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**Multinational Agribusiness Systems Incorporated**

PARAGUAY  
MINIFUNDIA CROP INTENSIFICATION  
PROJECT  
QUARTERLY PROGRESS REPORT  
(April 16, 1981 - June 31, 1981)

USAID-CREDICOOP-MASI

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I. INTRODUCTION

This report summarizes the principal activities carried out by MASI during the period April 16 - June 31, 1981 regarding the start-up of technical assistance activities under the Minifundia Crop Intensification Project. The late date of issuance of the report is attributed to a misunderstanding between MASI and USAID. MASI intended for the "Horticultural Report" completed on July 22, 1981 to serve also as the "First Quarterly Project Progress Report" since that document was prepared by the Acting Chief of Party, Dr. Ervin Bullard. (The USAID/MASI contract specifies that quarterly progress reports shall be prepared by the Chief of Party.) However, USAID later requested that a separate first quarterly progress report be prepared by MASI. The present report is being submitted in accordance with that request.

## II. PROJECT BACKGROUND

### A. DESCRIPTION OF CREDICOOP

CREDICOOP is a central of Paraguayan cooperative credit unions formed in 1973 to provide technical and financial assistance to credit unions and to promote the growth of the credit union movement in Paraguay. CREDICOOP's services include the promotion and organization of new credit unions, training of their management and administrative personnel, marketing, and auditing, insurance, and other technical services.

CREDICOOP operates under a charter issued by the Directorate of Cooperatives in the Ministry of Agriculture, and is assisted in its agricultural extension efforts by the Ministry's extension service (SEAG).

### B. PROJECT DESCRIPTION

The Project was designed to assist CREDICOOP to diversify into the production, processing and marketing of selected fruits and vegetables grown in minifundia zones throughout Paraguay and especially in the central area. CREDICOOP would promote increased production of tomatoes, bananas, pineapples and strawberries in approximately ten districts. CREDICOOP would utilize its present organizational structure and general knowledge of Paraguayan marketing conditions to assure that the increased production resulting from crop intensification would be marketed nationally and internationally, with the producing farmers receiving an equitable share of the income created.

## 1. Production

Members of individual cooperatives would decide which of the four products they wished to grow and market. To assist coop members in making their decisions CREDICOOP and USAID technicians would discuss with them the potential costs, benefits, production obstacles, and marketing arrangements for each of these crops. Once they had selected their crops, farmers would be advised as to how they could best increase their agronomic and economic returns on their small plots by using improved crop rotation systems. To do this a team of technicians from CREDICOOP, the USAID, the National Extension Service (SEAG), and the National Agronomic Institute (IAN) would collaborate to develop technology packages for intensive production of various fruit and vegetable combinations. Farm production plans would be adapted to each farmer's needs.

Once technological production packages were developed by the interdisciplinary cross-institutional teams, mass communications techniques would be employed to train farmers in recommended production techniques for the fruits or vegetables they have chosen to grow. Since fruit and vegetable technicians are in short supply in Paraguay, a unique system of spreading technological information would be employed by CREDICOOP. The Education Department of CREDICOOP, supported by Project funds and utilizing technical assistance from SEAG and IAN, would produce a series of video tapes in the Guaraní language.

The video system would be mainly utilized to create awareness of the new cultural practices and technology required to grow the proposed crops. Each crop would require several tapes to illustrate in color such topics as cultivation, seed bed preparation, plant spacing, control of weeds, pests specific to each crop and their proper control.

Para-technicians, known as Ayudantes de Campo, and Extension Agents would transport the tape projection equipment from village to village on a regular basis, and would see that follow-up visits by horticulturists and other specialists were scheduled and carried out.

The Project would also provide substantial credit to the small holders who would grow fruits and vegetables. A relatively small portion of the A.I.D. grant goes for this purpose because CREDICOOP has a sizeable cash liquidity which it has previously earmarked for farm loans.

