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SECTION I

INTRODUCTION

Chemonics is pleased to present its Progress Report for the period from January to June 1985. Our firm provides technical assistance services to the agricultural sector through our Contract numbered 511-059-008-HCC signed with the Ministry of Rural Affairs and Agriculture of Bolivia (MACA), with financing from the United States Agency for International Development (USAID) under loan number T-059. The following table presents the technical areas and the advisers who provided services during the period covered by this Report.

Technical Area	Long-term Advisers	Short-term Advisers
Seed Improvement	Adriel E. Garay Juan A. Landívar Edgar R. Cabrera	Gover Barja D. Julio Loredo Diógenes Chávez Omar Serritella
Construction	Eddy Decormis C.	
Soil Conservation	E. Don Hansen	
Training in Natural Resources		Juan Arandia S.
Cotton Production	Víctor Gonzáles	
Sector Planning	Preston S. Pattie	Miguel Ibáñez Ch.
Administration and Training		Bernard L. Delaine Kimberly J. DeBlauw

The annexes to this Report provide more detailed information on the amount of time that each long-term and short-term adviser worked during the semester.

The Project Supervisor from Chemonics' offices in Washington, D.C. visited Bolivia for eight days in April. The purpose of this visit was to arrive at an agreement with MACA regarding the extension of technical assistance services in certain technical areas. In addition, the procurement staff in Washington provided nearly three days of effort in support of the Project. It is also worth mentioning that Mr. Omar Serritella, included in the list above as a short-term adviser in seeds, is from the central office. Mr. Serritella is an expert in audio-visual methods; his assignment in Bolivia was for the purpose of directing a documentary film on seed production and certification.

Two local technicians were employed for the cotton production program in the Gran Chaco. They are José Luis Humérez and Ramón Gareca.

Also, two of the three trainees in soil conservation, hired in October of 1984, continued working through January to carry out surveys of Chaco farmers who have had land cleared by the Departmental Development Corporation of Tarija (CODETAR), or who have implemented soil conservation techniques on their land. Finally, seven trainees worked in La Paz in the area of information systems.

The technical team described above received the support of a local staff of highly qualified Bolivians, including administrators, secretaries, drivers, and messengers.

In April, an agreement was reached with MACA regarding the extension of the technical assistance contract to September 30, 1986. The agreement was based on a proposal presented by Chemonics in January of 1985. The documents for this extension were prepared and presented to USAID for approval of funds.

The following Section of this Report covers progress made in seed production in Santa Cruz, the Gran Chaco, and Chuquisaca/Potosí. It includes the efforts made by all advisers involved in this technical area, including work in feasibility studies and in preparation of a documentary film. Section III refers to efforts made in construction, which is closely linked to seed improvement.

Section IV presents a brief summary of work carried out in soil conservation. The adviser in this area completed his work in January of this year, yet the Project continues to provide some support. Section V describes efforts made in the preparation of courses in Natural Resources to be offered later this year.

Section VI presents progress made in cotton production. It includes the work of the adviser and the two local technicians employed by the Project.

Section VII addresses the area of information systems, including the work of the adviser and a group of seven trainees in La Paz. Their work is complemented by that of eight regional representatives throughout the country.

In Section VIII, activities regarding administration of project resources, report preparation and coordination of training are explained. Section IX presents objectives for the second semester of 1985.

SECTION II

SEED IMPROVEMENT, NATIONAL

The semester started with a permanent team of three long-term advisers in seeds located in Santa Cruz, Yacuiba, and Chuquisaca. However, early in the semester Dr. Adriel E. Garay, adviser in Santa Cruz, announced his departure anticipated for March of 1985. Also during the semester, we learned that the adviser from Chuquisaca, Dr. Edgar R. Cabrera, will leave Chemonics in August of 1985. In light of these personnel changes, it was proposed that the adviser working in Yacuiba, Dr. Juan A. Landívar, replace Dr. Garay in Santa Cruz beginning in July, 1985. Dr. Landívar is uniquely qualified for this position because of his knowledge of the region, the seed program, and the institutions which participate in carrying it out.

Engineer Diógenes Chávez, former head of the foundation seed unit of CIAT, was hired in May of 1985 to take the position as seed adviser for the Chaco region. He worked with Dr. Landívar during the last two months of the semester in the Chaco seed production program.

Several candidates were considered for the vacancy to be left by Dr. Cabrera in Sucre. One candidate was interviewed and later visited Bolivia at Chemonics' expense, but was not selected for the position. By the end of the semester, this position had not been filled, although qualified candidates were available.

Due to the work load of Dr. Cabrera in various regions of Bolivia, it was decided to hire a local adviser to assume part of the responsibilities in Chuquisaca and Potosí. For this purpose, Engineer Julio Loredó was hired in January of 1985.

In addition to the full-time advisers in seed improvement, the Chief of Party reinforced the seed component by dedicating time to feasibility studies in Chuquisaca and a wheat marketing effort at the national level. At the end of January, a short-term agricultural economist, Lic. Gover Barja, concluded his work in preparing feasibility studies in support of the seed program.

As seed production programs develop at the regional level, increasing amounts of time are dedicated to the development of human resources. There is also a growing need to develop strategies at the national level to strengthen regional programs. The overall objectives for the seed program at the national level reflect these needs. Specific objectives for this semester were:

- * Coordinate with regional seed councils and MACA to establish the National Seed Commission and help it carry out its tasks.

- * Prepare for the third annual National Round Table on seed program development.

* Complete audio-visual materials on seed programs. Specifically, this consists of a 20 to 30 minute videotape for public television.

* Carry out the training schedule developed for 1985.

National strikes on two occasions caused the meeting of the National Seed Commission to be postponed. In addition, there was some confusion concerning the representatives to be assigned by the seed councils to the Commission. This initial meeting had not been rescheduled by the end of the semester. The formation of the National Seed Commission is of prime importance for the definition of national strategies in seed production. Therefore, efforts should continue for establishment of this Commission.

The Second Round Table on seed program development was held in Santa Cruz in August of 1984. In this meeting it was decided to hold the Third Round Table in Chuquisaca. Efforts to organize this event began in April of 1985. The Chuquisaca Seed Council formed an Organizing Committee to carry out this task. The Committee, along with the adviser for Chuquisaca and Chemonics' Chief of Party, developed a work schedule needed to organize the Round Table. By the end of the semester, organization of the Third Round Table was exactly on schedule.

During the month of June, the communications expert, Omar Serritella, returned to Bolivia to complete the preparation of a videotape on seed production. The expert distributed his time between Santa Cruz and Chuquisaca. He received the help of the adviser from Chuquisaca in reviewing the script of the film. Engineer Jorge Rosales of Seed Certification of Santa Cruz was also very helpful in the production of the videotape. The video will be ready early next semester and is intended to be distributed to commercial and public television channels.

To continue with the scheduled National Training Program, a course on Quality Control was offered this semester in Santa Cruz. The course was coordinated by Dr. Edgar R. Cabrera with the cooperation of Drs. Adriel E. Garay and Juan A. Landívar, as well as Engineer Jorge Rosales. Approximately 20 persons attended the course from several regions of the country. Participants invited from Tarija and Yacuiba could not attend due to transportation problems.

Due to funding limitations, the Advanced Seed Certification course was cancelled. However, each adviser prepared a substitute course which was offered at the regional level.

Training outside the country was also offered during the semester. Five technicians from different areas of the country attended a general seed production course in CIAT/Colombia.

The following three portions of this section report on progress made in seed improvement in the regions of Santa Cruz, the Gran Chaco, and Chuquisaca/Potosí.

SECTION II-A

SEED IMPROVEMENT, SANTA CRUZ

A. Background and Objectives

During the semester covered in this report, the adviser in this area, Dr. Adriel E. Garay, accepted a position in CIAT/Colombia and left Chemonics in March of 1985. Therefore, objectives for Dr. Garay in Santa Cruz were defined only for the period of January through March.

At the end of the past semester, most seed fields were already planted. Significant increases in area planted for seeds were registered for soybean. Other crops showed a slight decrease in area planted for seed. This was mainly due to the lack of markets for seed of other crops during the past season.

The first semester of the year is normally devoted to follow-up on development of soybean, corn, rice and wheat crops through field inspections. By the end of the semester, seed conditioning becomes the mayor activity. Specific objectives set for this semester were:

- * Hold a regional evaluation meeting on the 1984 campaign in Santa Cruz for interested local institutions and participants from La Paz.

- * Provide orientation on equipment specifications and installation of the I.A.S.A. seed plant.

- * Help in the selection of candidates from the region for the April-June seed course in CIAT/Colombia.

- * Carry out an advanced seed certification and technology course of one-day-per-week sessions.

B. Progress

1. Regional Evaluation Meeting

A successful one-day meeting was held in Santa Cruz to evaluate progress made in the regional seed program during 1984. Approximately 25 persons participated. Most of the participants were from local institutions and included members of the Regional Seed Council, growers associations, and CIAT. The National Seed Director and personnel of USAID also attended the meeting.

Among the conclusions of the meeting, the following recommendations were formulated:

- * Intensify training in all components of the program.

- * CIAT should find alternatives for more rapid release of new varieties.

- * The foundation seed unit of CIAT should release new varieties of wheat.
- * CIAT should include cotton in their foundation seed program.
- * Agricultural credit should be conditioned on the use of certified seed.
- * Certification should include forage seed in their certification program.

In addressing technical aspects, it was pointed out in the meeting that one of the limiting factors in seed production in Santa Cruz was post-maturity loss of seed. During the following semester work will be initiated to identify specific factors that cause these losses and possibilities for preventing them.

2. I.A.S.A. Seed Conditioning Plant

The adviser from Chuquisaca, Dr. Edgar R. Cabrera, was the person involved in carrying out this activity. The I.A.S.A. seed plant began to operate during the past semester. However, some of the equipment used in this plant was not suited for conditioning seed. For example, the elevators were causing mechanical damage because they were run at high speed with a large electric motor. Moreover, the driers used were grain driers, making it difficult to adjust the heat to dry at temperatures not greater than 40 degrees centigrade.

In addition to recommending equipment changes, advice was provided regarding relocation of the conditioning equipment. It was pointed out that with the original setup, it was difficult to load the dry seed into the air-screen cleaner and there was not enough working space in the reception area. To carry out the recommendations, I.A.S.A would have to practically turn the seed plant around. By the end of the semester, this job was initiated. Assistance will continue to be provided in the improvement of this plant.

3. Selection of Candidates for Outside Training

In accordance with the National Training Program, three technicians from the region were selected to attend the April-June seed production course in CIAT/Colombia.

Since the personnel of the foundation seed unit of CIAT/Santa Cruz were new, Engineer Lorgio Domínguez was selected to attend the course. Currently Eng. Domínguez is the field supervisor of the foundation seed unit of CIAT. Engineer Magdaly León was also selected to attend the course. She is currently head of the Seed Testing Laboratory. The third participant from Santa Cruz was Engineer Rolando Zabala, a technician of the Soybean and Wheat Producers Association (ANAPO). Engineer Zabala is the technician in charge of supervising the ANAPO seed production program, which includes management of a conditioning plant.

At the end of the course, all three technicians returned to their jobs and are currently active in the program.

4. Advanced Seed Certification Course

An advanced seed certification course at the national level was cancelled early during the semester due to lack of funds. Instead, the adviser held one-day-per-week sessions for local personnel to cover various topics on seed certification. Six technicians from the Seed Certification Service attended the meetings. The meetings were informal and had the objective of generating discussions among the participants. The weekly sessions were offered through March of 1985. Technicians who attended the course agreed that this informal type of training was beneficial because it allowed them to discuss specific topics on seed certification and because they felt free to ask questions. This activity will be continued during the second semester of 1985 by the new adviser for the region.

