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USAID GUATEMALA



AGENCY FOR INTERNATIONAL DEVELOPMENT
UNITED STATES A. I. D. MISSION TO GUATEMALA

USAID/GUATEMALA or c/o American Embassy
APO MIAMI 34024 Guatemala City, Guatemala, C.A.

December 9, 1988

Gremial de Exportadores de Productos no Tradicionales
Edificio Camara de Industria, 6a Nivel
Ruta 6, 9-21, Zona 4
Guatemala, Guatemala

SUBJECT: Grant No. 520-0274-G-SS-9704-00

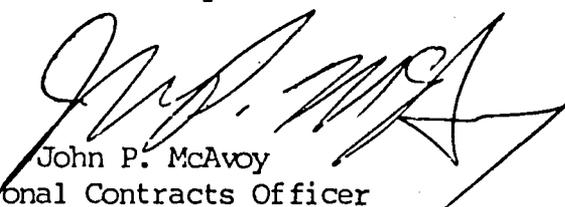
Gentlemen:

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development (hereinafter known as AID or ROCAP) hereby grants to the Gremial de Exportadores de Productos no Tradicionales (hereinafter known as Grantee or Gremial) the sum of five hundred thousand Guatemalan Quetzales (Q500,000) or one hundred eighty five thousand one hundred eighty five U.S. Dollars and nineteen cents (\$185,185.19) or whichever is lower to assist the Gremial in the financing of research on Hot Water treatment for mangos as more fully described in Attachment No 1 entitled "Schedule" and Attachment No. 2 entitled "Program Description".

This Grant is effective and obligation is made as of December 9, 1988 and shall apply to commitments made by the recipient in furtherance of program objectives during the period beginning with the effective date and ending March 21, 1990. This Grant is made to the Gremial on the condition that the funds will be administered in accordance with the terms and conditions set forth in Attachment 1 entitled the "Schedule", Attachment 2 entitled "Program Description", Attachment 3, entitled "Standard Provisions" which have been agreed to by your organization.

Please sign the original and five (5) copies of the letter to acknowledge your receipt of this Grant and return the original and four (4) copies to the USAID/Guatemala, Attention Regional Contracts Office.

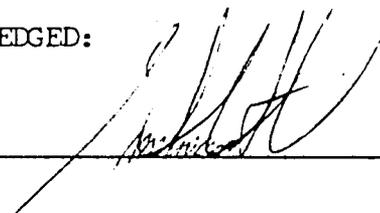
Sincerely,


John P. McAvoy
Regional Contracts Officer

Attachments:

1. Schedule
2. Program Description
3. Standard Provisions for Non-US., Nongovernmental Grantees

ACKNOWLEDGED:

By:  _____

Title: PRESIDENT

Date: DEC 13/88

Appropriation No.:	72-11M1021
Budget Plan Code:	LDAA-85-25520-AG13
PIO/T No.:	520-0274-3-50300
Project No.:	520-0274
Total Estimated Amount:	Q500,000
Total Obligated Amount:	Q500,000

SCHEDULE

A. Purpose of Grant

The purpose of this Grant with the Gremial is to assist in the financing of research on Hot Water Treatment for mangos. The Project is more specifically described in Attachment 2 of this Agreement entitled Project Description, which forms an integral part of this Agreement.

B. Period of Grant

The effective date of this Grant is December 9, 1988. The expiration date is March 21, 1990.

C. Amount of Agreement and Payment

1. The total estimated amount of this Grant for the period shown in B above is Q500,000.00. The obligated amount is Q500,000.00

2. Payment shall be made to the Grantee in accordance with procedures set forth in Attachment 3, Optional Standard Provision No. 1 entitled Payment - Periodic Advance.

D. Financial Plan

Revisions to this Plan shall be made in accordance with the Standard Provision No. 4 of this Agreement entitled Revision of Grant Budget. The Financial Plan presented below is illustrative in nature, and the Grantee can adjust budget lines. There will be no Overhead provided for in this Grant.