## 2. Marketing

The Project would include marketing trials for the four different fruit and vegetable products mentioned above. Marketing trials would be simple, and in most instances would consist only of systematic field gathering, cleaning, grading, crating and labeling. Once products were boxed they might be stored temporarily in the cold storage rooms, the warehouse, or they might be shipped immediately to domestic or foreign wholesale centers. Packing, rather than processing, would be the primary focus of the Project.

CREDICOOP would build a 1,000 square meter warehouse building with three refrigerated units for the storage, packing, and processing of fruits and vegetables. Each of the units would hold 144 cubic meters of produce. Administration of the warehouse would be carried out from a separate office building located on the same plot of land. The 1,300 square meter office building would house all of CREDICOOP's administrative offices, not only those directly connected with the Project. This consolidation of offices and warehouses on a 13,500 square meter plot of land near the new Asunción municipal wholesale market would greatly improve the efficiency of the entire CREDICOOP operation.

In the five years of the Project CREDICOOP would market a total of approximately 22,000 metric tons of fruits and vegetables produced under the Project. Project design would insure that only the smallest and most needy farmers would participate in the Project.

### 3. Location

The Project area is located in the Central Zone of the Eastern Region of Paraguay. It incorporates the Departments of Cordillera and Guairá; the major part of Central and Paraguari; and parts of Caazapá and Caaguazú. Within this area attention would be given to 38 specific districts identified for priority consideration.

#### 4. Population

The population of the Central Zone is about 1 million inhabitants, which represents 36% of the total for the country. Population density is high, varying from 11.5 — 147 inhabitants per Km<sup>2</sup>, compared to an average of 6.9 per Km<sup>2</sup> for the rest of the country. About 85% of the zone is classified as rural.

#### C. THE TECHNICAL ASSISTANCE CONTRACT

##### 1. Objectives

As stated in the USAID Request for Proposal (RFP), the objective of the technical assistance contract would be to provide technical assistance to CREDICOOP to implement the A.I.D. supported pilot project. The project would promote the production, processing, and marketing of tomatoes, bananas, pineapples, and strawberries by CREDICOOP's affiliated cooperatives in the minifundia (small landholding) districts of the Project area.

##### 2. Scope of Work

The contractor would provide the services of highly qualified personnel in various fields related to the production, processing and marketing of tomatoes, bananas, pineapples, and strawberries in the areas of specialization listed below:

Horticulturist/Production Specialist

Packing and Marketing Specialist

Refrigeration Specialist  
Farm Irrigation Specialist  
Agribusiness Management Specialist  
Domestic Marketing Specialist  
Fruit and Vegetable Storage Specialist  
Fruit and Vegetables Policy Advisor  
Video Specialist  
Frost Control Specialist

The specific functions of the specialists are set forth below:

1. Horticulturist/Production Specialist—will act as Chief of Party for the Contractor and will work closely with the General Manager of CREDICOOP. Major duties of the production specialist include:

- a. Technical guidance to CREDICOOP in all aspects of producing the four crops with which the Project will experiment. Among other things, the technician will:
  - (i) develop production practices adapted to non-mechanized small farms, with the key practices clearly defined and selected on the basis of their expected profitability for the farmer;
  - (ii) advise CREDICOOP as to the varieties best suited for production, considering climatic and soil conditions, availability of irrigation, consumer preferences and other factors;
  - (iii) assist CREDICOOP to located reliable sources of quality seeds; and

- (iv) together with the Farm Irrigation Specialist, advise CREDICOOP as to the appropriateness of alternative irrigation systems (or the need for any type of irrigation) for each of the four crops. (It will be necessary to indicate the economic consequences of each following key practice.)
  
  - b. Consultation with and assistance to CREDICOOP's audio-visual unit in the preparation of technical bulletins, videotapes, etc. The technician will provide an outline of topics to be covered and will check the materials produced for technical accuracy.
  
