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PROEXAG

P R O E X A G
NON-TRADITIONAL AGRICULTURAL EXPORT SUPPORT PROJECT

**OBSERVATIONS ON
PESTICIDE USAGE IN GUATEMALA**

Assignment Number: ST/89-32

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SUBMITTED TO:

Regional Office for Central America and Panama (ROCAP)
U.S. Agency for International Development
Guatemala City, Guatemala

SUBMITTED BY:

Mario R. Contreras

through

Chemonics International Consulting Division
2000 M Street, Northwest
Suite 200
Washington, D.C. 20036

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TRIP REPORT

Mario Contreras, Agricultural Consultant

I. PLACES AND DATES

From July 9 to 22, 1989: Guatemala City, San Juan Sacatepéquez, Chimaltenango, Escuintla and Antigua Guatemala.

II. PERSONS CONTACTED

1. Miguel Bestarrechea, Production Manager, Planterra Farms, Chimaltenango
2. Rafael Castañeda, General Manager, La Meseta, S.A., San Lucas Sacatepéquez
3. Filiberto Escobar, General Manager, INEXA, Chimaltenango
4. Fernando González, Owner/General Manager, Finca Magdalena, Escuintla
5. Teodoro Elsaesser, Owner/Manager, Lico Products, Antigua
6. Ricardo Zachrisson, Owner/Manager, Country Fresh Products, Chimaltenango
7. Carlos Méndez, Manager, GREPAGRO, Guatemala
8. Miguel Canga-Arguelles, Rector, Universidad del Valle, Guatemala
9. Charles McVean, Entomologist/Research Coordinator, Universidad del Valle, Guatemala
10. George Gerstenberg, District Director, FDA, Los Angeles, USA
11. Harvey Hundley, Laboratory Director, FDA, Los Angeles, USA
12. Visits to Pesticide Suppliers in Guatemala City
13. Seminar on Pesticide Regulations by FDA Delegation at GREMIAL, July 17, 1989

III. PURPOSE OF TRAVEL

- 1) Review and discuss PROEXAG Project files with team members concerned with the pesticide issue.
- 2) Review and discuss the latest draft of PROEXAG's Regional Strategy for Achieving Appropriate Agrochemical Usage.
- 3) Participate in meetings held between the representatives of FDA'S Los Angeles District Office and ROCAP, PROEXAG, GREPAGRO, the Gremial de Exportadores, Universidad del Valle, Sanidad Vegetal, and selected growers and grower/shippers.
- 4) Accompany the FDA delegation on visits to selected Guatemalan labs such as ICAITI, LUCAM, etc.
- 5) Accompany the FDA delegation on field visits to selected farms.
- 6) Review and critique the terms of reference and research proposals relating to pesticide use in snowpeas.
- 7) Review and critique studies already done in Guatemala on the use of agrochemicals in export-oriented non-traditional crops.
- 8) Present verbal observations on all of the above the PROEXAG team members and ROCAP officials, as appropriate.
- 9) Write up a summary trip report.

IV. TECHNICAL REPORT

This report is based on a review of documents, discussions with numerous persons participating directly in the NTAE crops industry (See Annex 3) and my observations on the issue.

As a general statement, the overall situation relating to pesticide use in Guatemala is one of concern and intent to improve. Those involved in the NTAE industry, from wholesale pesticide suppliers to producers and packers, seem much aware of the challenge posed by increasing restrictions and enforcement of present regulations by the US agencies as well as, the need to comply with them by adopting better crop and pesticide management practices. Lack of readily available updated information on appropriate pesticides and tolerances appears as a weakness to overcome. Similarly, the availability of appropriate technologies for pest management in selected crops, i.e. snowpeas, is a demand still to be satisfied which limits the industry.

A description of meetings and field visits follows with specific reference to pests and pesticides use.

1. **Field Visit to La Meseta Farm, San Lucas Sacatepéquez**
General Manager: Ing. Rafael Castañeda

This is a large production, packing and shipping operation that exports several products to the US under the Highlands Fresh label. In addition to celery and other vegetable crops for export, they produce avocados and Persian lime for the domestic market.

The farm visited presents sound soil management practices, i.e. terracing and contour plantings. The farm keeps good records on pesticides. Control of application decisions is centralized at the level of a General Production Manager. He decides on the general program and when to apply on the basis of insect and disease surveys. The records are kept by field, pest/disease problem, dosage, equipment and labor used, etc.

