land-Villa Tunari nursery	5 Ha.
Jeep Cherokee - non functional	1
Chevrolet Suburban - non functional	1
Fertilizers and chemicals	
Hand tools and miscellaneous	

IBTA/Chapare also received used vehicles from the GOB (MACA/IBTA) at the begining of the project:

5 Daihatsu jeeps
2 Toyota pickups
1 International truck
2 Chevrolet Suburbans
3 Fiat tractors - in poor condition
2 Ford pickups - non funtional

Requests for additional vehicles, equipment and supplies were submitted by IBTA/Chapare beginning in January 1985. Requests were submitted to USAID through the Secretaria de Desarrollo de los Tropicos Bolivianos (SDTB) for import through the Direct (Foreign Exchange) Account or for local purchase through the Special (Local Curency) account.

TABLE 2 is a partial list of equipment, vehicles, and supplies received during the life of the project.

D. Planning

The USAID Project Paper for the Chapare Regional Development project is the basic planning document as well as the basic budget document for IBTA/Chapare. Background information, goals, strategy, methodology and targets are discussed in the Project Paper.

The major planning document for IBTA/Chapare, the "Plan Operativo" was first elaborated in June and July 1985. This was submitted to the SDTB where methodologies were refined and revised to some extent, particularly with respect to extension, training and research. Extension methodology regarding establishment of demonstration farms at the invitation of communities was laid out in detail.

TABLE 2. EQUIPMENT AND SUPPLIES RECEIVED IN 1985

ITEM	No.	COST
VEHICLES:	15	$ 177,804
FORD Bronco	2	
FORD Van	2	
DODGE Microbus	1	
FORD Pickup	10	
AUDIOVISUAL EQUIPMENT		7,969
Slide projectors	4	
Office duplicators	2	
Typewriters	2	
Portable generators	3	
Misc.		
OFFICE EQUIPMENT AND MISC.		22,253
Typewriters	8	
Kitchen Stoves	16	
Refrigerators	15	
Furniture		
PARTS AND SUPPLIES		7,079
EQUIPMENT AND TOOLS		11,800
Portable generators	10	
Portable weed-eaters	10	
FUEL TANKS	4	3,120
TRUCK, TRACTORS, IMPLEMENTS AND EQUIPMENT FROM GOB		231,000

A training program for 1985 and for the life of the project was defined with the help of a short-term consultant. Research projects submitted by technical personnel were analyzed, prioritized and programmed. Targets, as shown in the Logical Framework in the Project Paper, were revised by adding more detail and by expanding in some areas for increased emphasis. TABLE 3 shows targets and target attainment at end of year.

III. EXTENSION

By 31 December 1985, IBTA/Chapare had 12 extensionists as follows:

3 Ing. Agronomos
7 Egresados
2 Peritos Agronomos

In addition, 81 paraprofessionals (promotors) had been trained to work as assistants to the extensionists in their respective communities.

For Extension purposes, the Chapare region is divided into three areas. Each area will be served by an extension office headed by an area extension officer. At present, only area II has a functioning extension office (Villa Tunari). The other two areas are administered from the experiment stations at La Jota and Chipiriri. See Figure 1.

The major extension thrust is to establish demonstration units and nurseries in farming communities. The demonstration units are called Production Demonstration Units (PDUs) rather than Demonstration Farms because they do not comprise the entire farm. Chapare farmers are not willing to devote their entire farm to experimental crops. Furthermore, only a few acres are required in each community for demonstrating new technologies.

TABLE 3 IBTA/CHAPARE TARGETS FOR 1985.

OBJETIVE/TARGET	AS PROPOSED IN THE PLAN OPERATIVO	AS ATTAINED AT END OF YEAR
Technical Personnel hired and Trained.	23	34
Production Demonstration Units Established	28	56
Paratechnicians trained	45	81
Farmers trained	100	79
Number of farmers participating in the IBTA/Chapare program	2.000	3000
Field days	18	6
Alternative technologies developed	6	26
Technicians in training abroad, L.T.	2	1
Technicians in training abroad, S.T.	10	5
Research Projects - Expt. Stations	20	40
Research Projects - Cooperating Farms	15	
Introduction of new varieties	12	20
Establishment of community nurseries	4	13