  - c. Assistance to CREDICOOP in its evaluation of (a) the potential profitability of the four crops and associated practices recommended for their production and (b) their acceptance by small farmers.
  
  - d. Advising CREDICOOP as to the most efficient means for coordinating the work of CREDICOOP's technical personnel and that of the staff of organizations supporting the project, i.e. the National Agricultural and Livestock Extension Service (SEAG), as well as the work of other specialists provided by the Contractor.
2. Packing and Marketing Specialist—will work closely with and act as a counterpart to the head of CREDICOOP's Marketing Department. The technician's major responsibilities will be:

- a. To advise CREDICOOP in the selection and utilization of the most appropriate methods of transporting, grading, packing, and presenting the four crops produced under the Project;
- b. To assist CREDICOOP in locating sources of supply for required equipment and materials;
- c. To help CREDICOOP develop an economic incentive program to introduce and promote improved methods of handling and grading fruits and vegetables at the farm and cooperative levels;
- d. Assist CREDICOOP's audiovisual unit in developing printed materials and videotape programs which can be used in training CREDICOOP staff and farmer members of affiliated cooperatives in practices related to transportation, grading, packing, and presentation. The technician will check the materials produced for technical accuracy; and
- e. To work closely with the Agribusiness Management Specialist and continue that advisor's seven basic job functions after the Agribusiness Management Specialist leaves Paraguay.

3. Refrigeration Specialist—shall be responsible for:
  - a. Training CREDICOOP technicians in the proper utilization of the new cold storage facilities, including training in packing hygiene, handling, storage limitations and overall efficiency in operations;
  - b. Producing videotapes explaining how the storage system will work;
  - c. Advising CREDICOOP in the selection of a long-term maintenance system which will best meet their needs for all cold storage equipment, including a refrigerated truck; and
  - d. Providing practical, hands-on demonstrations of the techniques required for completing functions (a) and (c) above.
  
4. Farm Irrigation Specialist—will:
  - a. Provide technical guidance to CREDICOOP regarding the efficient management of water used in the production of the four crops. Selection of practices to be recommended should be based mainly on their profitability and appropriateness for use on small farms in the Project area. Such practices may involve production under rainfed as well as irrigated conditions;

- b. Assist CREDICOOP in locating sources of appropriate irrigation and water storage equipment;
  - c. Advise CREDICOOP on the installation and use of appropriate irrigation and water storage equipment; and
  - d. Advise CREDICOOP's audiovisual unit in the preparation of technical bulletins, videotapes, etc. The technician will check the materials produced for technical accuracy.
5. Agribusiness Management Specialist—will work closely with & act as an advisor to the head of CREDICOOP's Marketing Department. This technician's major responsibilities will be:
- a. To advise the Marketing Department on ways to make marketing of the specific four crops most profitable;
  - b. To assist the Marketing Department in identifying market outlets, both local and foreign;
  - c. To assist CREDICOOP in establishing sales policies, setting of minimum sales levels, discounts for volume purchases, and prices;
  - d. To advise CREDICOOP in establishing short and long-term production and credit policies based on market potentials, consumer preference, and other factors;

- e. To assist CREDICOOP in identifying critical constraints to increased sales, and to propose measures to reduce these problems;
  - f. To assist CREDICOOP in selecting those varieties of fruits and vegetables which offer the best marketing prospects. Recommendations for varietal selections will be made jointly by the Market Analyst and the Production Specialist provided under the contract; and
  - g. To advise CREDICOOP on the most efficient means for coordinating the grading, transportation, packing and product presentation functions.
6. Domestic Marketing Specialist—will collaborate with the Marketing Department of CREDICOOP:
- a. To complete a detailed study of the domestic market potential of each of the four crops: bananas, tomatoes, pineapples and strawberries, included in the report; and
  - b. To discuss with CREDICOOP management the marketing alternatives and product mixes that will yield optimum financial returns in the domestic market.
7. Fruit and Vegetable Storage Specialist—Duties will be:
- a. To guide CREDICOOP in developing specifications and selection of required processing and cold storage equipment, including a refrigerated truck;

