



A Value Chain Assessment of the Tropical Floriculture Sector in Indonesia

July 2007

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AGRIBUSINESS MARKET AND SUPPORT ACTIVITY

BRI II Building, 28th Fl, Suite 2806

Jl. Jend. Sudirman 44-46, Jakarta 10210, Phone: 62-21-571 3548/49, Fax: 62-21-571 1388

“Helping Indonesia to Grow”

A VALUE CHAIN ASSESSMENT OF THE TROPICAL FLORICULTURE SECTOR IN INDONESIA

Nancy Laws (*Consultant*, Michigan State University)

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Acronyms

UPOV	The International Union for the Protection of New Varieties of Plants
ASEAN	Association of Southeast Asian Nations
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
FAO	Food and Agriculture Organization
MARDI	Malaysian Agricultural Research and Development Institute
SWOT	Strength Weakness Opportunity Threat analysis
IPB	Institute Pertanian Bogor
CIF	Cost, Insurance, Freight
KFA	Korean Flower Association
SBG	Singapore Botanical Gardens
OBC	Orchid Business Cluster
WOC	World Orchid Convention

I. Executive Summary

This consultancy recommends that the AMARTA floriculture project support the development of the Indonesian tropical floriculture industry in North Sumatra, East Java and Bali. It also recommends that AMARTA support floriculture activities in North Sulawesi, as they are soon to become part of the Indonesian Ministry of Agriculture's DG's "Blueprint for Floriculture for 2012".

At the present time, a delightful Indonesian highland floriculture industry already exists (cultivation of roses, chrysanthemums, over 200 species of fresh cut flowers, foliage and potted ornamental plants) in Berastagi, Bogor, Bandung/Lembang and offers a range of opportunities for efficient AMARTA interventions in North Java and West Sumatra and in highland Bali. A lowland tropical floriculture industry also exists (orchids, heliconias, ornamental foliage and container-grown plants) and prospers at the 0-700 m level in the area of Medan, Jakarta and southern Bali, and AMARTA interventions could significantly increase the productivity, and thus the average farm family income in both the tropical and temperate flower industries.

The floriculture farming communities and the dozen larger export-oriented floriculture ventures have not been surveyed in detail, therefore the precise impact that these AMARTA interventions might have is not yet known. Possibly they would have a positive effect on the income of over 20,000 farm families. A detailed survey of the sector is recommended.

Currently Indonesia exports less than \$5 million per year of cut flowers. This makes Indonesia the world's 33rd largest cut flower exporter, with .07% of world trade. (See Annexes for statistics.)

A dozen floriculture operations of efficient economic size, most of them foreign investments, export leatherleaf fern, chrysanthemum cuttings, orchids, seeds for annuals and perennials and dry flowers from Indonesia. They are, in many cases, outsourcing production of large companies in the USA, the Netherlands, Switzerland, Japan, Korea and so forth.

Exporting by the Indonesian floriculture industry is uneven in its development and infrastructure, bureaucracy and transport problems discourage many investors. On the other hand, labor and land (rental) cost is much less than even in neighboring Singapore and Malaysia, successful floriculture exporting nations. Yet in Indonesia thousands of small farmers are held back from full economic potential by reliance on traditional technology and planting material obtained during the colonial area or "grafted" from cut roses bought in the street markets, that may themselves be from degenerated plants illegally propagated abroad. There is a dearth of new improved commercial-quality seeds and bulbs and little technology transfer from abroad, or even the academic and government research centers in the country of Indonesia to the traditional flower farmer.

The Indonesian flower business could be revolutionized with the availability of new floriculture technology, new rose and orchid hybrids, small loans, cheaper inputs and “field unit size” pathology laboratories and technical training for agriculture extension agents.

There are compelling arguments to enhance and expand the “farmer group” empowerment concepts that a decade ago took Indonesia into self-sufficiency basic food crops. There are also opportunities to help several of the existing floriculture exporters to join together and solve input cost, infrastructure, air freight capacity, research and other problems.

With the recent arrival of a dozen large foreign investors or joint ventures in high-value export floriculture, the Indonesian government also perceives that the time is right to organize the traditional floriculture sector to:

- Carry out a census and develop a dynamic directory (published in hard copy and on the internet) of the ornamental floriculture industry profiling the larger firms, so that all interested parties (foreign buyers, other growers, educators, the government and the press) can get easy access and develop a dialogue dynamic.
- Help the farmers to raise the quality of the Indonesian floriculture to international commercial standard, thereby allowing import substitution by local florists who currently import fresh flowers from Korea, Taiwan, China, Malaysia, Australia, Ecuador and Holland.
- Explore opportunities for investment (both domestic and foreign) for the expansion of the production base to meet internal domestic demand and, where possible, develop more exports.
- Help to solve technical, infrastructure and logistical value-chain problems related to post-harvest, packaging, cold chain, transportation to market, redistribution and cold facilities, cost of air freight and streamlining of the export procedures that would allow efficient access to domestic and foreign markets..
- Harness the resources of the Indonesian floriculture industry to develop and patent (possibly under UPOV) new products (orchids and exotic foliage) that will usefully improve the image of Indonesia abroad, as well as earning income for Indonesian breeders.
- Coordinate with the efforts of neighboring countries in ASEAN to propagate rare and endangered species orchids and re-introduce them into their original wild native habitats.
- Respond to the national indignation about rare species orchid theft from Indonesia, and stem the illegal exports of rare orchid species that flood freely abroad to Taiwan, Thailand and Australia into the hands of avid collectors and ruthless greedy agents, by making legal exports with CITES and other

paperwork a quick procedure, enforcing inspection and developing a national campaign to raise consciousness on this subject.