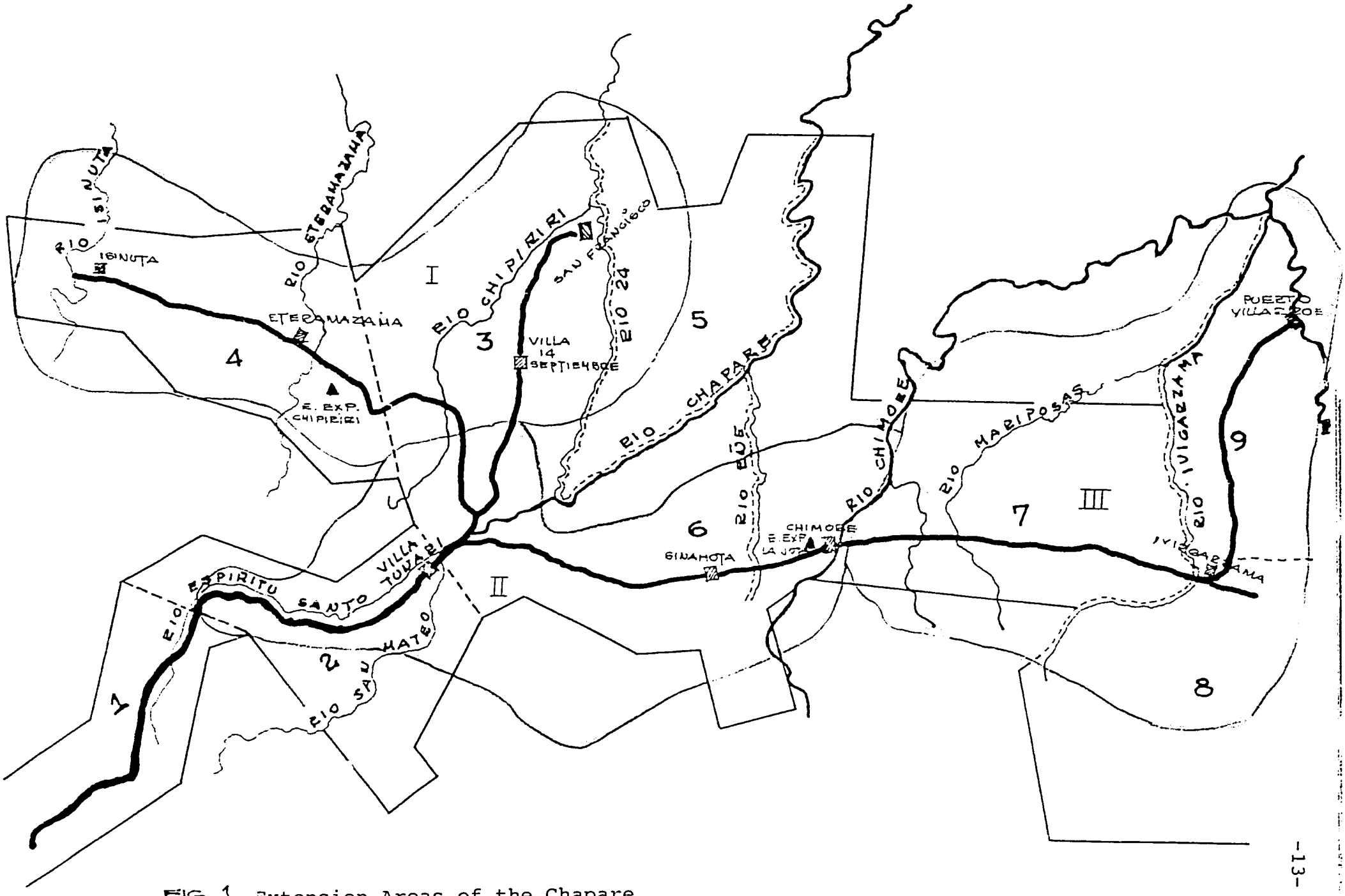

FIG. 1 Extension Areas of the Chapare

IBTA/Chapare operates at community level, usually through formal farmer organizations. In addititon, IBTA/Chapare operates only by invitation due to the unsettled and potentially dangerous social and political climate occasioned by the production and marketing of cocaine in the area. So far, there have been adequate invitations to keep research and extension personnel busy, and coverage of the overall area has been adequate. See Figure 2.

The initial step in IBTA/Chapare extension methodology is actually taken by the farm community - extending an invitation to IBTA/Chapare to visit their area. Community agricultural problems and interests are discussed, IBTA/Chapare and EI technicians explain the IBTA/Chapare approach and discussions are held on how the two entities can cooperate in agricultural development. Later, the communities usually meet without IBTA/Chapare to decide if they wish to continue in the program. If the decision is positive, the community selects candidates to be trained as paratechnicians. The community and IBTA/Chapare jointly select land for PDUs and nurseries.

Table 4 shows the steps taken in the establishment of Production Demonstration Units.

There are several advantages to the IBTA/Chapare extension approach.

1. Working by invitation preselects clients that are interested and more likely to adopt and benefit from new crops and technologies.

2. Working by invitation is the only safe way of moving around in the Chapare.

3. Working at community level through farmer organization allows contact with a maximum number of farmers at minimum cost.

TABLE 4. IBTA/CHAPARE EXTENSION METHODOLOGY

STAGE	DESCRTPTION
1	Initial contacts with interested communities. Community decision as whether to enter the program.
2	Training of paratechnicians (promotors) in extension techniques, production, non-formal education, etc.
3	Selection of PDU and nursery sites.
4	Descriptive survey of production systems and soil sampling.
5	Planning and design of siutable cropping systems, establishment of community nurseries and family gardens, elaboration of community work plan.
6	Establishment of PDUs.
7	Periodic visits for supervision and evaluation.
8	Data collection and reporting.

