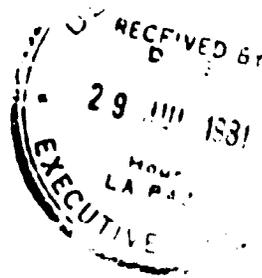


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CHEMONICS
INTERNATIONAL CONSULTING DIVISION

PROGRESS REPORT
JULY THROUGH DECEMBER 1980



SUBMITTED TO
THE MINISTRY OF RURAL AFFAIRS AND AGRICULTURE

BY
CHEMONICS INTERNATIONAL CONSULTING DIVISION

CONTRACT GOB/AID 511-111

APRIL 1981

La Paz, April 30, 1981

CHEMONICS
INTERNATIONAL CONSULTING DIVISION

Eng. Jaime Sejas
Director General
Ministry of Rural Affairs and
Agriculture
La Paz

Dear Eng. Sejas:

Chemonics International is pleased to present its fourth semiannual report under contract GOB/AID 511-111, which covers the period from July through December 1980.

We take this opportunity to mention that during the period of this report, it has been possible to overcome some limitations related to equipment and machinery. However, counterpart personnel for some programs in which Chemonics participates still is lacking. In our view, Bolivia is losing a very important opportunity by not taking full advantage of the practical training offered by our advisers.

We remain,

Sincerely yours,

Preston S. Pattie
Preston S. Pattie
Chief of Party

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SECTION I

INTRODUCTION

This progress report corresponds to the six month period from July through December 1980 inclusive. Five advisers with long-term contracts provided technical assistance during this report period:

- * Mr. Robert Sparks, Adviser in Organization and Methods
- * Dr. Adriel Garay, Seed Specialist
- * Mr. Leslie Rios, Heavy Equipment Maintenance Technician
- * Mr. James Wilkinson, Land Clearing Technician
- * Dr. Preston Pattle, Chief of Party and Adviser in Sector Planning.

Mr. Wilkinson resigned on August 12, 1980 and was not replaced. Dr. Garay took authorized leave of absence during part of July through September, and Mr. Sparks took leave without pay authorized by MACA for two weeks during October.

Two short-term technicians worked during this report period: Dr. David Zimet, Sector Planning Expert, completed ten weeks work in September, and Mr. Les Hook provided several days of assistance in the field of acquisitions in December. This work was done in support of the Land Clearing project in the Gran Chaco. The work of another technician in the field of fruit marketing was approved, and this technician should arrive in January 1981.

The next three sections of this report underline progress achieved in the six projects which receive Chemonics' technical assistance. The three field projects are described in Section II:

- * Seed Improvement
- * Land Clearing and Heavy Equipment Maintenance
- * Fruit and Vegetable Processing and Marketing

Then, Section III presents details on the three projects which have institutional strengthening as their main objective:

- * Sector Planning
- * Organization and Methods
- * Data Processing

Section IV reports on progress made in supervision of the above mentioned projects and in management of project resources.

In each technical area where progress is reported, important background information is outlined and the objectives for the report period are also detailed. Finally, suggestions are provided to improve the efficiency.

Section V gives a summary of the recommendations for each technical area, and finally in Section VI conclusions are presented, and a forecast is provided for the next period.

SECTION II

PROGRESS IN FIELD ACTIVITIES

A. Seed Improvement

1. Background and Objectives

The seed technician arrived in Bolivia in June, and at the request of MACA, undertook a trip to survey problems in seed production in various parts of the country. After an absence for personal reasons, work was begun in Santa Cruz in September. He agreed with his counterpart to focus initially in soybeans, and it was expected that activities would soon extend to corn, rice, and other crops. However, as the program advanced, the necessity of concentrating initial efforts only in soybeans was recognized.

The main objective was to initiate a program of quality control of soybean seed, in coordination with CIAT and ANAPO. Eng. Aulio Deza was designated as immediate counterpart in Santa Cruz, and the adviser also works continually with Eng. René Arancibia, especially in laboratory tests. Eng. Anibal Guzmán is the counterpart in matters involving decisions at the national level.

2. Progress

During the first days of July, the technician completed a survey trip in various areas of seed production. The trip was of a great value both for the technician and for the seed technicians visited. The adviser was able to exchange ideas with all the technicians, and in some cases the opportunity arose to provide concrete recommendations, for example:

- * Proper sieve for a lot of barley seed with special problems,
- * calibration of a soybean classifying machine in the farmer's field, and
- * choose adequate sieves for the classification of corn seed.

The technician also had the opportunity to visit the experimental station an activity of great importance because these are responsible for the genesis of improved seed through the selection of varieties and the production of basic seed. The acquired knowledge will permit a better support to Eng. Guzmán in formulating projects and national policies regarding seed production.

During this initial survey, the technician and his national counterpart saw the necessity of making technical consultations in specialized centers in the United States. These consultations were possible making use of the technician's stay in the United States for personal reasons. During the National Convention of the Association of Official Seed Certifiers, the technician was able to focus on literature collection and to make contacts with persons who can collaborate in the Bolivia program, especially in the following aspects:

- a. Organization and methods for releasing varieties and maintenance of basic seeds.
- b. Functioning of seed certification programs such as the OECD program applied in Europe.
- c. Functioning of the Qualifying Commission of Varieties and Certification.

Afterwards, in INTSOY (Soybean International Program) in Illinois, various practices applicable to Bolivia were observed, such as:

- a. Use of bean ladders to avoid fracturation of dry soybean.
- b. Systematic use of fungicides in fields of seeds to protect them against infection, in the maturation stage.
- c. Soybean drying with natural air.

The bibliographic material will be of great utility in the improvement of soybean seed quality in Bolivia.

Finally, a brief visit was made to the Laboratory of Seed Technology in Mississippi. This laboratory's personnel have wide experience in all aspects of seed technology and therefore constitute an important source of information. Due to the fact that an expert of Mississippi designed the

processing plants for Bolivia, the consultation was concentrated in the details of the plant in Warnes. Aspects of soybean drying and processing were discussed in detail as well as innovations to the original design to give more efficiency to the plant.

