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**PROEXAG  
NON-TRADITIONAL AGRICULTURAL EXPORT SUPPORT PROJECT**

**EVALUATION OF THE POTENTIAL FOR ESTABLISHING  
AN ORNAMENTAL HORTICULTURE INDUSTRY IN NICARAGUA**

**SUBMITTED TO:**

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

**SUBMITTED BY:**

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(ST-91-01)**

**THROUGH**

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May 1991

## PREFACE

Given production potentials as assessed in earlier consultation visits, and taking into account both overall trends in the marketplace and the potential competitiveness of Nicaragua, further narrowing down of recommendations for potential producers was needed to establish which ornamental plants to grow, who should grow them and how.

I spent one week in Nicaragua meeting with growers and visiting areas in the country that had shown production potential during earlier visits by others. My main mission was to evaluate individual growers to assess their potentials as ornamental growers, with regard to both the region they wanted to operate in and their individual abilities as possible growers.

My initial schedule was arranged by the APENN staff, and involved individual meetings with 8 potential growers at their fincas to evaluate their individual abilities and resources. That agenda didn't really work out. Three of the visits turned out to be impromptu seminars on industry overviews for as many as 25 interested growers. It became quite clear early on that the majority of the interested growers did not possess even a basic understanding of the nursery business, however, it was quite clear that Nicaragua presents a tremendous opportunity to create a viable, healthy new horticultural industry, devoid of most of the problems that plague all of the other producers in this region. This report will focus on the potentials I observed, as well as my suggestions for beginning the formation of the proposed new industry.

Assisting me during my visits were the APENN staff, Mr. Sean McSweeney (PROEXAG), who acted as my interpreter, Mr. John Lamb (PROEXAG), who counselled me during the first two days, and to a limited degree, Pedro Echeverra (PROEXAG).

## Executive Summary

Two other individuals before me (Jose Mondonedo and Herb Pierson) identified Nicaragua as having the correct types of climates and infrastructures necessary to begin a horticultural industry there. While not all the pieces needed are in place, they found either the correct settings, or the ability and willingness to create them. My primary focus was to evaluate the potential of the prospective growers themselves, and to begin the process of developing the methodology needed to begin the development of this potential new industry.

As my predecessors before me, I found the climate and terrain suitable for the growing of ornamentals. The same types of micro-climates that exist in surrounding countries with existing industries can also be found in Nicaragua. Also, the roadway system in Nicaragua is actually a little better than generally found in this region. However, refrigerated transport trucks were a very scarce commodity. During my week long stay, I only saw one reefer truck on the road. Because this element of the infrastructure is vital to assure success with ornamentals, this element of the system will have to be addressed. Also, no refrigeration facilities were apparent at the airport, again, an area that must be addressed for a successful system to function.

I found the Nicaraguan growers to be a very interested, enthusiastic group who had practically no knowledge of the nursery industry. Few had ever even been to a nursery before. And, unlike most of their counterparts in surrounding countries, they seemed receptive to a planned, organized program of development, rather than the helter-skelter get-it-planted-as-quick-as-possible mentality that worries about what to do when the crop is ready later. Because of their precarious financial situation, most realize that they must get it right this first time. There are no second chances here.

My recommendations detailed in the body of the report outline a step by step approach of communication, education, and technical coordination with the growers that will result in a cohesive, organized industry that can exist as a stand alone competitor right from the start. My program concentrates on first, selecting only the most qualified of the growers to become involved. Second, insuring that all of the elements for successful growing, marketing, and shipping are well known and documented, and that the resources needed to implement each is in place (or on the way) before production gets ahead of them. Third, the program develops an industry based around speciality and niche crops that do not go head to head with the established industries around them.

Because there are a relatively few growers that will be able to participate in this startup industry (mostly because once they discover what is involved they will drop out before getting started), it will be easier to maintain a

## Executive Summary - Continued

cooperative spirit among them. That is a critical component to the quick and successful establishment of this industry. Nicaragua is like a blank slate with no existing industry, therefore no bad habits. With careful, structured progress, the mistakes made in other regions can be avoided, taking only the successes, and learning from others mistakes. The growers themselves thought that to be a good approach, and seemed to be willing to go that way. I am confident that they will support an organized, program approach once it is laid out for them with a step-by-step approach.

