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INTERNATIONAL CONSULTING DIVISION

CHEMONICS

BELIZE COMMERCIALIZATION OF ALTERNATIVE CROPS PROJECT

CONTRACT NO. 505-0008-C-00-6030-00

PROJECT NO. 505-0008

QUARTERLY PROGRESS REPORT

(JULY-SEPTEMBER, 1987)

SUBMITTED TO:

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
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TABLE OF CONTENTS

I. INTRODUCTION 1

II. PROJECT MANAGEMENT 1
- A. Office Administration and Logistics 1
- B. Subcontractors 1
- C. Staffing and Man-Month Utilization of of the T.A. Team 2
- D. Procurement 4
- E. Financial Status 4

III. EXPORT 4
- A. On-farm Trials 4
- B. Cucumber Program 6
- C. Cucumber Plot Trials 6
- D. Papaya Post Harvest Handling 7
- E. Economists Trials Cost Summaries 8

IV. IMPORT SUBSTITUTION CROPS 8
- A. Progress to Date 8
- B. Objectives for the Next Quarter 9

V. SUPPORT 9
- A. Training 9
- B. Inventory 10
- C. Annexes: Agronomist and Economist's Quarterly Reports 10

QUARTERLY REPORT
JULY 1, 1987 THROUGH SEPTEMBER 30, 1987

I INTRODUCTION

This report covers the contractor's progress on the CAC Project for the quarterly period July 1, 1987 through September 30, 1987, on the activities outlined on the annual workplan.

Except for ongoing orchard crop farm trials, and cucumber production trials and cucumber pot trials most project activity centered around continued economic evaluation of production and preparation for the 1987-1988 winter vegetable season.

II PROJECT MANAGEMENT

A. Office Administration and Logistics

During the quarter emphasis was placed on modifying the project inventory reporting so that it addressed the issues brought up by USAID, Belize, which included receiving reports, location reports and ID numbers. Chemonics' home office, has provided an updated inventory of items purchased by Chemonics in Washington. We have included local purchases with this and now have a system that lists items by ID numbers, location of storage, present location, date of receiving, and equipment category.

Recommendations were made for a short term management specialist and the proposed candidate has been approved for a two month assignment. The short term management specialist will recruit a suitable candidate for project management assistant and train him/her in project management procedures including AID regulations and procedures for complying with these regulations. Mobile communications radios ordered for the project through Chemonics procurement several months ago have not materialized however, a recent memorandum on the issued mentioned late October or November as the expected delivery date.

B. Subcontractors

Three of the subcontractors, Walker williams and Co., CARDI, and Garrison Seed Co, were represented during the quarter. Walker Williams and CARDI were active throughout the quarter. In late August Garrison Seed Co.'s fieldman made a two week site visit to set out their program for the 1987-1988 project year and to start corn field trials.

All subcontractors taking part in the upcoming 1987-1988 trials were in contact with project management and presented their work plans.

C. Staffing and Man-Month Utilization of the T.A. Team

The three man Chemonics TA team remained in the field during the entire quarter, except for a vacation R&R leave taken by the Economist during July.

The home office backstopping team: Project supervisor, Project Administrator and Project Assistant, remained the same.

Short term advisory service was provided in the area of tropical fruit/pineapple production. Specialist Mike Strong was in country for a two week assignment.

Mr. Strong, who started his short term assignment late in the quarter, is scheduled to make an initial assessment of fruit production, and make recommendations with regards to soil limitations on the varieties selection during his first two weeks assignment. He will then return to the project in approximately 6 weeks and assess the results of his recommendations as well as implement plans to develop further tropical fruit crop trials with pineapple. papaya, mango, lychee and carambola.

I must mention that Mr. Strong is without a doubt one of the strongest technical persons in his field that I have been involved with during my career. He was able to assess the situation with the authority of someone who knows his crop, express himself explicitly, and deal with the problems on a level both management and growers could understand. His input, if carried out by the growers, will positively affect field production of a number of crops.

A chart of man-month expended during the quarter is shown on the following page.

CHART A
ALLOCATION OF MAN-MONTHS
CONTRACT LEVEL OF EFFORT

	CONTRACT REQUIRED	EXPENDED THROUGH 6/30/87	EXPENDED THIS QUARTER July-Sept, 1987	TOTAL EXPENDED THROUGH 9/30/87	REMAINDER
LONG-TERM TEAM					
Tokar	48.000	13.000	3.000	16.000	32.000
Neu/Bachofer	36.000	9.680	3.000	12.680	23.320
Chang/Braden	36.000	13.920	3.170	17.090	18.910
Subtotal Long-term LOE	120.000	36.600	9.170	45.770	74.230
SHORT-TERM TEAM					
Christiansen		2.220		2.220	
Mertely		0.970		0.970	
Paget-Wilkes		1.530		1.530	
Walker A. Williams Co.		9.831	2.308	12.139	
John Jackson		0.370		0.370	
William Grierson		0.600		0.600	
Michael Strong			0.14	0.140	
Subtotal Short-term LOE	33.000	15.521	2.308	17.829	15.171
HOME OFFICE					
Teele/Duoras		0.599	0.231	0.830	
Holguin/Ressler		0.693		0.693	
Dobson		0.519	0.046	0.565	
Lowry		0.253		0.253	
Boyd/Nastoff		0.686	0.462	1.148	
Milne		0.150		0.150	
Conoley		0.185		0.185	
Burdick		0.692		0.692	
Shan		0.709	0.087	0.796	
Christiansen		0.969		0.969	
Williams/Kettendorf		0.543	0.347	0.890	
Subtotal Home-Office LOE	4.250	5.998	1.173	7.171	-2.921
SPECIALIZED FIELD TEAMS					
CMMS		8.307	0.000	8.307	
SRD		11.075	0.000	11.075	
Steins Pass		8.653	0.000	8.653	
Garrison Seed Co.		4.431	0.369	4.800	
Griffin Brand		0.092	0.000	0.092	
Subtotal Specialized Field Teams LOE	60.000	32.558	0.369	32.927	27.073
TOTALS	217.250	90.677	13.020	103.697	113.553
CARDI					
Sinna - Scientist		5.740	3.000	8.740	
Garcia - Technician		6.800	3.000	9.800	
Gonzales - Technician		7.077	3.000	10.077	
Subtotal CARDI LOE	185.000	19.617	9.000	28.617	156.383

Includes .17mm relating to balance of Y.P. Chang's accrued leave.

D. Procurement

Support equipment for the project, to be used during the upcoming marketing/on-farm trails, has been ordered through Chemonics home office.

Equipment orders included irrigation materials and supplies, thrasher and cutter bars for CARDI, as well as various pieces of postharvest grain equipment for CARDI. As mentioned earlier the mobile radios ordered for project vehicles several months ago and have not yet arrived. Though I am sure that Chemonics' procurement staff is not at fault, several delays in receiving orders and partial fulfillment of orders is becoming all too common. As is pointed out in the agronomist's quarterly report only once during the quarter was all of the material on the packing list received. On other occassions all the materials on the packing list did not arrive as specified.

E. Financial Status (see attached chart)

III EXPORT CROPS

A On-Farm Trials

As this quarter was characterized by minimal field activity due to it being "off season" for Belize growers there was little representation by subcontractor fieldmen. Garrison Seed Co., represented by Eric Wright, was on site for approximately two weeks. During that time a work plan for Garrison Seed Co's. activity on the CAC project was presented and reviewed by the TA staff. Farmers and farm sites were selected, fields were laidout and planted with seed corn. A further shipment of hybrid corn varieties is expected in October and will be planted upon arrival.

A protocol for use between Garrison Seed co. and BABCO growers was developed and later amended for use during the upcoming season. The protocol is in keeping with that developed by the project agronomist in that the growers are responsible for all production costs except for the irrigation system supplied by the project.

Though Stein Pass was not represented in the field during the quarter, a work plan was submitted by them which calls for further melon and hot peppers trials. During the upcoming season Stein Pass has proposed melon field trials of 2-3 acres in which 3 varieties of cantaloupes plus honeydew will be grown. Six varieties of hot peppers on 2 acres of farm sites will also be included in their program. It is expected that the Corozal district will be extensively used for melon and pepper trials.

CONTRACT FINANCIAL STATUS
AS OF SEPTEMBER 30, 1987, 1986

(all figures in U.S. Dollars)

	CONTRACT BUDGET *	INVOICED THROUGH 6/30/87	INVOICED THIS QUARTER July-Sept., 1987	TOTAL INVOICED THROUGH 9/30/87	REMAINDER
SALARIES	$770,404.00	195,377.90	45,288.24	240,666.14	529,737.86
FRINGE	130,618.00	34,735.11	7,744.52	42,479.63	88,138.37
OVERHEAD	481,165.00	137,770.39	31,052.46	168,822.85	312,342.15
TRAVEL AND TRANSPORTATION	196,035.00	134,405.99	19,465.09	153,871.08	250,350.92
ALLOWANCES	404,222.00	114,050.65	13,575.81	127,626.46	276,595.54
OTHER DIRECT COSTS	153,131.00	98,430.22	20,506.51	118,336.73	34,194.27
EQUIPMENT	444,150.00	183,758.99	13,749.05	197,508.04	246,641.96
SUBCONTRACTS	721,361.00	327,063.13	43,547.35	370,610.48	350,750.52
G AND A	65,482.00	24,528.90	3,898.59	28,427.49	37,054.51
FIXED FEE	136,047.00	56,164.94	8,504.58	64,669.52	71,377.48
AWARD FEE	27,028.00	27,028.00	0.00	27,028.00	0.00
GRAND TOTAL	3,529,643.00	1,333,314.22	207,332.20	1,540,646.42	1,988,996.58

*Reflects changes in accordance with amendment No.4

This as a result of information gained from the 1986/87 farm trials in which higher production of better quality melons and peppers was grown in Corozal than in Orange Walk district. Steins Pass trials will be located on approximately 9 farm sites in the Paraiso, and Santa Elena areas of Corozal.