- b. To advise CREDICOOP as to sources of supply for needed equipment and set up spare parts inventory procedures; and
  - c. To help CREDICOOP devise plans for making the most profitable and efficient use of its cold storage capacity and refrigerated truck.
8. Fruit and Vegetable Policy Advisor—will:
- a. Assess GOP agricultural policies affecting the fruit and vegetable industry;
  - b. Brief CREDICOOP and the USAID on GOP policies toward fruit and vegetable production and marketing; and
  - c. Meet with top GOP officials, especially in the Ministry of Agriculture, to explore avenues for shipping policies that will stimulate fruit and vegetable production and marketing.
9. Video Specialist—will train one or two persons to effectively utilize a complete videotape system to produce quality educational programs related to the production, processing and marketing of tomatoes, bananas, pineapples, and strawberries. These programs will be designed principally to make small farmers aware of recommended practices and to encourage them to adopt these practices.

10. Frost Control Specialist—His responsibilities will entail:

- a. Proposing and demonstrating to CREDICOOP practical, inexpensive methods to prevent or minimize frost damage on the small farms of Project participants;
- b. Assisting CREDICOOP's audiovisual unit to prepare printed materials and videotape programs to demonstrate recommended frost control practices. The technician will check materials produced for technical accuracy.

In addition to the services indicated above, the assistance of short-term specialists in the fields of soils, entomology, plant pathology, and weed control will be necessary on an as-required basis.

### III. PROJECT START-UP

A cost plus fixed fee technical assistance contract was signed by USAID and MASI on April 16, 1981.<sup>1/</sup> Mr. Walter Price, Manager of Rural Development Programs on the MASI Home Office staff, was designated to serve as Project Director for the Paraguay Contract.

Mr. Price visited Paraguay during the period April 28—May 8, 1981 to initiate project start-up. Initial meetings were held with USAID and CREDICOOP staff to discuss project strategy and to review the proposed schedule of arrival of MASI technicians.

#### A. PROJECT STRATEGY

Regarding Project strategy, it was noted that during the first few weeks of Project start-up, high priority should be assigned to issues related to cold storage equipment. Special care would have to be taken to review CREDICOOP's projections of the volume and mix of fruit and vegetables to be produced and stored, since the design and capacity of cold storage facilities would have to be based on these projections.

Within the context of cold storage needs, the topic of linear programming as a possible tool for project analysis was discussed. It was noted that among its possible benefits would be its easy application in forecasting the need for cold storage space. USAID/Washington in cooperation with the Inter-American Development Bank (IDB) had

<sup>1/</sup> Minifundia Crop Intensification Project, Paraguay.  
USAID Contract No. LAC-0118-C-00-1026-00 Effective April 16, 1981

worked out an arrangement whereby a computerized linear programming model of the Bank would be made available for analysis of data gathered under the Minifundia Crop Intensification Project.

B. PHASING OF TECHNICAL ASSISTANCE

MASI technicians had originally been scheduled to begin arriving in Asuncion in early January, 1981. This schedule was developed by MASI to expedite early Project start-up called for in the RFP. The original schedule along with the rationale for the proposed phasing of technical assistance is presented in Attachment I.

Delays in signing the technical assistance contract with USAID made it necessary to revise this schedule so that field work would begin in late April or early May. MASI team members were contacted to determine their availability for later assignment; in most cases, there were no problems. However, Dr. Francisco Jordan Molero, MASI's Chief of Party, indicated that if he could not be assigned to Paraguay in January, he would have to commit himself to another semester of teaching at the University of Puerto Rico and thus would not become available again until July 1, 1981.