One aspect that could be improved is the storage and disposal of pesticides and containers. Their storage place lacks adequate ventilation for human safety, although it is well secured with locks. The pesticides are stored on shelves regardless of type, i.e. insecticides, fungicides, etc., or crop, i.e. broccoli, avocados, etc. Moreover, there were containers with old unused products, including a 55 gallon drum with methyl parathion. Even though these products were used appropriately, at first impression they give the appearance of potential misuse by mistake or other reasons. Other than this, the farm managers are well informed about pesticide regulations and tolerances for their crops. They also expressed their interest in the issue and willingness to improve whatever deficiency they became aware of.

2. **Field visit to "Country Fresh" Farm Operations**
Owner/Manager: Ing. Ricardo Zachrisson

This is a small snowpea production and packing operation, that produces on about 25 acres of rented land. It has a modest but adequate packing facility, with washing and cooling facilities. The field visited presented adequate soil conservation practices. Rented land is used for 2-3 seasons and then the production is moved elsewhere, as pest problems become more evident.

Two matters of interest can be pointed out. One is the lack of destruction (plowing into the soil, composting, burning, etc.) of the snowpea debris from the previous season. The debris observed harbored readily visible reproductive and resistant fungal structures, very likely from *Ascochyta* spp and Powdery mildew pathogens. This builds up the inoculum potential for diseases into the new cropping season tremendously. It may contribute significantly to the reportedly increasing problems with the *Ascochyta* fungus.

The other aspect is the large and extensive use of wooden poles to support the crop. My estimate is about 300,000 poles for the whole of Guatemala, over a two year cropping period. The price of these poles (bamboo) has trebled to about Q0.90 each over the last few years. The planting and use of fast growing tree species could prove profitable and desirable for all concerned.

The "Country Fresh" operation also has the distinction of having requested and been granted an exemption from the automatic detention imposed on Guatemalan snowpeas this past season, after they were able to demonstrate compliance with EPA regulations and tolerances.

3. **Field visit to Planterra Farms, Chimaltenango**
General Production Manager: Ing. Miguel Bestarrachea

This is a large production and packing operation. Their program for pest/pesticide management is centralized under the General Production Manager. Once the decision for application is made, the selected pesticide is sent to the specific farm under a code; thus precluding independent decisions by farm managers or operators on what to apply. No pesticides are kept at field sites or farms. The farm manager does not have the authority to purchase or apply products independently.

One suggestion made to them was to check the pH of water used to apply pesticides. Alkaline water (7.5-8.0) can reduce the active ingredient potency of a pesticide mixture very quickly. This leads to the erroneous assumption that the product does not work or, that the pests have become resistant to the pesticide.

4. **Field visit to Magdalena Farms, Escuintla**
Owner/Manager: Ing. Fernando González

The farm visited is part of a large agricultural enterprise comprising 9 farms and also engaged in sugar cane, coffee and cattle production. They began a diversification effort by planting macadamia (already bearing), soybean and asparagus. The zone has abundant rainfall during half of the year (June–November); the other half requires irrigation. The soil is a sandy loam with excellent permeability. Contour planting is practiced in the farm.

They have about 40 acres under asparagus cultivation, will be planting an additional 90 acres and have a goal of 200 acres for the immediate future. About 1000 boxes were exported with good market results last season. Their packing plant will have a capacity enough to handle the produce of 400–500 acres when complete. The farm has 3 million seedlings for crop expansion and is engaged in promotion of the crop with neighbors. It is the largest single asparagus operation in the region.

Production operations are managed by 3 agronomists, with practical knowledge of the crop. The pest/pesticide management is decided according to information obtained from an affiliated California company, PROEXAG advice and publications and standard references. The group has a good theoretical grasp of IPM practices and seem to be applying it. The size of the operation, however, poses a special challenge in terms of pest/pesticide management and crop productivity.

They are confronting two plant protection difficulties at present: weed control and cutworms ("night-cutters"), i.e. Agrotis sp or Prodenia spp. Weed control is addressed through the application of registered herbicides, machinery adapted for asparagus cultivation, manual labor and regulating plant densities. Cutworms affect the crop at harvest. Their strategy is to control the adult and larvae before these migrate to the soil. Once the larvae are in the soil, they are basically protected from insecticides and predators. Insecticide baits have been tried with limited success. They also use light traps and biological insecticides, i.e. Bacillus thuringiensis. There is damage by Cercospora and a Fusarium die-back. Biological control seems active in the plantation, as evidenced by larvae commonly found parasitized by fungi and the presence of beneficial insects in the crop.

