

**EXPORT INDUSTRY TECHNOLOGY SUPPORT PROJECT (AGRICULTURAL COMPONENT)****MONITORING NEW ZEALAND EXOTIC
CUT FLOWERS IN CENTRAL AMERICA**

Assignment Number: ST-113

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PREFACE

The nature of the assignment was to set up and monitor early trial plantings of *Sandersonia* and *Trachelium*s in Guatemala and Costa Rica. Also, more importantly, to provide technical assistance on production and postharvest handling of callas to new and intermediate level growers of the crop.

Visits were made to selected growers co-operating in new crop testing and to growers beginning commercial production of callas. A seminar was held in Costa Rica to stimulate interest from potential growers in calla production.

Acknowledgements are due to Dr Mondonedo and Mr Siliezar for their diligence in organising visits and their liaison with participating growers and local counterparts.

EXECUTIVE SUMMARY

Objectives:

- Transfer of technology on production, postharvest handling and marketing of calla flowers and tubers.
- To establish further interest in exotic flower crops in Guatemala and Costa Rica.

Procedures:

- Presentation of a technical seminar in Costa Rica.
- Visits to trial sites on growers properties.
- Supply of planting material and cultural information for calla, trachelium and sandersonia evaluations.

Observations:

(Guatemala)

- Early samples of callas had proved successful with two Guatemalan rose growers, San Sebastian and Pamputik.
- San Sebastian had difficulties with their first commercial importation of tubers and are cautiously proceeding with small material from a new source.
- Pamputik is successfully producing high quality calla flowers for export and are in the process of perfecting year-round scheduling. They are also trying to improve their quality and supply of planting stock.
- Two other major cutflower producers are testing calla planting stock for the first time.
- A propagation unit is being set up to produce planting stock under licence to New Zealand suppliers. They intend setting up a tissue culture facility and tuber production unit.

(Costa Rica)

- A new grower is testing small planting stock to assess his capabilities as a tuber grower for reselling of planting stock.
- A seminar was held in order to stimulate interest in calla production.

CONCLUSIONS:

(Guatemala and Costa Rica)

- Small tubers planted in May 1992 should be lifted in early 1993 and replanted after the 8 week rest cycle to evaluate flower productivity.
- Established producers should be given continued assistance with sourcing high quality planting stock.
- The long term success of the floriculture industry in Central America is dependent on a reliable service sector to supply planting stock, production materials, packaging, consultancy and exporting services.
- Government regulations on importations of planting stock could impede the progress of the industry.

Section I: Guatemala

A. Introduction and Background:

Under objectives of Proexag I, selected growers in the Antigua area had previously been the recipients of sample planting stock of new exotic floral crops. These included proteas, boronias, kangaroo paws and callas. Of the trial plantings established, callas came through with the highest degree of grower interest and successful performance.

The test plots were set up in 1990 and, following the successful assessment, two growers made their own importations of calla tubers from New Zealand. Both growers are currently producing main crops of roses and view callas as an alternative crop.

In light of their commercial interest in callas, a further importation of small "marble sized tubers" (MST's) was purchased by Proexag II to further stimulate interest with other flower growers under similar climatic and soil conditions.

Two other exotic crops have also been distributed for initial evaluation. They are *Sandersonia* and *Trachelium*. Growers who had already been co-operating with calla evaluations received samples of planting stock along with cultural information.

Observations, analysis and recommendations are itemized in the following subsections according to clients visited.

B. San Sebastian (Pedro Echeverria):

Following successful performance of calla planting stock supplied by Proexag in 1990 a decision was made to import "flowering size tubers" (FST's) from New Zealand. Tubers sent were a class "B" type which are divisions from field stock that have been used for previous flowering cycles. Class "A" tubers are no more than 3 growing cycles from tissue culture when purchased.

San Sebastian was not satisfied with the shipment as up to 50% of original stock was lost to soft rot disease. However, remaining tubers did grow in size and multiply, giving them a similar amount for replanting as the original number ordered. The reason for the high losses can be attributed to class "B" tubers being more susceptible to disease, production during the wet season which creates conditions conducive to infection and failure to implement cultural practices designed to reduce infection.

A system of growing tubers in a well aerated mulching material with roots contained in a normal substrate was explained to the agronomist. Good results were being achieved with a second purchase of smaller tubers (MST's) which had one growing cycle from propagation. They had been treated with gibberellic acid (GA) which had induced premature flowering. While flower stem length was short, flowering was prolific, and little disease was prevalent.

A recommendation was made to the grower to cease irrigation in November or December and lift tubers in January. A choice must then be made as to whether they wish to replant for flower production or sell the FST's and re-purchase MST's.