In view of Dr. Jordan's commitment to the University, it was decided that Dr. Ervin Bullard, the Fruit & Vegetable Policy Advisor, would serve as Acting Chief of Party for the period May 14—July 9, 1981. Dr. Jordan would then arrive on or about July 1, leaving a week of overlap in the two assignments wherein Dr. Bullard could brief Dr. Jordan on the work carried out during Project start-up.

In addition to Mr. Price and Dr. Bullard, four other MASI technicians visited Paraguay during the first quarter of the Project. The following table summarizes visits made during this three month period:

<u>SPECIALIST</u>	<u>TITLE</u>	<u>DURATION OF VISIT</u>
Walter A. Price	Project Director	4/28—5/08
Ervin Bullard	Acting Chief of Party/Horticulturist	5/14—7/09
Ricardo Dawson	Audio-Visual Specialist	5/05—7/21
Hector Wong	Audio-Visual Specialist	5/05—7/21
Amihud Kramer	Cold Storage Specialist	5/18—5/26
Henry Hopp	Domestic Marketing Specialist	5/25—7/02

Dr. Bullard, MASI's Acting Chief of Party/Horticulturist, began his work by reviewing horticultural experiments conducted in Paraguay over the past 20 years. In view of these findings he recommended priority areas for future research and suggested detailed improvements in experimental design and data analysis involving tomatoes, bananas, pineapples and strawberries. He also reviewed agricultural extension practices scheduled for use under the Project and proposed to complement these efforts with the use of flip books containing a series of pictures dealing with recommended cultural practices for the four commodities. He suggested that as new research information was generated it would be simple to replace certain pages in the booklets with new pages illustrating the revised recommendations. Dr. Bullard's work is summarized in Paraguay Minifundia Crop Intensification Project: Horticultural Report, July 22, 1981.

Messrs. Dawson and Wong, MASI's Audio-Visual Production Specialists, initiated training of CREDICOOP staff in the production of audio-visual materials to be used in teaching client farmers how to plant and care for Project commodities. Six trainees participated in the course which lasted 40 days. The course covered basic theory, techniques and equipment operation needed to get CREDICOOP's audio-visual unit started in making training materials. The audiovisual experts recommended that CREDICOOP technicians work for about six months "on their own" during which time they would further develop the skills acquired during the course. At the end of the six month period the audiovisual experts would return to Paraguay to offer a second course aimed at further capacitation of the CREDICOOP technicians. A summary presentation of the materials covered in the first course as well as an evaluation of course participants and recommendations for further training are given in Paraguay Proyecto de Intensificacion de Cultivos: Informe Sobre Adiestramiento Audiovisual, July 31, 1981.

Dr. Amihud Kramer, MASI's Cold Storage Specialist, did a preliminary design of a cold storage unit to hold Project commodities delivered to CREDICOOP. At the time of his visit there was considerable urgency surrounding the question of cold storage unit design because the Project called for installation of this unit at an early stage of implementation. Both Dr. Bullard and Dr. Hopp collaborated by preparing production/marketing information which would be needed by Dr. Kramer. However, at this early stage of the Project it was impossible to accurately project the volume and mix of commodities that would be stored by CREDICOOP. This uncertainty about the specific needs for cold storage equipment made it difficult to

recommend any one specific size or design over others. In light of this problem, Dr. Kramer was limited to accepting one set of volume/mix assumptions and designing a unit accordingly. Design specifications and price quotation were presented in Dr. Kramer's report of July, 1981.

Dr. Henry Hopp, MASI's Domestic Marketing Specialist, conducted an in-depth analysis of marketing conditions for the four project commodities. His study included an evaluation of the marketing structure (identification of marketing channels, packing, grading, product presentation and seasonality) and price relations (farm level price constraints and marketing margins). His findings are summarized in Paraguay Minifundia Crop Intensification Project: Domestic Marketing Report, July, 1981.