In September the first draft of the technician's Work Plan was developed, and at the same time the work was progressing, it was reviewed with the purpose of developing a document which reflects better the necessities perceived by counterparts.

At the beginning of the soybean seed improvement program in September, three principal aspects received major attention:

- a. The plant equipment installation in Warnes,
- b. harvesting and storing of winter "seed", and
- c. quality control of seeds to be planted in the Summer of 1980.

Regarding the first objective, in December approval for financing was obtained from USAID to install plant equipment. Meetings were maintained with officials of the Andean Pact with a view to a future extension of the same. An agreement was reached with USAID so that they cooperate in reviewing final designs, including a visit to the processing plant in Cochabamba.

Concerning harvest and storing of winter "seed", a strategy to visit commercial soybean fields was developed, and on the basis of the inspections, some fields were recommended for seed. The field visits indicated once more that fields with pure varieties do not exist. For this reason the word "seed" is put in quotations, since in reality, they are common fields selected for seed. The reason for these mixtures can be attributed to the lack of basic seed, lack of quality control, and lack of farmers specialized in seed production. At the end of the inspections those fields with low incidence of noxious weeds (especially Rogelia) and low varietal mixtures (less than 5%) were officially authorized for seed. This stage was successfully fulfilled and has permitted obtaining seeds of Mandarin and Pelicano with high germination. Also, the potential to produce high quality seed (germination, sanitation, vigor) in Bolivia during the winter has been verified. (see Chart).

With reference to quality control, the activities began by provisionally equipping the Warnes laboratory for seed analysis. Quality control began with the sampling in an orderly and systematic way both national seed and imported, principally soybean and also corn. Work then consisted of control of pureness, humidity, and germination. Finally the results were reported both to the interested seed owner as well as to the National Association of Oilseeds Producers (ANAPO).

A magnifying factor of work in quality control (official authorization of seed) has been the agreement between MACA and ANAPO, by means of which, imported soybean seed is subject to sampling and analysis by the Seed Certification Department of MACA. This experience has increased the awareness of members of ANAPO at all levels and of importers. Also it has permitted on-the-job training of counterparts in Santa Cruz in all the aspects of seed analysis.

The following table presents the results of tests of soybean seed from various sources that were analyzed in the Laboratory of Warnes:

Source	Germination Average %	Rank %
Imported from Brazil <u>1/</u>	68	16-90
Bolivian seed, Winter:		
Timely harvest	90	79-98
Inopportune harvest	less than 50	consistently
Bolivian seed, Summer <u>2/</u>		

1/ Data for 49 lots: the seed left Brazil with an average of 68% of germination and a range of 80 to 96%.

2/ Seed had a germination over 90% in May. The loss in germination reflects a delayed harvest, lack of drying and inadequate storage conditions.

The Laboratory in Warnes has analyzed 200 samples of seed both imported and national, principally soybean and corn. Laboratory personnel have adequate technical criteria, formats, and minimal equipment necessary for the performance of basic tests.

These data enable one to see the problem of soybean seed quality and also will permit developing an adequate strategy for short, medium and long range.

Another phase of the program is the formation of basic seed in Bolivia, a process that will take from 2 to 3 years, at best. Originally ANAPO received the recommendation to import basic seed of the following varieties: UFV-1, Mandarin and Bossier, which would constitute the pure original material to initiate soybean seed certification with the participation of trained and specialized farmers. Such seed was not obtained, however, and CIAT is currently forming basic seed, that will be very useful for multiplication of high quality seed as a medium range strategy.

On the basis of the above, an orderly process of soybean seed certification was initiated in coordination with ANAPO and CIAT. This process is based on certified seed or authorized imported seed. In the case of Mandarin and Pelicano it is based on authorized seed of MACA. The program is in progress with seed fields in flowering stage. At this time, the program is progressing optimally.

In summary, up to the present time the main objectives of this program have been met. High expectations have been created. All soybean farmers for the first time have recognized the quality of their seed before sowing, and they are aware of the importance of the Seed Certification Department of MACA. It was also possible to unite efforts between research (CIAT), certification (MACA), and farmers (ANAPO).



Germination tests in sand. Warnes, December 1980



Dr. Adriel Garay of Chemonics and Eng. René Arancibia of MACA Seed Department count plants during a germination test. Warnes, December 1980

3. Suggestions

The work plan indicated the importance of installation of the Warnes seed plant in order to insure the effectiveness of the adviser's efforts. The necessity of the plant is very acute now that the summer campaign has been initiated with production of certified soybean seed and basic corn seed. Several lots of good seed from Yapacani were lost because of lack of drying facilities and because of the low capacity of the obsolete processing machines in Warnes. These lots were sent to the oil plants by their owners. Therefore, the installation of adequate equipment at the plant in Warnes should be first priority; this plant should be in operating condition by April 15, 1981, at the latest.

As can be appreciated in the preceding sections of this report, work has concentrated primarily on soybeans, and has just recently begun with corn seed. The fundamental reason for which the adviser has agreed with MICA to proceed in this manner is the lack of counterparts that would enable the adviser to project his efforts to various crops at the same time. In order to have a positive impact, efforts must currently be concentrated in only one crop. This strategy is having positive impacts. For instance, corn producers have expressed interest in following the model carried out with soybeans.

It is anticipated that the number of seed samples to be tested in 1981 will increase dramatically, which will require more laboratory assistants and more specialization of existing personnel. Also, in an effort to accelerate services for interested seed producers and importers, special tests (viability by Tetrazolio) will need to be offered. In addition to lab personnel, a greater number of professional counterparts will be necessary to extend the program to corn and rice.