C. Pamputik (Antonio Peyre)

The proprietor has been working in co-operation with their importer in Miami to set up production capabilities to supply callas year round. Commercial importations in 1990 and 1991 yielded data on duration of production cycles and individual cultivar performance.

Production facilities at this rose growing property are first class and previous calla crops have proved satisfactory for the grower. Pamputik currently has 1 acre in production with a further acre being planted at the time of inspection in September. A temperature controlled tuber storage area has been installed to enable sequential plantings of single shipments. They have selected four robust cultivars with a suitable colour range for future scheduling.

One of their greatest challenges will be their ability to secure a year round source of planting stock with a known pre-history. The duration of storage and storage environment greatly effect time to flower during production.

Much time was spent in discussion looking at cultural practices, pest and disease control and postharvest treatments. At the conclusion of discussions recommendations were made regarding questions to ask of tuber suppliers, reliable sources for New Zealand bred stock, and a suitable programme for continuous production.

A possibility exists to import MST's and grow on for one cycle prior to flowering. This would reduce the initial outlay, reduce freight cost, and give more control over storage conditions prior to flower forcing.

D. Multicrop

A very large producer of roses with well equipped growing and support facilities. Samples of MST's were provided by Proexag in May, 1992 for evaluation of tuber increase and subsequent flower performance.

This was their first attempt at calla production. Some losses had occurred due to soft rot or damping off diseases. While not serious, levels were higher than experienced in other test sites. Indifference and inexperience were factors contributing to the less than optimum performance. Soil was ill prepared and lacking in adequate drainage which is essential for disease reduction. Soil fertility levels were low as no fertilizer had been applied. The grower had little knowledge of correct moisture levels desired.

A recommendation was given to increase fertility levels via liquid fertilisers similar to a standard rose feed solution. A mulch of rice hulls was suggested to keep the root zone cool and reduced frequency of irrigation would lessen the incidence of disease. A fungicidal drench to prevent pythium and phytothphora would also be an advantage. This should be carried out on a 14 day rotation. Watering should cease in November with tubers lifted in December and stored dry for 8 weeks before replanting. Re-planted tubers should be placed in a raised bed and treated with GA prior to planting.

E. Agroferns, S.A. PROEXAG II

A producer of carnations and leather leaf fern. Proexag supplied MST's of callas in May 1992 on a similar basis as those given to Multicrop. Material was being grown on in a propagation house in raised beds. There was no apparent loss from disease, however they appeared to be on the dry side.

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The agronomist was advised to increase watering and fertility until drying down. It was decided that one bed should be dried off in November and another in December to compare the effect of growing cycle duration. Once lifted tubers should receive 8 weeks rest and replanted after a treatment of GA.

F. Asesoría Técnica (Ana Lucrecia Bolaños)

Ana is currently in the process of establishing a tissue culture lab for propagation of callas. She has a keen interest in all aspects of calla culture and marketing. She attended all grower visits where possible to maximise her opportunity to learn about the crop.

Discussions were held on the pros and cons of various components of the calla industry which may be suitable for her to investigate. It was agreed that the relative small scale of her operation would be better suited to an industry support role rather than entering cutflower production with no existing physical resources. Her academic background in horticulture and her ability to research and apply technical inputs gives her a great advantage as a propagator and supplier/consultant. With obvious future expansion by Guatemalans into calla production such a support service will be essential.

Ana has since attended a training session on tissue culture at Texas A & M and she travelled to a plant propagators symposium in California. She will be importing a range of cultivars for growing on as MST's and is currently negotiating with a New Zealand company for propagation rights of their tissue cultured varieties.

XXX CONCLUSIONS:

The persistence of Pamputik in the development of calla flowers as an alternative crop demonstrates the beginning of a calla industry in Guatemala. Their production conditions and techniques are yielding a quality product. The partnership they have established with their importer has kept the project focussed on market demands.

Their success will inevitably lead others to follow, not only as rival cutflower producers, but also as members of an industry support sector. For the industry to grow propagators, consultants, suppliers and exporters will play an important role.

Opportunity not only exists for propagators to supply planting stock for cutflower production in Guatemala, but also to other countries in North, Central and South America.

Section II Costa Rica

A. Introduction and Background

During Proexag I two seminars were held on potential new exotic floral crops, one in 1989 and another in 1990. Sample material as was sent to Guatemala was also received in Costa Rica and distributed by CINDE. Protea plantings at the Alajuela Research Station survived but did not thrive under the local conditions. Initial calla samples were grown in containers at the research station, however no commercial grower can afford to establish a planting from the previous effort.

A further seminar was requested by CINDE in order to stimulate some interest from local growers. Through personal communications with Panfilo Tabora (formerly of FHIA) a grower made direct enquiries with myself to assist with the supply of calla planting stock.