The following suggestions were made during the visit:

- a) Close monitoring of the "night-cutter" population, through field surveys carried out at night which may lead to delineation of problem areas, as well as better understanding of the behavior of the pest. This could guide their control program effectively.
- b) In addition to pesticide residue monitoring of their export product, it may also prove useful to obtain and keep information on record for soil pesticide residues, i.e. herbicides and soil fumigants.

- c) It is possible that high rainfall and irrigation, combined with high soil permeability and continued removal of organic matter from the crop (pruning), may be conducive to minor element deficiencies in the future.
- d) Given the ecological conditions in the area, it is advisable to monitor closely fungal diseases and develop through trials, the necessary chemical treatments and varietal resistance programs to control them. Otherwise, plant diseases may prove limiting in the near future.

One final observation on this operation is their commendable effort in running experimental trials on varieties, weed control and harvesting practices. NTAE crops in Guatemala require more of this.

5. **Field visit to INEXA Farms, Chimaltenango**
Manager: Ing. Filiberto Escobar

This is a large production and packing operation that exported to the US about 8 million pounds of frozen broccoli, 3 million of snowpeas, 3 million of melon balls and about 0.5 million of sugar snaps this past year. Their "Jade" product is sold to about 10 different food companies in the US, i.e. General Foods, Stauffers, etc.

INEXA has a good track record with its products. To this effect, they enforce a contract on their producers, whereby these are subject to following very specific pest control/pesticide use programs. Such producers also are liable for any cost resulting from product refusal in the US resulting from pesticide misuse. Samples are kept from producers until final distribution in the US. The producers affiliated to INEXA receive technical assistance, with the production program and pesticide use spelled out in the contract, i.e. pesticides to use, tolerances, preharvest interval, etc. Moreover, the US food companies monitor INEXA products for pesticide residues systematically.

INEXA keeps adequate references for pesticide use; as with most snowpea producers, however, they misinterpreted the compounding nature of EBDC tolerance levels for snowpeas. In addition, INEXA has run production and pesticide residue analyses in broccoli, designed to measure the residue levels at different stages of crop growth and the packing process. The results (LUCAM) show that field and fresh product residues fall much below tolerance levels, after washing and blanching of the product. This type of information, if obtained for different products in Guatemala can provide an excellent reference base, for continued good relations with the US market and regulatory agencies, i.e. FDA, EPA.

6. Field visit to Lico Products, Antigua
Owner/Manager: Ted Elsaesser

This is a small but intensive operation for production and packing of different gourmet specialties. About 20 acres are farmed directly and some 60-80 small farmers are provided with seed, technical know-how and, in some cases, agricultural chemicals for the same purpose. Baby vegetables are packed almost daily and sent airfreight to Miami for distribution to the US. Lico Products buys from its farmers at a fixed price through the season, regardless of market fluctuations in price. One outstanding feature of its farm is the text-book soil management and conservation practices applied. The farm illustrates sustained agricultural production at its best.

Given the nature of his products, Mr. Elsaesser avoids application of pesticides during harvest. This is made possible by careful attention given to pest and disease control, with registered products, during the vegetative phase of the crops and the intensive harvesting of newly formed fruit. Crop rotation and avoidance for the most part of the rainy season also contribute to its high marketable yields. All in all, this is an outstanding farming and export operation.

In addition to the field visits reported above, discussions were held with two important groups relating to the export and pesticide issue.

- A) Meeting with GREPAGRO (Gremial de Proveedores de Agroquímicos),
Guatemala City
President: Mr. Rolando Amado
Manager: Mr. Carlos Méndez

This guild was organized in 1964 and comprises 26 companies (11 national, 15 international) engaged in formulation, repacking and selling of different agricultural chemicals. It is affiliated with to the International Association of Agricultural Chemical Producers (GIFAP), with headquarters in Brussels and founded in 1960. GIFAP represents over 90% of the total world agricultural chemical output, through affiliation of about 950 companies.

GREPAGRO is interested in promoting the safe and appropriate use of pesticides, because its members realize that this assures them of a more secure business over the long-term. They are pursuing four specific objectives:

- A.1) The application of the FAO Code of Conduct for pesticide use, which is becoming the industry standard.
- A.2) The promotion of GREPAGRO's own code
- A.3) The regulation of pesticide distribution and use, and
- A.4) Industry representation

Among some accomplishments, they have reduced the level of repacking in Guatemala from about 81% in 1985 to 46% in 1988. They also have improved substantially the labeling and introduced to the market appropriate pesticide containers for small production operations, i.e. smaller, well-labeled packages. GREPAGRO has developed visual aids and other communication products aimed at promoting the safe use of pesticides. A specific issue of interest to them is the safe disposal of containers and old products.