Walker Williams & Co., responsible for orchard crop trials, was represented during the entire quarter. Work continued in the nursery with production of trees for the field trials, as well as the establishment of new test plots. Passion fruit, papaya, mango and pineapple plantings were established during the quarter. BABCO involvement with the three papaya co-ops in the Corozal district was suspended due to the lack of response on the part of the groups. Over the past nine months work with these co-ops has been frustrating and at times futile due to the attitude of the members. I believe that this attitude is in part the result of the members frustrations in trying to arrange for short term production credit for inputs and improvements to their plots.

Subcontractor progress and evaluation is an ongoing program and reports are being generated by fieldmen on a regular basis.

B. Cucumber Program

The cucumber program established by the Chemonics Agronomist is about to be terminated. Six plantings were established and meaningful production data was obtained from five of these plantings. Detailed technical information was obtained in all trials and reliable information was obtained. The BABCO agronomist and extension officer have technically managed some of the plots and gained valuable hands on experience. In spite of adverse weather conditions the program should be considered successful and several accomplishments can be sited:

1) Six farmers were exposed to a "high tech" approach of producing trellised cucumbers
2) BABCO Ag. Dept. personnel were trained and can handled the crop
3) Agronomic constraints have been identified
4) A commercial level of production has been demonstrated
5) Reliable information for budget preparation has been obtained

C. Cucumber Pot Trials

The existence of serious nutrient deficiencies were recognized when cucumbers were planted at different locations in the Orange Walk District during the cucumber trial program.

In July a series of pot trials with cucumbers was initiated to attempt to determine the cause of these nutritional problems. Cucumbers were used because of their quick growth pattern and the degree to which nutritional disorders appear on the plant. Initial pot trials allowed the methodology and techniques to be developed. Conclusions from results of the pot trials included indications that:

1) The soil mix used in the BABCO nursery needed modification
2 Sand as a growth medium was not satisfactory
3) Fertilon-Combi 2 and Mocap, as used, were phytotoxic to cucumbers
4) Cucumbers response were different with different soil types
5) Nitrogen can safely be applied with irrigation water
6) Cucumber responds to TSP application alone or in combination with other fertilizers

Benefits derived from the series of experiments included:

1) Development of pot trial techniques
2) A substantial amount of technical information obtained during a time of year when weather adversely affects field work
3) Certain fertilizers and amendments have been identified which affect cucumber plant growth in a positive manner
4) Identification of growth response to different soils
5) Papaya propagation media problems identified
6) BABCO field personnel have been trained in research techniques

D. Papaya Post harvest Handling

Several days during the quarter were spent with the Corozal papaya co-operatives in developing appropriate procedures for handling and packing their papayas. Techniques were developed to properly grade and size fruit prior to packing and several methods to reduce post harvest losses due to anthracnosis and stem end rot were tried. As a result of problems encountered with stem and rot showing up as initial shipments of papaya reached foreign markets, growers suffered severe losses. However, with the addition of chlorene and other fungicides to wash water and the careful selection of fruit these losses were later kept to a minimum.

Initial marketing arrangements with Caribe Farms and Sun solo proved disastrous to the growers who have since made successful arrangements with Trans Gulf Corp and Wheatley Produce Co. At present it is expected that a packinghouse built with BABCO funds will be constructed in the Corozal District and will be operational during January or February 1988.

A visit was made to papaya packinghouses in Hawaii during September in order to gather information to be used in designing an appropriate facility for the Co-ops. During the same trip visits were made to various tropical fruit companies on the West Coast of the U.S. in order to develop additional markets for the Corozal growers. Pacific Rim Produce in southern California has expressed serious interest in dealing with the papaya co-ops and are ready to handle 40,000 lbs. on a weekly basis to be distributed in the west coast of the U.S. Interestingly, Pacific Rim has a market for green unripe, papayas and will accept up to 20,000 lbs a week of green fruit. This could be beneficial in that post harvest disorders would be minimal in immature fruits.

E. Economists Trials Costs Summaries

During the quarter the economists' main work efforts were to establish an ongoing database of technical, production and marketing information; to summarize and analyse the results of the summer cucumber trials; to revise crop budgets for the upcoming season's shipping and marketing trials; to convert all on-farm trial data to a new accounting code; and to update all season-to-date field production costs for those trials.

An accounting code was established in mid-July by the project agronomist to monitor the summer cucumber trials. This code system effectively costed each field activity with a unique account and subaccount numbering system. The cucumbers accounting code system was later amended and expanded, by the economists, to accomodate other field activities more suited to all of the BABCO crops including nursery operations, orchard crops, grain seed crops and oil seed crops. The conversion ofs the previous data to the new accounting system was successfully introduced and implemented during the quarter.

IV IMPORT SUBSTITUTION CROPS

A. Progress to Date

The main thrust of CARDI activity during the quarter has been the continuation of soybean production trials planted during the previous quarter. Two further soybean trials were planted in July, one a plant density/spacing trial at the CARDI field station, the other, a variety, spacing, and fertilizer trial, was

planted in the district. The initial CARDI trials were planted in two varieties, however, later trials included replicated plantings of several long duration varieties. The seeds were provided by the Asian Vegetable Research and Development Center, Taiwan and the International Institute of Tropical Agriculture, Nigeria.

CARDI's present series of soybean trials started out well and except for some weed and insect control problems the plots were well done. Later in the growth cycle, it was thought that plant vigor was declining. The soil chemist for the Ministry of Agriculture visited plots in the Orange Walk and Corozal Districts, collected soil samples and is now preparing a soil analysis. The CARDI agronomist will prepare a detailed report after receiving the analysis results.

Together with the CAC project economist, the CARDI agronomist visited INTSOY, University of Illinois, Champaign during August, to see various soybean extraction and processing equipment that may be applicable for CARDI's development works on import-substitution crops for the CAC project.

B. Objectives for the Next Quarter

CARDI's objectives for the next quarter include harvesting, drying and handling the soybean trials now in production, developing a soil fertilization package based in results of the soil analysis done by the Ministry of Agriculture, and further trials with winter planted soybean and other oilseed crops.

V SUPPORT ACTIVITIES

A. Training

One of the two Extension officers, who had been on the Project since 1986, left the job and the vacated position has not been filled. The other Extension officer continues to work with the Project agronomist and during the quarter has received useful training in research procedures while working with the cucumber pot trials as well as valuable "hands on" experience with the summer cucmber field trials. The Extension officer is also starting some basic computer operations training that will be beneficial when recording data collected in the field for future agronomic accounting.

Three Belize College of Agriculture students spent a six week internship working with BABCO. The students were involved with field work, the production of cucumbers, greenhouse work and various administrative duties. The students worked well and the contribution of these young people to the project was considerable.

B. Inventory

The inventory contol system was modified somewhat during the quarter. This in an effort to comply with a request from the USAID Project Officer that more detailed information with regards to receiving identification and present whereabouts of project equipment be kept.

The modified inventory system now lists each item by ID number, item classification, item name, date acquired, storage area, and where the items is presently being used. A control system similar to that used by USAID, Belize has been implemented.

Approximately 5000 sq, ft. of storage area has been added for project equipment and it now being used to house irrigation equipment while the Tower Hill facility is used mainly for production equipment and agricultural input storage.

C. Annexes: Agronomist and Economist Quarterly Report

Both the agronomist and economist's quarterly reports are included as annexes to this report. Since certain information from these reports has been incorporated into the official quarterly report of the Chemonics Team, the two individual reports are considered unofficial. Nonetheless, they contain interesting detail and insights which should be available to readers of this report. To preserve these insights, these reports appear in their unedited versions.

ANNEX A

BABCO MEMORANDUM- Ag Department

File: 871010.MEM

Date: October 10, 1987

To: MTokar

From: DBraden

Subject: 3rd Quarter, 1987 Report

Attached you will find my second quarterly report while associated with the CAC Project. It is for your perusal and please do with it what you wish.

If we want to report the progress of project activities why not use a form to outline the different activities? The form could present per cent completion, number installed, man-hours invested, person-months, etc. With the form, we could then provide a brief narrative description of the progress of the activity. It might be a little dull, but it would be useful and easy to prepare.

Possibly, we should consider what is the purpose of this report and prepare it accordingly. What is this for, where does it go, who uses it, and what do they do with it?

cc: Chemonics/Wash

REPORT- Third Quarter, 1987

Don Braden, PhD- CAC Horticulturalist

Travel-

A travel log is maintained to report miles traveled and places visited when using Project vehicle (C-6322). This information is kept by month and the logs for July, August, and September of 1987 are presented in the Appendix which attached to this report. Please note that miles traveled and places visited when traveling in another vehical, project or otherwise, are not reported in these monthly logs. There there is another report included (Appendix Page A4) which summarizes miles and gasoline milage for the Project vehicle assigned to the ex-patriate horticulturalist. Travel, to date, with the project vehicle C-6322 can be summarized as follows:

D. Braden- Project Miles

Month		Milage	Miles	Avg Mi/Mo	Travel Days	Avg Mi/Day
March	(04/02)	2,246	1,637	1,637		
April	(04/28)	3,249	1,003	1,320	-	-
May	(05/30)	4,838	1,589	1,410	-	-
June	(07/03)	6,897	2,059	1,572	26	79.2
Quarter Sub-Total			4,651	1,550	-	-
July	(07/31)	7,529	632	1,384	25	25.3
August	(09/04)	8,926	1,397	1,386	24	58.2
Sept	(09/30)	9,830	904	1,317	21	43.0
Quarter Sub-Total			2,933	978	70	41.9

The miles driven in Project vehicle C-6322 decreased during the third quarter of 1987. This reduction in travel was due to several reasons. Some of the reasons were as follows:

1. The number of field trials were reduced.

2. Rainy conditions greatly reduced field work.

3. Field work was concentrated in Orange Walk District and less miles had to be driven.

Procurement-

The Project horticulturalist has been involved indirectly with some Project procurement. With the orders where there has been involvement, some observations can be found below. We would wish to share our ideas with others involved in the procurement process as to make this very important aspect of the CAC Project run more smoothly.