- Enhance opportunities for growers to learn through extension, the Internet and travel abroad to other flower producing nations and plant pathology and propagation technical centers.
- Help to link the floriculture efforts of government research centers, academic research centers and private sector laboratories that now work in isolation away from a floriculture industry which is much in need of research and development.

Since traditional floriculture, a high-value horticulture industry, already has made significant progress in this flower-conscious country, a few long-cost interventions would be able to significantly improve capacity and farmer earnings. The peri-urban areas of Medan, Jakarta and Denpasar with their booming economies now have unsatisfied floriculture demand. The quality specifications are becoming more stringent, and imports from Holland, Colombia, Korea, Australia have become popular. Helping traditional growers to improve their variety offerings, the quality of these flowers and hence import substitution in their own market would bring multiple benefits.

One suggested AMARTA effort is simply to set up demonstration plots of new plant varieties in order that they might be compared to productivity of the virused and diseased plants introduced during the Dutch colonial period that have not been renewed. Another intervention involves plant hygiene and control of pests and diseases, a skill currently confounded by lack of knowledge and lack of access to pathology laboratories and literature. Other suggested interventions would share technology among the farmers in the floriculture industry.

USAID AMARTA interventions in floriculture will generate significant benefits and aim to:

- Double the current rural floriculture farmer employment which currently stands at approximately 20,000 farm families.
- Increase farmer household income (already in evidence in Cihidueng).
- Increase the proportion of employment of women in floriculture to 60%
- Encourage woman ownership of floriculture businesses
- Eliminate the employment of school-age children in floriculture
- Increase opportunities for lucrative employment in the rural areas which will help inhibit migration to the cities. (Thailand's orchid exports involve 5000 farm families; Kenya has 20,000 farmers producing export cut flowers and Colombia's cut flower directly employs 70,000 farmers).
- Increase foreign exchange income for Indonesia. A goal of \$30,000,000 worth of floriculture exports by 2012 would be obtainable.

- Create a spill-over effect to other horticulture crops from improvements in flower-production, post-harvest and shipping methodology.
- Bring down costs of air freight by economies of scale and negotiation in groups among the perishables exporters.
- Improve Indonesian export competitiveness in horticulture, an area in which Indonesia has fallen far behind its ASEAN competitors.
- Improve the global image of Indonesia through a concerted effort to in-vitro propagate and re-introduce rare orchids into their natural habitat in the wild.

Second, the consultancy recommends that the AMARTA floriculture project be market-driven. This will be done by identifying the major domestic and Asian region floriculture wholesalers and importer/distributors and determining with them the products that have the greatest potential for local and export sales.

During the period of this consultancy, a number of specific projects were recommended and are detailed in the sections on Medan and Berastagi, Bogor and Lembang, Denpasar and upland Bali.

Included in the report of the consultant's activities (Annex IV) are several suggested sets of AMARTA interventions, called, simply, Ideas. In each case the delivery model is different. In Bali we will work with a single mother farm and outgrower model. In North Java the interventions will work with both a farm village cluster model and, separately, one or more large exporting growers. In Medan we envision working with a hobbyist group, to try to upgrade their level of professionalism. In Berastagi we will work with a leader-grower initiator, whose early use of technology will helpfully influence others. In N. Sulawesi, we will work with the mayor and city administration of a village 30 km from Manado. In regards to an orchid conservation program and the ticklish issue of UPOV vs. national legislation, we will work with government entities directly. In regards to developing an enabling environment for exporters, we will work with the national flower exporters association. Each intervention will be judged on its own merits. More importantly, each delivery model will also be assessed to determine how best to modernize the whole Indonesian floriculture industry.

In each case it will be the grower or grower group or key official who will prioritize suggested interventions according to their needs and interests and the opportunity to measure results with a 3-year time frame. We hope that projects will be selected with the biggest potential impact. We hope for synergy with other projects (as might be the case with edible citrus and miniature ornamental citrus in decorative terracotta pots. The overall criteria will take in enthusiasm and the AMARTA budget. The objective of the interventions will be as much sociological and motivational as they are economical, though that will be the rationale.

Successful AMARTA financed interventions will be given wide coverage in the international and local Indonesian press.

Floriculture will be, with any luck at all, a highly visible industry that, in the next three years, will inspire other industries of Indonesia to reinvent and modernize themselves, contributing to the economic and social progress in Indonesia.