GREPAGRO expressed interest in collaborating and strengthening relations with all private and public groups associated with pesticide use. They could benefit from access to information on production plans and trends on old and new crops in Guatemala. This would prepare them to better support eventual needs, i.e. registration of appropriate pesticides, training, formulation, etc.

GREPAGRO appears to be a very important actor in the whole pesticide issue in Guatemala.

- B. Meeting with FDA Delegation-Visiting Guatemala, from July 12-19, 1989
Mr. George Gerstenberg, District Inspector, Los Angeles, USA
Mr. Harvey Hundley, Laboratory Inspector, Los Angeles, USA

Both inspectors had the opportunity to see and discuss, through field and laboratory visits and meetings with different groups, issues and activities pertaining to pesticide use in NTAE crops. Very open and constructive presentations and discussions invariably arose with those interviewed, including producers, packers, pesticide dealers, laboratory technicians, etc. It soon became evident that many problems result from misinformation and misinterpretation, rather than intent to get around the regulations. It was also apparent that there is genuine interest on the part of exporters to comply fully with regulations and to avoid potential problems relating to pesticide misuse.

Both inspectors expressed their intention to collaborate with the NTAE industry in Guatemala, through training in laboratory analyses, providing written information on pesticides, and personal consultation (telephone) if required.

Their visit culminated with a 2 hour presentation at the GREMIAL by Mr. Hundley, which was attended by about 50 people interested in the issue.

This type of program would be very useful if carried out throughout the Central American region.

ANNEX 1

OBSERVATIONS ON THE REPORT "PESTICIDES USED IN FOUR
NON-TRADITIONAL CROPS IN GUATEMALA:
IMPLICATIONS FOR RESIDUES"
(Hoppin, May 1989)

INTRODUCTION:

The report portrays a crisis situation for some NTAE products from Guatemala, based on:

- Widespread misuse of pesticides
- Lack of observance of pre-harvest intervals
- Increased use of pesticides due to possible pest resistance
- Increased enforcement capability by FDA to stop illegal pesticide use.
- Decreasing availability of registered pesticides
- Perception that the Guatemalan export industry is incapable of reaching and educating the NTAE farmers, particularly small farmers, in order to improve compliance with present and future regulations.

OBSERVATIONS ON THE REPORT¹

- 1) Although a very general picture of the current NTAE products industry may, in particular cases present some of the above deficiencies, the report fails to acknowledge a significant number of producers who are turning and exporting within present regulations; thus giving a general impression of wide-spread violations and crisis. Moreover, it provides only limited and

¹These observations are based on a two week review of Guatemalan NTAE activities in the company of two FDA officers: District Inspector, George Gerstenberg and Laboratory Inspector, Harvey Hundley, Los Angeles, USA.

marginal options for sustained economic and social development of the NTAE Guatemalan small farmers; i.e. organic farming.

- 2) It is a fact that the historic record of violations detected by FDA from Guatemala, with the more recent exception of snowpeas is at a level similar to the US and other countries around the world (4%). The automatic detention of snowpeas from Guatemala (1988-89 season) resulted from detection by FDA of total carbamate (EBDC) levels above current tolerance levels. Discussions and spray records show that the Guatemalan producers had misinterpreted the regulations, using independent tolerance pesticide values for registered dithiocarbamates, as well as unregistered EBDC's and excessive amounts of both, rather than the total combined tolerance level (7 ppm). This will be corrected during the upcoming production season. FDA is pleased with the snowpea industry, disposition to comply with its regulations, and this reinforces their policy of lifting automatic attention for Guatemala snowpeas next season. There is ample potential in the Guatemalan NTAE industry to adjust and comply with present and future regulations, indeed!
- 3) The notion that increased use of pesticides may be the result of pest resistance is not well substantiated in the report. As a matter of fact, increased pesticide use may be the result of the presence of higher inoculum potential due to increased acreage, lack of crop rotation, inadequate or lack of crop debris destruction, rainfall precipitation washing off pesticides from the crops, etc. I would anticipate that crop rotation and crop debris destruction alone could reduce pesticide use substantially in the short term.
- 4) Experimental production data reviewed and supported by laboratory analyses show that pesticides residues are already much below tolerance levels when the export product is being packed (INEXA, 1989). It is interesting to note that the samples analyzed in the Hoppin study by a US laboratory showed no illegal residues. Extensive surveys and laboratory analyses carried out in Honduras on vegetable food crops (cabbage, tomatoes,

cucumbers, etc.), collected at domestic marketing outlets have consistently shown similar results (FHIA, 1988). Generally speaking, pesticide residues above tolerance levels are more the exception than the rule for NTAE produce.