There are some strange things happening. We order 10 rain gauges, we get 8. Same thing happened, with max and min thermometers. Stranger yet, We order a part for my washing machine and we do not get any.

Order 1 (Preparation Date: April 24, 1987)-

About 165 days after preparation (DAP), this very complicated order has yet to be completely filled. This order has arrived in three different shipments as follows:

1. Brought by Chemonics Personnel- June 21, 1987 (58 DAP)

2. Two crates opened by USAID- August, 1987

3. Container opened by CAC- September 16, 1987 (144 DAP)

Only once, was all of the material on the packing list received and this was when the shipment was brought by Chemonics personnel. On the other occasions all the material on the packing list did not arrive. In one case we received equipment which we did not order. Crates arrived opened and broken in Orange Walk with the second shipment and we do not know where material was lost. The last shipment arrived in Orange Walk in a sealed container and still there were discrepancies between the packing list and the contents. Of course, we do not know if it was the original seal or if it had been changed as we did not receive the bill of lading. Also, we do not know if the seal number was included on the bill of lading. Any way, it looks like we have to send material with Chemonics personnel or, Chemonics personnel with shipments, if we are to receive what is dispatched.

Order 3 (Preparation Date: June 25, 1987)-

Still, 92+ DAP, have not received all of the filter screen inserts as ordered. There was a problem with the 200 mesh screens for the Rainbird 120 GPM filter. Screens for a smaller filter were sent, received, and returned. We need some information on this to determine what to do:

1. If they do not make 200 mesh, then order the finest available- the greater the number the finer the mesh.

2. If still out of stock, when will they be in?

14

Procurement (Continued)-

Have received two different ribbons for Canon FP-10 calculator, both of which do not fit. Please order a couple of EPSON ERC-09 ribbon cartridges.

Order E (Preparation Date: August 24, 1987)-

About 40 DAP and we have not heard if the order was approved, ordered, expected, or what.

Cucumber Program-

The Cucumber Program is about to be terminated. We were able to establish six plantings and meaningful production data obtained from five of these planting. Important technical information was obtained from all trials. Production costs, both labor and materials, have been obtained. At present, the sixth planting is being managed technically by the BABCO agronomist and Extension Officer. In spite of poor weather we have experienced, the Program would be considered successful, as we have accomplished the following:

1. Six farmers were exposed to the technology of producing trellised cucumbers and they received on-the-job training.

2. BABCO Ag Dept personnel were trained and are ready to handle this crop on a small, but commercial, level.

3. Agronomic constraints have been identified.

4. A low, but commercial, level of production has been demonstrated.

5. Information for budget prepartion has been obtained.

AccSys-

A substantial amount of time was spent developing an account code and system to be able to better handle agronomic and financial data related to field trial management. In the design phase of the system, an attempt was made to get the project economist involved in the design of the system. While the economists were on leave and on project associated trips, the Ag Dept was able to accomplish the following:

1. Modify and improve the account code and computer formats and forms.

2. Train BABCO staff in coding and computer operation and data processing.

3. Code data from the Cucumber Program field trials and put system to work

4. Start coding data from the Tropical Fruit Program field trials.

5. Extend efforts to get CARDI personnel trained in the system.

AccSys (Continued)-

One evening, the project economist made a unilateral decision to change the account codes and the coding system. As a result of this, field trial data for the Tropical Fruit Program had to be re-coded,data from cucumber field trials has a different coding system, and the code has increased in size. The new coding system was not necessary, it does not provide any distinct advantages over the old one, it is more complicated an difficult to handle, it is difficult to 'memorize' account codes because there are more numbers and there is more duplication of numbers, and it brought him very close to physical pain.

FileSys-

A method for organizing technical files, information, and books was suggested several months ago. BABCO was trying to obtain the services of the national librarian to set up a filing system. Since considerable time had passed and nothing had been started, it was decided that a filing system for technical materials and books would be started using the assistance of one the agricultural students assigned to BABCO for a six week internship.

The FileSys was prepared, computerized, and revised. Technical materials located in the Ag Dept were classified by Category, put into file folders, and organized. Shelves were requested from BABCO and when they came, they were installed in the Admin building. Ag Dept files have been placed in cardboard boxes. The project economist has not changed the filing system, as yet, but he has indicated that he would be interested in 'expanding the system' to include economic topics.

Weather Data-

We installed a rain guage and max/min thermometer at the BSI compound in Tower Hill in the last week of September, 1987. Since July, 1987, we have max/min temperatures taken at D. Perez's farm near Tower Hill using an apparatus provided by a staff member. We also have precipitation data from this site, but the equipment used was not very reliable.

Regretfully, this is the only weather data we have collected. The CAC project is into its second year and for some reason, equipment to determine weather conditions was not ordered nor delivered. The delivery of this order took over 144 DAP. In late August, 1987, we received eight thermometers and rain guages and the apparati for two evaporation pan installations and data collection. These devices will be installed at selected sites in the two districts.

Training-

One Extension Officer, who had been with the CAC Project since 1986, left for the Toledo District and the position he vacated, has not been filled. A total of three Belize College of Agriculture students spent a six week internship working with BABCO. The BCA students did not arrive at the same time, so that the Ag Dept had one, three, or two students at a time. The students were involved with field work, the production of cucumbers, greenhouse

Training (Continued)-

work, and miscelaneous administrative duties. The contribution of these students to the over al agronomic effort was considerable,

The Ag Dept staff was trained in all aspects of commercial cucumber production and exposed to some research techniques and some computer operations. Efforts to train the project economists in certain aspects of basic and simplified budget preparation for participant growers was a slow, difficult, and not completely successful process.

Efforts were expended with some sub-contractor personnel, managers and field staff, to educate them in the areas of data taking, planning, and field work organization. It seems that some headway has been achieved but it is thought that it is easier to work with people 'new' to the Project. It is something like- 'teaching an old dog new tricks'.

Congradulations to the people who got Mr. Mike Strong on the CAC Project. It is a pleasure to work with a person who knows his crop and Mr. Strong know several. If we can find other technicians with just half of Mr. Strong's abilities and knowledge the CAC Project will be a phenomenial success. Mr. Strong will end up training a lot of people at BABCO, the Horticulturalist included, and he will positively affect field production of a number of crops.

Inventory-

The inventory control system was started in the 2nd Quarter of 1987 and was working satisfactory. During Mr. Teal's most recent to Orange Walk Town he stated that Chemonics/Washington had an 'inventory system' and that it was satisfactory. Due to this and the project economist's growing interest in these matters, Ag Dept personnel viewed their efforts in this area as being supercilious and went to the field.

A new storage area was acquired by BABCO and a substantial amount of time and effort was expended by Ag Dept personnel in organizing the new storage space and transfering materials and equipment from and among other storage areas and different sites in both Orange Walk and Corozal Districts. Many man-days were spend collecting irrigation hose and other materials from different field trial sites. This installations had been by sub-contractors during the previous phase of on-farm trials.

Pot Trials-

A series of eight research trials were conducted using small plastic pots cucumber, and different soil amendments, fertilizers, and chemicals. The results from these trials have just recently been reported and the following was accomplished:

1. Pot techniques were improved and developed.

2. Cucumber seedling emergence was different on apparently similar soils.

3. Cucumber development was negatively affected by some materials, as used.

4. Cucumber growth perimeters were positively affected by some fertilizers.

CARDI-

CARDI's present series of soybean trials started out well and except for some poor weed control and some lack of insect control the plots were well done. A little later in the growth cycle, it was thought that plant vigor was seen to be declining. It seems that CARDI has only been working with soybean since the early 1980's and during that time CARDI was working on a number of crops, systems, ideas, economics, etc, plus import restriction. One would think that a minimum of 10 years pertinent experience would be required of a sub-contractor. In-house talents at BABCO do not include soybean production, nor soybean economics, apparently. It has been recommended, without too much popularity, that the CAC Project get some technical assistance in to look at the production results in the field and Belize's soybean economics. If we want to be in a position to make meaningful decisions regarding soybean production in the North, we had best get CARDI and BABCO some expert help.

Miscelaneous-

Numerous and all types of meetings were attended. Staff meetings were down to a reasonable number and frequency during September. Local banks got BABCO staff envolved with the demise of the Caribe Farms operation and BABCO has been called upon a number of times and by a number of organizations to "make judgements" on Caribe. On occasion we have been 'forced' to make evaluations without seeing any data. Some recommendations/suggestions were taken, modified, amplified, and presented as being 'approved' by BABCO.

We were plaqued by short termers from the other part of the CAC project. On more than one occasion, comments made to these persons have returned to haunt us, when taken out of context. So much time was spent with these people we should have gotten paid for our contribution and, for sure, should have a copy of the report.

Personal-

Due to factors not controlled by anyone, residences were changed twice in one day early in this quarter. For one who abhors moving, this kind of thing does not make for a happy person. We would like to know why we do not get Cost of Living on this project when ground beef and chicken costs more here than in Washington, DC. Also, we would be happier if the washing machine got fixed and we would work better if there were mobil radio communications. We some times ask why these kind of reports are written if no one reads them? A USAID post orientation was held late in September, 1987, six months after in-country arrival; nevertheless, the portion of the orientation attended was informative. The donuts were good, too. This occasion also provided an opportunity to meet the new Ambassador.