ATTACHMENT IPROPOSED PHASING OF TECHNICAL ASSISTANCE

In MASI's judgement, the proper phasing of technical assistance activities will be a crucial factor in achieving overall project success. The assignment of technicians under the project must take into account such factors as (a) planting, cultivation and harvesting dates for the various crops; (b) periods of possible frost damage; (c) periods of water shortages; (d) principal periods of fruit and vegetable packing and marketing; (e) time required for procurement of refrigeration and other equipment; (f) dates when equipment will be installed; and (g) the complementarity of work performed by certain technicians.

These and other factors related to the phasing of technical assistance activities were discussed with CREDICOOP's management. Based on these discussions and MASI's experience in similar projects, a schedule for assignment of technicians is presented in Figure 2.



Rationale

Horticulturist/Production Specialist (Jan. 1, 1981-Dec. 31, 1982):  
As team leader, the specialist would be needed throughout the period of project implementation.

Packing and Marketing Specialist (Aug. 1, 1981-Dec. 31, 1981 and  
(Aug. 1, 1982-Dec. 31, 1982)

This specialist would be needed principally during the five-month packing and marketing season each year. In 1981, his work would be concerned principally with bananas and tomatoes; during 1982 his work would focus mainly upon the introduction of pineapples and strawberries into the CREDICOOP operation.

Refrigeration Specialist (Sept. 1, 1981-Oct. 31, 1981 and  
Aug. 1, 1982-Aug. 31, 1982)

The refrigeration specialist would first advise CREDICOOP on matters relating to cold storage and shipment of tomatoes; he would return in 1982 when strawberries are first marketed.

Irrigation Specialist (Apr. 1, 1981-Sept. 30, 1981)

This expert would be most needed during the period which corresponds to the cultivation season for project crops.

Agribusiness Management Specialist (July 1, 1981-Dec. 31, 1981)

It is anticipated that the greatest need for on-the-job agribusiness management training will be during the harvesting, packing and marketing season of the first year of project implementation.

Domestic Marketing Specialist (Jan. 1, 1981-Mar. 31, 1981)

The domestic marketing specialist would be assigned to Paraguay at the earliest possible date, since the design of many project activities will depend upon the identification and development of specific market outlets.

Fruit and Vegetable Storage Specialist (Feb. 1, 1981-Apr.30,1981)

The early assignment of this specialist under the project would allow CREDICOOP ample time to place orders for required processing and cold storage equipment and to install such equipment before the initiation of the harvest season.

Fruit and Vegetable Policy Advisor (Feb. 1, 1981-Feb. 28, 1981)

The fruit and vegetable policy advisor would visit Paraguay near the beginning of project execution. In this way, Paraguayan government agencies would have ample time to consider and possibly implement recommended changes in marketing policies in anticipation of the first marketing activity under the project.

Video Specialists (Jan. 1, 1981-Feb. 28, 1981)

Audiovisual productions would play a central role in CREDICOOP's educational programs to promote the production, processing and marketing of fruits and vegetables under the project. For this reason, it is essential that CREDICOOP employees acquire necessary audiovisual production skills at an early stage of project execution. In the opinion of MASI, two expatriate technicians would be needed for this work instead of the one requested in the RFP for reasons explained above.

Frost Control Specialist (May 15, 1981-Aug. 15, 1981)

The specialist in frost control would be in Paraguay (a) some six weeks preceding the period in which frost damage poses the greatest

threat and (b) during July and early August which is the actual frost season. This timing would allow him to assess conventional frost control practices and make recommendations for preventing frost damage in anticipation of the danger period. Also, he would be present during the frost period to evaluate the effectiveness of recommended practices.

Specialist in Project Preparation (Aug. 1982 and Nov.-Dec. 1982)

During his first visit, this specialist would advise CREDICOOP regarding the steps to be followed in preparing a Phase II project and the specific types of information and data that would be needed. CREDICOOP would then begin to assemble this material (during September and October). The expert would then return (during November, December) to assist CREDICOOP in the actual preparation of the the Phase II project document.