Finally, as can be appreciated above, the laboratory installed in Warnes is still lacking many elements of specialized equipment. For 1981, lab equipment should be completed in order to train personnel, in addition to obtaining more accurate results. Additional equipment has been received from Cochabamba; but in spite of this, some essential elements are missing

that could be acquired in 1981.

The first few months have allowed counterparts to become prepared in basic guidelines of Laboratory and Certification. Therefore, the adviser will be able to leave direct responsibility of these efforts gradually to the counterparts and intensify his activities in the installation of the processing plant in Warnes.

B. Land Clearing, and Heavy Equipment Maintenance

1. Background and Objectives

During the first six months of 1980, the need was expressed of acquiring additional tools and equipment to complete the shop at Palmer Chico, work site of the Heavy Equipment Maintenance Technician. However, in order to determine the kinds of equipment needed, a definition was first required as to the role the shop might play performing maintenance services for other institutions in the Chaco, such as the Integral Coop "Gran Chaco", which now has various agricultural tractors and harvesters. Since the adviser's effectiveness depends on having these essential tools, the principal objective of Chironica during the report period was to proceed with the acquisitions necessary to complete the shop.

A second objective regarding maintenance had been to strengthen the shop with additional specialized personnel so that the adviser can concentrate his efforts towards training; instead of carrying out the work in an isolated manner. A third objective was to establish a warehouse to store spare parts and to establish necessary controls over them.

Regarding land clearing it was the desire of both COJETAR and Chironica to redefine the position of the land clearing technician to one oriented toward field supervision instead of planning and economic analysis of land clearing. However, the adviser resigned from Chironica in August and left the recommendations that he should be replaced with a technician in conservation with emphasis in erosion control. This recommendation was accepted by MACA.



Soybean harvesters in preparation for the second season.
Palmar Chico, December 1980



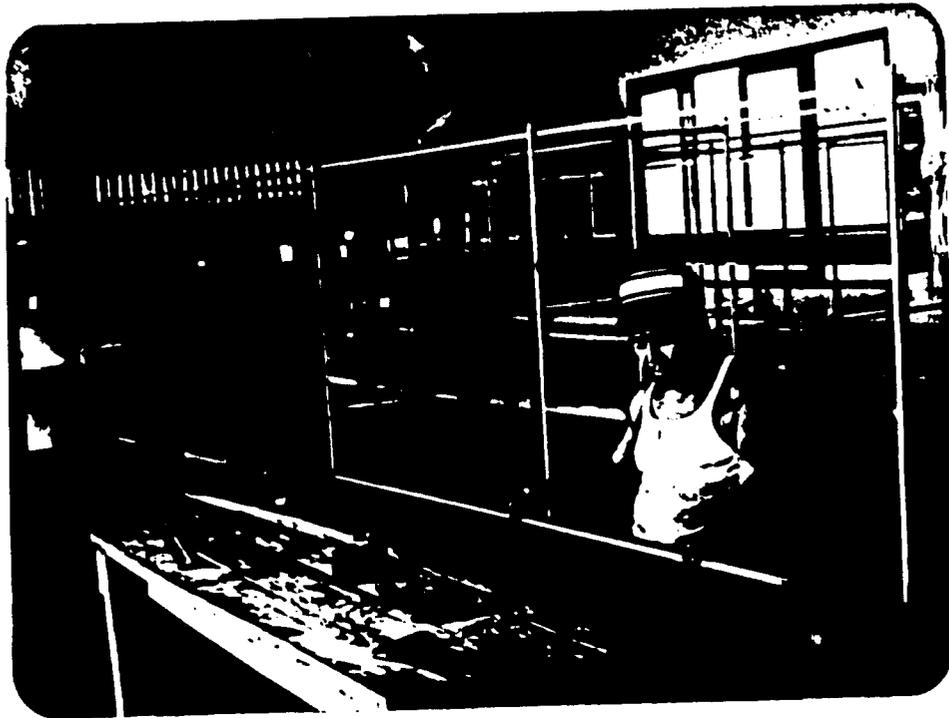
Testing a FIAT tractor recently put in operation.
Palmar Chico, December 1980

2. Progress

The Adviser in Heavy Equipment Maintenance prepared a list of tools and equipment necessary to establish a shop adequate for immediate and future needs with respect to the machinery currently owned by CODETAR. After a series of conversations with authorities of MACA, CODETAR and USAID, this was extended to take into account the necessities of the Integral Cooperative and other institutions in the region of Yacuiba. MACA's Coordination Office requested financing for this equipment from USAID, mentioning Chemonics as acquisition agent, and USAID gave its affirmative answer in December. A few days later, our adviser traveled to Washington, D.C. to work with Chemonics' personnel in charge of acquisitions in the elaboration of exact specifications. Also the applicable norms and regulations were clarified on the basis of the total amount to be disbursed. It is expected that the tools and equipment will arrive in Bolivia by April 1981.

The Work Plan of the Technician in Heavy Equipment Maintenance was presented and received MACA's approval in July. Later, at the initiative of the adviser and MACA, CODETAR modified the relationship between the adviser and the counterpart, to give the adviser responsibility for management of the shop and the maintenance program. In this way, the adviser becomes trainer and provisional supervisor of the shop, until the time that CODETAR has personnel with sufficient qualifications. Additional personnel has been hired for the shop, including a mechanic/counterpart, three assistants, and a welder.

In August the JD generator was received, and was installed in September. Due to the lengthy period that it was in transit, it experienced several difficulties which were later corrected. With the cooperation of the Armed Forces in the Chaco, the necessary materials were obtained for construction of shelves for the spare parts warehouse. Construction was completed in December, and the warehouse will enter in operation before the next land clearing season.