## Section I - Itinerary

Thursday 4/11/91

Depart Miami late morning for Managua  
Meet APENN driver for trip to the hotel, then on to the APENN office.  
Meet with John Lamb for consultation

Friday 4/12

Breakfast with John Lamb  
Picked up Sean McSweeney at the APENN office  
Driver from Leon District picked us up at the hotel for transport to Leon and a proposed meeting with 2 growers  
Arrived to find a room with 20+ prospective growers with possible interest (see appendix 1 for the list of attendees). Ended up giving an impromptu 2+ hour overview seminar on ornamentals. Sean translated.  
Went to lunch, and continued informal discussions with 4 growers. The discussion was wide ranging.  
After lunch I visited the farm of Sr. Alvarez. Saw many ornamentals growing wild and in the landscapes.  
Returned to Managua, and met with John Lamb for consultation.

Saturday 4/13

Met with Sean in the hotel lobby and reviewed previous reports and production records from surrounding regions. Sr. Mario Hanon Jr. picked us up in the lobby for transport to his farm a short distance from Managua. Sr. Hanon was having exactly the type of experience that is typical of new growers that do not have access to continuous technological support. Because of the suggestions made to him in the past, he had obtained a quantity of *Draceana marginata* (green and tricolor), and had planted about 7 acres total of the two varieties. They had grown to an average height of 1 1/2 m, with some as tall as 2+m. The plants were of average quality, but were showing some slight nutrient deficiency. They were planted as multiple stems, with water shoots coming up by this time. He showed me his rooting area where he was experiencing a 75% loss rate. He also related to me that he thought he should bulldoze them all down, because not only was he having trouble rooting them, but he had recently been in Miami and had seen vast fields of abandoned *Marginata* stock plants. He had quickly realized that the market was slow, his costs were high, and he would not be able to compete. I was able to demonstrate to him how to turn his stock plants into character trees to be sold for local retail consumption, and make a far better rate of return than from export. He is now happy, but wiser for the experience.  
We stayed at Sr. Hanon's farm for an extra half hour past the time when my next appointment was supposed to

## Section I - Continued

pick me up. Thinking that there had been a mix up and that he (SR. E. Enriquez) had gone to the hotel for us, we went there. He had not been there, so we waited for one hour, and assumed that his plans had changed. I remained at the hotel for the remainder of the day in case he showed up, but that did not occur. I spent the day beginning to write my report and composing notes on my trip so far.

Monday 4/15

I was picked up at the hotel at 8:00 by Roberto Midence for the trip to the Hotel Selva Negra where 6 growers awaited (listed in Appendix 2). Sean and Pedro followed in the APENN truck, and arrived shortly after I. I had a very wide ranging 3 hour discussion with this group of growers, who once again impressed me with their total lack of knowledge of the nursery industry, but a clear ability to understand potential problems they would experience if they ventured into an established marketplace with the same products that everyone else had. I briefed them on my concepts of an organized program approach, and they seemed to agree completely. They endorsed the concepts of a fact finding trip to Costa Rica, sending potential managers (or coming themselves) to Miami to work in nurseries there to gain experience, and insuring that marketing plans and the proper infrastructure was in place prior to beginning large scale production.

While here, I experienced another common problem that can generally be found in developing regions. I saw a small area under the trees where Sr. Kuhl was raising coffee seedlings. They were being grown in standard plastic nursery bags filled with native soil. They told me that was and had been the standard method to produce these plants. I gave them a half hour mini-seminar on medias and why to use them instead of soil when growing in bags (or containers). Following a lengthy discussion, we did determine that sufficient raw materials did exist to create a media, so I gave them brief instructions, and they promised to experiment. I also promised to make a list of suggested medias and compositions to try, and later created the list and left it at the APENN office for distribution to all of the interested growers (see Appendix 4 for the list). It is critical that this kind of technology be available to them before they embark on production programs.