Gremial de Exportadores de Productos no Tradicionales BUDGET

I. <u>Personnel</u>	-Q285,600
II. <u>Travel</u>	-Q53,973
III. <u>Equipment, Installation, and Materials</u>	-Q212,050
IV. <u>Operational Costs</u>	Q274,658
V. <u>Miscellaneous and other Direct Costs</u>	82,628
VI. <u>Administration</u>	80,000
	<hr/> Q988,909.00
<u>Financing</u>	
ANACAFE Counterpart	Q 94,300
Sub-commission Counterpart	Q200,000
Del Monte Tropical Fruit Support	Q194,609
A.I.D.	Q500,000
Total	<hr/> Q988,909

E. Authorized Geographic Code

The Authorized Geographic Code for procurement of goods and services shall be in accordance with Optional Standard Provision No. 5.

F. Reports and Evaluation

1. Financial Reports

On a quarterly basis, or as otherwise agreed upon in advance, the Recipient will submit to Controller/USAID requests for advances or reimbursements using form SF 1034, public voucher for purchases and services other than personal. As supporting documentation for voucher form SF 1034, the Recipient shall also submit to Controller/USAID on a quarterly basis, a financial status report showing the status of Project funds on SF 269.

2. Activity Progress Reports

The researchers will prepare and submit to the Mission quarterly progress reports and a final report in Spanish, in form and substance acceptable to A.I.D., of the research results.

G. Evaluation

The Recipient shall submit to A.I.D. on a quarterly basis in conjunction with the financial reports, a performance report that briefly presents: a comparison of actual accomplishments with goals established for the period; reasons why established goals were not met, and any other pertinent information.

H. Grant Officer's Technical Representative

1. The Grant Officer's technical representative for the performance of this Grant is the Chief, ORD, USAID/Guatemala, or his designee. This individual shall have the following authority:

- a) Certification of work performed on all vouchers submitted.
- b) Necessary clarifications of, or minor, non-cost-related clarifications to, the program descriptions in Attachment II.
- c) Approval of all reports, plans, timetables or other such technical submissions required under the Program Description.

2. The Grantee must receive prior written authorization for short term technical assistance personnel, and their international travel from the Grant Officer's Technical Representative (GOTR). Grantee may submit to the GOTR an estimated schedule on a quarterly basis. Any subsequent adjustments to the timing of this technical assistance, or minor adjustments to the length of any particular assignment, shall require the approval of the GOTR.

3. Salaries or compensation of short and long-term Specialists require prior written approval by the Regional Grant Officer.

I. Title to Property

Title to property purchased with Grant funds will vest with the Gremial de Exportadores de Productos No Tradicionales.

_____ End of Schedule _____

ATTACHMENT No. 2

PROGRAM DESCRIPTION

A. Project Summary

This document outlines a proposed Grant to the Gremial de Exportadores de Productos no Tradicionales for a period of fifteen months. This grant will cover assistance to a new effort by the Gremial to research Hot Water treatment for mangos.

The objective of this program is to carry out research to improve methods of Hot Water Dip Treatment of Mangos (of the Tommy Atkins variety) infested with the Mediterranean fruit fly (*Caratitis capitata* Wied) and species of the fruit fly *Anastrepha* (particularly *Anastrepha obliqua*). These improved methods will lower incidence of insect infestation to levels that will satisfy USDA phytosanitary restrictions for the importation of Guatemalan mangos to U.S. markets.

To also demonstrate the effectiveness of the improved method in controlling the incidence of fly infestation in mangos in accordance with USDA phytosanitary standards, and to obtain USDA approval of this as an approved phytosanitary treatment for the exportation of Guatemalan mangos to the U.S.

The research to be conducted during the Grant period will consist of the following procedures:

1. A characterization of the Fruit Fly population:

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1.1 The research will define and stratify the principle mango production areas in Guatemala to develop a fruit fly sampling frame, and will identify a list of the primary, secondary and alternate hosts to be investigated in the research program.