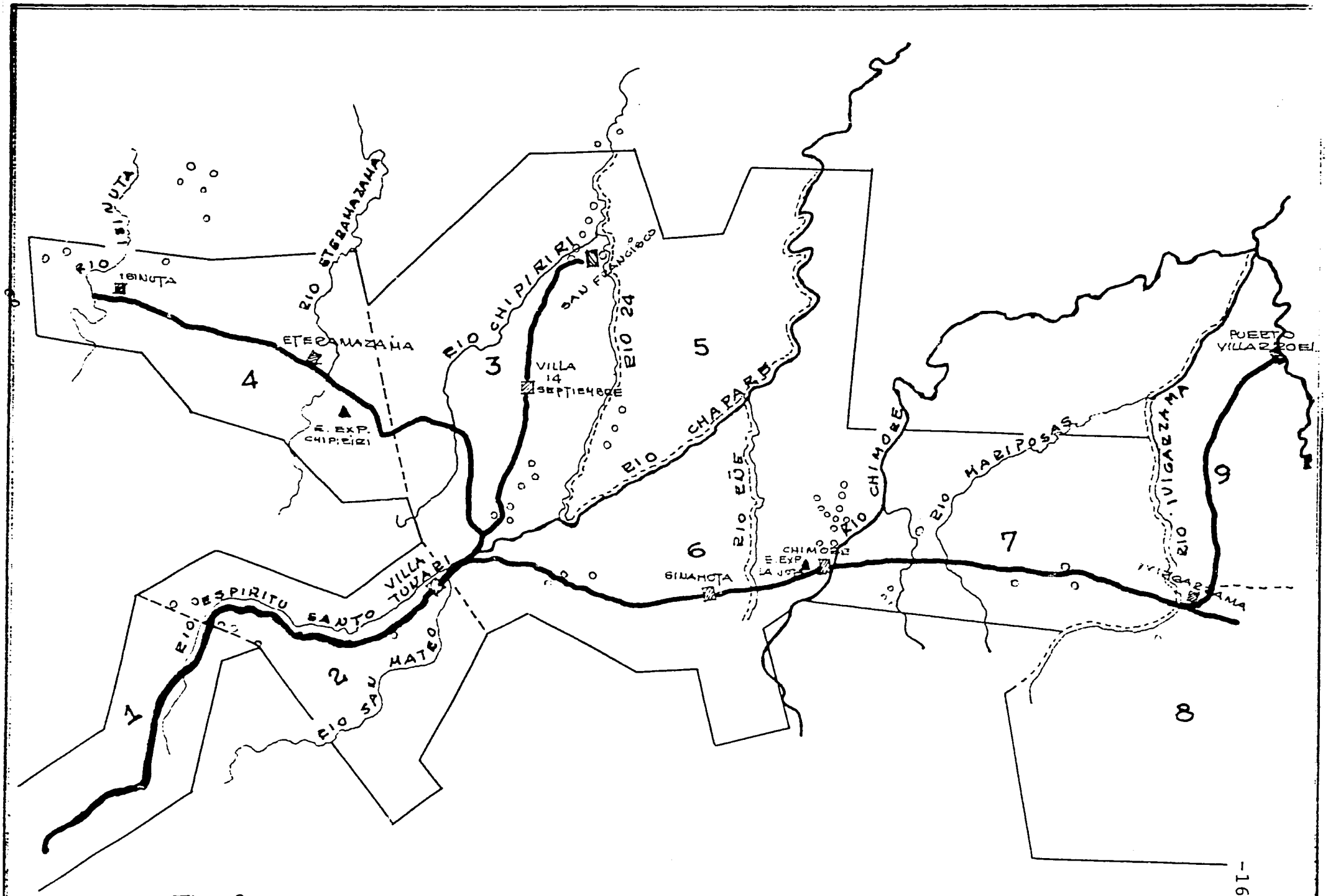

FIG. 2 Location of PDUs

4. New technologies tested at farm level in cooperation with interested farmers are more likely to be acceptable than technologies developed on experiment stations, or technologies introduced from other areas.

As of the end of this reporting period, 56 PDUs had been established in the Chapare, along with 13 community nurseries.

Figures 2 and 3 show location of the PDUs and nurseries. Appendix I gives detail on stage of development, location, types of technologies and crops.

Attached primarily to the extension branch, but serving research as well, is a communication unit. This unit has responsibility for preparing training material, technical bulletins, and for preparing public relations material aimed primarily at Chapare farmers. Efforts are also being made to inform the general public via radio, television and the press.

IV. AGRICULTURAL RESEARCH

IBTA/Chapare has 40 research subprojects under way or complete. For purposes of research administration, these are divided into seven programs as follows:

Fruits, Horticultural and Industrial crops
Roots and Tubers
Cereals and Legumes
Spices and Medicinal crops
Livestock
Forage crops
Miscellaneous (plant diseases, insect pests, etc.)

Over 60 % of the research subprojects concern observation and/or improvement of nontraditional crops under consideration as new introductions.