Tuesday 4/16

I was picked up at the airport at 8:00am by Lionel Wheelock. Sean had other duties today and did not

## Section I - Continued

accompany us. Sr. Wheelock farms coffee very near Managua in a region that has severe water shortages from the standpoint of many agricultural crops, including coffee. Last years rainfall occurred late causing severe bud drop and devastating the coffee harvest in this region. The financial situation here is very bad.

Because the rainy season lasts only 5 months per year, the farmers in this region have developed a series of rainwater catch areas that drain into huge cisterns the one I saw at Sr. Wheelock's farm was concrete, and measured approx. 7m wide x 12m long x 25m deep. He had a total of 6 cisterns of different sizes for water storage for the entire 7 months of the dry season. We talked about the feasibility of using this source of water for a nursery operation and concluded that it was feasible with some modifications and enhancements. Sr. Wheelock's land could be suitable for a nursery location, and is only 20 minutes from the airport. There are some bad roads in the way, but they could be dealt with. He has a very small test growing area, but once again, he has never been exposed to medias and is producing plants in plastic bags in soil. I went thru the same discussion as before, and even was able to gather up some potential media components and make a small amount of a demonstration media for him. He was able to show me a possible peat moss substitute that he has in abundance, dried coffee bean husk. I told him that crushed into nuggels, it may act to retain moisture. I asked him to have the material tested for soluble salts, pH, pathogens, etc. before using it, but <sup>added</sup> that between that and the abundance of available rice hulls, we should be able to come up with some good medias. I found Sr. Wheelock to be very attentive, agreeable, and enthusiastic. His biggest problems are water, a lack of mechanization in his operation, and a severe cash flow problem.

Next I met with Salvador Rios, who shows tremendous potential. He has an agriculture degree from Texas A & M, and is currently managing his family's chicken farm, as well as being half owner in an agricultural import/export business. He just completed his first successful export of limes to the US, and seems to be quite knowledgeable about that business, and could be a catalyst for this whole developing industry. He has some very nice property available to him right at the chicken farm, and like Sr. Wheelock has a large cistern for rainwater, but unlike Sr. Wheelock, has access to city water brought in by water main. His basic knowledge of horticulture, his association with friends

Section I - Continued

that have nurseries in Costa Rica, and his import/export experience, make him an excellent candidate for this project. He seemed very cognizant of American style business.

I spent the balance of the afternoon with Sr. Mario Gutierrez who also farms primarily coffee in this region. We toured his extensive finca that was most impressive. It was very clean and neat, and laid out very well. He has the same water problems as the others in this region, but has plans to install a well (at a cost of approx \$75,000) this year. He is currently doing extensive testing of asparagus as a potential crop. We also visited his low farm where he maintains cattle and food crops, and has access to city water. Both locations have areas with the potential for nursery development. The high farm has a more even climate, but the low farm has the access to water. Sr. Gutierrez impressed me with his extensive general agricultural knowledge and history, his total understanding of the challenges of beginning a nursery, and his go slow, do-it-right-the-first-time attitude. He is very methodical in his approach to the asparagus, setting up extensive experiments and having the patience to wait for them to finish before forging ahead. I believe he would be a good candidate for this program.

Wednesday 4/17

A seminar with the growers was planned in the morning, but most of the growers scheduled to be there were the ones I had already spent time with. The others scheduled to attend had cancelled on Tuesday for various reasons. The APENN office staff decided instead to cancel the whole program. We had a tentative appointment set with Samuel Mansell, which ended up being delayed, and I opted to catch a 9:30 am plane back to Miami. I felt that I had seen and experienced enough to complete my assignment based on the information I had already gathered. I arrived back in Miami at around 2:00 (after Customs).