Day	Place	Time	O'Meter	Miles
3 Mon	BSI	0800	7528.0	0.0
	BABCO		533.7	5.7
	CAMPO 20	1000	551.2	17.5
	BSI	1100	566.7	15.5
	BABCO		570.9	4.2
	PEREZ'S			0.0
	SWIn			0.0
	BSI	1730	582.0	11.1
4 Tue	BSI		582.0	0.0
	WCARBALLO			0.0
	BSI		600.7	18.7
5 Wed	BSI	0800	600.7	0.0
	PEREZ'S		602.5	1.8
	BABCO		605.7	3.2
	BSI	1630	610.4	4.7
6 Thu	BSI	0800	610.4	0.0
	BABCO		614.6	4.2
	BWatfield			0.0
7 Fri	BABCO	1300		140.4
	WCarballo		755.0	0.0
	BABCO 2x		773.1	18.1
	BSI 2x	1700	786.5	13.4
8 Sat	BSI		786.5	0.0
	SAN ANTONIO			0.0
	BSI		833.0	46.5
10 Mon	BSI	0800	833.0	0.0
	THILL	0900	840.9	7.9
	SAN LAZARO		851.5	10.6
	BABCO	1315	862.9	11.4
	COROZAL			0.0
	BSI	1800	930.1	67.2
11 Tue	BSI	0800	930.1	0.0
	BABCO			0.0
	THILL		939.3	9.2
	SAN LAZARO			0.0
	YO CREEK			0.0
	BABCO		961.5	22.2
	THILL		966.8	5.3
	BABCO			0.0
	BSI	1800	974.8	9.0
12 Wed	BSI		974.8	0.0
	BABCO		978.9	4.1
	BSI			0.0
	PEREZ'S			0.0
	CUCO3/0587	1130	997.6	18.7
	PEREZ'S		8006.5	8.9
	CUCO287			0.0
	YO CREEK		20.0	13.5
	BSI		8031.0	0.0

Day	Place	Time	O'Meter	Miles
13 Thu	BSI	0800	8031.0	0.0
	BABCO			0.0
	BEL CITY			0.0
	BSI		154.2	123.2
14 Fri	BSI	0800	154.2	0.0
	BABCO		158.2	4.0
	BSI			0.0
	BABCO			0.0
	BSI	1800	171.5	13.3
15 Sat	BSI		171.5	0.0
	BEL CITY			0.0
	BSI		281.0	109.5
17 Mon	BSI	0800	281.0	0.0
	BABCO		286.2	5.2
	CAMPO 20			0.0
	BSI	1300	318.5	32.3
18 Tue	BSI	0800	318.5	0.0
	BABCO		330.8	12.3
	OIL CHANGE		332.1	1.3
	CUCO487			0.0
	BSI			0.0
	THILL			0.0
	BSI- PTO687		356.6	24.5
19 Wed	BSI		356.6	0.0
	BABCO		360.6	4.0
	THILL			0.0
	BODEGA			0.0
	BABCO		368.2	7.6
	BSI- ADMIN	1330	372.2	4.0
20 Thu	BSI	0800	372.2	0.0
	BABCO		377.9	5.7
	COROZAL		410.8	32.9
	BABCO	1300		0.0
	BSI		452.6	41.8
21 Fri	BSI	0800	452.6	0.0
	BABCO			0.0
	BSI		461.0	8.4
22 Sat	BSI			0.0
	COROZAL			0.0
	BSI		545.4	84.4
24 Mon	BSI	0800	545.4	0.0
	BABCO		549.6	4.2
	BSI	1000	554.2	4.6
	CUCO587		566.7	12.5
	BABCO		578.8	12.1
	BSI	1400	8582.9	4.1

Day	Place	Time	O'Meter	Miles
25 Tue	BSI	0800	8582.9	0.0
	BABCO		587.2	4.3
	YO CREEK R CAL			0.0
	PEREZ			0.0
	THILL			0.0
	BABCO			0.0
	BSI	1430	609.9	22.7
26 Wed	BSI	0800	609.9	0.0
	BABCO		613.9	4.0
	THILL		617.7	3.8
	BSI			0.0
	BABCO		622.6	4.9
	BSI		626.8	4.2
27 Thu	BSI	0800	626.8	0.0
	BABCO		630.9	4.1
	BSI	1130	635.1	4.2
	BABCO			0.0
	THILL		644.8	9.7
	BABCO		648.4	3.6
	BSI	1730	652.4	4.0
28 Fri	BSI	0800	652.4	0.0
	BABCO		656.4	4.0
	THILL			0.0
	BSI		668.1	11.7
	BABCO		672.1	4.0
	BSI		678.8	6.7
31 Mon	BSI	0800	678.8	0.0
	BABCO			0.0
	CUCO587		698.2	19.4
	CAMPO 20			0.0
	BABCO	1300	734.6	36.4
	BSI	1500	8740.4	5.8
				0.0
				0.0
				0.0

Day	Place	Time	O'Meter	Miles
1	Wed BSI	0745	6823.0	0.0
	BABCO		827.1	4.1
	CUK0187			0.0
	BSI		831.5	4.4
	CUK0287		836.7	5.2
	CUK0487		850.7	14.0
	BABCO		962.4	11.7
	BSI		866.4	4.0
2	Thu BSI	0800	866.4	0.0
	BABCO (BELMO)	0815	870.9	4.5
	BSI	1730	874.9	4.0
3	Fri BSI		874.9	0.0
	BABCO YO CREEK			0.0
	CUK0187	0945	895.9	21.0
	BSI		6907.1	11.2
6	Mon BSI	0730	907.1	0.0
	BABCO		911.2	4.1
	CUK01/CUK0287		918.7	7.5
	CUK0387		925.0	6.3
	BABCO	1145	935.9	10.9
	CUK0187	1200		0.0
	BSI	1430	941.4	5.5
7	Tue BSI	0800	941.4	0.0
	BABCO			0.0
	BSI		949.8	8.4
8	Wed BSI		949.8	0.0
	BABCO			0.0
	CUK0287			0.0
	BSI	1400	959.2	9.4
	BABCO		963.2	4.0
	BSI	1730	967.5	4.3
9	Thu BSI	0730	967.5	0.0
	BABCO	0930	971.9	4.4
	SAN MARCISO	1130	981.0	9.1
	LIBERTAD		999.0	18.0
	BABCO	1300		0.0
	BSI	1330	7016.4	17.4
10	Fri BSI	0745	16.4	0.0
	BABCO		20.4	4.0
	THILL	1000	25.4	5.0
	BABCO		29.3	3.9
	BSI	1700	33.9	4.6
13	Mon BSI	0730	33.9	0.0
	BABCO			0.0
	CUK0187			0.0
	BSI	1400		0.0
	BABCO			0.0
	BSI		50.7	16.8
				0.0

Day	Place	Time	O'Meter	Miles
14	Tue BSI	0800	7050.7	0.0
	BABCO		54.9	4.2
	BSI		59.7	4.8
	BABCO		63.4	3.7
	BSI		67.6	4.2
15	Wed BSI	0800	67.6	0.0
	BABCO- Corozal		71.7	4.1
	BSI	1730	77.6	5.9
16	Thu BSI		77.6	0.0
	BABCO- Caribe Mi 49			0.0
	BSI		86.1	8.5
17	Fri BSI	0600	86.1	0.0
	BABCO	0830	90.3	4.2
	LIBERTAD			0.0
	BSI		133.0	42.7
	CUK0487	1230		0.0
	CUK0287			0.0
	BSI	1700	154.0	21.0
18	Sat BSI		154.0	0.0
	BABCO	0830		0.0
	BSI		162.6	8.6
20	Mon BSI	0800	162.6	0.0
	BABCO		166.8	4.2
	BSI		171.3	4.5
	CUK0187			0.0
	THill		173.6	2.3
	BABCO			0.0
	CAMPO 20		195.7	22.1
	BSI	1800	210.9	15.2
21	Tue BSI	0800	210.9	0.0
	BABCO	1330		0.0
	BSI	1600	221.0	10.1
22	Wed BSI	0700	221.0	0.0
	BABCO- USAID		225.1	4.1
	BSI	1800	229.1	4.0
23	Thu BSI		229.1	0.0
	BABCO	1730	233.5	4.4
	BEL CITY		287.6	54.1
	BSI	2300	352.0	64.4
24	Fri BSI	0800	352.0	0.0
	BABCO		357.4	5.4
	BSI		362.2	4.8
25	Sat BSI	1200	362.2	0.0
	COROZAL			0.0
	BSI	1700	445.8	83.6
27	Mon BSI	0815	445.8	0.0
	BABCO		450.0	4.2
	BSI	1700	454.7	4.7

Day	Place	Time	O'Meter	Miles
28	Tue BSI		7454.7	0.0
	BABCO		459.0	4.3
	BSI		465.0	6.0
29	Wed BSI	0800	465.0	0.0
	BABCO		469.2	4.2
	BSI		473.9	4.7
30	Thu BSI	0800	473.9	0.0
	BABCO		478.3	4.4
	BSI	1430	484.0	5.7
31	Fri BSI	0800	484.0	0.0
	BABCO			0.0
	CUC0387	1100		0.0
	BSI	1200	511.0	27.0
	BABCO	1430		0.0
	CUC0187			0.0
	BABCO	1500	524.7	13.7
	BSI	1700	7528.9	4.2
				0.0
				0.0
				0.0