Construction of shelves in the Spare Parts and Materials Warehouse. Palmar Chico, December 1980



Part of the machinery assigned to land clearing. Yacuíba, November 1979

Regarding heavy equipment, Caterpillar tractor No. 8, which was not in use for almost a year due to lack of spare parts, entered in service in September. Since that date, all tractors continued working at almost 100% of their capacity. Five field tanks were received for diesel, each one with a capacity of 5,000 liters. These were mounted on wheels so that the Caterpillar tractor itself can tow them from one working site to another. It is worth noting that previously a truck was occupied on a daily route providing fuel to the tractors. The tanks permit a great reduction in operating costs and also avoid interruptions in work.

The five FIAT agricultural tractors owned by CODETAR were put in operation during this report period. Most of them were sent to the region of Villanovitas together with plows and disk harrows. These machines were also down for almost a year. Summarizing work on equipment maintenance, the objectives described above were achieved, with the exception that the equipment acquisition for the shop is behind schedule due to delays in financing.

3. Suggestions

A formal policy is still required so that the Palmar Chico shop can carry out maintenance services for other public and private entities in the Chaco region. In this way, an unnecessary over-investment in shops and equipment maintenance could be avoided. CODETAR would also achieve a better utilization of shop equipment and the fixed personnel could be better utilized.

Additional personnel is required for the shop, including an automotive electrician.

CODETAR should enter into a rationalization phase with regard to the machines that it now owns. For example, the stump grinders operate with agricultural tractors of 120 HP; these tractors could not be obtained for CODETAR, and therefore these machines have not received any use. Furthermore, the plows and disk harrows for 120 HP tractors cannot be used with FIAT the tractors that CODETAR owns.

In addition, we recommend that CODETAR elaborates a plan to develop an adequate spare parts stock for a full year of work. We would like to emphasize this need, since Chemonics gives all the cooperation possible in getting emergency spare parts, however, we are aware of the delays that are caused when parts are not available in the country.

As recognized by CODETAR, the necessity of communications in the field is very acute, and the lack of radio equipment causes CODETAR to incur high expenditures in transportation of mechanics, field supervisors and support equipment. We recommend to proceed with radio acquisition as an integral component of the minimum equipment necessary to operate the land clearing program.

Finally, before implementing the recommendation to hire an adviser in soils in the Chaco, an evaluation of the soils and climatic situation of the land clearing area should be carried out and also of the areas where water reservoirs are constructed in order to better specify the needs for technical assistance. Activities of CODETAR, BAB, IBTA and the Integral Cooperative should be coordinated so that farmers in the region receive efficient support to carry out practices necessary for erosion control.

C. Fruit and Vegetable Processing and Marketing

1. Background and Objectives

In early July, 1980 three short-term projects were under way in this technical area. First, Dr. Waldo Heron was completing work on the industrialization of fruits in Chuquisaca, a job that was carried out for CORDECH. Second, Messrs. Masson and Silva's report was pending review to be written in final copy. This job, which consists of fruit and vegetable marketing through cold-storage chambers and fruit dehydration, complements CODETAR's Fruit Program which projects sizeable increases in production in Tarija. Third, during the month of June, MACA had authorized a one month job for the Juan Misael Saracho University of Tarija. This work consists in designing a pilot plant for fruit and vegetable processing for the purpose

of training in this field. We consider that this project complements other programs in Chuquisaca and Tarija. An agreement was reached between the parties interested in the sense that Dr. Heron would also undertake this work.

Finally, Chemonics received MACA's approval to elaborate terms of reference for a national study of fruit and vegetable marketing, with emphasis in present practices of brokers, wholesalers, retailers, transporters and others. This work was requested by CORDECI and also by the Association of Citrus Producers of the Emborozú region in Tarija.

The objectives for the period were to complete the projects which are under way and approved, and to provide additional assistance to CODETAR and CORDECH in the completion of the corresponding feasibility studies.

We consider also of great importance the market study since there is the possibility that the various projects for increasing production in different departments can succeed to the point that supply surpasses national demand, a situation that could depress prices and affect the feasibility of some projects.

2. Progress

Dr. Heron prepared preliminary recommendations for CORDECH before terminating his stay in Bolivia in June. Shortly after, MACA authorized an extension of the technician's contract so that he could develop machinery specifications for the plant in Chuquisaca. This work was completed in the United States and the final report was submitted in September. The report includes an analysis on farming in the Cinti Valley located in Chuquisaca, a sketch of the possible volumes of raw materials in future years, processing methods for five different products, a flow of processing operations in the plant, operations plan and engineering of the plant, and also observations about the organization of the enterprise that would be responsible. The latter includes the enterprise's administration, including personnel needed. Additionally, the report and its annexes present the plant's size and machinery

costs based on exact specifications and quotations.

An adviser in financing and business administration was requested for the purpose of completing the feasibility study for the warehousing center and dehydration plant in Tarija. MACA gave its authorization for this work in November but approval by USAID was left pending until the end of the year. Lic. Gustavo Vega was presented to MACA to perform this work. Masson and Silva's report was submitted to CODETAR on aspects of fruit marketing in Tarija including necessary machinery for cold-storage and the drying plant. But, completion of the feasibility study depends on a deeper financial analysis.

The work for the Juan Misael Saracho University in Tarija was performed by Dr. Heron who has wide experience in the field. A design of the pilot plant was completed including specifications for equipment, adhering to the limit of 100,000 dollars established by authorities of the University. In addition, a detailed study curriculum was included with descriptions of the specialized courses in the field of food processing. And finally, recommendations were made on library materials and teaching methods that should be provided.

Terms of reference had been developed for a national study of marketing systems including observations about quantities and prices, and especially, the quality of products. However, this activity was not carried out due to lack of financing.

In conclusion, two of the three pending projects were completed during the period, and a candidate was presented to perform the last stage of the feasibility study for CODETAR. Unfortunately, the market study was not initiated, which is considered of great importance and interest to the various institutions which are increasing fruit and vegetable production in the valleys.