## Section II - Discussion

The tone of my entire trip to Nicaragua was set fairly well on my first stop in Leon. I was supposed to meet with two gentlemen and to look at their test plantings. Instead I was greeted by a room filled with @ 25 very interested growers and ended up giving an impromptu seminar on production philosophy and marketing. That went on for 2 hours and was then continued over lunch on a one-on-one basis. The same messages were clear throughout my trip, ie: give us a blueprint on how to do it, help us with technical and monetary assistance, and we will do it.

One other important point was made clear early on. The wages paid to Nicaraguan labor are substantially higher than those paid to the workers in surrounding countries. The Sandinista experience may have been devastating to the country from a political and economic basis, but it did teach the ordinary worker to demand a higher standard of living. There are well organized and powerful unions in most of the existing industries, and there is no reason to believe that they would not quickly become a powerful force in this developing industry as well. The advantage of cheap labor available in surrounding countries gives them yet another tool to keep Nicaragua from becoming a factor in the market if the growers choose to enter the traditional markets of marginata, yucca, pothos, etc. Conversely, the Nicaraguans should be able to grow the higher maintenance, harder to grow crops because they should be able to develop more highly skilled workers.

It was also clear early on that it would be nearly impossible to fulfil my Terms of Reference as originally set forth. Where I was supposed to evaluate individual growers, I was interacting with groups. Due to unforeseen events I was unable to see some scheduled growers. It is my opinion that there are currently too many growers that think that they are interested at this point to visit them all for individual evaluation. My conclusion is that an alternate approach should be considered.

In order to truly identify the seriously interested growers, I propose the following course of action:

- a) APENN needs to gather together and create a reference brochure that catalogues the climatic, geographical, and environmental variables available within the country. These variables include rainfall, temperatures, humidity, winds, elevation, groundwater availability, regional history (cotton farming, cattle ranching, wilderness area, etc.), and regional infrastructure. I did obtain some limited data on elevation, rainfall, evapotranspiration, and humidity, but much more is needed and should be available with some looking. Pam Michael may already have some info on infrastructure.

## Section II - Continued

b) PROEXAG should develop a comprehensive brochure on the bureaucratic/regulatory requirements for shipping material into and out of Nicaragua, the USA, Europe, the Far East, and Israel. This brochure should be a basic "how to" cookbook format that lays out each step in the process with many "what if" comments to cover glitches. This brochure could easily be adapted to cover each of the other countries PROEXAG works in and could become a valuable tool with unlimited usefulness for Nicaragua and other areas.

c) With help from Herb Pierson, myself, and others who could give good advice an educational/information gathering trip to existing nurseries in Costa Rica should be arranged by APENN for interested members so that they can see for themselves what is involved in setting up a nursery. I envision this as being a minimum 2 day bus trip, and may require more than one bus judging from the response I have gotten so far. The incentive for the Costa Rican growers to show off their nurseries is two fold. First, to scare off potential competitors by showing them how advanced they are and describing how bad business is, and because I believe that we can convince the two biggest brokers in Miami to pressure their suppliers to cooperate.

d) Develop a real world pull -no-punches blue print for what it takes to set up a nursery, detailing from a to z the logistics, equipment, supplies, structures, personnel, business plan, etc., with all related costs involved.

e) Develop a proposed production plan that details the three possible scenarios that appear most appropriate for Nicaragua. Those scenarios, from my perspective, include traditional production (marginata, yucca, pothos, etc.), speciality and niche production (calla lilly, ornamental pineapple, cut foliage, cut flowers, seed production, etc.), and a blending of the two. This plan would include generalized income projections using price lists gathered from current producers and brokers.

f) APENN and PROEXAG should cooperate in developing a proposed plan of action for training nursery workers and supervisors. This plan will undoubtedly call for a nursery production school to be set up similar to those in place in Florida. The nursery worker school would last one week, and would teach the basics of irrigation, spraying, fertilization, pruning, disease and pest control, plant physiology, equipment operation, and soils. All would be required to take this class first. The supervisor school would last an additional one to two weeks, and would go much more in depth in each segment, and would add a worker supervision segment. Graduates of each school would receive a certificate, and would command a higher rate of pay. The