Day	Place	Time	O'Meter	Miles
1	Tue BSI	0800	8740.4	
	BABCO		744.4	4.0
	COROZAL	1115	778.0	33.6
	BABCO		808.1	30.1
	THILL		811.7	3.6
	BABCO			0.0
	THILL		819.0	7.3
	BSI		820.0	1.0
2	Wed BSI	0800	820.0	0.0
	BABCO		824.0	4.0
	COROZAL	0915	853.9	29.9
	BABCO			0.0
	THILL			0.0
	BABCO			0.0
	BSI	1445	894.9	41.0
3	Thu BSI	0800	894.9	0.0
	BABCO			0.0
	THILL		902.5	7.6
	BABCO THILL BABCO			0.0
	THILL BABCO			0.0
	BSI	1700	925.5	23.0
4	Fri BSI	0800	925.5	0.0
	BABCO			0.0
	SAN LAZARO		942.5	17.0
	BABCO	1200		0.0
	BSI	1530	958.0	15.5
7	Mon BSI	0800	958.0	0.0
	BABCO			0.0
	BSI			0.0
	BABCO	1130	971.5	13.5
	BHAIFIELD		9050.0	78.5
8	Tue BABCO	1230	9050.0	0.0
	BSI	1600	54.4	4.4
9	Wed BSI	0800	54.4	0.0
	BABCO			0.0
	BSI			0.0
	BABCO		67.4	13.0
	BSI		71.9	4.5
	DWIn PEason			0.0
	BSI		79.3	7.4
14	Mon BSI	0745	79.3	0.0
	AIRPORT	0915	123.9	44.6
	BABCO	1100	185.6	61.7
	BSI	1200	190.3	4.7

Day	Place	Time	O'Meter	Miles
15	Tue BSI	0800	8190.3	
	BABCO			0.0
	HASSAN'S			0.0
	BABCO			0.0
	BSI	1030	207.0	16.7
16	Wed BSI	0800	207.0	0.0
	BABCO			0.0
	COROZAL	1130	241.0	34.0
	DWIn	1230	272.0	31.0
	BSI	1430	277.4	5.4
	THILL	1800		0.0
	BSI	2200	282.9	5.5
17	Thu BSI	0800	282.9	0.0
	BABCO		286.9	4.0
	THILL		291.0	4.1
	BSI	1500	292.5	1.5
18	Fri BSI	0800	292.5	0.0
	BABCO	0930	296.7	4.2
	BSI		303.3	6.6
	BABCO 2X			0.0
	BSI 2X		319.5	16.2
19	Sat BSI		319.5	0.0
	BABCO			0.0
	BSI		328.5	9.0
22	Tue BSI	0830	328.5	0.0
	BABCO	1000	332.7	4.2
	BSI	1430	336.9	4.2
	BELIZE CITY	1530	398.3	61.4
	BABCO	1700	444.8	46.5
	BSI	1730	448.8	4.0
23	Wed BSI	0800	448.8	0.0
	BABCO	0830	453.0	4.2
	BELIZE CITY	0930	499.3	46.3
	BSI	1215	561.5	62.2
	BELIZE CITY	1530	606.1	44.6
	BSI	1800	656.8	50.7
24	Thu BSI	0800	656.8	0.0
	BABCO	0930		0.0
	BSI	1230		0.0
	BABCO	1500		0.0
	BSI	1830	674.8	18.0
	BABCO/GOURMET	1930		0.0
	BSI	2200	683.1	9.3
25	Fri BSI	0630	683.1	0.0
	BELIZE CITY	0800		0.0
	BABCO	1330		0.0
	BSI	1430	9796.2	113.1

Day	Place	Time	O'Meter	Miles
26	Sat BSI		9796.2	
	BABCO			0.0
	BSI		805.3	9.1
29	Mon BSI	0830	805.3	0.0
	BABCO	0900		0.0
	BSI		817.4	12.1
29	BSI		817.4	0.0
	BABCO	1530		0.0
	BSI	1700	821.4	821.4
30	Wed BSI		821.4	0.0
	BABCO			0.0
	BSI		9830.3	8.9

DBraden- Fuel Charges CAC Project

Orc. #		Finish	Start	Total	1987	Station/Town	Gal	Gals	Mi/Gal
23601	O	609	0	609	0312	Shell- OWTn	30	30	20.30
23602						JNovello			
23603						Void- DBraden			
23604	O	958	609	349	0316	Shell- OWTn	25	55	17.42
23605	O	1,445	958	487	0320	Shell- OWTn	33	88	16.42
23606	O	1,816	1,445	371	0326	Shell- OWTn	28	116	15.66
23607	O	2,246	1,816	430	0402	Shell- OWTn	29	145	15.49
23608	O	2,546	2,246	300	0410	Shell- OWTn	20	165	15.43
23609	O			0		Diesel- MF 235			
23610	O	2,876	2,546	330	0418	Esso- THill	25	190	15.14
21701	O	3,249	2,876	373	0428	Esso- THill	26	216	15.04
21702	O			0	0505	CUK0187- gas 5gal			
21703	O	3,571	3,249	322	0508	Esso- THill	27	243	14.70
21704	O	3,744	3,571	173	0509	Esso- THill	12	255	14.68
21705	O	4,079	3,744	335	0513	Esso- THill	25	280	14.57
21706	O			0	0514	Diesel- MF235 6gal			
21707	O	4,305	4,079	226	0518	Esso- THill	17	297	14.49
21708	O			0	0519	CUK0287- gas 4gal			
21709	O	4,690	4,305	385	0529	Esso- THill	32	329	14.26
21710	O			0	0530	CUK0287- gas 5gal			
21710	O	4,838	4,690	148	0530	Esso- THill	11	340	14.23
11511	O	5,221	4,838	383	0605	Esso- THill	31	371	14.07
11512	O	5,483	5,221	262	0606	Texaco- P.G.	19	390	14.06
11513	O	5,822	5,483	339	0609	Esso- THill	26	416	14.00
11514	O			0	0616	CUK0287- gas 6gal			
11515	O	6,140	5,822	318	0617	Esso- THill	24	440	13.95
11516	O	6,510	6,140	370	0623	Esso- THill	30	470	13.85
11517	P								
11518	O	6,897	6,510	387	0703	Esso- THill	30	500	13.79
11519	O	7,174	6,897	277	0720	Esso- THill	26	526	13.64
11520									
11601	O	7,529	7,174	355	0731	Esso- THill	25	551	13.66
11602	O	7,939	7,529	410	0811	Esso- THill	25	576	13.78
11603	O	8,287	7,939	348	0817	Esso- THill	14	590	14.05
11604	P								
11605	O	8,322	8,287	35	0820	OwTn Shell	10	600	13.87
11606	O	8,582	8,322	260	0824	Esso- THill	33	633	13.56
11607	O	8,926	8,526	400	0904	Esso- THill	28	661	13.50
11608	O	9,278	8,926	352	0916	Esso- THill	30	691	13.43
11609	P								
11610		VOID-	DBraden						
19961	O	9,684	9,278	406	0925	Esso- THill	31	722	13.41
19962									
19963	O	9,830	9,684	146	0930	Esso- THill	12	734	13.39

(File: Mile871.WKS; DAB/5Oct87)

ANNEX B

October 14, 1987

To: Matt Tokar/ Jose Novelo
From: Jack Bachofer/ Azucena Quan
Subj: First Quarterly Report, 1987-88: July - September, 1987

The months July to September, 1987 were characterized by minimal field activity for most crops since summer time is by definition the off-season for all winter fruit and vegetable exports to the U.S.. The economists' main work efforts were to establish an ongoing database of technical, production and marketing information: to summarize and analyze the results of the summer cucumber trials: to revise crop budgets for the upcoming season's shipping and marketing trials; to convert all on-farm trial data to a new accounting code system; and to update all season-to-date field production costs for those trials.

Highlights of Jack's trip to INTSOY and Azucena's participation in the Caribbean Food Crops Society and Caribbean Agro-Economic Society Joint Meeting in Antigua are summarized from the trip report and paper presentation of each agricultural economist, respectively.

Discussion of most topics addressed during the quarter follows the logical sequence of the following five attachments:

Attachment 1: 1987 - 1988 Annual Work Plan
Attachment 2: On-Farm Trial Data Summarization Status
Attachment 3: On-Farm Trial Season-to-Date Costs
Attachment 4: Original vs. Revised Budget Assumptions
Attachment 5: Cucumber Trials' Cost Summaries

1987 - 1988 Annual Work Plan

The 1987-88 Annual Workplan for the agricultural economists is essentially the same as submitted in CHEMONIC's Technical Proposal: Volume One to U.S. AID on February 14, 1986. The economists are primarily responsible for evaluating the marketing results of papayas and the second year marketing trials. Continuing on-farm orchard crop trials and second year on-farm production trials for selected crops will also be monitored and evaluated by the project economists.

In general, it is expected that most of the economists' evaluations at this time will still stress financial returns instead of concentrating on broader, socio-economic considerations. For either a complete financial or economic analysis, it is necessary for there to be a demonstrated technical feasibility first. All estimated agricultural practices for the BABCO crops should be prepared and submitted by the project agronomists on a crop specific basis. Even if a crop is capable of being produced in acceptable quality, the actual level of productivity and/or costs of production may make the crop uneconomic for Belize.

On-farm Trial Data Summarization Status

The first accounting code was established mid-July to monitor the summer cucumber trials. This accounting code system effectively costed each cucumber field activity with a unique

24

account and subaccount numbering system. The cucumber accounting code system was later expanded to accomodate other field activities more suited for all of the BABCO crops including nursery operations, orchard crops, hybrid grain seed and commercial grain, and oilseeds. The conversion of previous data to the new accounting code system was succesfully introduced and accomplished during the quarter for all of the BABCO crops except the summer cucumber trials. Cucumber plantings this fall should also be using the new accounting code so that all BABCO crops will be following the same system.