3. Suggestions

An aspect of concern regarding the various fruit programs is that each department plans its activities independently. Therefore, there are possibilities of over-investments in some enterprises; while others may not receive proper emphasis in terms of the volume of the national market. Over-investment or under-investment in different activities by the public sector implies a lower profitability than is possible to obtain from the projects. But, this situation becomes even more crucial when the farmers' participation in the programs is considered, in the sense that they would also obtain reduced profitability for their capital and manpower. Two elements are missing to avoid this situation: a mechanism of inter-institutional coordination, and basic information regarding the market. Therefore, we recommend to proceed with the above mentioned study. We also suggest that an informal committee be formed between the development corporations of Tarija and Chuquisaca in order to initiate better communication between projects. In the long run, a system of joint planning should be developed, for which MACA and the Ministry of Planning and Coordination could provide support.

SECTION III
PROGRESS IN INSTITUTIONAL STRENGTHENING

A. Agricultural Sector Planning

1. Background and Objectives

At the beginning of the report period Chemonics was engaged in the development of a linear programming model on the agricultural sector. For this purpose, Dr. David Zimet, expert in agricultural economics, arrived in Bolivia to collaborate for three months with the Sector Planning Office and the Statistics Division of MACA.

Two additional jobs were requested from Chemonics in August. First, the Minister and Director General indicated to Chemonics' Chief of Party the necessity to prepare a report regarding institutional strengthening of the offices connected with planning within MACA. They mentioned that this work should be carried out once the linear programming model is completed. Later the Director of Planning also expressed his desire for Chemonics to prepare this report. Second, the Chief of Economic Studies requested help in the analysis of milk production costs. At the same time, the Departmental Director of MACA in Chuquisaca asked for collaboration on a study of milk production costs in that Department. This work was urgent due to negotiations currently taking place between MACA, PIL, and milk producers. Also the need was seen to develop an analysis of milk supply in various departments.

Chemonics objectives during the period were to complete the linear programming model, run the model on computer, and present the results to MACA. The second objective was to provide cooperation in data analysis on milk production costs, analyze the history of supply, and present concepts on alternative price policies. Third, a goal was to present a report on planning: basic functions within the overall structure of the agricultural public sector, and institutional forms corresponding to desired performance of the sector.

In addition, during the previous report period considerable efforts had been made to define the role of Chemonics within the offices related to information analysis and agricultural policy. Although none of the alternatives previously presented to MACA were officially accepted, we continue with the objective to clarify ambiguities in our contract and in our relationship with MACA.

2. Progress

The linear programming model consists of three main components: supply, demand and transportation. The first of these contains data regarding production costs under different technologies, yields, manpower utilization and resource availability, including land, irrigation water, capital and manpower. The component that considers demand is based on information regarding the population of each of the fourteen regions, per capita consumption and the price elasticity of demand. The model balances supply and demand within and among zones using information on transport costs by three different modes: road, rail and waterway. Transportation between some zones requires combinations of two or three modes.

Dr. Zimet of Chemonics was mainly responsible for the section corresponding to demand, with the help of Dr. Joseph Goodwin of the University of Florida. The section on transportation was developed by Chemonics' Chief of Party. An explanation of the methodology for these parts of the model and all information utilized are included in Dr. Zimet's report.

The section on supply was developed by OPS and the Statistics Division of MACA. Information for the model was coded for entry in the computer, but unfortunately MACA did not have funds available for computation. This problem was overcome with the support of Chemonics, and at the end of the report period the data were being entered in a computer in the United States. Dr. Zimet will present the results together with an analysis as soon as possible.

Help was provided to the Chief of Economic Studies of MACA, jointly with representatives of the Ministry of Industry and Commerce and the Ministry of Finance, in analyzing information obtained by means of a survey of milk

producers in four departments. Chemonics' adviser in Organization and Methods and Chief of Party helped with this work in August and September. Previously, during the months of June and July, the technician in Organization and Methods had participated in the analysis of production costs at the departmental level in Chuquisaca, working with a commission constituted by representatives from PIL, CORDECH and MACA. The work consisted in calculating production costs per liter of milk for two zones, Yamparaez and Sucre, utilizing data obtained by a survey directed to milk producers. In addition, the advisers prepared a report for MACA in which milk supply in Cochabamba, Santa Cruz and at the national level was analyzed, demonstrating the relation between quantity produced and price paid by PIL. From this analysis, it was also possible to identify the effects of production incentives resulting from programs which support milk producers and also due to construction of new milk plants. Finally, the report presented a sketch of alternative pricing and distribution policies, emphasizing replacement of imports and benefits to low income consumers.

In compliance with the request of the Minister and other MACA authorities regarding institutional reorganization of the offices related to data analysis and planning, Chemonics' Chief of Party prepared a report which was submitted to MACA in November. The report contemplates a general restructuring of MACA in very broad terms, indicating that the form which institutions should take depends on the desired performance of the public sector. Basic concepts were presented on public choice theory with the purpose of focusing on the role of the public sector as a vehicle to provide support to private sector within the productive system. Secondly, systems analysis theory was applied to the public agricultural sector to define the role of planning in a concrete way. This basic system was then extended to take into account the interaction with international financing institutions. On the basis of this system, an outline for organization of an office of Economic Studies and Planning in MACA was set forth.

Finally, Chemonics presented still another alternative to MACA for defining the needs for technical assistance in data analysis and planning, but

no agreement was reached. The Director of Planning indicated that he would define his needs through a work plan which was being prepared for his office, and that he would convey the results to us. However, up to the end of the report period we received no communication.

In summary, Chemonics participated in three projects related to planning, and achieved the completion of two of these. The linear programming model was delayed due to lack of funds for computation. However, since this obstacle was overcome, we hope to complete this phase as soon as possible.

3. Suggestions

The function of economic analysis is spread between various offices in MACA. This situation diminishes effectiveness of work in this area due to the fact that no overall work plan is developed to coordinate the utilization of the scarce human and capital resources. Therefore, we recommend the continuation of efforts for restructuring this important part of the Ministry. Also, it will be necessary to assign more resources to these activities, once reorganized.