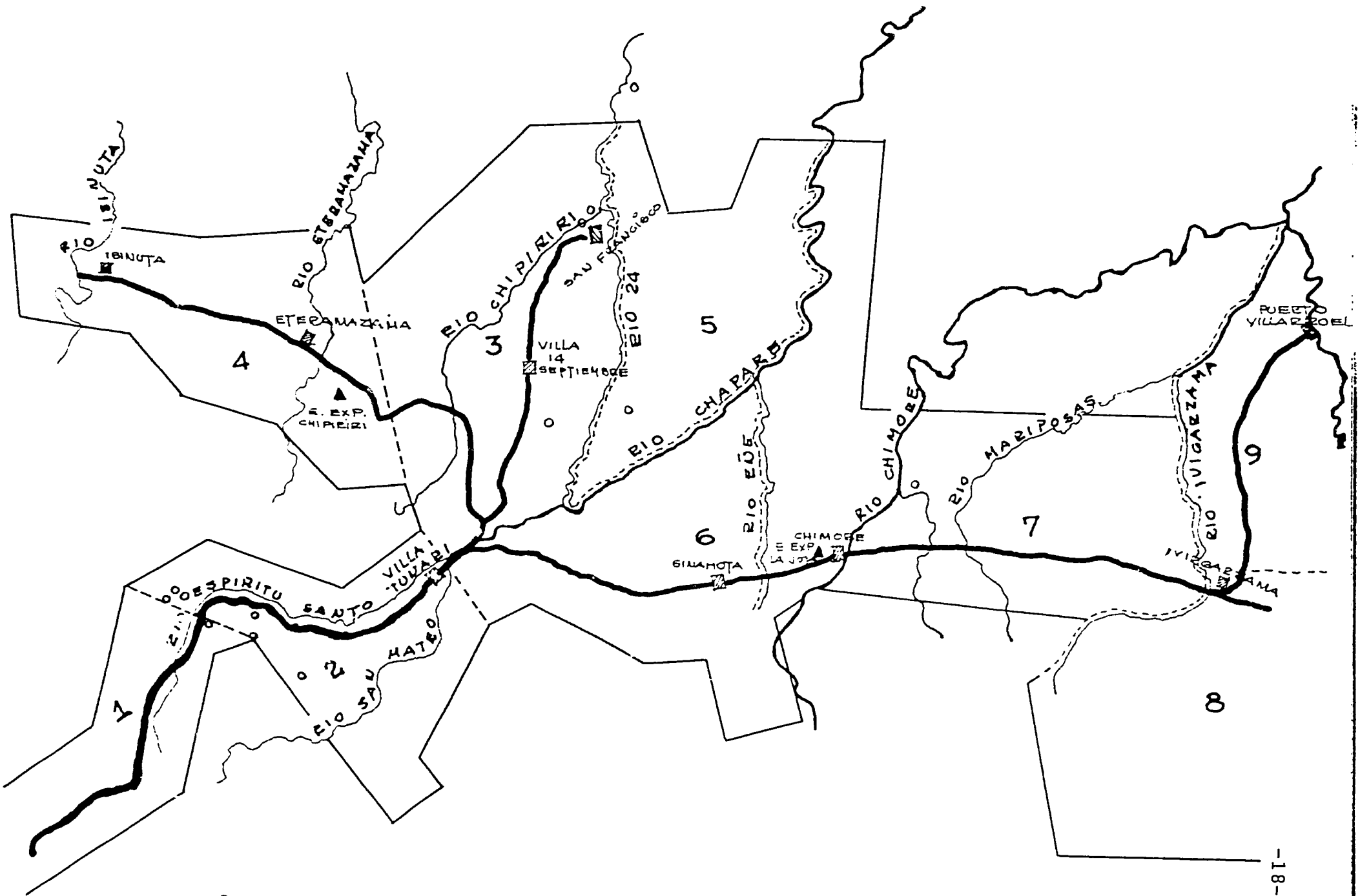

FIG.3 Location of Community Nurseries

Appendix II gives details of the IBTA/Chapare research program.

Eight research projects planned for FY 1985 were not initiated for various reasons such as lack of seed or labor.

Research was initiated on over 20 alternate technologies involving both animal and perennial crops. Development of these technologies will be a continuing process although many are ready to be tested at farm level.

V. TRAINING

There are several elements in the IBTA/Chapare training program.

Experience, Incorporated and IBTA/Chapare technicians offer formal training sessions on a regular schedule to update the skills of IBTA/Chapare technicians. Paratechnicians and farmers are trained in a similar program. Twelve short courses in four training cycles were planned for 1985, but only three cycles were completed due to inclement weather and other problems.

IBTA/Chapare technicians are sent abroad for long term and short term training. One technician is currently in a long-term program in Costa Rica and five more finished short-term training programs abroad during 1985.

Table 5 gives details of in-country training and Table 6 provides information on the training program out-of-country.

TABLE 5 IN-COUNTRY TRAINING FOR FARMERS, PROMOTORS AND IBTA PERSONNEL

PARTICIPANT	LOCATION	SUBJECT MATTER CONTENT	DURATION	No. TRAINED	COMMENTS
FARMERS	Chipiriri Exp. Station	Nursery preparation, management and maintenance.	3 - 20 Thru. 3 - 23	8	
	Chipiriri Exp. Station	Nursery preparation, management and maintenance.	10 - 22 Thru. 10 - 24	8	
	La Jota Exp. Station	Nursery preparation, management and maintenance.	3 - 20 Thru. 3 - 23	12	
	La Jota Exp. Station	Nursery preparation, management and maintenance.	10 - 22 thru. 10 - 24	21	
	Gilberto Villarreal	Pesticide management and safety	8 - 16 Thru. 8 - 19	30	Done in Community
PROMOTORS	La Jota Exp. Station	Extension and tropical agricultural practices	3 - 4 Thru. 3 - 8	19	
	La Jota Exp. Station	Estension and tropical agricultural practices	10 - 7 Thru. 10 - 11	23	
	Chipiriri Exp. Station	Extension and tropical agricultural practices	10 - 7 Thru. 10 - 11	27	
	Chipiriri Exp. Station	Large and small animal husbandry	12 - 9 Thru. 12 - 13	12	