5. Other Activities

In addition to the objectives defined above, the adviser continued to be active in supporting all components of the program, particularly in the production of foundation and certified wheat seed. Several meetings were held with CIAT and seed certification to coordinate the work.

C. Summary and Recommendations

The departure of Dr. Garay left the region without a permanent adviser during the second half of the semester. However, the adviser from Chuquisaca and the adviser from the Gran Chaco covered some basic needs for the region.

All four objectives set for this region were successfully completed. A regional evaluation meeting took place with the participation of local and national institutions. Several recommendations were drawn from the meeting. On the technical aspects, it was pointed out that two thirds of the registered fields were eliminated before harvest. We intend to place special emphasis in identifying the reasons for this problem.

In addition to outside training, the adviser offered a series of one-day-per-week sessions to discuss various topics on seed production. The response from participants was positive. This type of training is an effective means of intensifying routine on-the-job training. Therefore, we intend to continue with this program during the following semester.

Activities in the regional seed program in Santa Cruz are reaching a high level of complexity. Considerable expert assistance is needed for all components of the program. There is a need for guidance in foundation seed production. The release of new varieties of corn and wheat is needed. Regarding rice foundation seed production, there is a need to produce sufficient quantities of all recommended varieties of seed that is free of red rice.

The Seed Certification Service needs technicians with higher levels of technical training. The actual stage of development of the program requires at least two technicians with Master's degrees in seed technology.

The current level of production has led to the construction of three seed conditioning plants in addition to the Warnes facility. The seed plants need help in training their personnel, in quality control, and in management of their facilities. In addition to the four plants mentioned above, three more plants are under construction. Therefore, the need for expert assistance is great for this component of the program.

Technology for production of high quality seed is available, but since the consumer dictates what kind and quality of seed is desirable in the market, Santa Cruz seed producers need to know what the consumer wants. Therefore, there is a need to carry out seed marketing studies for various crops.

SECTION II-B

SEED IMPROVEMENT, GRAN CHACO

A. Background and Objectives

During the 1983/84 growing season, private companies entered the seed production scheme for the first time in the Chaco. Although local seed production was below expected levels, the experience gained was valuable. By the end of the previous semester, seed produced locally was conditioned, certified, and was being sold at acceptable prices. Approximately 50 percent of seed planted in the Chaco for the 1984/85 crop year was imported by the Integral Cooperative.

At the end of the past semester, planting of the 1984/85 crop was well under way, but none of the seed companies had their growers officially registered as seed producers. Registration was continued into the semester covered in this report. Objectives set for this semester were:

- * Provide assistance to certification personnel in field inspections, record-keeping and testing of seed lots of locally produced seed.
- * Assist growers with the production of 400 hectares of soybean seed.
- * Help growers and certification personnel in purification of seed fields planted with foundation seed.
- * Assist CODETAR in the construction and installation of the seed conditioning facility at El Palmar.
- * Help with the installation and management of a temporary seed drying and conditioning facility.
- * Prepare a monthly newsletter for distribution to local seed producers and regional leaders.
- * Conduct courses on seed technology in the region.

Dr. Juan A. Landívar has worked in the Gran Chaco as adviser to the regional program since April of 1983. His job description included responsibilities in Santa Cruz, which was specified as his primary work site. During the semester, an agreement was reached with MACA whereby Dr. Landívar would place emphasis on his work in Santa Cruz and take responsibility as Chemonics' activity leader for seed programs. This change would come about on July 1, 1985. A local adviser, Ing. Diógenes Chávez, was employed in May to take the position of adviser to the seed program in the Chaco. Hence the two advisers overlapped during May and June in the region.

B. Progress

1. Assistance to Seed Certification

Registration of seed producers proceeded slowly during the first months of the semester. The failure of the seed companies to register their growers as seed producers was very damaging to the work strategy of the Seed Certification Service and to that of the adviser. As seed fields were registered, field inspections were carried out. However, most fields were not registered until they were ready for harvest. This created an overload of work for the Certification Office. Field inspections were further delayed by the lack of personnel. At the end of January of 1985, the only field technician and the secretary-bookkeeper of Certification resigned because MACA failed to pay them. (To date they have not received their salary since July of 1984). This left Certification with only one technician to carry out administrative and technical work. Consequently, as harvest time neared, most seed fields had only one inspection and several fields had no inspections.

By mid-semester, the head of Certification was able to hire a secretary-bookkeeper and in May of 1985, he hired a temporary field inspector, Ing. Eduardo Nagel, with PIL-103 funds. At this time, Chemonics also hired Ing. Diógenes Chávez. During the transition period, both Chemonics advisers continued working in the region. With this new work force, pre-harvest field inspections were carried out satisfactorily.

After harvest, certification personnel and the advisers continued to support the conditioning and storage of local seed production. Once conditioned, the seed was tested and tagged. Table 1 shows the quality of the seed conditioned, tested, and tagged up to the end of the semester.

Table 1 SUMMARY OF QUALITY AND QUANTITY OF SOYBEAN SEED CONDITIONED
BY THE END OF THE SEMESTER, VARIETY UFV-1

Lot No.	Category	Moist.Cont. percent	Purity percent	Germ. percent	Quantity Kg.
L-01	Fiscal.	12.40	99.78	93.67	10.400
L-02	Regist.	12.40	99.60	95.67	6.600
L-03	Fiscal.	12.70	99.70	97.00	12.800
L-04	Fiscal.	13.60	99.60	91.33	14.950
L-05	Fiscal.	13.20	99.58	89.00	12.550
L-06	Fiscal.	14.50	99.50	81.00	15.700
L-07	Fiscal.	13.60	99.64	91.66	7.300
L-08	Fiscal.	13.50	99.30	88.00	9.200
L-09	Fiscal.	13.70	99.25	88.33	4.650
L-10	Fiscal.	13.70	99.80	91.70	13.050
L-11	Fiscal.	12.70	99.90	93.00	10.500
L-12	Fiscal.	13.70	99.60	88.33	6.850
L-13	Fiscal.	12.70	99.32	87.60	12.750
L-14	Fiscal.	12.00	99.70	94.00	10.500
L-15	Fiscal.	12.70	99.46	91.00	10.680
L-16	Fiscal.	12.30	99.06	89.30	7.460
L-17	Fiscal.	12.30	99.04	87.00	15.840
L-18	Fiscal.	12.40	99.40	87.60	15.200
L-19	Fiscal.	12.90	99.40	86.00	12.120
L-20	Fiscal.	11.90	99.14	86.00	4.040
L-21	Regist.	12.20	99.40	85.00	1.560
L-22	Fiscal.	12.60	99.80	92.00	8.360
TOTAL					223.060
AVERAGE		12.89	99.50	89.73	

The incorporation of Eng. Guido Revollo in October of 1984 as head of the Regional Seed Certification Service was an asset to the program. His technical skills and his commitment to the program simplified the organization of the Certification Service. By the end of the semester covered in this report, a total of 481 hectares were inspected (62 fields, with an average of 2.2 inspections/field) and 223 tons of seed were conditioned, analyzed, and tagged.

2. Assistance to Seed Producers

During the 1984/85 growing season, three private companies participated in the production component of the program: the Integral Cooperative, COSEY, and CASARR. Each company had a group of cooperating producers. The Integral Cooperative registered 34 growers: COSEY had 17; and CASARR had 5, making a total of 56 seed fields ranging from 1 to 80 hectares. A total of 454 hectares were registered by these private companies.

Advice was given to the companies concerning harvest dates and the distribution of combines. Once the crop was harvested, the advisers provided assistance in reception of the unconditioned seed and in determining drying and conditioning schedules.

Field inspections provided a mechanism to maintain direct contact with seed producers. Advice was provided on how to solve field problems. Once again, the seed multiplication component was the strongest component of the program. This resulted in an all-time seed production record for the region. Table 2 shows the regional seed production (before conditioning) by company.

Table 2 AREA AND QUANTITY OF SOYBEAN SEED PRODUCED BY
LOCAL COMPANIES

Seed Company	Variety	Category	Hectares	Production (Kg)
Coop. Integral	UFV-1	Registered	8	14.390
Coop. Integral	UFV-1	Fiscalized	175	311.923
Coop. Integral	IAC-8	Fiscalized	12	17.745
COSEY	UFV-1	Fiscalized	26	49.929
COSEY	Cristal.	Registered	10	7.540
CASARR	Cristal.	Registered	5	7.500
IBTA	UFV-1	Foundation	2	--
IBTA	UFV-1	Fiscalized	8	--
IBTA	Cristal.	Foundation	4	--
IBTA	Cristal.	Registered	10	--
TOTAL			260	409.027

Note: Quantities of seed produced by IBTA are not registered in this table because lots had not yet been weighed. Production was estimated at 30 tons total among the different varieties and categories.

3. Purification of Foundation Seed Fields

Approximately 10 hectares were planted with foundation seed of soybean. This seed was obtained from Santa Cruz. The adviser, Diógenes Chávez, along with technicians from Certification and growers, rogued the seed fields. Seed from these fields will be distributed to seed growers in order to produce certified seed next year.

4. Assistance to CODETAR

Construction of the seed conditioning facility of El Palmar was under way during the semester covered in this report. Chemonics' adviser, Edgar R. Cabrera, continued to support this project. Dr. Cabrera worked with CODETAR in designing the base structure for the conditioning equipment and in determining its most adequate location. By the end of the semester, the conditioning equipment had arrived in La Paz and was in the process of

being transferred to Yacuiba.

5. Installation of a Temporary Conditioning Facility

A temporary seed conditioning facility was installed in Yacuiba to process local seed. The conditioning facility was administered by the Integral Cooperative and was installed in a large warehouse rented by the Cooperative.

For the purpose of seed drying, two systems were set up. As in the previous year, part of the seed was dried using two sets of fans and kerosene burners to force heated air through a tunnel-like structure made out of bagged seed. Using this technique, seed was dried to less than 13 percent moisture content in approximately 24 hours. Each tunnel-like structure was made up of approximately six metric tons of seed. In addition to this system, a wooden bin with a perforated floor was constructed to dry seed in bulk. This wooden bin used an electric fan and burner (purchased by Chemonics with funds from the T-059 Project and lent to Seed Certification) to force heated air through the seed mass. The system dried approximately 2.5 metric tons in six hours, then discharged the dry seed directly into an elevator which feeds an air screen cleaner. Therefore, the drying bin also served as a surge bin to feed the air-screen cleaner.

Grading of the seed was done using a Clipper 27 air-screen cleaner. Since the seeds were free of the kinds of contaminants that are difficult to separate, the Clipper 27 successfully conditioned the seed. Purity analyses of the conditioned seed are presented in Table 1 above. The average purity of all lots was 99.5 percent, well above the 97 percent required for the fiscalized seed class. By the end of the semester, all the seed received was dried and approximately two-thirds was graded, tested, and tagged.

6. Preparation of a Monthly Seed Production Newsletter

This activity was carried out in cooperation with Seed Certification and is a continuation of the promotion of the regional seed program initiated during the past semester. The Newsletter was to be financed through registration fees paid by growers. Two monthly newsletters were prepared (financed by the T-059 Project) and distributed to the seed producers. However, the preparation of newsletters was later discontinued due to the failure of the seed companies to register their growers and pay registration fees. This means of providing information to the growers seems to be effective, yet other sources of financing must be found.

7. Training

Once again this objective was partially fulfilled. A three-day course in harvesting techniques was organized, to be offered in the region during May. Unfortunately, a local strike completely paralyzed all activities in Yacuiba for 10 days, forcing cancellation of the course. At the national level, a one-week quality control course was offered in Santa Cruz; two technicians from the Chaco region were invited to attend. Ing. Guido Revollo attended but left before completion of the course. The second technician could not come to Santa Cruz at that time.