## Section II - Continued

school should be set up to accept students sponsored by the growers for a fee (gives them an incentive to support it and the graduates).

g) Possibly the cornerstone of this program could be a unique, innovative technique for preparing these potential growers for getting into the nursery business. Those that survived the trip to Costa Rica, and the shock of learning what it takes to really be in the business would themselves (or their prospective nursery manager), come to South Florida and work in one of several nurseries there for 3 months to obtain first hand experience in nursery operations. These work assignments (jobs) could easily be set up in So. Florida by myself or Herb Pierson at several of the leading nurseries in the area. This could be the perfect way to learn the basics on someone else's "nuckle", and really have a feel for what it takes. Plus, this could take place while other vital parts of the program were being prepared and put into place. When the freshly trained, Florida educated nurserymen returned, not only would the infrastructure be in place, but they would have formed their own market contacts and would be on track immediately.

The plan of action outlined above would accomplish the goals stated in the original plan for the development of a non-traditional agricultural segment in Nicaragua. It would also "weed out" the faint-hearted and less serious potential growers, and would allow for the establishment of a sound start-up industry that would not suffer the normal growing pains and early reinventing-of-the-wheel that normally takes place. It would also result in the foregoing of the usual 2 to 3 year operating-at-a-loss periods that generally accompanied the start up of the nursery industry in every other Central American country to date. We have a blueprint of what not to do from the last 20 years in Honduras, Guatemala, Costa Rica, Jamaica, and Puerto Rico. It makes no sense to make those same mistakes again. Nicaragua is a blank slate that can be done correctly the first time. The technical and monetary expertise is available.

There is a somewhat widely held feeling/belief that one should allow the growers to "find their own way", with some guidance from the sidelines. I believe that to be an inevitable truism, regardless of what advice we provide. The key is to try to keep the scale of the early mistakes to a minimum. This requires a concerted effort on the part of those involved to provide the maximum amount of communications of available technical information to the growers as is feasible. Due to the apparent lack of a viable postal system in Nicaragua, this may be difficult at best. I am told that each grower-member of APENN has a box in the APENN office, and that each grower is responsible for

## Section II - Continued

checking his box periodically. This may be adequate in the beginning, but will require study for the future.

Several growers have established trial plantings of the "traditional" types of foliage crops like marginata. They have already begun to learn that it is not as easy as it looks. One grower is already experiencing a 60% loss ratio in his test harvested cuttings, and those that survived were of poor quality. He already has mentioned to me thoughts that he should bulldoze the field and plant something else. This could be used as a good example to the other growers as to why an informed approach to business development rather than a blind rush to act started' preferable. I have been able to counsel this grower on how to turn this potential mini-disaster into a profitable adventure by expanding his horizons into looking at the (often) ignored domestic market as an outlet for his marginata in an ornamental, whole-plant form. I taught him how to create character pieces in his stock field that can be dug up and sold for top dollar in containers on the local market.

I have related this experience as an example the already developing repeat patterns experienced in other developing countries. We can stop it, or at least minimize it if action begins now. I was relatively shocked to learn that only 2 of the 25+ growers present at my meeting in Leon had seen or knew of the report from Herb Pierson's trip. That is disturbing, but I am told that the recent shifts in personnel assignments in the APENN office address that problem.

### Section III - Conclusion

In conclusion, I see a tremendous long term potential for a Nicaraguan non-traditional export segment in ornamental plants provided that the guidelines laid out in this report are considered when developing this industry. Advising the growers of Nicaragua to develop an industry based on the traditional varieties (marginata, yucca, pothos, etc.), will force them to compete head-to-head with established industries in at least 6 other countries that have at least a 15 year head start. That will doom them to several years of frustration and no income, followed by years of relatively low income. Nicaragua desperately needs export commodities that generate high dollar returns, quick market acceptance, and ease of market entry. By starting out in speciality and niche crops that are currently under produced and in demand, they can short-circuit the often near disastrous start-up period usually seen elsewhere.