TABLE 5 IN-COUNTRY TRAINING FOR FARMERS, PROMOTORS AND IBTA PERSONNEL

PARTICIPANT	LOCATION	SUBJECT MATTER CONTENT	DURATION	No. TRAINED	COMMENTS
IBTA PERSONNEL	La Jota Exp. Station	Extension and tropical agricultural practices	2 - 4 Thru. 2 - 8	10	
	La Jota Exp. Station	Extension and tropical agricultural practices	8 - 26 Thru. 8 - 30	16	
	La Jota Exp. Station	Alternative technologies for demonstration modules	11 - 11 Thru. 11 - 15	15	Workshop
	Chipiriri Exp. Station	Large and small animal husbandry	11 - 18 Thru. 11 - 22	12	Only for Extension Agents
	Chipiriri Exp. Station	Alternative technologies for demonstration modules.	12 - 2 Thru. 12 - 6	10	Workshop

TABLE 6 TRAINING ABROAD FOR IBTA/CHAPARE TECHNICIANS

IBTA PERSONNEL	LOCATION	SUBJECT MATTER	DURATION	COMMENTS
Armando Ferrufino	CATIE, Costa Rica	Animal Production	4-8 thru. 1985 4 - 8, 1987	USAID funded Masters Progra
Daniel Sanchez	Tsukuba International Agricultural Training Centre Tsukuba, Japan	Rice Production	3 - 8 Thru.10 - 12, 1985	IBTA Scholarship
Cesar Mealla	Hyogo International Centre Japan International Cooperation Agency Kobe, Japan	Control of Rice Diseases & Insect pests.	5 - 28 Thru. 12 - 10, 1985	IBTA Scholarship
Cleto Prado	CATIE, Costa Rica	Production Systems	8 - 12 Thru. 10 - 31, 1985	USAID funded
Roberto Delgadillo	CATIE, Costa Rica	Production Systems	8 - 12 Thru. 10 - 31, 1985	USAID funded
Eduardo Ayala	CIAT, Colombia	Seed Propagation and Storage	4 - 15 Thru. 6 - 15, 1985	IBTA Scholarship

VI INTRODUCTION OF NEW GENETIC MATERIAL

IBTA/Chapare's effectiveness depends to a large extent on its ability to respond to the felt needs of Chapare farmers. At present, many farmers are interested in commercial/industrial crops such as coffee, cacao, rubber, citrus and tea; with which they already have some experience. Also many farmers are interested in exotic new introductions such as macadamia, black pepper, vanilla and cardamon. The interest in and demand for both types of genetic material can be expected to increase as the area devoted to coca cultivation decreases. A major objective of IBTA/Chapare is to introduce and adapt these plants to Chapare conditions, and to multiply the material for distribution to community nurseries and individual farmers.

Farmers are also showing interest in traditional and subsistance crops. IBTA/Chapare believes that it is important to provide crops and technologies that will help improve diets. Legumes (beans and cowpeas), animal products (meat, milk and eggs), and garden crops are important in this respect.

Table 7 is a partial list of genetic material imported from abroad and currently under observation. In addition, quantities of seed coffee, cacao, corn and beans have been procured in country.

Most of the new genetic material is under observation and/or being multiplied on experiment stations, but some has already been planted on PDUs and community nurseries. See Appendix I.

IBTA/Chapare has had a great deal of trouble importing genetic material from abroad, as suppliers are generally not willing to accept the USAID method of payment. Much of the material imported from Costa Rica was paid for by private funds, and the individual is yet awaiting reimbursement.

Table 7. GENETIC MATERIAL ACQUIRED BY IBTA/CHAPARE IN 1985

(IMPORTED FROM COSTA RICA UNLESS OTHERWISE NOTED)

Coffee	
Var. Caturra *	70 Kg.
Var. Catimor *	40 Kg.
Var. Caturi **	2 Kg.
Cacao	
Hybrids *	26.000 Plants
Roots and Tubers	
Malanga	50 bulbs
Tiguisgue	30 bulbs
Sweet Potato	50 tubers
Beans	
(3 varieties)	
Cowpea	
(61 cultivars)***	
Forestry Species	
Poro	100 grams
Gliricidia	100 grams
Spices and Herbs	
Black Pepper	2 Kg.
Cardamon	10 Kg.
Vegetable crops	
Curcurbit	1 Kg.
Fruits and Nuts	
Passion fruit	100 grams seed
Macadamia	10 Kg. seed
Solanum quitoense	15 grams

* Bolivia
** Brazil
*** U.S.

This problem should soon be resolved by authorizing EI to pay directly for material purchased abroad. IBTA/Chapare expects to import large quantities of genetic material in early 1986, including:

Beans	Cinnamon
Cowpeas	Cacao
Corn	Cassava
Macadamia	Sweet potato
Forestry species	Mangosteen
Peach Palm	Lichee
Citrus	Naranjilla
Vanilla	Yams
Black pepper	Guanabana
Allspice	Herbs
Coconut	

In addition to material brought in from other areas, IBTA/Chapare and EI technicians have made collections of fruits (such as avocado, papaya and mango) and forestry species already growing in the Chapare. A small plantation of cardamon introduced several years ago by the University of Florida has been rehabilitated and a few plants of vanilla found growing wild have been transplanted at La Jota for reproduction and observation.

VII. PRODUCTION OF SEEDS AND SEEDLINGS.

It is traditional in Bolivia for the research and extension service to provide improved seeds and other plant material to client farmers. IBTA/Chapare has to date provided citrus, peach palm, pineapple, coffee and rice to Chapare farmers. Some of this material, especially the citrus and peach palm, was salvaged from nurseries initiated by predecessor agencies. Unfortunately, most of the material established by predecessor agencies was not salvageable due to neglect over the two years preceeding IBTA/Chapare involvement. IBTA/Chapare, in their first year, has also obtained genetic material abroad and in country which was reproduced in community nurseries.