8. Other Activities

Two other activities related to seed production in the Gran Chaco were carried out by Dr. Juan A. Landívar during the semester. These were:

- * Work with seed companies in finding a market for local seed.

Approximately 250 metric tons of soybean seed were produced in excess of local demand. A market for the excess seed was found in Santa Cruz. The adviser learned about possible marketing channels in Santa Cruz and informed local companies. The local companies contacted buyers and sold the seed at their convenience.

- * Advise a student on thesis research.

The adviser cooperated with Agronomist Oscar Zubiaurre in his thesis work. The research consisted of identifying weather parameters that contribute to seed deterioration in the field and in storage. The objectives of the study are: (1) to provide information on adequate areas within the Chaco region for seed production; (2) to obtain information in order to recommend optimum harvest periods to seed producers; and (3) to study the possible deterioration of seeds stored at ambient conditions in Yacuiba.

C. Summary and Recommendations

Seed activities began rather slowly during the first few months of the semester. This was due to the late registration of seed producers and to the loss of personnel in Certification. However, what seemed to be a difficult year turned out to be a record year in seed production. Producers turned in 409 tons of good quality soybean seed. Local production was enough to supply regional needs and to provide 250 metric tons to Santa Cruz. The seed-importing Chaco region this year became a seed-exporting region.

The Certification Service played an important role during this semester by providing services such as field inspections, conditioning, sampling, testing for purity and germination, and tagging bags. All of these services were provided by the head of the Certification Service and by temporarily hired technicians. Further progress in the region will be seriously limited by the lack of personnel in Certification. It is strongly recommended that two more technicians be provided to the Certification Service of Yacuiba.

Seed multiplication by private farmers was the strongest component of the program, mainly due to the willingness on the part of growers to accept the recommendations of the Certification Service and of the adviser. They are responsible for a large part of the successful year. However, it is highly recommended that seed companies register their producers no later than January 15 of each year.

A temporary seed conditioning plant was successfully installed and used to condition local seed. Although this installation suffered severe limitations regarding equipment, the quality of the conditioned seed was acceptable. Construction of the seed conditioning facility at El Palmar

proceeded slowly this semester. However, the equipment is already in Bolivia and there is time to have the plant finished for use next season.

Preparation and distribution of monthly newsletters seems to be an effective way of spreading information about the program to regional leaders and seed producers. Continuation of this activity is recommended but financing is necessary. At this time, it is unlikely that Seed Certification could afford the costs.

Organizing courses on seed production in Yacuiba has become a difficult objective to meet. This is due to the lack of reliable transportation for instructors to Yacuiba and to the excessive number and unpredictability of national and local strikes. Future courses in Yacuiba will be scheduled during the dry season.

The Chaco region proved this year its potential for becoming a major seed-producing region of the country. Estimates show that seed growers may increase their profits by 100 dollars per hectare by becoming seed producers as opposed to grain producers. The potential benefit to the farmers and to the region may be seriously damaged if the National Seed Department of MACA does not provide the Regional Certification Service with enough technicians to carry on field inspections and other seed certification work.

SECTION II-C

SEED IMPROVEMENT, CHUQUISACA/POTOSI

A. Background and Objectives

During the July-December 1984 period, 97 tons of commercial and foundation seed were conditioned in the Zudáñez seed conditioning plant. Twenty percent of this seed was utilized for seed multiplication and the remainder for commercial production of wheat. Only a small number of seed multiplication fields for the 1984/85 crop year had been planted by the end of December; most of the planting was carried out in January, 1985.

In the last report, the following objectives were proposed for the period covered by this report:

- * Plant 11 hectares for the production of 12 tons of wheat foundation seed.

- * Produce 250 tons of fiscalized wheat seed through the CARE-CORDECH and CARITAS seed programs.

- * Present a feasibility study of the seed conditioning plant in Chuquisaca to the Regional Seed Council.

- * Present a market study and agricultural project design for the CHARCAS flour mill to CARITAS.

- * Install holding bins and framing for seed equipment in the Zudáñez seed conditioning plant.

- * Initiate the conditioning of foundation and commercial seed produced in the area.

- * Conduct a short-course on seed production of cereal crops in Chuquisaca.

Dr. Edgar R. Cabrera is the principal adviser in this area. In addition, Engineer Julio Loredo, who since November 1, 1984 had been working as a field assistant for Chemonics, was promoted to short-term adviser as of May 1st. He continues to provide technical assistance to the Seed Certification Service (SCS), particularly in the area of seed production. Finally, Lic. Gover Barja provided assistance in the preparation of feasibility studies.

B. Progress

1. Foundation Seed

A foundation seed project to be implemented at the Chinoli Experimental Station was presented to PL-480 last year. But due to the lack of personnel in the experimental station to carry out the project, it did not receive financing. Despite the lack of financing, seven tons of barley and

two tons of wheat seed were produced. Roguing of fields was effectively carried out and good yields were obtained. However, failure on the part of station personnel to harvest the seed on time caused considerable loss of seed in the field; two consecutive hailstorms caused about 35 percent loss of seed before harvest.

The director of the agriculture department of the La Paz Brewery (CBN) committed the CBN to purchase barley foundation seed produced in the station, but was disappointed by the loss of this valuable material.

The foundation seed project to be implemented by the Chinoli Experimental Station contemplated the production of wheat foundation seed for Chuquisaca. Since this project was carried out on a very limited scale, a scheme for production of wheat foundation seed was improvised in the Chuquisaca region. CARE, a private voluntary organization, provided the financing and the Seed Certification Service (SCS) chose farmers who produced seven tons of wheat foundation seed of the Saguayo variety. CARE provided the seed and other inputs as well as the funds to purchase the seed from farmers. Three more tons of foundation seed of the Totorá and Tarata varieties were produced by farmers under contract with the Departmental Development Corporation of Chuquisaca (CORDECH).

2. Commercial Seed

The goal for the production of commercial seed was set at 250 hectares of wheat. Under the CARITAS seed program, 50 hectares were planted. However, no seed had arrived at the Zudáñez plant by the end of the semester. Two hundred hectares were planted under the CARE-CORDECH seed production project. Due to the inability of CORDECH to respond as a counterpart, CARE abandoned the project, leaving it completely in the hands of CORDECH.

This year there was again a shortage of field technicians to provide technical supervision of fields under production. As a consequence, there was a reluctance on the part of the farmers to control weeds, to rogue fields, and, finally to turn in harvested seed. Toward the end of this semester, two months after some fields had been harvested, CORDECH had not yet recovered nor paid for all of the seed produced by farmers. Even though it is estimated that around 180 tons of fiscalized Saguayo seed were produced in fields that were inspected, only about 70 tons of seed might be recovered from farmers.

3. Seed Certification

During the first part of the semester, the Seed Certification Service (SCS) operated with only one staff member, Engineer Angel Clavijo. However, at the beginning of March one more technician was added, Agronomist Edgar Gutiérrez. Funds of the PIL-103 were used, as requested by the Regional Seed Council, to partially finance activities of the SCS.

The SCS required the registration of seed producers, but CORDECH and CARITAS fell short of providing the lists of farmers that they wanted to multiply seed. Actually, seed producers were selected from a large group of farmers working under CORDECH and CARITAS. The criteria used for selection of farmers were: their cultivation of a known source of seed, easy

access to their properties and, when possible, availability of irrigation in their fields.

At least two inspections were conducted in every field under production. The main task of the inspectors was to demonstrate how to recognize extraneous varieties that needed to be rogued out. They also showed the farmers those weeds that needed to be removed prior to harvest. Toward the end of the season, it was evident that the farmers were not following the recommendations, even after three or more visits from the SCS inspectors. The decision was made to allow certain weeds to remain in the field and to rely on seed conditioning equipment for their removal. Otherwise most fields would have been rejected.

In Potosí, the Seed Unit produced a few hectares of wheat, barley, and potatoes. In March, an agreement was reached with the CBN whereby Seed Unit technicians inspected barley and wheat foundation seed fields maintained by the Chinoli Experimental Station, as well as about 10 hectares of barley produced by farmers in Pampas de Lequezana under contract with CBN.

The laboratory analyses of the first lots of seed that have been conditioned indicate a lower incidence of inert matter. This is a direct result of the mechanical threshing of foundation seed lots. Some mechanical damage was detected in these lots and was caused by maladjustment of the stationary thresher. Germination is high--above 96 percent average--but the presence of weed seed is around 3 to 4 seeds per kilogram.

A "drill-box" survey was conducted at the beginning of the semester to determine the quality of seed planted by farmers; this refers to seed that the farmer saves from his own production from one year to the next. The results obtained in laboratory analyses are shown in the following tables:

Table 1 LABORATORY RESULTS OF PURITY AND GERMINATION TESTS
CONDUCTED ON WHEAT SEED SAVED BY FARMERS IN CHUQUISACA

Variety	Pure Seed (%)	Inert mat. (%)	Other Crops (seed/Kg)	Weed Seed (seed/Kg)	Germ (%)
Jaral	96.62	2.93	30	1489	98.5
Saguayo	99.25	0.58	1	154	95.5
Florentino	80.28	18.38	239	9	98.0
Chinoli-70	98.15	1.27	111	0	98.5
Criollo	96.40	2.84	72	1554	98.5

Table 2 LABORATORY RESULTS OF PURITY AND GERMINATION TESTS
CONDUCTED ON WHEAT AND BARLEY SEED SAVED BY FARMERS IN POTOSI

Variety	Pure seed (%)	Inert mat. (%)	Other Crops (seed/kg)	Weed seed (seed/kg)	Germ. (%)
Wheat:					
Jaral	96.10	3.86	14	0	93.0
Chinoli-70	99.00	0.79	44	0	83.0
Barley:					
Promesa-76	98.92	1.08	0	0	99.5
IBTA-80	93.14	6.86	0	0	41.0

Seed produced under the seed program last year was of better quality than that shown above. The purity of the lots was improved, mostly due to conditioning and to the fact that the number of other crop and weed seeds was lower. Seed germination was 98 percent on the average. Germination is also high in most of the seed that the farmers save because of low humidity and cool temperatures in the region. Occasionally, a lot of seed will have a low germination, such as the lot of IBTA-80. Most of the time this is due to early frost or drought during the filling stage. Seeds with a germination rate lower than 80 percent have not been found under the seed program.

4. Seed Conditioning

In January of 1985, the T-059 Coordination Office assumed responsibility for building and installing holding bins and framing in the MACA seed conditioning plant in Zudáñez. They used designs prepared by the adviser for that purpose, and proceeded to obtain price quotes from around the country. Section III contains details related to this activity.

The seed equipment purchased by the T-059 Project began to arrive in La Paz at the end of the semester. The need for a complete set of screens for the cleaner is great; some lots will need to be run again through the cleaner when the new set of screens arrives. Among the equipment to be provided for the Zudáñez plant is a gravity table. The electric motor for this machine uses three-phase current. The SCS, as the counterpart, is to provide the installation of three-phase electricity.

5. Orientation of the Seed Program

The Regional Seed Council (RSC) continues to be the entity in charge of developing the regional seed program policies. Meetings of the executive committee were held regularly during the semester.

Since the project to produce wheat foundation seed in Potosí for Chuquisaca was turned down, the area was left without a source of foundation seed for 1985/86. The RSC considered an alternative producer of foundation seed and the CARE-MACA project got under way.

A feasibility study was prepared for a seed conditioning plant in the wheat-producing area of Chuquisaca. The study was the last in a series of five studies for the Chuquisaca area. All were done with the purpose of implementing different parts of the seed production program in the region. The plant would be on a small-scale, in order to make it more capable of self-financing its operations and repaying investment costs. Its best location would be in Tomina or Zudáñez.