- 5) While the report falls short of identifying adequate options for small farmers, it nonetheless illustrates the already perceived need by Guatemalans, to organize a sustained effort in communications, training, technical assistance, applied research and regulatory pesticide surveillance, with the purpose of incorporating small farmers to a viable and reputable NTAE industry. To those involved in plant protection for food and export crops, the pesticide issue should only represent a challenging opportunity to improve agricultural production and export potential, thereby improving economic and social conditions for the Guatemalan small farmers.

ANNEX 2

REVIEW OF PROPOSALS FOR PLANT PROTECTION RESEARCH ON SNOWPEAS

The Universidad del Valle and Corporación de Servicios Profesionales Agrícolas (CORSEPRA) both submitted proposals to the GREMIAL and Snowpeas Growers Association, to conduct adaptive research seeking integrated methods of control for insect and disease problems. While both proposals project research activities and results over a 15-24 month period, the snowpea growers face increasing and immediate problems with the control of diseases, particularly an Ascochyta spp spotting, plus more stringent restrictions on the use of pesticides.

COMPARATIVE ANALYSIS:

The Universidad del Valle proposes a more comprehensive long term approach to snowpea and other vegetable crops phytosanitary problems. While this is a commendable approach, the facts are that current snowpea problems demand a more immediate and focused approach. A priority problem is the Ascochyta spotting, which must be singled out as a production constraint to overcome in the shortest time possible. The present faculty staff do not include a resident plant pathologist, although laboratory facilities are available. It would seem that the commitment with the snowpea growers and the GREMIAL should command permanent field and laboratory attention, in order to achieve rapid results and sustained progress. Over the long run, however, Universidad del Valle offers a more permanent scientific environment which could generate, accumulate and provide guidance to the snowpea producers and the country on this and other problems.

The CORSEPRA proposal is more specifically defined to solve the snowpea disease problem. It appears to provide more opportunity for the generation of short term applicable results, however partial, for the more pressing problems of the producers. It does not commit support beyond the project scope and time

frame, which may be an important issue for the GREMIAL/Snowpea Association as they look more into the future. As is the case with most private consulting firms, the proposal is designed to provide the best and quickest results within the economic and time-frame of the project. It provides a permanent plant pathologist for the project, but does not commit a broad scientific support as Universidad del Valle appears to imply. For the more pressing purposes of the GREMIAL and snowpea growers, however, CORSEPRA appears more efficient in generating/validating technologies of immediate interest to them. Cost-wise, CORSEPRA may be less expensive than Universidad del Valle to the GREMIAL/Snowpea Growers Association in the long run.

COMMENTARY:

One effective and efficient way of setting a research strategy, such as presently demanded by the snowpea industry, is to define a theoretical technological frame for immediate application by growers. There are proven plant protection principles and practices that do not require research to be applied. There is accumulated knowledge available internationally in the management of pest/pesticides in snowpeas. The Guatemalan Snowpea growers have experience, however empirical, which provides orientation on the problem and how to address it, etc.

I would suggest that, regardless of who wins this contract, a workshop on snowpea crop protection be convened in Guatemala as soon as possible. This could be a 3-day workshop with participation of plant protection specialists, professionals involved in the issue, selected growers, etc. The goals of this workshop, in addition to reviewing and providing information on snowpea insect and disease problems, would be to develop a technological set of recommendations for growers of immediate application, i.e. this coming season, and to recommend a long term strategy for applied research in snowpeas in Guatemala. The technological set of recommendations, integrating the whole issue of pesticide regulations and tolerances for export, provides then the base for immediate communication/ extension work by the GREMIAL, GREPAGRO, Snowpea Producers Associations, etc., aimed at addressing current phytosanitary problems of this crop.

In addition, a regulatory framework should be developed soon to assure appropriate request, analysis and contract award of proposals such as the ones discussed herein. This would assure that the best interest of donors, investors and beneficiaries would be served, through effective and efficient use of technical resources and capital in Guatemala.