Currently under consideration is a project to assume control of about 200 hectares of land from the Colonization Service in the Mariposas area for the production of rice, corn and other seeds. An analysis of the productive capacity of the land and IBTA/Chapare resources must be done before a decision can be taken.

VIII. ISSUES AND SOLUTIONS

The most important problem, and the greatest challenge, facing IBTA/Chapare and EI at the beginning of the project involved the confidence and good will of Chapare farmers.

The two strikes against IBTA/Chapare and EI were:
1) The farmers were disillusioned with IBTA/Chapare predecessor agencies and 2) The project was openly drug-related. IBTA/Chapare initiated its activities gradually. The major policy was to work by invitation, and almost from the beginning there were sufficient invitations to keep IBTA/Chapare and EI busy. As farmers and promotors were brought to the experiment stations for orientation and training, and as seeds and technologies were taken directly to farming communities, confidence on the part of farmers grew. IBTA/Chapare and EI carefully avoided any direct links with control and eradication aspects of the overall program and therefore distanced themselves to some extent from the politics of coca.

A second major problem confronting IBTA/Chapare and EI was a general delay and the frequent tardiness in disbursement of funds and provision of vehicles and equipment. This was the cause of morale problems as well as delays in programmed activities. By end of reporting period, IBTA/Chapare had received vehicles and a large portion of machinery and equipment necessary to its functions. However, continued delays in disbursement of funds is inevitable due to the complexities of the Pari Passu system of USAID and the problems of communications in the disbursement network.

Poor roads to and within the project area are the main cause of transportation problems. Intermittent shortages of fuel contribute to this problem.

IBTA/Chapare as yet does not have adequate communications between the liaison office in Cochabamba and the project area. The only link is an outmoded tube-type short-wave link between the EI office in Cochabamba and their staff house in Villa Tunari. USAID imported modern radios for the project, but they are detained in Bolivian customs for lack of a frequency certificate which must be provided by another agency of the Bolian government. EI considers this situation unsafe as well as a barrier to meeting objectives.

Strikes and demonstrations were a serious hindrance under the government of President Siles Suazo. This problem has been largely eliminated under the new government, and we hope that political stability will continue.

IBTA/Chapare constantly suffers from a shortage of labor in the project area, occasioned by their inability (due to government regulation) to pay competitive wages. The going wage rate for labor in the project area is inordinately high because of the drug-based economy. IBTA/Chapare is amelioriating this problem by the use of machinery and contract labor. However, much of the work associated with observation trials and experiments cannot be done by machinery, and requires constant attention by semi-skilled workers who cannot be contracted. Technicians usually do this work to the detriment of their other duties.

APPENDIX I. DETAIL OF IBTA/CHAPARE PRODUCTION DEMONSTRATION UNITS

COMMUNITY	PDU No.	MICRO-REGION	STAGE OF DEVELOPMENT*	C R O P S
Jatun Pampa	1	2	6,7	Cardamom + Plantain, Beans + Corn + Cassava, Seedbed - cardamom and coffee, rice
Jatun Pampa	2	2	6,7	Coffee, family garden, cassava + corn
Bolivar	3	2	6,7	Coffee, family garden, corn + beans
Villa Banzer	4	2	6,7	Coffee, corn + beans, cassava + beans
Barrientos	5	2	6,7	Coffee, rice + corn
Arroyo Seco	6	2	6,7	Corn + cassava, corn + beans, rice + corn, family garden, peanuts + corn + cucumber
Mariposas	7	7	5	Pineapple, corn + beans, rice + corn
San Miguel	8	3	4	Cacao, citrus, corn
Villa Gral. Roman	9	3	6,7	Peach palm + pasture, pasture, beans, peach palm + plantain
Villa Gral. Roman	10	3	6	Peach palm + pasture, pasture, beans, peach palm + plantain
Nueva Canaan	11	7	6,7	Tea, corn + beans, rice
Nueva Canaan	12	7	5	Tea, corn + beans, cassava + peanuts, rice

* See Table 4 for description of stages of development

APPENDIX I. DETAIL OF IBTA/CHAPARE PRODUCTION DEMONSTRATION UNITS

COMMUNITY	PDU No.	MICRO-REGION	STAGE OF DEVELOPMENT	C R O P S
Nueva Canaan	13	7	6,7	Tea, corn + beans, rice, citrus
Nueva Canaan	14	7	5	Citrus + cassava, corn + beans, beans + watermelon
Senda C.	15	7	5	Corn + beans
Chimore	16	6	6,7	Beans, corn + beans, corn
Agrigento	17	6	6	Corn + rice + beans, citrus + beans
Ibuelo	18	6	5	Cassava, corn, beans + corn, rice + corn
San Isidro	19	6	5	Citrus + corn + beans, family garden, cassava, beans, rice
Colonia Melga	20	7	6,7	Citrus + corn, family garden, beans + corn, beans + cassava
Ivirgarzama	21	7	5,6	Citrus + corn, rice + corn, beans + rice
Valle Ivirza	22	8	3	Citrus + rice, corn + beans, plantain
Puerto Alegre	23	7	6,7	Pasture
Gualberto Villarroel	24	3	6,7	Citrus, beans, corn, rice, rice + corn, peanuts, cowpeas, cardamom, nursery
Gualberto Villarroel	25	3	6,7	Potatos, beans + corn, cassava + beans, soybeans, rice, corn, citrus nursery
Gualberto Villarroel	26	3	6,7	Corn + beans, rice