With reference to the needs for technical assistance and Chemonics' contract with MACA, it is important to point out that the contract mentions functions in planning with which the consultant should collaborate, however, the necessary level of advisory manpower is not provided. Instead, these activities are added to the duties of Chemonics' Chief of Party, who has wide responsibilities in the support of various technical areas, supervision of short and long-term advisers, and management of project resources. An agreement with MACA was reached in the sense that the Chief of Party should give first priority to supporting the remaining programs before providing technical assistance to economic studies and planning. However, we again recommend that this agreement be formalized officially. Terms of reference should be developed according to the necessities of MACA for technical assistance and necessary advisory resources should be provided.

B. Organization and Methods

1. Background and Objectives

The Organization and Methods Adviser is engaged basically in tasks related to institutional strengthening of MACA, in collaboration with the Office of Administrative Analysis as the Bolivian counterpart. However, during the last four months of this semester, the adviser was working without a counterpart in MACA, instead, he worked with an individual assigned from SNDC, with the support of an assistant from the Office of Administrative Analysis.

At the beginning of the semester, July to December, 1980, collection of data for a Personnel Study of the Agricultural Sector was begun. The objective of this study is to develop a basic document, backed by data, on the human element responsible for providing public services to the Agricultural Sector in Bolivia. During the report period, the collaboration of the adviser was requested for three additional jobs: First, the Chief of Economic Studies and the Departmental Director of Chuquisaca asked cooperation in analysis of costs of milk production. Second, the Chief of the Agricultural Marketing Office asked for help on the Peasant Farmer Markets Project. And third, the Director of Planning requested a report containing comments on restructuring of MACA. Principal areas of work are presented for the report period with percentage of time spent in each one, as follows:

<u>TASK</u>	<u>% of Time Dedicated</u>
1) Study of Personnel	7.5
2) Analysis of Milk Production Costs	12.5
3) Peasant Farmer Markets Project	4.0
4) Comments on "Preliminary Report of the MACA Restructuring Commission"	4.0
5) Internal Management	<u>8.0</u>
	100.0

Objectives for the report period regarding the Study of Personnel were to complete data collection, code and run them on computer, and prepare the

first of a series of reports about one of the sector's principal institutions. Other objectives had been to provide the necessary cooperation to complete the three additional jobs mentioned above.

The next section presents a summary of progress achieved in each area, except the analysis of milk production costs which was included in previous section.

2. Progress

a. Personnel Study

During the past semester the Adviser was engaged in four tasks regarding the Personnel Study:

- 1) finishing the collection of basic data and completing data which was missing for some decentralized entities,
- 2) developing coding keys, coding collected information, and supervising the entry of coded data onto magnetic tape to be processed on the CENCO computer,
- 3) setting forth a preliminary program for processing SNDC data
- 4) analyzing resulting charts and writing a draft of the report for SNDC.

At the end of the semester basic data on 90% of MICA's personnel and its decentralized entities had been collected. However, information was deficient in some cases because members of the initial work group opted to request the institution under study to fill out the forms instead of collecting the information personally. In these cases basic data was missing, for example, salaries of all personnel of the National Institute of Colonization. In addition, in spite of having made trips to various departments to collect and verify data and to carry out interviews with departmental officials, the members of the work group did not present reports of the interviews. The situation became even more complicated when two of the members left the public sector in August. Finally, no information was collected on personnel of CIAT in Santa Cruz.

Another observation regarding data is that personnel files do not contain enough information to determine educational level and discipline. It is estimated that these data are available only for 50-60% of the people working in the Sector.

The task of coding was 40-50% complete at the end of December. Progress was very slow due to lack of qualified personnel, a situation which forced the Organization and Methods Adviser to carry out routine tasks of correcting coding sheets and to review information again once the data was entered on magnetic tape. In summary, to secure accuracy in coding, the adviser had to supervise each step, and even perform routine tasks.

With the help of the Chemonics' Chief of Party and the collaboration of Mrs. Lily Arze de Alarcón (Planning Office of SMDC) preliminary tables were designed for the STIC information. Chemonics' Chief of Party prepared a program in FORTRAN which was run on the CEVCOO computer.

The Organization and Methods adviser analyzed the first computation results, revised the corresponding tables, and wrote the main sections of a draft report for STIC. In spite of the needs of introducing changes in programming to achieve an applicable model to the rest of institutions, this work was useful in focusing the analysis on the most essential aspects.

b. Peasant Farmer Markets Project.

During September Eng. Freddy Arteaga, Chief of the Agricultural Marketing Office requested advice from the Organization and Methods Adviser on the development of an outline for a project regarding "Installation and Operation of Peasant Farmer Markets in Selected Areas of the Department of La Paz". Too much has been said in previous years about marketing of agricultural products, and in many cases solutions have been focused from the consumer's point of view, with retailer markets in urban centers and price fixing for basic necessities. What is missing is a practical solution which attacks the problem at its roots and provides a system with the necessary infrastructure to encourage adequate marketing, beginning with the producer in his own surroundings-- the field. This

is precisely the focus of mentioned project, to begin with warehousing centers in the field with the purpose of ordering and simplifying the commercialization process, always using existing intermediaries. Then, integration of the warehousing centers in the field with wholesale markets in urban centers is foreseen (F/AO Project, October 1978).

To develop an outline for basic studies, feasibility, and design with the necessary detail, the Organization and Methods Adviser assisted Eng. Arteaga in costs estimation. He also reviewed the text in final form and offered pertinent suggestions.

c. Comments on the "Preliminary Report of the MACA Restructuring Commission"

During the first week of October the Director of the Planning Office of MACA requested Chemonics to prepare a critical analysis on the Restructuring Commission (MACA) report. This commission was formed as a result of the conclusions of the First Agricultural Symposium (Santa Cruz, March 1980). The analysis was requested to be presented within two days, for which the Adviser and Chief of Party made a special effort delivering the analysis in the form of a memorandum on October 7. A summary of the work of previous commissions was presented and later an analysis of the new document observing the positive and weak points. Finally, basic concepts were included on the normative function and how it should be based in planning.