The study was presented to the RSC and recommendations were discussed. Among these, the study suggested the formation of a new firm made up of CORDECH, CARITAS, and ASOPROHL. This new firm would submit the feasibility study to a financing institution such as PL-480 or the Inter-American Development Bank (IDB). During the time before the plant is built, the new firm would rent MACA's seed facilities in Zudáñez and would be responsible for the conditioning and storage of wheat seed produced in the area.

However, up to now local institutions have been reluctant to assume a loan for this purpose. Future projections of wheat seed markets and production are still doubtful. This is due, in large part, to the very low price paid for local wheat, between \$50 to \$100 per metric ton. International prices CIF/Bolivia run between \$175 and \$225. By the end of the semester, the new firm had not yet been formed and the SCS continued to condition and store seed.

During the II National Seed Round Table in 1984, representatives of Chuquisaca requested that Sucre be the host of the III Round Table. The RSC formed a committee to be in charge of organizing the event. Since the round table is to be held during the last week of August, the committee became active toward the end of the semester in preparing for this event.

6. Training

A Cereals Crops Seed Production short-course was conducted in Sucre from the 10th through the 12th of April. The subjects of discussion were: seed program development (with particular emphasis on the Chuquisaca program), seed production of cereal crops, and seed quality evaluation. Seventeen field technicians from different institutions in Chuquisaca and Potosí participated in the course.

During a general strike in March that paralyzed activities in the region, a Seed Technology course was conducted for five days for seed certification personnel. Organization of seed programs and the role of seed certification were the main subjects discussed, along with other subjects such as seed maturation, harvesting, drying, conditioning and storage.

A one-day course was conducted for IBTA extension agents in June. The course focussed on the importance of the usage of improved seeds. Thirteen extension agents participated.

Remberto Pleticosich, a field technician from CORDECH, was sent by the project to CIAT-Colombia for the IV Seed Technology Course, organized by the Seed Unit in CIAT. The training lasted three months and Mr. Pleticosich returned to the Basic Crops Unit in CORDECH in mid-June.

7. Seed Marketing

At the request of CARITAS, a private, non-profit organization, Chemonics prepared a study to provide technical assistance to wheat growers in the region. The study was completed and presented to CARITAS in February. It contemplated the production of wheat to supply the CHARCAS flour mill with the needed wheat grain. CHARCAS is a central cooperative made up of several member cooperatives from the wheat-growing area of Chuquisaca. One of the most important components of the project would be the introduction of improved varieties, which would create a demand of up to 1177 tons of seed by 1987.

The findings of the study show that the flour mill component of the project is marginally viable, depending on oscillating conditions of the market. The mill would sell flour to a parallel market not satisfied by flour imported by the government and would be sold at official prices. The size of this market varies greatly, depending on government policies regarding wheat importation and levels of official prices. Hence the mill is especially vulnerable to policy changes. The project has not yet obtained financing and the chances of its implementation appear to be slim.

The main market which has been identified for the wheat seed produced in the area continues to be Santa Cruz. Most of the wheat seed produced during this semester was harvested in time to be conditioned and shipped to Santa Cruz. CORDECH, however, was slow in purchasing the threshed seed from the producers. This recovery of seed from farmers is crucial, since the demand for wheat seed in Santa Cruz is heavy in April and May. This year, wheat seed could have even been sold to Santa Cruz in June since the lack of rain delayed planting, but CORDECH had not obtained the seed even by then.

Another market for wheat seed was identified in Chuquisaca. The Fondo Internacional para el Desarrollo Agrícola (FIDA), through the North Chuquisaca Project, will be distributing around 50 tons of wheat seed to farmers. They have been contacted by CORDECH and it is expected that they will purchase this volume of seed by the end of July. CORDECH will continue to market about 45 tons of wheat seed for their grain production program.

C. Summary and Suggestions

Sufficient volumes of wheat foundation seed were produced this year, but a definite strategy for future production has not been established. It is therefore suggested that during the next semester, the RSC study the possibility of utilizing IBTA-Chuquisaca as the foundation seed producer. The Regional Director of IBTA has expressed interest in establishing a foundation seed program in the institution's Production Unit. IBTA has also recently hired more field technicians and can specifically allocate two of them to run the foundation seed program. This program would involve the production of 20 tons of wheat seed a year.

Based on the experience of this semester, it is also suggested that Chinoli continue to produce barley foundation seed, as well as the wheat and barley breeder seed.

Commercial seed should be produced by any farmer that meets the criteria established by the SCS and it is expected that CORDECH, CARITAS and ASOPROHL will continue to do so. The recent interest displayed by the CBN in participating in the regional program is viewed with high expectations. It is recommended that the production of registered seed (using the foundation seed produced this year in Chinoli) be initiated next semester in Pampas de Lequezana, Tarabuco, and Yamparáez.

The seed conditioning plant in Zudáñez should be remodeled as planned, and should be used until the proposed plant is built. During the coming semester, the CORDECH-CARITAS-ASOPROHL company should be formed and the feasibility study should be submitted for financing to BID or PL-480.

If at all possible, it is suggested that CORDECH reach an agreement with the North Chuquisaca Project to supply this project with wheat seed of improved varieties. At the same time, CORDECH should try to take advantage of the potential market for wheat seed in Santa Cruz. This can be achieved by planting early (December-January) and through dynamic and efficient recovery of the harvested seed from farmers. Institutions such as the National Oilseed Producers Association (ANAPO) are willing to contract-purchase wheat seed from the area since they are fully aware of the high quality seed that is produced in Chuquisaca.

SECTION III
CONSTRUCTIONS

A. Background and Objectives

The position in civil engineering was originally defined and requested by the Coordination Office of MACA to backstop the Coordinator in construction projects financed by the T-059 Project. In most cases, however, alternative financial sources were found for construction, and gradually the burden was shifted to other institutions with funds in Bolivian pesos. Hence, the position of the adviser evolved into one of varied support to several local institutions, nearly all of which are highly involved in the emerging seed industry in Bolivia.

However, it is recognized that local consulting companies are available to develop designs and supervise construction jobs. Therefore, it was agreed with MACA and USAID that Chemonics' support in this area should terminate on March 31, 1985, when most constructions and installations financed by the T-059 Project would be completed. Architect Raúl Garrón of MACA would provide the follow-up after that date.

Objectives set for the three-month period were as follows:

- * Help MACA with the final reception of drying bins in El Algarrobal.
- * Liquidate final payments related to the construction project at Toralapa.
- * Complete computerized analyses of unit prices and construction specifications for PL-480.
- * Obtain quotes and proceed with contracts for installation of equipment and building of hoppers for seed plants in Zudáñez, Betanzos, and Las Barrancas.

B. Progress

1. Project: SEED DRYING BINS

Location: IBTA EXPERIMENTAL STATION. GRAN CHACO

Due to unavailability of funds through the T-059 Project, this activity progressed very little during the period. The disbursements to purchase flooring material for the driers were especially needed. This material was to be purchased by the Coordination Office in La Paz. Quotes were obtained and a provider was selected, yet, the materials were not purchased.

It was agreed that the adviser's assistance would not be needed for the final reception of the bins.

2. Project: COMPLETION OF CONSTRUCTIONS

Location: IBTA EXPERIMENTAL STATION, TORALAPA, COCHABAMBA

The adviser occupied more time in this area than in any other. The purpose of his efforts was to reach a final agreement with the construction company, CASEM, regarding final liquidation of their construction contract with MACA. A detailed study of documents and a proposal for liquidation were prepared by mid-January. This was presented to CASEM, IBTA, and MACA for study and approval. However, it was later decided to visit the construction site once more with representatives of these institutions in order to reassess the degree of progress made on the project by CASEM. New measurements would be made by Architect Garrón and the adviser in the presence of IBTA and CASEM in order to reach a final agreement.

Contact was maintained with these institutions throughout the national strike in March in order to coordinate the visit to Toralapa. Despite the interest expressed by Engineer Oblitas of CASEM, he was suddenly unavailable on March 27 when the trip was carried out. The measurements were taken as planned, and Architect Garrón later completed the reassessment. This was presented to MACA, IBTA, and USAID, thereby ending the involvement of the T-059 Project in this area.

3. Project: COMPUTERIZED ANALYSIS OF UNIT PRICES
AND CONSTRUCTION SPECIFICATIONS

Location: OFFICES OF CHEMONICS AND PL 480. LA PAZ

Completion of this task required the delivery of a Wang computer purchased through the Project for the PL 480 offices. This procurement was carried out by USAID and suffered severe delays. However, a Wang computer, which was delivered to the CICTAR program in mid-February, was utilized.

The Coordination Office arranged for counterparts to be assigned from PL-480 to review the data base; they were Engineer René Cruz and Lic. Orlando Villena. Architect Garrón was assigned the job of transcribing data to computer disks. A work plan commencing March 1st was agreed upon by all. While the data base was being reviewed, the adviser prepared the data computation programs.

Transcription of data and testing of the system for operability were not completed by the end of March. However, the adviser worked on his own time with his PL 480 counterparts throughout April and the objectives in this area were met.

4. Project: SEED PROCESSING PLANTS

Location: ZUDANEZ, BETANZOS, LAS BARRANCAS

This work consisted in installing equipment and building hoppers in three existing seed plants. The adviser coordinated his efforts with Lic. Dexter Vargas of the Coordination Office of MACA. In early January,

forms for obtaining quotes were sent out to 18 construction companies that work in metal in La Paz, Cochabamba, and Santa Cruz. Only six firms responded. A comparative chart was drawn up and presented to the Coordination Office.

A contract was not awarded upon the basis of these bids; instead, new terms of reference were developed to request best and final offers from three selected firms. New forms requesting final quotes were sent out near the end of March.

In addition to the above activity, the adviser assisted in developing designs and budgets for a possible new seed plant in Chuquisaca. This was done in support of a feasibility study being carried out for that region. In connection with this work, he visited the Zudáñez plant and helped to assemble some of the equipment previously in disuse.

C. Summary

Most objectives were met in this area. The Coordination Office is responsible for continuing to follow up on the reception of the drying bins, the final liquidation of CASEM for their work in Toralapa, and installation of the seed equipment in three seed plants. This latter activity has to coincide with the arrival of equipment being procured by USAID.

SECTION IV

SOIL CONSERVATION, GRAN CHACO

A. Background and Objectives

The adviser in Soil Conservation, Dr. E. Don Hansen, completed his three-year assignment in Bolivia on February 1, 1985. Objectives stated in the previous Progress Report were as follows:

- * Provide orientation to the three trainees during the month of January.

- * Carry out a field survey of farmers regarding factors that caused them to adopt soil conservation practices.

- * Send the three trainees to Perú for further training, especially to provide them with a more solid theoretical background.

- * Promote the soil conservation activity among local institutions to ensure continuity of the program.

The following objectives were also created:

- * Distribute the film on soil erosion in Bolivia.

- * Edit and publish Dr. Hansen's final report.

Therefore, this Section reports on one month of Dr. Hansen's time and nine days of that of Mr. Omar Scritella, expert in audio-visual techniques. It also includes one month of time of the trainees: Walter Vildoso and Adhemar Solíz.

B. Progress

Three of the primary objectives in this technical area concern the three trainees that worked with the adviser and his local counterpart, Engineer Jorge Balderrama, during the dry season of 1984.

One of the trainees, Adhemar Solíz, was interested in conducting a survey of farmers in the area for the purpose of analyzing reasons for farmer adoption of conservation practices. This information would provide a basis for Adhemar's thesis. Last semester, Chemonics' Chief of Party assisted in developing the concept for the study, the survey design, and methods for drawing a sample. Field work for this survey was completed in January.