During my travels thru the countryside I kept a running tape recording of some of the plant materials that I saw growing wild and in the landscapes. Appendix II catalogues those types of plants noted. That information is valuable as a comparison tool to determine what else may grow there.

Appendix V is a preliminary listing of some of the niche or speciality plants that come to mind as possible candidates for Nicaragua. The list is by no means complete, but is a starting point to begin to develop a plan suitable for the tremendous job ahead. Done correctly, this developing industry could be a dominant factor in Central America early on. Done the traditional way, it will flounder along with little to show for years to come.

Appendix I Growers Visited

Leon District

Ing. Jaime Gurdian Machado  
Dr. Jose Velazquez Delgaddillo  
Dr. Roger Gurdian Vijil  
Don Hermogenes Baldizon Jaen  
Lic. Ramiro Castillo Canton  
Ing. Jenero Luna Castillo  
Dr. Donaldo Pastora Velazquez  
Dr. Oscar Aleman Cruz  
Don Martin Baldizon Vega  
Ing. Francisco Javier Gurdian Mendez  
Don Rigoberto Garcia Pallaviccini  
Don Mario Reyes  
Don Alvaro Reyes  
Ing. Carlos A. Velazquez Pereira  
Ing. Diego Velazquez Pereira  
Lic. Alvaro E. Pastora Castillo  
Dr. Horacio Garcia Pallaviccini  
Don Julio Castaneda Camey  
Lic. Yader J Avilez

Tipitapa District

Mario Hanon

Matagalpa District

Argentina Cuadra  
Julio Solorzano L.  
Khalil Lopez M.  
Eduardo Chavez K.  
Roberto Midence C.  
Roberto Midence Jr.  
Raul Delgado  
Klaus Kuhl  
Iron Castellon C.  
Astrid Solorzano

Crucero District

Leonel Wheelock

Masaya District

Salvador Rios  
Mario Gutierrez

Appendix II - Ornamental Plants Seen While  
Traveling In Nicaragua

The following is a listing of some of the plants observed during my travels in Nicaragua. The list is by no means complete, but is intended to demonstrate the diversity of plant materials seen throughout the country. These observations will help guide the recommendations for plant materials that can be produced here.

Leon District

- marginata (planted stock)
- Asparagus plumosa
- Roses
- Ferns (several varieties)
- Bouganvillea
- Oleander
- Coconut palm
- Periwinkle
- Wedelia
- Mango
- Breadfruit
- Dieffenbachia
- Calladium
- Cactus (Cereus, Euphorbia, others)
- Ficus (nitida, benamina, hybrids)
- Tropical Almond

Tipitapa

- Marginata (planted stock)
- Rice
- Bouganvillea
- Banana

Matagalpa

- Rice
- Hong Kong Orchid
- Oleander
- Banana
- Yucca
- Bottle Brush
- Sanseveria
- Pine trees
- Tamarind
- Euphorbia sp.
- Mango
- Draceana massangeana
- Italian Cypress
- Norfolk Island Pine
- Frangipani
- Areca palm
- Ficus decora
- Castor bean

Appendix 11 - Continued

Jacaranda  
Spanish moss  
Bromeliads, Tillandsia, wild Orchids  
Strawberry  
Coffee  
Impatients  
Philodendron selloum  
Numerous tropical and sub tropical varieties  
Calla lillies (wild)  
Tree fern  
Bamboo palms

Crucero District

Bouganvillea  
Banana  
Phoenix sp. (palm)  
Orange jasmine  
Croton  
Aralia  
Mango  
Papaya  
Frangipani  
Bamboo  
Draceana "Janet Craig"  
Areca palm  
Euphorbia sp.  
Numerous tropicals

Appendix III - Miscellaneous Notes

Leon District, Velasquez Farm, Marginata stock test planting:

plants fair, showing yellowing, possible signs of nutrient deficiency (lower leaves yellowing), probable pH imbalance in the soil  
no obvious disease some minor pest problem  
asparagus and melon test plantings also here look ok  
water seems abundant, all the landscape plants are the same as in Miami