Unfortunately, the opportunity to exchange ideas about the report never presented itself. Shortly after having presented the report, Chemonics received another request from OPS in the sense of developing another report, focusing on alternatives for restructuring of the sector. The Chief of Party responded with the work mentioned in the previous section on Planning.

d. Internal Management

In the absence of Chemonics' Chief of Party from La Paz Office, the Organization and Methods Adviser remains in charge, which implies the utilization of a minimum period of time for management tasks, such as:

- 1) preparation of reports,
- 2) supervision of local personnel, and
- 3) support of the Land Clearing program in the Chaco, and of the Seed program in Santa Cruz.

3. Suggestions

In the Progress Report for the semester of January-June 1980 four suggestions were proposed in regard to the work in O & M:

- a) approval of the Work Plan for the Adviser in Organization and Methods.
- b) support of MACA to go ahead with the Study of Personnel,
- c) the relocation of the Office of Administrative Analysis within the Ministry,
- d) the strengthening of Administrative Analysis with professional personnel.

The first suggestion was fulfilled and the second partially fulfilled, with the assignment of one additional secretary to the Office. However, it is urgent that two or three additional persons with academic preparation in administration and with experience in the sector be assigned to the Office. Only in this way can the Office of Administrative Analysis fulfill its mission and give advice in an effective way to other entities of the sector. It is noted that there is an almost absolute lack of personnel with academic preparation in public administration. It would be very beneficial to investigate the possibility of training persons in this area, maybe taking advantage of ASAN, in Lima, Perú.

It would also be advisable to secure more continuity on the part of Bolivian counterparts. Due to the fact that a counterpart was lacking during most of the period, work progressed slowly.

A final suggestion refers to the reorganization process of the agricultural sector. Up to this time almost all efforts to restructure the sector have been centralized within the Ministry with some participation of decentralized entities and sporadically with the advice of international institu-

tions. However, the progress of the agricultural sector in Bolivia is a matter of interest with inter-sectorial impact that could transcend the Ministry and its decentralized entities. It deals with aspects of commercialization, financing, foreign trade, balance of payments, development and social welfare, among others, and not only with increased production.

Given the importance of the sector and its priority in the national reconstruction scheme, it could be very helpful to appoint an inter-ministerial group to set out the basis for a modern, efficient structure. The merit of this strategy would be to give the agricultural sector the importance it deserves in the national economy and to formulate a consensus opinion about the appropriate structure for the efficient delivery of services to the farmer. Some of the main participants should be COMPLAN, the Ministry of Finance, MICT, the Departmental Corporations, CRF, MACA and its decentralized entities. With this wide participation, the sector would have enough support to implement a complete structure molded to the necessities of the country.

C. Data Processing

Previous to this report period, MACA was preparing formal agreements to create a Data Processing Center for the Agricultural Sector in collaboration with the ERTS Program. Chemonics presented candidates for the long-term position in processing. According to the terms of reference for this adviser, he should take charge of the Center and also the responsibility of putting it in operation during one year. Then, MACA would hire a Director for the Center, who would be the counterpart of Chemonics' adviser.

Unfortunately, the procedures to establish the Center and approval for the adviser did not reach its conclusion prior to the political changes in July, a situation which froze the funds for this program. We recommend to reinstitute the work of this technical area as soon as possible.

SECTION IV
PROGRESS IN PROJECT SUPERVISION AND
MANAGEMENT

A. Background and Objectives

Supervision of the technical areas and management of contract resources are basic responsibilities of the Chief of Party in Bolivia. He received support during four weeks in October and November by Chemonics' Project Supervisor from Washington, during that period the local Chief of Party was working nearly full-time in writing a report for MACA regarding institutional restructuring and planning. Also, the Adviser in Organization and Methods provides back-up to supervision activities during the periods when the Chief of Party is away from the central office in La Paz.

The objectives for project supervision included the completion of the work plan for the seed program, to begin the acquisition of equipment and tools for the shop in Palmar Chico, to initiate the installation of the seed plant in Warnes, to fix the source of financing for data computation in support of the Organization and Methods and Planning programs, and to search for resources to finish the feasibility study for the fruit warehousing center in Tarija. Additionally, another objective was to publish and distribute the following reports:

- * Progress Report, December 1979 through June 1980
- * Dr. Heron's Report for COPDECH
- * Dr. Masson and Mr. Silva's Report for CODETAR
- * Dr. Heron's Report for the University of Tarija
- * Dr. Preston Pattie's Report for MACA on restructuring and planning
- * Final Report of Mr. Jimmy Wilkinson, Land Clearing Adviser
- * Dr. David Zimet's Report on the Linear Programming Model
- * Report on Milk Prices by Dr. Preston Pattie and Lic. Robert Sparks
- * Comments on MACA's Efforts in Restructuring, by Lic. Robert Sparks

With reference to management, one objective was to establish a Chemonics' office in the seed plant in Warnes.

B. Progress in Supervision of Technical Areas

1. Seed Improvement

* An 18 month Work Plan was developed jointly by the National Seed Director and the Chemonics Adviser.

* Financing sources were established for the installation of machinery in the seed plant in Varnes.

* Support was given to MACA in arriving at concrete plans for said installation.

2. Land Clearing

* Financing for tools and equipment for the Shop in Palmar Chico was fixed.

* Help was given to activate the above mentioned acquisition, coordinating among CODETAR, MACA, and USAID.

* The acquisition of spare parts for two harvesters previously purchased was completed.

* In coordination with CODETAR the relationship between the adviser and his counterpart was modified so that he becomes trainer and supervisor for a provisional period.

3. Fruits and Vegetables Processing and Marketing

* A candidate was presented to MACA to complete the feasibility study of the warehousing center in Tarija.