On-Farm Trials Season -To-Date Costs

Costs for each BABCO trial and the equivalent acre cost calculations are summarized in attachment 3. With few exceptions, the season-to-date costs are complete for all direct production costs. The two areas which need further review are cost estimates for some Walker Williams seedlings (i.e. carambola, and passion fruit), and depreciation allocations. Depreciation charges for irrigation systems and spray equipment will be reviewed for possible adjustment to indicate some economies of scale instead of allocating all depreciation fixed costs to existing small plot acreages only.

For the second year of shipping/marketing and on-farm trials, only irrigation equipment is provided at no cost to the farmer.

1987-88 Original vs Revised Budget Assumptions

In July, 1987 original budgets were prepared for most of the BABCO crops considered for marketing trials and/or additional on-farm trials. At that time, it was not expected GSC would consider commercial sorghum grain in its 1987-88 program. Also, no crop budget estimates for any of Walker Williams orchard crops, except papayas, were prepared.

During the quarter the original budgets were revised for five BABCO crops. Details of the main budget parameters which have changed are listed in attachment 4. The net changes in the bottom line, ie. returns/acre, are summarized as follows:

	Original Budget (Bz $)	Revised Budget (Bz $)
CORN, HYBRID SEED	(993)	2,039
CUCUMBER, SLICE	1,399	3,325
SORGHUM, HYBRID SEED	1,411	1,431
SORGHUM, COMMERCIAL GRAIN	71	(175)
SQUASH, ZUCHINI	8,701	1,407

For hybrid corn, the original budget reflected commercial grain production. The revised budget is for seed production. Hence, both yields and selling price were revised . The estimated net yield was reduced from 3,000 to 2,000 lbs/acre, but the estimated selling price was increased from $ 0.17 to $ 1.75 per pound. Returns per acre are now estimated at $ 2,039 on a consolidated basis instead of a loss of almost $ 1,000.

For hybrid sorghum seed, the yield assumptions have not been revised from the original budget of 2,000 lbs/acre . Minor offsetting differences in higher preharvest labor costs but slightly higher expected sales revenues have resulted in a negligible change in estimated returns per acre.

For commercial sorghum grain, yield estimates have been decreased from 3,000 to 2,000 lbs/acre, labor use has been increased 70%, and the expected selling price is unchanged at $ 0.17 per pound. Based on discussions with Eric Wright, it is expected that this crop will now lose $ 175 per acre or about $.09 per pound. At this time, GSC intends to plant out 150 varieties at 0.1 acre/variety or about 15 acres for the commercial sorghum grain. Unless GSC absorbs the projected loss as part of their research and development effort, or unless the project protocol is amended, a restudy of GSC's operating plan is warranted.

For zucchini squash, the main difference in the revised budget is related to the expected yield. The original budget assumed 1,154 boxes per acre, or equal to "good yield in the U.S." as reported in Knott's Handbook For Vegetable Growers. The revised budget assumes exportable production equal to Arsenio Carrillo's actual gross production last season of 284 boxes per acre equivalent.

For papayas, the original budget was based on Matt Tokar's July 27, 1986 memo to Pedro Perez on production cost/ expected returns for papaya. The revised budget was based on growing, and pick and pack cost estimates prepared in January, 1987 as part of the packing shed analysis. The papaya budget should be revised again to include specific agricultural practices for fertilization, pest and disease control as recommended and/or estimated by the project agronomists/technical staff.

Summer Cucumber Trials' Cost Summaries

Attachment 5 compares the original budget, actual field costs and the revised budget for cucumbers based on the summer field trial results. The costs are per acre costs and the returns assume export sales to the New York terminal market. The trials (of 0.1 and 0.5 acre plots) were extrapolated to get per acre costs. The only adjustment in the extrapolated per acre costs was in the downward adjustment of tractor hours since efficiencies of tractor use are better on larger than smaller plots. One fact to keep in mind with comparisons based on the field trials is that the trials were not done following uniform agronomic practices. Irrigation systems used varied and so did fertiliser practices. Different seed varieties were also being tested which had different yields. Another factor is the question of how representative climatic conditions in the summer are to those in the "winter" season.

Labour use is very intensive for the production technology package being developed. Labour proved to be the highest cost and the most limiting factor of production in the trials. Trellising, weeding and harvesting are the most labour intensive operations. For the trials, labour use was at least twice that originally estimated. For the revised budget,bearing in mind that training time was included in the trials' labour use, labour needs were

26

estimated at half that for the trials.

Preharvest costs have averaged, for the trials, close to expectations. Seed costs were high because of testing for different varieties. The seeding rate in the trials are not the same that will be used commercially. Trellis costs were lower for the trials than the original budget because the use of wire has reduced the number of stakes needed. The price of twine was also one quarter of what was estimated. Fertiliser regimes are specific for each soil type and location. The agronomist has also been doing pot trials to determine, among other concerns, the fertiliser recommendation for one soil type. The irrigation costs for the trials does not account for depreciation for the pumping system. The pumping time for the trials fluctuated widely, depending on rainfall distribution, with rainfall being least for the first trial and heaviest for the last. In revising estimates for pumping time, very little rainfall was assumed during the winter months. Pest control costs were lower for the trials than anticipated. However, the control programmes were not as adequate as could be. Hence, the revised budget takes the recommendations of the team's entomologist into account.

Yields were originally estimated assuming 6 weeks harvest. The longest harvest period in the trials was four weeks. The yields of the trials are also averages of two to four different varieties. The revised budget still assumes that six weeks harvest is possible. Plantings for the shipping and marketing trials will use only those varieties selected out from the summer trials.

Export marketing costs have been revised. The differences are attributable to revised transportation, administrative and US handling costs. Returns per acre have tripled for the revised budget as compared to the original. The increase in returns is due primarily to reductions in marketing cost estimates rather than to increases in technical efficiency.

Grower settlements for the cucumber trials

Grower settlements/payments for the summer cucumber trials were calculated based on the protocol. From sales revenue, BABCO took out its expenses, then the grower took out his and received the profits, if there were any. The calculated settlements reflect what the trials really did cost. Based on actual sales, the only trial that recouped its cost and made a profit was CUC0187. The sales revenue for the other cucumber trials did not cover their expenses. The actual settlement that was made with the farmer was based mainly on the protocol, but it assumed that all exportable quality cucumbers were sold at the existing average local sales prices. This is why CUC0387 made a small profit. The differences in the calculated and actual grower settlements/payments were as follows:

Trial	Protocol Calculation	Actual Settlement
CUC0187	$ 90.38	$ 90.38
CUC0287	($ 192.97)	0
CUC0387	($ 107.45)	$ 96.74
CUC0487	($ 35.63)	0

INTSOY TRIP REPORT:

From August 24 - 26, Jack Bachofer and Anil Sinha visited the International Soybean Program (INTSOY) at the University of Illinois (UOI) at Urbana-Champaign. The objective of the trip was to preliminarily identify soybean extraction and processing equipment that may be applicable for CARDI's development work on import-substitution crops for the Commercialization of Alternative Crops Project.

The main trip observations are as follows: The solvent extraction process is not economic for Belize under any forseeable conditions in the future. The extrusion and expelling process may be economic for Belize depending on CARDI's development program and the need to derive oil for domestic cooking purposes. The INSTA-PRO extrusion process is a logical next step for processing in Belize after first exhausting the roasting alternative. UOI research indicates that some roasters can maintain a recommended temperature range satisfactory to inactivate the trypsin inhibitor without destroying important nutritional components such as protein.

CARDI should evaluate the production results of the June soybean plantings as soon as harvest is completed in early November. Based on the technical trial results, and depending on the financial costs and returns, an updated development program should be specified for oilseed crops in terms of acreages, timing, and yields for the next three years. At this time there is no formal financial analysis to justify any capital investment for soybean processing.

CFCS/CAES JOINT PROGRAM IN ANTIGUA: CROP DIVERSIFICATION

From August 23 - 28, Azucena Quan attended a joint meeting of the Caribbean Food Crops Society and the Caribbean Agro-Economic Society in Antigua. The theme of the program was Crop Diversification: New Horizons For Agricultural Development. Details of the papers presented during the conference will be filed in the BABCO library. Besides attending the joint meeting, Azucena made a presentation on Belize's diversification experiences to date. The paper was titled "Agricultural Crop Diversification In Belize". The main sections of the presentation were as follows:

"Belize has a narrow range of traditional export crops-namely sugarcane, citrus and bananas. The Belizean economy is highly dependent on foreign exchange earnings from sugar. The cutbacks in the US preferential quota and the deterioration in the price for sugar on the international market have resulted in sugar's contribution to export earnings declining steadily from 60% in 1978 to only 43% in 1986. Given the need to reduce the economy's dependency on one export commodity, a Commercialization of Alternative Crops Project (CAC) was initiated in June, 1986 by the Ministry of Agriculture with funding provided by the United States Agency for International Development. The Belize Agri-Business Company (BABCO) is the nonprofit organisation responsible for administering the CAC Project until June, 1990. BABCO's agricultural crop diversification strategy has both

export oriented and import substitution components.

BABCO's approach has been to start with the market linkage. American packers/shippers were subcontracted to grow selected crops which they marketed and which they thought had potential. These subcontractors were to provide fieldmen to develop the production technology for these crops. The first phase of work was research and development on the crops. Once the technical package was refined, shipping and marketing trials would be done on semi-commercial acreages. The final phase would be commercialisation. The project focuses on the financial feasibility of the crops.

BABCO is conducting all crop production work through on-farm trials to facilitate the transfer of technology from the project to the target group of farmers. These crop trials are managed by farmers following technical recommendations from project personnel. The project provided the capital equipment and agri-chemical inputs required for the trials. For the second round of crops for the US winter market, marketing and shipping trials will be done for squash, cucumber and papayas. Research and development will continue on snapbean, pickled cucumber, melons, hot pepper, orchard crops and the grains and oilseeds.