Tipitapa District, Hanon Farm

Marginata stock has been in for about 1 year, is showing signs of ant damage  
no water problems here, easy access to rice hulls (he grows rice)  
they have no knowledge of anti-transpirants

Matagalpa District

there seems to be a good availability of chemicals  
the rainy season produces days of 24 hour rain, constant winds that always blow from the north, with very high levels of humidity  
there is an indigenous cicada-like insect here  
there is also a serious white fly problem in this area from the coffee production that will undoubtedly carry over into any ornamentals tried here

General comments:

It would be useful to produce a listing of the agricultural crops grown in each area, along with the types of pests & pathogens known to prey on those varieties so that we can predict some of the problems we will encounter and be ready for them.



## Appendix V - Suggestions For A Beginning List Of Potential Plant Varieties For Nicaragua

Currently the foliage market is flooded with average and below average quality cuttings of all of the traditional varieties (pothos, philo, yucca, marginata, decora, sanderiana, godsieffiana, aglaonema, Janet Craig, warneckii, mass & fragrans cane & tips, etc.). As is always the case, there is never enough top quality of any of those varieties.

But there is a strong demand for speciality and niche crops that has been unacknowledged by most growers for years. Those crops are either too hard, too expensive, or too time consuming to grow for most of the established growers, who tend to be loath to change what they have been doing for the last 10 or 20 years. So, those markets go unanswered. I feel they hold great potential for Nicaragua.

Several areas come to mind, including, but not limited to the following:

Seed production - volumes of reference materials are available on this. Possible varieties include orange jasmine, arboricola, areca, chamedorea, and other palms, etc. The infrastructure needed is far less than that required for other commodities.

Cut Foliage Production - again, volumes of reference material are available. Very labor intensive, this area requires first class facilities and infrastructure. The pay out is very high, in many cases almost a name-your-price market because of acute shortages and high demand. Varieties that may be candidates include anthurium, calathea, caladium cordylines (many varieties), ginger, bromeliads, heliconia, and many of the foliage varieties like Janet Craig, aglaonema, various palms etc.

Speciality Cut Flower Production - again, lots of info available. Ditto above on facilities and infrastructure. Possible varieties include anthurium, orchids, heliconia, protea, regular & white bird of paradise, calla lilly, etc.

Speciality Plant Production (cuttings, both rooted & unrooted) - Ditto the entire list above, along with bromeliads and tillandsia.

Bulb and corm production - caladium, calla lilly, possibly tulip, etc.

Many hurdles will have to be overcome to begin any of the above, but they have to be solved for any potential crops. My feeling is that starting from the beginning, with no bad habits to fight, starting with a hard crop is as easy as an easy one, because that's all they know. I am confident that the bottom line will bear me out were a market survey to be done taking my points into consideration.

I have included with this Section an article supplied by the Chemonics office to accentuate the potentials that exist, provided that Nicaragua is able to move into the market quickly, with quality crops that fill the demands of

that market. Current overproduction in most traditional varieties has saturated those markets. A case in point:

On my return from Nicaragua I was contacted by Sr. Carlos Molina, a grower from Jinotepes, near Managua. Prior to the Sandinistas he had been a nurseryman producing Mass cane and exporting it to the US. In his ten year absence from the country, his farm was never cared for, and was now in ruins. However, he does have a large supply (@ 10,000) good quality mass cane stumps that could be sold. He called me for help, and we met at my house. After a long discussion we decided that he would see Joe Roberts ( I arranged an appointment for him), as well as call on all the growers that potentially would be in that market ( I gave him a listing of Fl. growers and what they grow ). He was hoping to receive \$8 - 10 per stump (finished product wholesales for \$30 - \$50). During my preliminary discussion with Joe he told me that the market was flooded with stumps, and the going rate was \$2 - \$5 ea., but sales were slow. Sr. Molina was not to discouraged, but was quickly learning the realities of todays market. Ten years ago he could have named his price for that item. Today it's almost a giveaway.