The purpose of the Costa Rican visit was to evaluate samples shifted from the Research Station to a small grower, to deliver planting stock and cultural information to Highland Heliconias, and to present a half-day seminar on callas.

B. Highland Heliconias (Mike Anderson)

A US citizen living in Costa Rica who produces Heliconias at a lowland farm and intends to grow callas at a location above Cartago at approximately 4,500ft.

A quantity of MST's were purchased from New Zealand sources and delivered for immediate planting. Cultural instructions were given along with discussion on the possibility of setting up a tuber production facility.

Planting stock should be dried off in February and lifted in March. At this time a determination of tuber productivity under local conditions can be assessed. Options exist for future liaison with New Zealand propagators to grow on tuber stock for supply to new growers in Latin America or to retail bulb markets in North America.

C. Test Sites

A small grower/landholder was chosen to test production in field soil as opposed to containers as was the practice at the research station.

The growers were of a "hobby" scale but very attentive with their cultural practice. Tubers were newly planted and no assessment could be made regarding performance.

A second grower/test site was visited to view sandersonia samples grown on in containers. Stem length was short and tubers had suffered from insect damage and some soil borne disease. Cultural information on sandersonia was issued and samples of callas were presented along with cultural information.

D. Seminar at CINDE

A near identical presentation to the 1990 seminar was prepared at the request of CINDE. In attendance were potential growers, Ministry of Agriculture staff, tuber brokers from Florida and a Proexag consultant from Panama.

Handouts were prepared in Spanish as was the previous presentation in 1990. Mr Javier Siliezar performed an excellent task as translator for the 4 hour presentation. The success of the seminar must be gauged by CINDE from follow-up enquiries on callas.

XXX CONCLUSIONS:

Interest in diversification to exotic crops has not yet gained the attention of any major flower producer. This must be encouraged if the industry is to develop. Some concern was expressed about plant importation regulations. A workable understanding with officials is vital to future development of new crops.

SECTION XXX OVERALL CONCLUSIONS:

Worldwide consumption of floral products has continued to increase. Specialty and exotic flowers are gaining in popularity and receive a high price in wholesale markets. New Zealand's exports of calla flowers have increased substantially since 1986. New Zealand currently leads the world in calla production with the majority of its flowers being exported to Japan. Exports of callas to the USA have dropped from 19% in 1990 to 10% of total exports in 1992.

These minimal exports to the US market have created interest in callas yet supply is neither constant nor substantial. Central American producers are well placed to fill this demand with their production advantages i.e. ideal year-round climate and close proximity to the market place. Most production of callas in the US takes place on the West Coast and flowers are seldom distributed to the East. Miami is the obvious distribution point for Central American producers.

Guatemalan producers have proven year-round production of high quality flowers is possible. The success of the industry will depend on the securement of a reliable and constant source of planting stock. This may involve the importation of small planting stock or even propagation under licence to New Zealand suppliers. The result will be reduced freight cost, less frequent importation difficulties and control over tuber harvest times.

Expansion of the floriculture industry into exotic crops will be enhanced by a local support industry to supply planting stock. Import restrictions in many Central American countries create difficulties for regular supply from countries with breeding and new crop programmes. Local propagation of plug grown seedlings, cuttings and bulbs with agreement with overseas supplies is highly recommended.

Future PROEXAG II involvement should now focus on identifying opportunities for these supporting operations and assisting with the procurement of mutually beneficial arrangements with planting stock suppliers. Steps can include: a seminar on plant propagation, encouragement of participation in the International Plant Propagators Society in Central America, facilitating visits for potential supplier partners and the identification of potential propagators locally.

ANNEX

Suppliers of planting stock

1. Peter Meyer
Southern Hights Floral Exports
47 Holyrood Street
Napier, New Zealand
Phone/fax 64 6 8445296
callas, sandersonia, nerines

 2. B L McKenzie and Associates
P O Box 15953
New Lynn, Auckland, New Zealand
Phone 64 9 827 0791
Fax 64 9 827 0792
*callas, sandersonia, nerines,
agapanthus, eustoma*

 3. Dexter Ball
Ball SP
320 Hames Road
Watsonville, CA USA
Phone 408 761 0188
Fax 408 724 6233
seed, cuttings, bulbs

 4. Joaquin de la Torre
S B Talee
Calle 69 No. 8-25
Santa Fe de Bogota D.C.
Colombia
Phone 571 217 6363
Fax 571 310 1073
plugs

 5. Alvan Donnan
Worldwide Plants Inc
5512 Hobson Road
Orlando, FL 32818
USA
Phone 407 886 8696
Fax 407 886 6524
callas, foliage
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