Several difficulties were experienced in the first round of trials, mostly related to basic agronomic problems (ie. suitable water availability and quality for irrigation during the dry winter season) and socio-economic considerations (ie. the labor requirements for many diversified crops peaked during the harvesting season for sugarcane resulting in competition for scarce labor resources). Many of the operational difficulties experienced by BABCO in the first year of diversified crop trials are not uncommon, and have highlighted several important factors. Crop diversification is a multidisciplinary approach, requiring adequate institutional support as well as appropriate government policies to enable farmers to respond to favorable market opportunities.

The importance of establishing linkages between the producers and the marketer is essential. However, although the market linkage is important, the production technology for the crop is essential. In BABCO, the market links were established. However, the production technology was not satisfactorily developed in the first year of on-farm trials. A successful commercial operation requires adequate crop production and market technology.

Understanding farmer attitudes, their constraints, the farming system and how commercialisation fits into their context are critical considerations to maximize successful farmer participation. Changing a cropping pattern may also entail changes in the farmer's social lifestyle. Moving from a relatively labour extensive crop like sugarcane to labour intensive, high risk crops like vegetables require long-term attitudinal and socio-economic adjustments by the farmer.

The exchange of information on work being done in agricultural diversification in regional countries can facilitate the process by avoiding duplication of efforts and concentrating scarce resources in other aspects."

Attachment 1

YEAR 2- 1987/1988: BELIZE CAC 1 PROJECT

SCHEDULED ACTIVITIES:	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
2. Continuing Project Management Activities												
Prepare Second Annual Work Plan	TM											
Contractor Quarterly Reports			TM			TM			TM			TM
Annual Report												TM
3. Export Crops												
Phase 1B:												
On-Farm Trials												
Papayas	TM	TM	TM	TM								
Marketing Trials												
Papayas					AGE	AGE	AGE	AGE				
Second Year On-Farm Trials			TM	TM	TM	TM	TM	TM				
Second Year Marketing Trials							AGE	AGE	AGE	AGE	AGE	
Phase II: Production and Marketing												
Planning for Production & Marketing Campaign	TM											
Develop & Negotiate Production Contracts with Farmers and/or Producers' Associations		TM	TM									
Commercial Production of Export Crops by Farmers Assisted by F/V				TM	TM	TM	TM	TM				
Commercial Marketing								AGE	AGE	AGE	AGE	
Report on Commercial Production & Marketing- First Cycle												TM
4. Domestic and Import Substitution Crops												
Phase 1A:												
On-Farm Trials												
Interim Report on First Year	AGE											
Full Report on First Year Rotation				TM	TM							
Possible Revisions in Second Annual Workplan Resulting from Completion of Trials					TM							
Reports & Recommendations- Winter Season									AGE			
Phase 1B:												
Research and Development of Processing and Marketing												
Conduct Processing and Marketing Trials (after each harvest)	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
Phase II: Implementation												
Work with Farmers on Production				TM	TM	TM	TM	TM				TM
Promote Processing Units	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
5. Support Activites												
a. Institution Building												
BABCO	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
Extension Service	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
Producers' Associations	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
b. Procurement and Construction												
Prepare procurement plan as part of 2nd annual work plan	TM	TM										
d. Market Information System												
Operate System	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
e. Training												
On-the-Job Training	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM

Attachment 2

Project No.	Participating BAECO Grower: Name	Participating BAECO Grower: Location	Acct Code: old	Acct Code: new	Data Summarization Activity: Last Date of Input Data	Date Received	Date Completed	Date Returned
CUC01B7B	Perez, D.	O/Walk, Tower Hill	x		completed	15-Sep	15-Sep	15-Sep
CUC02B7	Leiva, R.	O/Walk, Guinea Grass	x		completed	15-Sep	15-Sep	15-Sep
CUC03B7	Carrillo, T.	O/Walk, San Lazaro	x		completed	15-Sep	15-Sep	15-Sep
CUC04B7	Carrillo, J.	O/Walk, San Lazaro	x		completed	14-Sep	15-Sep	15-Sep
CUC05B7	Duene,	O/Walk, Trinidad	x		24-Sep-87	06-Oct	08-Oct	08-Oct
NUFRAPB7		O/Walk, Yo Creek		x	01-Jul-87	29-Sep	29-Sep	30-Sep
XAIBEBAB	NSGC Coop	Corozal, Xaibe		x	28-Aug-87	29-Sep	29-Sep	30-Sep
OVGMOBAB	OVGMO Coop	Corozal		x	not yet			
PAP01B7	Rivera, R.	O/Walk, Indian Churc		x	16-Sep-87	29-Sep	29-Sep	30-Sep
PAP02B7	Carillo, A.	O/Walk, San Lazaro		x	20-Aug-87	29-Sep	29-Sep	30-Sep
PAP03B7	Blanco, T.	O/Walk, Yo Creek		x	29-Aug-87	29-Sep	29-Sep	30-Sep
PAP04B7	Peraza, F.	O/Walk, San Antonio		x	12-Sep-87	29-Sep	29-Sep	30-Sep
PAP05B7	Hassan, B.	O/Walk, Tower Hill		x	17-Sep-87	29-Sep	29-Sep	30-Sep
PAP06B7	Esquivel	Corozal		x	31-Jul-87	29-Sep	29-Sep	30-Sep
MAN01B7	Rivera, R.	O/Walk, Indian Churc		x	20-Jul-87	29-Sep	29-Sep	30-Sep
MAN02B7	Carillo, A.	O/Walk, San Lazaro		x	06-Aug-87	29-Sep	29-Sep	30-Sep
MAN03B7	Blanco, T.	O/Walk, Yo Creek		x	02-Sep-87	06-Oct	08-Oct	08-Oct
MAN04B7	Peraza, F.	O/Walk, San Antonio		x	13-Sep-87	29-Sep	29-Sep	30-Sep
MAN05B7	Verde, R.	Corozal, Sarteneja		x	23-Sep-87	29-Sep	29-Sep	30-Sep
MAN06B7	Esquivel	Corozal		x	01-Sep-87	29-Sep	29-Sep	30-Sep
MAN07B7	Vasquez	Corozal, Paraiso		x	19-Jun-87	29-Sep	29-Sep	30-Sep
MAN08B7	Sosa, H.	Corozal, Chan Pine		x	31-Aug-87	29-Sep	29-Sep	30-Sep
PAS01B7	Carillo, A.	O/Walk, San Lazaro		x	20-Aug-87	29-Sep	29-Sep	30-Sep
PAS02B7	Hassan, B.	O/Walk, Tower Hill		x	18-Sep-87	29-Sep	29-Sep	30-Sep
PAS03B7	Esquivel	Corozal		x	03-Sep-87	29-Sep	29-Sep	30-Sep
PIN01B7	Vasquez	Corozal, Paraiso		x	08-Sep-87	29-Sep	29-Sep	30-Sep
PIN02B7	Esquivel	Corozal		x	02-Sep-87	29-Sep	29-Sep	30-Sep
STAR01B7	Esquivel	Corozal		x	05-Sep-87	29-Sep	29-Sep	30-Sep
STAR02B7	Carillo, A.	O/Walk, San Lazaro		x	not yet			
STAR03B7	Blanco, T.	O/Walk, Yo Creek		x	11-Aug-87	29-Sep	29-Sep	30-Sep
SDYA01B7	Chan, C.	Corozal, Consejo		x	04-Sep-87	02-Oct	05-Oct	06-Oct
SDYA02B7	Sosa, H.	Corozal, Chan Chen		x	25-Sep-87	02-Oct	05-Oct	06-Oct
SDYA03B7	Chan, F.	Corozal, Christo Rey		x	14-Aug-87	02-Oct	05-Oct	06-Oct
SDYA04B7	Tun, A.	Corozal, San Narciso		x	22-Sep-87	02-Oct	05-Oct	06-Oct
SDYA05B7	Cardenas, S.	O/Walk, Douglas		x	25-Sep-87	02-Oct	05-Oct	06-Oct
SDYA06B7	Yupit, A.	Corozal, San Narciso		x	28-Sep-87	02-Oct	05-Oct	06-Oct
SDYA07B7	Chi, Bartolo	O/Walk, San Luis		x	02-Sep-87	02-Oct	05-Oct	06-Oct
SDYA08B7	Pech,S.	O/Walk, Yo Creek		x	18-Sep-87	02-Oct	05-Oct	06-Oct
SDYA09B7	Medina, A.	O/Walk, August Pine		x	17-Jun-87	02-Oct	05-Oct	06-Oct
SDYA10B7	Rembel, J.	O/Walk, Blue Creek		x	01-Sep-87	02-Oct	05-Oct	06-Oct
SDYA11B7	Puga, E.	Cayo		x	21-Aug-87	02-Oct	05-Oct	06-Oct
SDYA12B7	Obando, L.	Cayo		x	27-Aug-87	02-Oct	05-Oct	06-Oct
SDYA13B7	Tun, M.	Cayo		x	05-Aug-87	02-Oct	05-Oct	06-Oct
SDYA14B7	Sanchez, S.	Cayo		x	14-Aug-87	02-Oct	05-Oct	06-Oct
SDYA15B7	Cook, R.	Cayo		x	27-Aug-87	02-Oct	05-Oct	06-Oct
SDYA16B7	Tun, A.	Corozal, San Narciso		x	19-Aug-87	02-Oct	05-Oct	06-Oct
SDYA17B7	Tun, A.	Corozal, San Narciso		x	19-Aug-87	02-Oct	05-Oct	06-Oct
SDD01B7	Carillo, A.	O/Walk, San Lazaro		x	not yet			