APPENDIX I. DETAIL OF IBTA/CHAPARE PRODUCTION DEMONSTRATION UNITS

COMMUNITY	PDU No.	MICRO-REGION	STAGE OF DEVELOPMENT	C R O P S
Mejillones	27	5	5	Beans, cacao
Tocopilla	28	5	6	Family garden, beans + corn, tomatoes, cassava
Tocopilla	29	5	6	Citrus + coffee nursery, soybeans, beans
Pto. San Francisco	30	3	6,7	Peach palm + plantain, beans, coffee + cardamom, nursery
Pto. San Francisco	31	3	6,7	Family garden, peach palm + pasture, corn, beans, soybeans, rice + coffee, cardamom + citrus nursery
Pto. San Francisco	32	3	6,7	Rice, cardamom, nursery
Pto. San Francisco	33	3	6,7	Family garden, beans + corn, beans, cassava + beans, rice, corn + beans + cassava
Pto. San Francisco	34	3	6,7	Family garden, beans + corn, rice
Pto. San Francisco	35	3	6,7	Family garden, coffee, rice, beans + corn, cardamom, nursery
Bubuzama	36	3	6	Beans, rice, corn
Bubuzama	37	3	6	Beans, rice, corn
Chipiriri	38	4	6,7	Citrus, family garden
Chipiriri	39	4	6,7	Citrus, beans
Chipiriri	40	4	6,7	Cowpea, gandul, beans

APPENDIX I. DETAIL OF IBTA/CHAPARE PRODUCTION DEMONSTRATION UNITS

COMMUNITY	PDU No.	MICRO-REGION	STAGE OF DEVELOPMENT	C R O P S
2 of September	41	4	6,7	Coffee, peach palm
Sasazema Bolivar	42	4	6,7	Citrus, coffee, cardamom) nursery, rice, beans
Mariscal Sucre bajo	43	4	6,7	Citrus, rice, cardamom) nursery
Union Agr.La Estrella	44	4	6,7	Citrus, coffee + cardamom) nursery
Santa Isabel	45	4	6,7	Citrus, cardamom) + coffee nursery
San Gabriel	46	4	6,7	Citrus
Estrella	47	4	6,7	Citrus
Santa Isabel	48	4	6,7	Cardamom) nursery
Santa Rosa	49	7	6,7	Corn, corn + beans, coffee, pineapple, cassava
2 of August	50	7	6,7	Coffee, corn + beans, pineapple
2 of August	51	7	6,7	Corn + beans, coffee, pineapple
Senda D	52	7	6	Corn + beans, family garden, coffee nursery
Senda B	53	7	6,7	Corn, beans, corn + beans
Senda B	54	7	6,7	Corn + beans, corn
Senda B	55	7	6,7	Corn + beans, corn
Senda B	56	7	6,7	Beans, rice, beans + corn

APPENDIX II

DETAIL OF IBTA/CHAPARE RESEARCH PROGRAMS, 1985

PROGRAM: FRUIT, VEGETABLES, AND INDUSTRIAL CROPS

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Introduction of Citrus Varieties	Improved genetic potential of citrus for industrial use.	Established in 1977-79. New varieties introduced in 1985. To be continued.
Genetic Improvement	Multiplication of Banana Corms Under Different Techniques	Determine faster ways to multiply banana plantings.	Only 50% of expected progress due to shortage of labor. To be continued.
Genetic Improvement	Collection and Introduction of Improved Varieties of Papaya	Selection of better varieties.	Approximately 300 seedlings under observation. To be continued in 1986.
Genetic Improvement	Introduction of Coconut and Macadamia	Selection of varieties best adapted to conditions in the Chapare.	500 plants of macadamia under observation. To be expanded and continued.
Genetic Improvement	Introduction of New Varieties of Tembe.	Selection of better varieties.	Some existing plants recuperated, new varieties introduced. To be continued.
Genetic Improvement	Introduction of New Varieties of Vegetables	Selection of varieties best adapted to conditions in the Chapare.	Includes tomato, eggplant, cabbage, cucumber, green pepper, jalapeño and beans.

APPENDIX II

DETAIL OF IBTA/CHAPARE RESEARCH PROGRAMS, 1985

PROGRAM: FRUIT, VEGETABLES, AND INDUSTRIAL CROPS

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Introduction of 29 Varieties of Coffee	Determine adaptability, disease resistance and yield.	Planted in nursery for later transfer to observation plots.
Genetic Improvement	Performance of Five Lines of Coffee with and Without Shade	Obtain information on performance under the two production systems.	Three observation plots planted; one in Chipiriri and two in Jatum Pampa.
Genetic Improvement	Performance of Progenies and Lines of Catuai and Sarchimor Coffee Varieties	Obtain more detail on adaptibility and yield of these promising varieties.	Plants growing in nursery.
Genetic Improvement	Tolerance to Coffee Rust	Evaluate disease tolerance and yield of 11 coffee varieties.	Plants growing in nurseries for transfer to research plots.
Genetic Improvement	Introduction and Adaptation of 18 Hybrid Cacao Varieties Under Two Types of Shade	Selection of best varieties.	Nursery established.
Genetic Improvement	Yield Evaluation of Rubber Trees	Determine yields of native and cloned rubber trees.	Plantations established many years ago but never exploited.