In another instance, a group of observers stated that CODETAR was clearing land on very steep slopes (up to 35 percent) and was causing ecological damage to the region. It was alarming to realize that no objec-

textures, and 16.7 percent are heavy soils with large amount of clay.

Results of the survey show some degree of erosion on 68 percent of the lands cleared by the T-059 Project. Severe types of erosion (rill and gully) were found on 26 percent of the 62.3 hectares covered in the survey.

Table 2 TYPE OF EROSION ACCORDING TO PERCENT SLOPE
OF LAND

Slope	Type of Erosion				Total
	Minimum	Sheet	Rill	Gully	
(Percent)	(Percent of land in each row)				
0 to 3	52	35	11	2	100
4 to 6	0	48	47	5	100
7 to 9	0	60	29	11	100
over 9	0	36	55	9	100

It can be noted that there is a relationship between slope and erosion type, tending toward more severe types of erosion (rill and gully) on steeper slopes. There was no relationship noted between type of erosion and texture in this sample.

The third objective concerning the trainees was to obtain scholarships for them to study outside Bolivia for at least one semester in order to provide them with a more solid academic background. It is felt that employment opportunities are beginning to develop in this field in Bolivia, but that few trained persons are available. However, this objective was not met due to the restriction that candidates for scholarships financed under the Project must already be employed by the public sector.

The three trainees terminated their work with the departure of Dr. Hansen. At this point, the soil conservation program in the Gran Chaco was left without any meaningful institutional support and no local technicians assigned to it. Shortly afterward, however, Engineer Balderrama was hired by CODETAR to take charge of the program once more, receiving full support of that institution. As a result, the T-059 Project agreed to provide a vehicle for exclusive use in soil conservation in the region.

Final revisions and editing of the film "Soil Erosion in Bolivia" were completed in Washington D.C. Narration and musical background were pro-

vided by Bolivian citizens residing in the United States. In February, the film was distributed throughout Bolivia to interested institutions, including television channels. A copy was given to the Minister of Rural Affairs and Agriculture for the national television channel, Canal 7. However, the copy had not been delivered to the Channel by the end of the semester.

Finally, Dr. Hansen's final report was edited and published. The report contains an excellent analysis of the adviser's experience in developing the soil conservation program from scratch and also provides a technical orientation on the conservation methods adopted in the region.

C. Summary and Suggestions

All objectives in this area were met except the critical aspect of providing extensive training for local technicians in conservation. This is a crucial aspect of the program given the fact that only one trained counterpart has been left behind at the end of three years' work. Interestingly, both MACA and local farmers had expressed interest in continuing with long-term technical assistance in soil conservation. However, Chemonics feels that the foreign adviser's role as researcher, organizer, and trainer has been completed. Conservation techniques have been identified and successfully implemented throughout the region. Local institutions are capable of carrying this activity forward at its current level.

The evaluation team that visited the Project in April, 1985, praised the work done so far and recommended that work in terracing, contour farming, and minimum tillage techniques be continued. They recommended that a foreign adviser need not be stationed permanently in the region, but should be on hand to visit the program once or twice every year. His role would be to promote the activity and orient institutions to continue their support. Chemonics strongly agrees with this recommendation.

SECTION V

TRAINING IN NATURAL RESOURCES

A. Background and Objectives

Initial objectives in this area were limited during the semester. For the semester covered by this report they were defined as follows:

- * Provide technical assistance to help teach a course in irrigation engineering in May, if this assistance is requested by USAID and MACA.

- * Begin preparation for the Second National Soil Conservation Course to be given later in the year.

The course on irrigation management was postponed until October, 1985. However, two new objectives were defined:

- * Provide assistance to the Cooperative Sorata, Ltda. to include soil conservation as part of a general training seminar for rural leaders.

- * Edit a Soil Conservation Manual for use in soils courses later this year.

B. Progress

Initially, a second course in soil conservation was planned for the Gran Chaco for the latter part of 1985. However, interest in this kind of training was expressed by the Association of Agricultural Teachers and by representatives of the Sorata Cooperative in the Department of La Paz.

The Project paid travel costs for Engineer Balderrama of CODETAR to come to La Paz to present a general introduction in soil conservation to a group of 85 rural leaders in the Sorata area. The soil erosion film was shown during this event, which was held in June.

After a brief analysis with MACA of further needs for training, it was decided to present two practical courses for agricultural teachers who number 523 throughout the country. Twenty participants would be permitted in each course. One course would be held in Coroico, a northern valley area near La Paz, and another in Patacamaya, located at the center of the Altiplano south of La Paz. Participants would be drawn from all parts of the country. The courses would be held in September and October. The second course in Yacuiba was postponed until 1986.

Two advisers were recruited from outside the country for this purpose; both are working in Honduras: Mr. Frederick C. Tracy and Dr. Carlos Gandarillas. Also Engineer Jorge Balderrama and a technician from the Soils Department of MACA would be on hand as local instructors.

The Soil Conservation Manual was edited and prepared for publication. Engineer Juan Arandia S. provided considerable support in this regard; a local artist prepared the graphics materials. The material for the Manual was developed from the first soil conservation course given in Yacuiba last November. However, some parts of the Manual are not fully developed for publication. Hence the document will be prepared in draft to be used in the upcoming courses.

C. Summary and Suggestions

All objectives were met in this area. Chemonics is very impressed with the great interest expressed in training in soil conservation. However, training must be coupled with a program that can provide follow-up and varied kinds of support for implementation of conservation practices around the country. Hopefully USAID or another international donor institution will develop a new project to fulfill this need.

SECTION VI

COTTON PRODUCTION

A. Background and Objectives

At the end of last semester, a new association was formed known as the Departmental Association of Cotton Producers of the Gran Chaco (ADEPACH). This new group was created with the purpose of representing the cotton producers in the Gran Chaco Province. It will probably also take on the functions of the Guidance Committee which had overseen the program up to now.

Cotton production for this year (1984-85) includes planting of approximately 600 hectares with the participation of almost 160 families in all three sections of the Province--Yacuiba, Caraparí, and Villamontes. Registration and selection of farmers for participation in the program were performed by executives of ADEPACH, the Cooperative, and the program technicians.

The following objectives were outlined for this semester:

- * Provide in-service training to the two technicians of the program.
- * Support technicians in weekly field demonstrations and in supervision of demonstration parcels in the Villamontes area.
- * Carry out short-courses in different communities to teach producers about calibration of the ultra-low-volume sprayer for application of insecticides.
- * Carry out a three-day short-course on cotton physiology and pest control.
- * Visit the cotton producing region of Resistencia, Argentina for purposes of training and exchange of ideas.
- * Seek out possibilities in Mexico, Colombia or Israel for more intensive training for one of the two technicians working in the program.
- * Provide support to the Integral Cooperative and to producers in planning cotton harvest, storing of fiber, and marketing of fiber and seed.
- * Program and order inputs for the 1985/86 crop year in coordination with the institution which handles the importation.

Two technicians worked from the start of the semester: José Luis Humérez and Ramón Garca. A third technician was to be employed, but plans were dropped due to cost. Two additional objectives were defined, both of which concern the technical assistance program, as follows:

* Train local farmers to work as technicians to determine insect populations in cotton crops.

* Begin preparation of a project to set up a private technical assistance service for cotton producers.

B. Progress

1. 1984/85 Production Campaign

The first months of this agricultural campaign were extremely rainy. During the period from December 1984 through April of 1985, 1964.7 millimeters of rainfall were registered in the region of Campo Grande, 34 percent less in Caiza, and 45 percent less in Caigua (Villamontes). Soils began to get saturated with humidity during flowering and at the beginning of maturation (February and March). Weeds overgrew parcels where chemical control was not performed or where early manual control was poor. Subsequently, it became difficult to carry out effective weed control because the fields were too wet.

Lack of sunshine during periods of the growing season was probably responsible for provoking what is called "physiological deficiency". Physiological Deficiency is produced by an alteration of the normal functions of the plant. It can be caused by:

* deficiencies of water, light or nutrients,

* toxicity of herbicides, insecticides or of foliar fertilizers improperly applied, or

* excess water which encourages exaggerated growth of the plant, a development which is incompatible with formation of fruit. Excessive growth of foliage impedes the reception of light by the leaves and fruit. Therefore, photosynthesis is not adequately carried out for the development of fruit, causing it to fall to the ground.

Aside from the problems with weather this year, it is apparent that a large number of producers have not provided sufficient attention to the crop in the field. A major factor in this attitude of farmers is undoubtedly related to price. The international price of cotton has fallen off somewhat since last year--\$67 per hundredweight of fiber this year compared with \$95 last year. However, the price equivalent in pesos being discussed in Bolivia at the end of the semester would be less than half of the international price. This is due to the use of the official rate of the peso in relation to the dollar to determine the price of cotton fiber.

2. Technical Assistance to Farmers

The two technicians of the program carried out an intense field program through visits to producers' farms and through periodic field

demonstrations established in eleven communities. A total of 764 direct contacts were made with producers. According to the table on the following page, field work involving direct contacts with farmers either on their farms or on demonstration parcels accounted for 54 percent of total work-days during the semester.

During the first two months of the semester, three demonstrations were carried out to show the use of a manual ultra-low-volume sprayer for application of insecticides. A total of 28 farmers received training.

The advisor assisted the technicians in the preparation of two radio programs, one regarding pest control and the other on recommendations for the cotton harvest. These programs had a duration of 15 to 30 minutes each and were presented several times with the collaboration of the IPC (Polytechnic Farm Institute) and the OPPEJ (Provincial Office of Planning and Execution of CODETAR).

3. Training

The formation of professionals with expertise in management and control of pests is being performed simultaneously with the development of the cotton program in the region. During March, a two-day short course was presented on "Pest Control and Ultra-low-volume Spraying Techniques". Thirteen agronomists of the region and ten students of the Polytechnic Farm Institute of the Tarija University attended. This course constitutes the second one presented since the beginning of the Pilot Cotton Program. A bulletin entitled, "Practical Guide on Ultra-low-volume Spraying", was prepared and distributed among participants. In light of the interest expressed, a similar course is being planned for next year.

Cotton producers of other regions in Bolivia often contract with private services to determine insect populations in their fields. This is carried out by trained persons who perform sampling and insect counts during the entire crop season. These data are used by the agronomist to plan spraying schedules. With this in mind, a young Chaco farmer, Ernesto Albornoz, of the community of Campo Grande, received training in insect population control during this semester. Afterwards, he successfully worked on a medium-size farm in the area, performing the tasks of insect population control. Several other producers demonstrated interest in having these services performed during the next campaign.

Several contacts were initiated with institutions in other countries for the purpose of determining possibilities for further academic training for one of the local technicians. However, no definite alternatives were identified by the end of the semester. Since the adviser is located in Yacuiba, he has experienced some limitations in making these contacts.

A visit to northern Argentina was planned with several interested persons in the Chaco, including farmers and technicians. The purpose was to become familiar with equipment used to mechanically harvest small plots and with methods of marketing of fiber. However, this was cancelled due to lack of financing by the Project.

Table 1

WORK-DAYS AND TECHNICAL ASSISTANCE TO PRODUCERS CARRIED OUT
BY COTTON TECHNICIANS DURING THE FIRST SEMESTER OF 1985

	M O N T H						TOTAL
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	
Office work:							
Days	7	8	9	13	11	11	59
Percentage	29	44	45	65	48	50	46
Work in the field:							
Days	17	10	11	7	12	11	68
Percentage	71	56	55	19	52	50	54
<hr/>							
Number of farmers who received on-farm assistance	75	24	57	75	102	77	410
Number of farmers who attended demonstration parcels	159	119	55	10	0	11	354
Number of visits to demonstration parcels	35	29	14	5	0	6	89
Farmers' attendance (average per demonstration parcel)	5	4	4	2	0	2	4

4. Harvesting, Ginning and Marketing

Assistance was provided to producers enabling them to obtain information on wage levels paid in Santa Cruz this year for cotton harvest. On this basis, ADEPACH initially fixed wages for the cotton harvest in the region.