Attachment 3

Project No.	BABCO Grower	Trial No. Acres	Season-to-Date Status: Field Costs/Trial	Season-to-Date Status: Field Costs/Acre
CUC0187	Perez, D.	0.11	$360.68	$3,278.90
CUC0287	Leiva, R.	0.11	$293.38	$2,667.08
CUC0387	Carrillo, T.	0.11	$307.44	$2,794.90
CUC0487	Carrillo, J.	0.05	$127.93	$2,558.91
CUC0587	Quema,	0.05	data input to be reviewed	
KURPAP87		1.00	$994.98	$994.98
XAIBEBAB	NBBC Coop	2.00	$7,605.26	$3,802.63
CVBMCBAB	CVBMC Coop	2.00	no data input yet	
PAP0187	Rivera, R.	0.50	$675.56	$1,351.12
PAP0287	Carillo, A.	0.28	$556.23	$1,986.54
PAP0387	Blanco, T.	0.50	$939.01	$1,678.02
PAP0487	Peraza, F.	1.00	$1,798.71	$1,798.71
PAP0587	Hassan, B.	0.31	$573.32	$1,849.43
PAP0687	Esquivel	0.50	$80.07	$160.14
MAN0187	Rivera, R.	0.76	$410.52	$540.16
MAN0287	Carillo, A.	1.13	$701.59	$620.88
MAN0387	Blanco, T.	1.13	$735.92	$651.26
MAN0487	Peraza, F.	1.03	$845.82	$821.18
MAN0587	Verde, R.	0.86	$469.22	$548.62
MAN0687	Esquivel	1.00	$630.27	$630.27
MAN0787	Vasquez	1.00	$533.76	$533.76
MAN0887	Sosa, H.	1.00	$724.28	$724.28
PAS0187	Carillo, A.	0.38	$3,118.49	$8,206.55
PAS0287	Hassan, B.	0.25	$2,658.93	$10,635.70
PAS0387	Esquivel	0.25	$1,010.59	$4,042.38
PIN0187	Vasquez	0.40	$1,849.60	$4,623.99
PIN0287	Esquivel	0.09	$400.89	$4,230.60
STAR0187	Esquivel	0.11	$54.12	$492.00
STAR0287	Carillo, A.	0.11	not initiated yet	
STAR0387	Blanco, T.	0.11	$77.30	$702.73
SOYA0187	Chan, C.	0.60	$192.29	$320.48
SOYA0287	Sosa, H.	1.00	$442.76	$442.76
SOYA0387	Chan, P.	1.00	$307.74	$307.74
SOYA0487	Tun, A.	0.50	$173.43	$346.86
SOYA0587	Cardenas, S.	0.50	$278.11	$556.23
SOYA0687	Yupit, A.	0.50	$200.71	$401.42
SOYA0787	Chi, Bartolo	1.00	$477.79	$477.79
SOYA0887	Pech,G.	1.00	$411.28	$411.28
SOYA0987	Medina, A.	0.50	$127.00	$253.99
SOYA1087	Rembel, J.	1.00	$294.48	$294.48
SOYA1187	Puga, E.	1.00	$354.22	$354.22
SOYA1287	Obando, L.	0.50	$193.97	$387.93
SOYA1387	Tun, M.	0.50	$143.26	$286.53
SOYA1487	Sanchez, S.	0.50	$187.90	$375.81
SOYA1587	Cott, P.	0.50	$179.68	$359.36
SOYA1687	Tun, A.	0.30	$138.72	$462.40
SOYA1787	Tun, A.	0.25	$397.93	$1,591.72
SEC0187	Carillo, A.	0.50	no data input yet	

Attachment 4

	1987-88 ORIGINAL BUDGET ASSUMPTIONS						1987-88 REVISED BUDGET ASSUMPTIONS					
	Total Labor (MH)	Preharvest Costs/acre ($)	Net Yield (# units)	Cost/unit ($)	Sales Price ($)	Return/acre ($)	Total Labor (MH)	Preharvest Costs/acre ($)	Net Yield (# units)	Cost/unit ($)	Sales Price ($)	Return/acre ($)
WINTER/SHORT SEASON FRUITS AND VEGETABLES, HYBRID GRAIN SEED, COMMERCIAL GRAIN & OILSEEDS:												
Beans, Snap (30 #/ctn)	281	$1,192	333	$21.89	$28.20	$2,186			no revised budget prepared			
Cantaloupe (40 #/ctn)	366	$1,471	500	$25.23	$37.60	$6,186			no revised budget prepared			
Corn, Hybrid Seed (/lb.)	13	$603	3,000	$0.50	$0.17	($993)	64	$573	2,000	$0.73	$1.[illegible]	$0.[illegible]
Sweet (42 #/ctn)	134	$1,168	286	$23.71	$21.20	($774)			no revised budget prepared			
Cucumber, Dill (25 #/ctn)	273	$2,125	216	$36.01	$35.00	($220)			no revised budget prepared			
Slice (55 #/ctn)	213	$2,125	600	$27.67	$30.00	$1,399	361	$1,979	600	$24.46	$57.00	$5,[illegible]
Eggplant (33 #/ctn)	405	$1,555	758	$18.66	$19.80	$865			no revised budget prepared			
Pepper, Bell (28 #/ctn)	359	$1,657	714	$19.84	$31.36	$8,228			no revised budget prepared			
Hot (20 #/ctn)	359	$1,657	300	$21.98	$33.00	$3,305			no revised budget prepared			
Sesame (/lb.)	136	$231	1,520	$0.33	$0.55	$331			no revised budget prepared			
Sorghum, Hybrid Seed (/lb.)	69	$567	2,000	$0.74	$1.45	$1,411	54	$567	2,000	$0.73	$1.55	$1,[illegible]
Commercial Grain (/lb)	28	$232	3,000	$0.15	$0.17	$71	46	$209	2,000	$0.[illegible]	$0.17	($[illegible])
Soybean (/lb.	10	$385	2,000	$0.25	$0.30	$104			no revised budget prepared			
Squash, Zucchini (26 #/ctn)	265	$1,068	1,154	$15.86	$23.40	$8,701	265	$1,110	284	$18.59	$23.40	$1,[illegible]
ORCHARD CROPS:												
Carambola (10 #/ctn)			no original budget prepared						no original/revised budget prepared			
Lychee (10 #/ctn)			no original budget prepared						no original/revised budget prepared			
Mango (10 #/ctn)			no original budget prepared						no original/revised budget prepared			
Mangosteen (10 #/ctn)			no original budget prepared						no original/revised budget prepared			
Papaya (10 #/ctn)	3,160	$11,266	4,500	$11.73	$14.00	$11,694	2,884	$11,403	4,000	$10.[illegible]	$14.[illegible]	$[illegible]
Passion Fruit (10 #/ctn)			no original budget prepared						no original/revised budget prepared			
Pineapples (Sweet 48 #/ctn)			no original budget prepared						no original/revised budget prepared			

NOTE: Returns Area are consolidated; grower and marketing profit shares are not separated

Attachment 5

CUCUMBER COSTS-OF-PRODUCTION PER ACRE (B$)

LABOUR USE (MANHOURS)	ORIGINAL BUDGET	1987 SUMMER TRIALS CUC0187	CUC0287	CUC0387	CUC0487	AVERAGE	REVISED BUDGET
Land prep	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plant/reseed	8.0	7.0	17.0	27.0	12.0	15.8	8.0
Thin	16.0	9.0	5.0	6.0	12.0	8.0	4.0
Trellising	64.0	246.0	306.0	100.0	234.6	222.2	118.0
Weed	24.0	300.0	77.0	5.0	182.4	141.1	67.0
Fertilize	0.0	8.0	1.0	9.0	20.4	9.6	5.0
Irrigate	16.0	0.0	0.0	136.0	0.0	34.0	34.0
Pest Control	24.0	12.0	8.0	14.0	19.4	13.4	7.5
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Preharvest labour	152.0	582.0	416.0	297.0	480.8	444.0	243.5
Harvest	61.0	188.0	211.0	194.0	111.2	176.1	117.0
Labor Total	213.0	770.0	627.0	491.0	592.0	620.0	360.5
COSTS/ACRE							
Preharvest labor	$285.00	$1,091.25	$780.00	$556.88	$901.50	$832.41	$456.56
Land prep/Seed	$202.50	$413.35	$343.33	$315.48	$576.89	$412.26	$210.02
Trellis	$619.69	$280.00	$175.30	$233.64	$243.30	$233.06	$233.34
Fertilizer	$192.01	$183.96	$105.67	$256.10	$117.83	$165.89	$302.50
Irrigation	$336.17	$648.51	$505.78	$742.18	$132.91	$507.35	$397.96
Pest control	$278.90	$170.40	$53.41	$71.89	$192.85	$122.14	$236.66
Other	$208.00	$24.19	$17.42	$3.39	$0.00	$11.25	$141.50
Preharvest costs	$2,122.27	$2,811.66	$1,980.91	$2,179.56	$2,165.28	$2,284.35	$1,978.54
PER CARTON COST							
Cartons/acre (55lbs)	600	423	261	439	318	360.3	600
Preharvest costs	$3.54	$6.65	$7.59	$4.96	$6.81	$6.34	$3.30
Pick & Pack	$4.65	$5.09	$5.92	$5.08	$4.99	$5.27	$4.56
Transportation	$12.93	$12.10	$12.10	$12.10	$12.10	$12.10	$12.10
US Marketing	$6.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00
Management & Admin	$0.55	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50
PRODUCT COST/CTN	$27.67	$28.34	$30.11	$26.64	$28.40	$28.21	$24.46
RETURNS/ACRE							
New York Price	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00
Gross sales	$18,000.00	$12,690.00	$7,830.00	$13,170.00	$9,540.00	$10,807.50	$18,000.00
Prod. costs/acre	$16,600.27	$11,986.53	$7,858.63	$11,697.08	$9,030.90	$10,163.02	$14,674.54
RETURNS/ACRE	$1,399.73	$703.47	($28.63)	$1,472.92	$509.10	$644.48	$3,325.46