1.2 The researchers will conduct a systematic survey to confirm the presence or absence of fruit flies (including but not limited to the following species-- *Anastrepha obliqua*, *A. ludens*, *A. serpentina*, *A. distincta*, *A. striata*, *A. fraterculus*, *A. Balowee*, and *Ceratitis capitata*), in selected sites in the following areas:

A. areas with heavy mango production (particularly the Tommy Atkins variety)

B. areas with little mango production

C. areas not currently producing mangos for export but having the potential to do so in the future.

2. Test the effectiveness of the Hot Water Dip Treatment Method for Mangos:

2.1 The researchers will adapt *Ceratitis capitata* and other fruit flies, identified in the above survey as infesting Tommy Atkins mangos, to breeding conditions within a quarantined laboratory. A basic artificial diet developed for *A. Ludens*, *Ceratitis capitata*, *Dacus* will be utilized. In extreme cases, where investigated species have difficulty in adapting to the artificial diet, natural hosts will be used.

2.2 The researchers will carry out a large-scale breeding program of laboratory-adapted species.

2.3 Using loose larvae and larva in the fruit, the researchers will determine the optimum Hot Water Dip Treatment Methods for control of *Ceratitis capitata* and other fruit flies infesting mangos:

2.3.1 Examination of heat tolerance and susceptibility by species of loose larva:

Replicates of 400 loose larva of each specie will be tested under two treatments, time of immersion (from 30-60 minutes) in hot water and degree of water temperature (from 30 to 60 degrees Centigrade). The test will determine differences in heat tolerance among the species of loose larva examined and the optimum temperature to produce 100% mortality of the loose larva of all species under examination.

The treated larva will be transferred to special containers and stored in quarantined rooms (25 degrees C. and 70% humidity) to permit larval development and measurement of final results of the treatment.

2.3.2 Examination of heat tolerance of examined species of larva in infected mangos (using modified methods and materials developed by Sharp, 1986):

The researchers will conduct tests to determine the effectiveness of the optimum temperature identified in the preceding phase of the research, with artificially infected mangos (20 larva per fruit) of the variety Tommy Atkins (grade 8). During a two day period, 50 fruit will be infected; they will then be transferred to special cabinets where the larva may develop to their third stage before being treated. Afterwards, researchers will transfer the treated fruit to special containers located in controlled quarters with air conditioning (25 degrees C. and 70% humidity) to permit enumeration of surviving larva during the next 15-20 days. On completion of this phase, researchers will cut open and examine the fruit to determine the number of larva and pupa. The collected pupa will be retained in appropriate vessels to determine their viability. The researchers will maintain the same conditions of the initial experimental design in all holding drawers and quarantined rooms for all replications of each species, to evaluate the viability and mortality levels of each.

The data will be evaluated both by the local researchers and by ARS/USDA to determine the regression equation for treatment levels and insect mortality and make an assessment of its usefulness.

2.3.3 Pre-commercial evaluation of Hot Water Dip Treatment methods on Mango (variety Tommy Atkins, grade 8)

Following determination of the optimum Hot Water Dip temperature for attaining 100% mortality for all species of flies under investigation infecting the mango, (described in section 2.3.2) researchers will examine the optimum time of immersion of fruit fly infected mangos in the Hot Water Dip treatment, evaluating intervals from 40 to 90 minutes, for all fruit fly species being studied.

The researchers will utilize the following procedures:

- A. The researchers will treat five thousand mangos of the variety Tommy Atkins with the previously determined optimum temperature and time of immersion for the Hot Water Dip, and maintain another 5000 mangos of the same variety as a control to determine the effective incidence of infestation. (Using an estimated infestation level of 2000 larva per 100 fruit, an estimated 11,000 fruit, grade B will be required to meet the required levels of 100,000 dead larva for each species.)

Utilizing ten metal containers, each with a capacity to treat 100 fruit at a time, it is estimated that a minimum of five replications will be required, given an effective degree of

infestation provided above.

To ensure uniformity of water temperature, conditions similar to those described by Sharp, 1986, and pumps to circulate the water should be used.

The management of fruit, larva, and pupas, as well as analysis and evaluation of data obtained, will be the same as described in section 2.3.2 above.

B. The researchers will also examine the effects of the Hot Water Dip treatment on physiology, storage life, and quality of the mango, variety Tommy Atkins. The researchers will simulate commercial conditions used in the exportation of this fruit to the U.S. for these studies.

3. The researchers will colaborate with the USDA to obtain approval for the modified Hot Water Dip treatment as meeting USDA phytosanitary restrictions for treating Guatemalan mangos (variety Tommy Atkins) for commercial export to the U.S.

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