Production credit was insufficient and untimely. Strikes decreed by the COB and road blockades that took place in the region altered the progress of field work. Harvest tasks in many plots are being carried out slowly and discontinuously, due to lack of hand-labor. In these cases it is likely that yields will be further affected.

As in the past, ginning and marketing remain under the responsibility of the Integral Cooperative. A three-year rental contract for the cotton gin of Campo Pajoso was signed between the Integral Cooperative and the University of Tarija which owns the gin. This was a first step necessary to assure ginning services for producers of the region.

Ginning is being carried out by two experts who were hired by the Cooperative in Santa Cruz. The problems which existed last year in the electronic system that controls humidity of raw cotton were overcome. Hence, ginning is being carried out efficiently this year.

Assistance was provided to the Cooperative and producers regarding scheduling of ginning operations in order to coordinate reception of cotton at the gin.

5. Input Planning for Next Season

In the middle of the semester, the Integral Cooperative requested the advisor's support in order to project requirements of inputs and equipment for the program during the next year. As in the past, this institution will be responsible for the importations for the entire program.

6. Organization of a New Program

Information is being gathered for preparation of a study for the creation and operation of a separate technical office that would be sponsored by ADEPACH. The advisor spent a great deal of time in providing orientation regarding plans for organization and administration of the technical assistance program. The objective of this new office is to provide efficient technical services and to achieve self-financed operations. Contributions from producers would be an important part of the starting capital this office needs for its implementation. In order to seek out alternative strategies for organization of the program, consultations are being carried out with several producers, with ADEPACH, and with the Integral Cooperative. Completion of this activity is contemplated in the objectives for the second semester of 1985.

C. Summary and Suggestions

Eight objectives out of the ten outlined for this semester were entirely fulfilled. The two objectives which were not reached both relate to training outside Bolivia. Assistance to meet training objectives will be requested from USAID/B and from the Ministry of Foreign Relations of Bolivia.

Ginning was carried out efficiently. However, there is a need to determine the yield of cotton ginning. For this reason, we recommend that the Cooperative weigh raw cotton upon arrival at the gin. A balance is available at the gin for this purpose. Likewise, transportation of the seed to the Villamontes oilseed mill must be coordinated in order to avoid its deterioration during storage.

The study for organization of the technical services under ADEPACH will be submitted along with a final report of results for the 1984/85 campaign. We recommend that producers, especially the representatives of ADEPACH, expand on ideas about the role that this institution should perform in the region.

SECTION VII
INFORMATION SYSTEMS

A. Background and Objectives

Progress achieved during the past semester was positive, and has permitted a gradual consolidation of the program. Initial objectives outlined for the semester covered by this report were:

- * Reach a level of 800 subscriptions to the CICTAR Bulletin by June, 1985.
- * Organize the Bulletin according to specialized sections.
- * Elaborate plans for the establishment of information networks within and among regions.
- * Carry out training courses in Oruro, Potosí and Cochabamba on documentation techniques.
- * Complete the collection of questionnaires, tabulate data, and prepare the Second Edition of the Directory of Resources.

The many requests for information from users brought about two additional objectives concerning a new activity related to bibliographic searches:

- * Inventory and catalogue existing information in institutions of the sector,
- * Facilitate bibliographic search of information for users.

In February, SISTECO, a computer services company, delivered a Wang computer for use on a provisional basis until the official project equipment arrived in Bolivia. In May, the equipment owned by CICTAR was installed. It has a capacity of 30 MB in hard disk and software such as Lotus 1-2-3 and dBase, which will permit more efficient handling and organization of bibliographic references, lists of subscribers, institutions, etc.

B. Progress

1. Information Bulletin

The last edition of the Bulletin in 1984 closed Volume Number 1. Volume Number 2 will correspond to the editions of 1985, approximately 16 numbers. Results have been positive, based on reader expectations and the continuous increase of subscriptions. By May, nearly 1200 subscriptions were registered, which means an average increase of 99 per month during one full year. The initial objective for the semester was to reach 800 subscriptions by June, 1985.

In order to learn which sections of the Bulletin are of greater interest to users, a questionnaire was distributed in March of this year. The results demonstrate that: (1) articles are the main interest, followed by (2) announcements of events, and (3) announcements of work opportunities.

In order to obtain more up-to-date information for articles, the adviser obtained information from research projects carried out in the experimental stations of Toralapa, Chipiriri, San Benito and La Jota. This task was facilitated by trips made by the adviser which permit direct contact with institutions and users.

As a result of a recommendation made in the II National Round Table on Seeds in 1984, a separate specialized section was included in the Bulletin concerning seed production. Compilation of material and preparation of articles are the responsibility of Engineer Jorge Rosales, Regional Director of Seed Certification in Santa Cruz.

Another section of the Bulletin was developed in support of a new activity related to "bibliographic searches". This activity is explained more fully in subsection 5, below.

The prolonged suspension of activities during March delayed editions of the Bulletin. Publication was regularized by April, thanks to the determination and dedication by the persons in charge, Guillermo Valencia and Boris Crespo.

With the aim of assuring the high technical quality of the Bulletin, a Publishing Board was informally organized. Initially it was formed by Engineer Jorge Calvo, Dr. Luis Ampuero and Dr. Preston S. Pattie. The first meeting made possible the timely edition of Bulletin No. 5. The Board's activity is not limited to the Bulletin, but also analyzes other aspects related to the program.

2. Regional Committees

Organizing regional networks of documentary centers requires the involvement of institutions related to the sector. With that purpose, regional committees were created, especially to facilitate access to institutions and to support them in organizing their documentation centers. To date, committees were organized in five regions and three of them have signed agreements of mutual cooperation with regional institutions.

One positive result of these agreements is that the adviser received support in developing inventories of information existing in the libraries of local institutions. Documentation workshops carried out in various regions were also important in this regard. Persons who received training carried out initial tasks of making inventories in their institutions.

The Committees of Potosí, Cochabamba and Chuquisaca organized seminars dealing with problems of information flow. The objective they are pursuing is to create an awareness among institutions of the sector so that they

will support the work carried out by CICTAR. This activity requires the direct support of the adviser, which implies continual visits to the regions.

3. Directory of Resources

Questionnaires for collection of personal and professional information from technicians working in the sector have been distributed throughout the country. According to the plan presented by René Zeballos, who is in charge of this task, March 31 was defined as the deadline for the reception of questionnaires. Announcements were carried in the Bulletin to this effect, and regional delegates were advised. Questionnaires were collected during the trips made by the adviser, both from the regional delegates as well as from users directly. However, only about 450 questionnaires were received. It is hoped that the second edition will have a larger number of registered persons than the first registry (1601), published in 1983. Therefore, it was decided to extend the deadline to September 30, 1985. In order to achieve the objective in number of registered persons, the collection of questionnaires will be carried out by

- * the technical group in La Paz,
- * René Zeballos in Oruro, Potosí and Tarija, and
- * the adviser in the remaining regions.

The collection of material for the other sections of the registry is on schedule in La Paz. Again, travel by the technical group and the adviser is necessary to complete this task. Likewise, assistants for the regional delegates will provide support for this activity.

4. Training

The technical group in La Paz received training in use of the Wang computer, specifically in the following areas: 1) operative systems, 2) word processing, 3) commercial graphics, 4) multiplan. During the following months, SISTECO will provide training to the group in other programs. Progress attained by the trainees was satisfactory.

Plans to assist regional committees in terms of their organization, workplans, and courses in documentation techniques were postponed until next semester. This decision was taken in order to dedicate more time to the functioning of the technical group in La Paz.

5. Information Services

In view of the many requests from users for bibliographic information from CICTAR, the "service of bibliographic search" was initiated. This activity grew out of the need expressed by professionals in the sector to have access to technical material that is generated and published in the country.

The mechanism applied is:

1) CICTAR receives a user's request for documents in a determined area through the regional delegate or directly by letter or phone call.

2) The request is transmitted through the Bulletin and/or a letter addressed to documentation centers and libraries in the country.

3) The centers and/or libraries send CICTAR the lists of the material which they have on the subject.

4) The response to the user is published in the Bulletin or a letter is sent to him.

In support of this system, CICTAR-La Paz has approximately 5,000 bibliographic references in computerized files which allow the service to be carried out more directly and faster.

Only in exceptional cases does CICTAR offer to actually obtain documents for transmittal to users. This is viewed as an activity which should be carried out directly by documentation centers for users. In any case, the user must be prepared to bear the total cost of such a service.

6. Other Activities

The Coordinator of FAO for the CARIS program in Latin America visited Bolivia for a few days in June. CARIS is a program which publishes registries of research work completed and in progress throughout the world. The program in Bolivia is coordinated by IBTA, but since 1978, Bolivia has not sent lists of researchers nor of research projects. Thanks to Engineer Francisco Pereira's support, CICTAR attended the meetings and training sessions for questionnaire handling with the idea of reinitiating Bolivia's participation in the program.

The FAO expert was complimentary of efforts made in Bolivia regarding the publication of the Registry of Professionals of the Agricultural Sector. There is the possibility that, after IBTA carries out compilation of information on research efforts, it will be transferred to CICTAR in order to be published in the Directory of Resources.

C. Conclusions and Recommendations

CICTAR was successful in reaching the objectives outlined for the Bulletin. This means of transmitting information is unique in the sector, and has proved to be an effective manner of keeping the Bolivian professional up-to-date with information generated in the country. It has also facilitated the development of other information services in different areas of the sector. This success is reflected in the continuous increase of subscriptions to a current total of 1200 subscribers. Printing in offset will permit increasing the Bulletin's content, and presentation will be of better quality.

A more solid and realistic structure for the participation of regional committees is being achieved. These committees will continue receiving support from the adviser.

Material gathered for the Directory of Resources has increased from 60 percent to 75 percent of the projected levels during the semester. Extension of the deadline for receipt of questionnaires (September 30) allows for tabulation from October to December and publication in March of 1986.

The CICTAR program is included within the technical assistance budget of the T-059 Project until April 1986. The contribution of the Project, aside from the costs of the technical adviser, will be for: (1) office space, (2) equipment and materials, (3) travel and per diems of the technical group, (4) training, which includes: (a) stipends for the technical group and (b) scholarships for assistants to regional delegates.

It is expected that an instrument for making copy plates will be given to CICTAR with the purpose of using offset printing. The machine was originally purchased by the T-059 Project.

The Catholic University of Bolivia, UCB, defined its contribution to the program, consisting of: (1) scholarships for the students who work in CICTAR in La Paz, (2) office furniture, (3) some office supplies, and (4) the hiring of a supervisor of the technical group who would perform duties as the adviser's counterpart.

The UCB has nominated Mr. Raúl Valdivia as counterpart of the adviser. He is a graduate of the Communications School of the UCB. Mr. Valdivia will begin work in July.