APPENDIX II

DETAIL OF IBTA/CHAPARE
RESEARCH PROGRAMS, 1985

PROGRAM: FRUIT, VEGETABLES, AND INDUSTRIAL CROPS

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Effects of Zinc on Citrus Yields	Determine effects of zinc on citrus yields.	Experiment established in one location.
Genetic Improvement	Effects of Pruning in Renewal of Older Tress	Determine ways to rehabilitate older trees and abandoned plantations.	Not yet begun.
Genetic Improvement	Effects of Removing Excess Shoots on Banana Production	Determine most effective methods of removing shoots.	Not yet begun.
Genetic Improvement	Eleminating Sun Scald in Pineapple	Improved pineapple quality and yield.	Not yet begun.
Genetic Improvement	Home Garden Management	Increased production of vegetables.	Completed.
Genetic Improvement	Treatment for Cacao Fungal Disease "Witches Broom"	Develop optimum technology for control of this disease.	Not yet begun.
Genetic Improvement	Treatment for Coffee Rust (roya) with Copper Based and Systemic Fungicides	Determine the proper fungicide, optimum dosage and frequency of treatment.	Experiment established in one location.

APPENDIX II

DETAIL OF IBTA/CHAPARE
RESEARCH PROGRAMS, 1985

PROGRAM: FRUIT, VEGETABLES, AND INDUSTRIAL CROPS

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Special Study	Diagnosis of Unknown Citrus Disease	Identification of common malady.	To be established in ten locations.
Genetic Improvement	Classification of Yucca Collection	Selection of most promising varieties.	Experiment havested. Subject of MS Thesis.
Genetic Improvement	Introduction of Tubers	Identify most promising varieties of sweet potato, tiquisque, taro and yam.	Experiment ready for harvest.
Production Systems	Associations of Yucca, Corn, Cowpeas and Beans	Evaluate performance of yuca in association with other crops.	Experiment partially harvested.

APPENDIX II

DETAIL OF IBTA/CHAPARE RESEARCH PROGRAMS, 1985

PROGRAM: CEREALS AND LEGUMES

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Introduction and Evaluation of 18 Varieties of Corn	Determine yield potential and resistence to disease.	Harvested, results being tabulated for analysis.
Genetic Improvement	Native Corn Crosses	Identify viable "choclo" type corn varieties for humid tropics.	Haversted, results being tabulated for analysis.
Genetic Improvement	Introduction and Evaluation of 25 Varieties of Cowpea	Study adaptability of Costa Rica varieties.	Harvested, results under analysis.
Genetic Improvement	Evaluation of Tolerance to Pericularia of 12 Varieties of Rice	Identification of tolerant varieties.	Not yet begun.
Genetic Improvement	Bean Variety Trial	Selection of superior varieties.	Harvested, results under analysis.
Production Systems	Interplantings of Corn and Beans	Determine influence on yield.	Not yet begun.

APPENDIX II

DETAIL OF IBTA/CHAPARE RESEARCH PROGRAMS, 1985

PROGRAM: SPICES AND SPECIALTY CROPS

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Introduction of Ginger, Black Pepper, Vanilla, Cardamon	Diversify production of high-value crops in the Chapare.	Observation trials in various locations.
Genetic Improvement	Introduction of Various Non-traditional Specialty Crops	Diversify production of specially crops in the Chapare.	Several varieties in nurseries to be transplanted for observation in various locations.

APPENDIX II

DETAIL OF IBTA/CHAPARE RESEARCH PROGRAMS, 1985

PROGRAM: LIVESTOCK

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Gradual Improvement of Creola Cattle by Crossing with Holstien	Develop improved breed for use by Chapare farmers.	Project begun in 1979 Herd inbred.
Genetic Improvement	Improved Milk Production	Selection of cattle for milk production.	In-breeding a problem. Lack of new breeding stock.
Livestock Management	Use of Male Buffalos for Animal Traction	Training of buffalo.	Not yet begun.
Production Systems	Milk Production Modules	Develop modules for milk production at small farm level using local feeds and by-products.	Pasture established on PDUs in two communities.
Production Systems	Swine Production Modules	To study feed conversion effectiveness and cost of production.	Study in progress. Weight gains noted.
Production Systems	Broiler Production Modules	Stimulate broiler production, determine costs of production.	Very low mortality, impressive weight gains, high feed conversion ratio.
Production Systems	Layer Production Module	Evaluate layer production at family farm level.	Not yet begun.

APPENDIX II

DETAIL OF IBTA/CHAPARE RESEARCH PROGRAMS, 1985

PROGRAM: FORAGE PRODUCTION

PROJECT	SUB-PROJECT	OBJETIVE	OBSERVATIONS
Genetic Improvement	Yield Evaluation of 36 Lines of Brachiaria	Selection of higest yielding lines.	Six promising lives identified.
Production Systems	Pasture Establishment	Seed 30 hectares of permanent pasture for an enterprise in Chimore.	Ten hectares established
Production Systems	Animal Preference - Brachiaria	Determine degree of preference among ten lines of Briachiaria.	Results being analyzed.
Special Studies	Effects of Rock Phosphate and Sulfur on Pasture Improvement	Evaluation.	Initiated in December, 1985.