* Pending reports for CODETAR, CORDECH, and the University of Tarija were completed.

* Terms of reference were prepared for a national marketing study related to fruit products.

4. Sector Planning

* Funds to proceed with running the linear programming model on computer were approved.

* Alternatives were presented to MACA for the utilization of technical assistance.

5. Organization and Methods

- * Approval for the adviser's work plan was received.
- * Funds were approved for analysis of collected data for the 'Study of Personnel'.

6. Data Processing

- * Candidates were presented for the long-term position in this field.

In summary, all the objectives in programs supervision were completed; this work required a total of 40 percent of the Chemonics' Chief of Party time in Bolivia.

C. Progress in Management and Logistics

Since the report period marks the beginning of the second year of work of Chemonics in Bolivia, methods of management are established and only require some adjustments on the Chief of Party's side.

Among the tasks carried out, the following can be underlined:

- * A secretary/bookkeeper was hired to support administrative work in La Paz.
- * An office was established in Warnes, Department of Santa Cruz and a secretary and driver were hired.
- * Annual evaluations for local employees were completed.
- * Banking and petty cash systems were modified to permit check drawing in Yacuiba and Santa Cruz. This modification avoids delays in making payments, and diminishes banking charges.
- * An amendment was signed with MACA to readjust per-diems of local employees.
- * Chemonics' office was moved from the Avenida Building to the central MACA building.
- * All foreign personnel was registered with the census in the Ministry of the Interior.

* An amendment was signed with MACA increasing the time that Chemonics' Supervisor in Washington can assist the Project in Bolivia.

* A new administrator was recruited for La Paz office.

* Spare parts were ordered for official vehicles and major repairs were made to two of them.

In conclusion, several steps were taken to increase administrative effectiveness in order to support programs more efficiently. Due to major difficulties regarding financing by USAID during the period, Chemonics' Chief of Party gave extended help to MACA in administration of programs which depend on this source. This support was provided to the Coordination Office of Project T-059 and to the Director General. In total, Chemonics' Chief of Party utilized 37% of his time in management activities.

D. Suggestions

Chemonics has completed one year and a half of work in Bolivia under the contract with MACA. Changes have been made in original concepts of the contract in various technical areas, including credit, land clearing, planning, and seeds, and a new area was begun, fruit marketing. There is a need to review our programs from an overall perspective, with the intention to better utilizing technical assistance resources available to MACA. Therefore, we recommend that MACA and USAID participate in an evaluation before the end of our contract this year. Ideally the evaluation would be carried out by third persons who are not directly engaged in the programs.

We also recommend that the principal authorities of MACA maintain weekly meetings with Chemonics Advisers to coordinate the consultant's efforts within the various programs.

SECTION V

SUMMARY OF RECOMMENDATIONS

In this section we reiterate the suggestions and recommendations considered to be more crucial for the projects in which Chemonics participates. First, we recommend prompt installation of machinery in the seed processing plant, including drying capacity for seed. Also, regarding this program we recommend that MACA employ one or two additional persons so that the program can be extended to rice and corn. Third, there is an acute necessity to equip the plant laboratory for the purpose of analysis for seed certification.

Referring to the Land Clearing program we reiterate our concerns for the natural resources of the region; therefore, we recommend putting in effect MACA's decision to provide technical assistance for erosion control in the Chaco. This should be carried out after an evaluation of erosion problems in the area.

Regarding equipment maintenance, we suggest that institutions working in the Chaco enter into an agreement so that CODETAR perform maintenance services and machinery repair for other entities. We recommend that CODETAR hire additional personnel for the shop in order that they be trained to take responsibility of the various activities that are involved in the operation of a large shop. Additionally, we suggest proceeding with the acquisition of radio equipment, which will help reduce operating costs and protect the machinery.

As for the fruit program, a market study considering both processed and fresh fruit should be carried out at national level, and a coordination system between the departments of Tarija, Chuquisaca and Cochabamba should be initiated with the purpose of rationalizing investments in production and industrialization.

For the planning area, we suggest once again that an institutional restructuring be implemented, directed at the offices of Planning, Statistics, and Economic Studies. Subsequently, these activities should be

strengthened with additional resources, both with respect to human resources and work facilities.

In the Organization and Methods area, personnel at the professional level is required for the Office of Administrative Analysis, and a definition of this Office's role in the MACA restructuring is needed. We recommend that the restructuring process be formalized inter-institutionally with the purpose of covering a broader range of aspects of the agricultural sector in the restructuring of MACA. We hope that this work can be carried out as soon as possible.

In regard to the data processing program, we recommend reinitiation of efforts to establish the Data Computation Center for the agricultural sector as soon as possible, and to continue with acquisition of equipment for this Center in coordination with the ERIS Program.

Finally, regarding management of the Chemonics Project, we emphasize the necessity for an overall evaluation, jointly with MACA and USAID, before the end of two years of work in June 1961.

The next section presents brief conclusions and forecasts for the next semester.

SECTION VI

CONCLUSIONS AND FORECASTS

During the period, it has been possible to proceed with some crucial aspects for the programs in which Chemonics participates: principally the acquisition of equipment and tools for the shop of Palmar Chico in the Chaco and the installation of machinery for the seed plant in Santa Cruz. In addition, funds to utilize computer time in support of the planning and Organization and Methods programs were obtained. In spite of the time taken in formalities, these steps are quite positive since they constitute some of the basic requisites for the mentioned programs.

For these reasons, an increase in productivity is expected on the side of the advisers in seeds, equipment maintenance, and organization and methods during the next period of the contract. Access to the mentioned equipment permits a wider range of activities on the part of the advisers and an acceleration of work. This situation is especially favorable for training of Bolivian personnel. Therefore, MACA and COETAF have an excellent opportunity to take advantage of the knowledge of these experts. The costs corresponding to counterpart personnel for advisers represent a small percentage of the investment already made, and the benefits for the country of having trained, qualified people are obviously great.