SECTION VIII

COORDINATION, ADMINISTRATION AND PROCUREMENT

A. Background and Objectives

At the end of the last semester, Chemonics placed a great deal of importance on the recruitment of a new DCOP to replace Dr. Bernard L. Delaine, who was scheduled to move to another Chemonics project in early May. The experience of last semester has demonstrated how crucial this position is, and the need to extend it until the end of the Project. The objectives set forth for this semester in the administrative area were as follows:

1. Prepare a Plan of Activities 1985/86 by January 20th for submission to MACA and USAID.
2. Enter into negotiations with client institutions, MACA and USAID, to prepare for an extension or the closing of the technical assistance contract.
3. Publish the following reports:
 - a. Progress Report for the second semester of 1984 in English and Spanish.
 - b. End of Tour reports on soil conservation and seed certification.
 - c. Feasibility study report for a Chuquisaca seed processing plant.
 - d. Administrative report on the first soil conservation course of November, 1984. Edit and publish a second technical report--a product of the course.
4. Carry out the training schedule in accordance with the original plan.
5. Recruit and hire a new Deputy Chief of Party.
6. Close out special MACA training accounts and request reimbursement from MACA and USAID for funds advanced by Chemonics.
7. Complete installation of new offices in La Paz for Chemonics and the Office of Coordination of MACA. Obtain prompt reimbursement of funds advanced to the Project by Chemonics for this purpose.
8. Strengthen the accounting/administration division of Chemonics in La Paz in order to catch up on work accumulated over the last year. Also strengthen support systems of the regional offices.

9. Continue efforts towards completion of an inventory system for all equipment and furniture under Chemonics' responsibility. Complete necessary procurements, such as the purchase of two radios for communications with Yacuiha.

10. Assist USAID in the receipt and distribution of Project equipment for seed processing plants and seed certification services.

11. Assist AID-contracted evaluators in their assessment of the Project.

12. Prepare or assist in preparations for new training programs, in particular, the soil conservation courses to be given in the La Paz area.

B. Progress

1. Reporting

The publication of progress reports was completed on schedule. A list of the reports completed and published during the semester is as follows:

- a. Semi-Annual Progress Report for the first semester of 1984 (Spanish).
- b. Semi-Annual Progress Report for the second semester of 1984 (English).
- c. Semi-Annual Progress Report for the second semester of 1984 (Spanish).
- d. End of Tour Report by E. Don Hansen on the soil conservation program (English and Spanish).
- e. End of Tour Report by Adriel E. Garay on the seed program in Santa Cruz (Spanish).
- f. Feasibility study for a seed processing plant in Chuquisaca for wheat seed by Edgar R. Cabrera and Gover Barja (Spanish).
- g. Administrative report on the soil conservation course of November, 1984 by Juan Arandia S. (Spanish).

2. Training

In-Country: Only one course scheduled on wheat seed was not completed due to severe weather conditions that impeded travel. The CICTAR courses were not executed due to over-programming and emphasis on other activities, primarily publication of the Bulletin and coordination with the regional representatives. All other programmed courses were carried out as planned. In addition, Chemonics has lent its support in the preparation of

various unprogrammed courses. The following chart presents a summary of the status of the original in-country training plan for this semester.

IN-COUNTRY TRAINING PROGRAM

DATE	EVENT	PLACE	BY	RESULTS
Jan-Mar	Advanced Course on Seed Certification and Technology	SCZ	GARAY LANDIVAR CABRERA	Executed in each region
Jan 15-20	Course-Workshop on Documentation	POTOSI	CICTAR	Not executed
Feb 6-8	Course for Seed Inspectors on Wheat Seed in Comarapa	COMARAPA	GARAY	Not executed - poor weather
Feb 18-21	Advanced Course on Seed Conditioning & Internal Quality Control	SCZ	CABRERA	Executed
Mar 4-8	Course-Workshop on Documentation	CBZ	CICTAR	Not executed
Apr 10-12	Course on Cereals Seed Production	SUCRE	CABRERA	Executed
May	Second Course on Irrigation	TJA	USAID/ CORNELL	Postponed til October
May 20-24	Course-Workshop on Documentation	LPB	CICTAR	Postponed
June	Usage of Improved Seeds	SRE	CABRERA	Executed
June 20-22	Soil Conservation Course	SORATA	CODETAR	Executed

Informal computer training courses in WordStar, SuperCalc, and Database programs were provided by Chemonics' Chief of Party to technical and support staff of Chemonics and the Office of Coordination in La Paz. In other Chemonics offices, Dr. Landivar gave courses to Certification personnel and support staff.

Outside the Country: Training outside the country was limited in scope. Centreisem in Brazil did not respond to an application regarding a seed analysis and certification course. Training in Peru for the three candidates in soil conservation was cancelled by MACA. No training was received at the University of Mississippi for lack of language proficiency of the candidates. Only the courses in CIAT/Colombia on seed technology were carried out as planned. The following chart summarizes this class of training.

TRAINING OUTSIDE THE COUNTRY

DATE	EVENT	PLACE	STATUS
Dec-Jan	Seed Analysis and Certification	Centreisem Brazil	No response to application
April-June	Course on Seed Technology	CIAT Colombia	Executed
Mar-Aug	Course on Soil Conservation	La Molina Perú	Rejected by MACA
Jan-July	In-Service Training on Seed Certification	Univ. of Miss.	Candidates did not fulfill language req.
June-July	Summer Course on Seed Technology	Univ. of Miss.	Candidates did not fulfill language req.

Regarding the preparation of training materials, Mr. Omar Serritella from Chemonics/Washington returned to Bolivia in April to complete production of a videotape on seed certification in this country. The film was completed in Washington in June and is ready for distribution. A version in the English language will also be produced by Chemonics/Washington.

3. Project Administration

a. Hiring of New DCOP

With the departure of Dr. Bernard L. Delaine in May, Ms. Kimberly J. DeBlauw was transferred from the Chemonics/Washington office to Chemonics/La Paz and began her functions on May 20 as the new DCOP.

b. Closing Out Special MACA Training Accounts

Chemonics presented the balance of funds advanced for the MACA training accounts to the Coordination Office on December 21, 1984. However the documentation was returned to Chemonics for revision. It was finally accepted on February 14. The total amount of the advances made by Chemonics to the Project reaches 10,864.63 US dollars.

Chemonics was not responsible for making such advances to the Project. However, delays in disbursements by USAID and MACA would have produced serious interruptions in the work of advisers. Thus, Chemonics felt obligated to continue with Project activities in spite of these delays and provided unprecedented advances in order to do so. Reimbursement was finally made at the end of April by USAID.

c. Office Space

Although the installation of Chemonics and Coordination in new offices in La Paz was carried out as planned, minor logistical problems had to be resolved. The lack of a private telephone line in the Chemonics office for direct-dial communication with the rest of the country was one concern. A new line was obtained and has greatly facilitated communication between the Chemonics' offices.

In June, plans were made for the complete transfer of the CICTAR offices and workshop from the Catholic University facilities to a Chemonics office in La Paz. Chemonics transferred its work room to the office formally occupied by the AID Statistics office.

Again in the case of installation of offices, Chemonics advanced funds to the Project for subsequent reimbursement by USAID.

d. Strengthening of Accounting/Administration Divisions in Chemonics Offices

In order to catch up on work accumulated over the last year, a new deputy administrator was hired in February. After a few weeks, responsibilities were redefined for each person in the division. This new system allows the division to speed up its work and to bring up to date much of the documentation that had been incomplete. Efforts are also being made to improve reporting procedures from the field offices to La Paz and from La Paz to Chemonics/Washington. A computer accounting program has been developed which is utilized to produce a monthly summary of accounting records.

e. Inventories and Procurement

With the arrival of the new deputy administrator in La Paz, efforts began to update and complete an inventory system for all of the equipment and furniture under Chemonics' responsibility.

New procurement for the semester involved Chemonics' and the Coordination Office's participation in the receipt of equipment ordered by the Project through USAID. Chemonics' advisor in Sucre provided extensive assistance in verifying the orders actually made. After considerable delay and correction of errors made in the ordering process, the equipment began arriving in June. Subsequent plans were made for an organized process of inventory and disbursement to various Bolivian institutions. The equipment largely consists of machinery for seed processing plants, laboratory equipment for seed certification labs, and vehicles for different entities.

Equipment purchased by Chemonics includes two personal computer systems. A Kaypro computer was delivered to the Chemonics/Santa Cruz office in May and a second Kaypro was sent to Chemonics/Yacuiba, thereby completing the installation of computers in each of the Chemonics offices and facilitating administrative and accounting functions. Client institutions, such as certification services, are making ample use of this equipment.

In April, the purchase of two short-wave radios was made and they were installed in Chemonics' offices in Santa Cruz and Yacuiba in order to improve communications between the field offices and La Paz.

Due to the critical situation in the seed program of the Gran Chaco with regard to the drying of soybean seed, Chemonics took the initiative of purchasing a drier locally with funds assigned to the technical assistance contract. The drier was installed in the processing plant operated by the Integral Cooperative, and was a crucial factor in reaching the ambitious objectives defined for the program this year.

Automobile insurance was updated for Project vehicles under Chemonics' responsibility. The purchase was timely as two subsequent accidents were completely covered by the policy.

f. Plan of Activities 1985/86

In January, a Plan of Activities for the period 1985-86 was completed and submitted to MACA and USAID. This was done at the request of MACA and USAID as presented during the meeting of Advisors in December of 1984. The report presented an analysis of the current state of affairs in each area where technical assistance is provided by Chemonics. It also presented the conclusions made during the meeting and subsequent recommendations for future efforts in cotton and seed production, construction, soil conservation, information systems and technical supervision. MACA was to respond to this proposal by March of 1985.

g. Negotiations for Contract Extension

Among the recommendations formulated in the Plan of Activities was the proposal to extend the Chemonics contract for another year, or until September 30, 1986. In April, Ms. Candace Conrad, Project Supervisor, arrived from Chemonics/Washington to begin negotiations for the contract extension. Amendment 15 was drawn up and approved by the Minister of Rural Affairs and Agriculture. By June, USAID/Washington had approved the change in PACD (Project Activities Completion Date) from December 31, 1985 to September 30, 1986, as well as a waiver for non-competitive contract negotiations with Chemonics. Amendment 15, to take effect July 1, 1985, was submitted by MACA to USAID/Bolivia at the end of June for approval.

The Chief of Party spent considerable time in assisting the Office of Coordination with preparation of documents concerning disbursements and remaining funds under the Project. Remaining funds were reprogrammed in coordination with MACA and USAID.

h. USAID Evaluation Team

In April, the Project welcomed the arrival of Norman N. Ward and Milton E. Gertsch from Development Associates Inc., who were contracted by

USAID/Bolivia to perform a thorough evaluation of the Agricultural Sector II Project. The primary objective of the study was to make recommendations that would help ensure the viability and progress in the various areas that receive technical assistance through the end of the Project and thereafter.

Chemonics/Bolivia assisted the evaluators in making contact with representatives of local institutions and farmers and provided data for their analysis. Support was also provided in arrangements for local transport, especially to the Gran Chaco, where heavy rains created precarious conditions for the evaluators. A USAID vehicle provided for the team could not reach the Chaco. Hence a small plane was contracted to transport the team, including the USAID Project Manager and Chemonics Chief of Party, to and from the region. Two Chemonics vehicles provided transport within the area.

The evaluators' report assessed project accomplishments since reactivation in 1983. It also focused on an analysis of the strength of local institutions with concern for their viability in the future without the financial and technical support of the Project. Besides specific recommendations for each technical area, the evaluators also suggested that the Project be continued for one more year and that a request be submitted for an Agricultural Sector III Project.

C. Summary and Suggestions

Each of the technical reports anticipated for this semester was completed, although publication of the Soil Conservation Manual was postponed until July. New reports to be published in the following semester include: the Progress Report for the second semester of 1985 (Spanish and English) and an End of Tour Report by Edgar R. Cabrera (Spanish and English).

All of the activities programmed for this semester in the training component were completed as planned with the exception of the CICTAR programs and those foreign scholarships that were not utilized for various reasons. Nevertheless, the flexibility of the training component allowed for Chemonics' participation in the planning of new courses for the semester. Labor strikes and social unrest, though prolific, did not result in any major delays for the training schedule.

Project administrative activities were carried out as planned, except those objectives relating to inventories and accounting summaries. We have intentionally maintained a minimal central administrative staff, despite the many demands made upon us by MACA, USAID and Chemonics/Washington for accounting and reporting.

Administrative plans for the future include a general reorganization and strengthening of administrative/accounting functions in each office in order to provide greater supervisory control, policy clarification, and answerability to the Chemonics/Washington office. Another important goal

will be the creation of accurate records in preparation for the eventual Project closing. One additional person may be required in the accounting office for this purpose.

. The results of the USAID evaluation are encouraging for the Project and concur with the general MACA-USAID-Chemonics assessment made in the December 1984 meeting and in Chemonics' Plan of Activities for 1985/86. Future administrative and training activities will follow the recommendations outlined in each of these reports. The assumption of responsibility for these tasks by the Deputy Chief of Party has enabled the Chief of Party to dedicate himself almost exclusively to technical work, thereby creating greater consistency in both the administrative and the technical areas.

SECTION 1X

CONCLUSIONS AND PROJECTIONS

Technical assistance was completed as scheduled in two areas of work during the first semester of 1985; these are construction and soil conservation. These reductions coincide with the diminishing support provided by the T-059 Project in terms of funding for the two activities mentioned. In both cases, responsibilities for follow-up activities were turned over to local institutions.

There has also been some turnover in advisers during the semester. Fortunately, the technical team remains strong with the inclusion of Ms. Kimberly J. DeBlauw as Deputy Chief of Party and Engineer Diógenes Chávez as seed adviser in the Chaco.

The Plan of Activities for 1985/86 led to an agreement with MACA and USAID concerning the terms for extension of the technical assistance contract through September of 1986. Final approval of Amendment 15 to the contract was pending in USAID as of June 30, 1985. Objectives shown below for the second semester of 1985 are developed on the assumption that this approval is forthcoming.

Seed Improvement, National

- * Coordinate with the regional seed councils, MACA, and USAID to establish the National Seed Commission.

- * Continue offering scheduled courses on seed production and technology and develop a training plan for the period of July, 1985 to September, 1986.

- * Help carry out the Third National Round Table on Seed Program Development. This event will take place in August in Sucre. Approximately 80 participants are expected.

Seed Improvement, Santa Cruz

- * Develop a computerized system for record-keeping and management of seed certification.

- * Assist in the organization of a university course on seed technology.

- * Offer a one-day-per-week course to the technicians of the Certification Service.

- * Assist CIAT-Santa Cruz in the production of foundation seed. Special support will be given concerning wheat.

* Investigate factors causing large losses of soybean seed in the field after maturation, and develop a strategy to solve these problems.

Seed Improvement, Gran Chaco

* Help private companies in conditioning the remainder of the 1984/85 seed crop.

* Assist Certification in analyzing and tagging locally produced seed.

* Work with local institutions in preparing a work plan for the 1985/86 seed production season, and in developing strategies for the program.

* Offer a three-day course in agricultural machinery and seed production.

* Help Certification in the registration of seed growers and in performing field inspections.

* Work with the seed companies in the promotion of the seed program, and inform their cooperating growers about the scope of the program.

Seed Improvement, Chuquisaca/Potosí

It is estimated that the program in this region will work with 10 hectares of barley foundation seed, 10 hectares of wheat foundation seed, 65 hectares of barley registered seed, and 65 hectares of registered wheat seed. CORDECH should market wheat seed by October, at the latest, so that the farmers will have it by November. The number of seed producers should be limited to those who meet the criteria established by the Seed Certification Service and can be supervised and supported by the SCS.

* Support the Chinoli Experimental Station in the organization of the foundation seed production program for barley.

* Help organize a foundation seed production program with IBTA-Chuquisaca by means of contract farmers. IBTA has no experimental station in the Department, nor does it own land on which to produce foundation seed.

* Condition the foundation, certified and fiscalized seed produced during this semester. A special effort will be made to remove noxious weeds by use of a length grader.

* Perform all testing of the conditioned seed, and tag according to seed class. Testing of barley seed lots from the CBN should also be conducted.

* Remodel the seed conditioning plant in Zudáñez.

* Register wheat and barley seed producers both in Potosí and Chuquisaca.

Training in Natural Resources

* Employ a local instructor to participate in a second irrigation course to be held in Cochabamba, if requested to do so by MACA and USAID.

* Conduct two courses in Soil Conservation for agricultural teachers. One course is to be held in Coroico and the other in Patacamaya. Both local and foreign instructors are to be provided. The courses will be a joint effort between MACA, IBTA, CODETAR, and Chemonics. The Ministry of Education and Culture will choose the participants.

Cotton Production/Gran Chaco

* Carry out the tabulation of data concerning cotton production for the 1984/85 campaign. Present this information to producers through radio programs and meetings with producers.

* Set up a system of inscription of producers for 1985/86. Carry out the selection of producers in cooperation with ADEPACH, the program technicians, and the Integral Cooperative. For this purpose, visits will be made to the farm of each person to gather information regarding physical and economic resources.

* Carry out an evaluation of the Pilot Program and prepare a project to be presented to PL-480 in order to obtain financing for the activities of ADEPACH. This will include financing of the the program technicians currently employed by the T-059 Project under Chemonics.

* Carry out six demonstrations on calibration of sprayers for application of herbicides. The adviser will also provide assistance as instructor in a regional course on seed production and mechanization.

* Support the two program technicians in field work.

Information Systems

* Publish the Bulletin in offset, thereby increasing the number of pages and improving its presentation.

* Expand the Bulletin's distribution abroad.

* Establish a system of codification for bibliographic references which should be adopted by the documentation centers of other institutions around the country.

- * Develop a form to receive information requests from users.
- * Edit the Directory of Resources by December 1985 for publication next year.
- * Provide support in organizing documentation centers in institutions of the sector and in establishing regional information networks.
- * Carry out training courses in documentation techniques in La Paz, Oruro, Cochabamba, and Potosí.

Coordination, Administration and Procurement

- * Complete updating of local accounts, inventory and personnel documentation in preparation for an internal audit by Chemonics in December.
- * Purchase medical insurance for all local staff, including 100 percent coverage of hospital, clinical, dental and optical expenses.
- * Effect the procurement of one indented cylinder for the Zudáez seed plant through Chemonics' Procurement Department in Washington.
- * Carry out administrative functions for the III National Round Table on Seeds in Sucre.
- * Complete the publication of the following reports:
 1. Preliminary report on soil conservation in Bolivia, by Frederick C. Tracy, Juan Arandia S. and Julio E. Luna. (Spanish)
 2. Report on seed program development in various countries, by Nicholas W. Minot. (Spanish)
 3. Paper on seed marketing, by Dr. Preston S. Pattie and Lic. Gover Barja for presentation at the Round Table. (Spanish)
 4. Final Report by Dr. Adriel E. Garay, seeds adviser-Santa Cruz. (English)
 5. Final Report by Dr. Edgar R. Cabrera, seeds adviser-Sucre. (English and Spanish)
 6. Summary Report of the III National Round Table on Seeds. (Spanish)
 7. Project for the funding of CICTAR, to begin in May of 1986, by Miguel Ibáñez Ch. and Dr. Preston S. Pattie. (Spanish)
 8. Project for ADEPACH to obtain funding for activities of that organization, by Enqincer Víctor González and Dr. Preston S. Pattie. (Spanish)

* Reassess contract budget in light of rising local costs, especially in relation to local personnel.

* Continuation of training coordination in accordance with following plan:

IN-COUNTRY TRAINING PROGRAM

DATE	EVENT	PLACE	BY
August	Third National Round Table on Seeds	SUCRE	CHEM/MACA
September	Soil Conservation Course	COROICO	TRACY
October	Seminar on Foundation Seed	SANTA CRUZ	LANDIVAR
October	Soil Conservation Course	PATACAMAYA	GANDARILLAS
November	Seed Production and Agricultural Machinery Course	YACUIBA	CASTRO LANDIVAR
December	Seed Analysis and Certification Course	SANTA CRUZ	LANDIVAR

TRAINING OUTSIDE THE COUNTRY

DATE	EVENT	PLACE
October	Advanced Course on Quality and Control of Seed-Transmitted Diseases	CIAT Colombia

TABLE I

WORK-DAYS PAID DIRECTLY BY THE CONTRACT
BY TECHNICAL AREA
MAY, 1979 - JUNE, 1985

Technical Area	Long-term Advisors	COP and DCOP	Short-term Advisors & Procurement	Home Office	TOTAL
(Work-Days)					
<u>Field Programs</u>					
Seeds	2309.50	336.40	677.00	28.20	3351.10
Land Clearing and Machinery Maintenance	1512.00	167.60	-	14.00	1693.60
Soils	821.00	73.30	-	6.10	900.40
Cotton	468.00	41.70	232.00	3.50	745.20
Production and Marketing Studies	-	51.80	197.50	7.30	256.60
Constructions	-	12.40	475.00	1.00	488.40
Special Courses	-	40.00	165.80	3.40	209.10
Sub-Total	5110.50	723.20	1747.30	63.60	7644.50
<u>Institutional Strengthening</u>					
Planning	-	160.40	696.50	14.20	880.10
Data Processing	-	16.40	36.00	1.40	53.80
Institutional Reform	541.00	83.30	143.30	7.00	774.60
Sub-Total	541.00	269.10	875.80	22.50	1708.50
<u>Support</u>					
Administration	-	749.30	9.00	62.80	821.10
Procurement	-	85.40	57.50	74.70	217.60
Sub-Total	.00	834.70	66.50	137.40	1038.60
T O T A L	5651.50	1827.00	2689.60	223.50	10391.50

Totals may not add due to rounding.

TABLE II

WORK-DAYS PAID DIRECTLY BY THE CONTRAT
BY TECHNICAL AREA
JANUARY - JUNE, 1985

Technical Area	Long-term Advisors	COP and DCOP	Short-term Advisors & Procurement	Home Office	TOTAL
(Work-Days)					
<u>Field Programs</u>					
Seeds	353.00	32.90	174.00	1.10	561.00
Land Clearing and Machinery Maintenance	-	1.10	-	-	1.10
Soils	52.00	15.00	-	.50	67.50
Cotton	129.00	3.40	-	.10	132.50
Production and Marketing Studies	-	-	-	-	.00
Constructions	-	1.40	64.00	-	65.40
Special Courses	-	.70	10.00	-	10.70
Sub-Total	534.00	54.50	248.00	1.70	838.20
<u>Institutional Strengthening</u>					
Planning	-	19.30	129.00	.60	148.90
Data Processing	-	-	-	-	.00
Institutional Reform	-	-	-	-	.00
Sub-Total	.00	19.30	129.00	.60	148.90
<u>Support</u>					
Administration	-	174.00	-	5.60	179.60
Procurement	-	2.20	-	2.80	5.00
Sub-Total	.00	176.20	.00	8.30	184.60
T O T A L	534.00	250.00	377.00	10.70	1171.70

Totals may not add due to rounding.

TABLE III

LEVEL OF EFFORT OF THE ADVISORY GROUP BY SEMESTER

IN WORK-DAYS

Year	^a 1979		1980		1981		1982		1983		1984		1985	TOTAL
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	
(Work-Days paid by the Project)														
Long-Term	81	493	517	526	499	482	615	609	506	685	780	786	663	7242
Short-Term	9	0	164	88	50	86	247	288	151	259	402	686	498	2927
Home Office	22	79	18	29	10	9	10	11	5	20	25	15	11	224
TOTAL	112	572	699	642	559	577	872	908	662	964	1208	1487	1172	10392

a The first semester of 1979 includes the months of May and June only.

Totals may not add due to rounding.