2. Purpose of the Floriculture Consultancy

USAID/DAI in Indonesia financed a three week survey of floriculture in Indonesia in July, 2007. The purpose was to determine if this industry, compared to other horticulture businesses in the country, could significantly benefit from AMARTA interventions.

The scope of work demanded a look at the whole value chain. The goal was to look for opportunities for short-term, high-visibility interventions that could substantially contribute to the Indonesian floriculture industry progress.

The consultancy started by investigated competitor floriculture industries in nearby countries (Singapore and Malaysia). The consultant looked at the level of technology and size of the largest and most successful operations there, and probed for interest in investment of entrepreneurs there in nearby Indonesia.

In Indonesia the consultant studied businesses at the production, distribution and exporting levels, on three of the major island regions. The consultant investigated small farmers, village farm groups, individual entrepreneurs, exporting business, three floral wholesalers, one florist, and four village flower markets. A floral importer/distributor/re-exporter (to China, Japan and Hong Kong) was interviewed in depth.

The purpose of these open interviews was to determine Indonesian floriculture's strong points, the problems, the opportunities and the threats.

Government officials and flower and orchid association leaders were interviewed, as were innovators in plant breeding and plant growing technology in both the private sector and the universities.

Verbal interventions were made during the process of the three weeks to solve problems that the growers and administrators brought to the consultant's attention. An orchid seminar was given in Medan attracting 60 growers and government administrators.

A final report with suggestions (to be elaborated in a follow-up consultancy in November 2007) was presented to the director of the DAI/AMARTA project on July 26, 2007.

See the Annexes for a list of question used by the consultant.

3. Indonesia Floriculture Project Recommendations

This consultancy recommends that the AMARTA floriculture project support the development of the Indonesian tropical floriculture industry in North Sumatra, East Java and Bali. It also recommends that AMARTA support floriculture activities in N. Sulawesi, as they are soon to become part of the Indonesian Ministry of Agriculture's DG's "Blueprint for Floriculture for 2012".

At the present time, the Indonesian highland floriculture industry already produces roses, chrysanthemums, over 200 species of fresh cut flowers, foliage and potted ornamental plants in Barastegui, Bogor, Bandung/Lembang and offers a range of opportunities for efficient AMARTA interventions in North Java and West Sumatra and in highland Bali.

Alowland tropical floriculture industry producing orchids, heliconias, ornamental foliages and container-grown plants prospers at the 0-700 m level in the area of Medan, Jakarta and southern Bali, and AMARTA interventions could significantly increase the productivity, and thus the average farm family income in both the tropical and temperate flower industries.

In addition, AMARTA initiatives can help Indonesia explore and develop and take advantage of its biodiversity in floriculture, (foliages, orchids) in order to supply local demand and/or to compete on export markets. By providing assistance in the floriculture sector, AMARTA would be joining the Food and Agriculture Organization (FAO) endeavors for the conservation of plant genetic resources as part of a global plan of action adopted at the Leipzig conference in 2002. (See FAO document, "Floriculture for Food Security" in Annex V.)

That FAO document mentions that, "high value horticulture crops can be exchanged in the market place for basic food stuffs." It also notes, "the floriculture sector is a means of creating employment and income leading to improved livelihood for the less endowed. Promoting the development of the floriculture sector...is also a means of contributing to another universal commitment, that related to safeguarding biodiversity."

The floriculture farming communities and the dozen larger export-oriented floriculture ventures have not been surveyed in detail, therefore the precise impact that these AMARTA interventions might have is not yet known. Possibly they would have a positive effect on the income of over 20,000 farm families. A detailed survey of the sector is recommended.

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Exporting by the Indonesian floriculture industry is uneven in its development. Infrastructure, bureaucracy and transport problems discourage many investors, both local and foreign. On the other hand, labor and land (rental) cost is much less than even in neighboring Singapore and Malaysia, successful floriculture exporting nations. Yet in Indonesia thousands of small farmers are held back from full economic potential by reliance on traditional technology and flower planting material obtained during the colonial area or “grafted” from cut roses bought in the street markets, that may themselves be from degenerated plants illegally propagated abroad. There is a dearth of new improved commercial-quality seeds and bulbs and little technology transfer from abroad, or even the academic and government research centers in the country of Indonesia to the traditional flower farmer.

The Indonesian flower business could be revolutionized with the input of new floriculture technology, new rose and orchid hybrids, small loans, cheaper inputs and “field unit size” pathology laboratories and technical training for agriculture extension agents.

There are also opportunities to help several of the existing floriculture exporters to join together to reduce input costs, obtain more air freight capacity at a lower cost and to do relevant research and plant development.

With the recent arrival of foreign investors and joint ventures in high-value export floriculture, the Indonesian Government, specifically the Directorate General of Horticulture, Ministry of Agriculture, of the Republic of Indonesia, perceives that the time is right to organize the traditional floriculture sector to:

- Carry out a census and develop a dynamic directory (published in hard copy and on the internet) of the ornamental floriculture industry profiling the larger firms, so that all interested parties (foreign buyers, other growers, educators, the government and the press) can get easy access and develop a dialogue dynamic.
- Help the farmers to raise the quality of the Indonesian floriculture to international commercial standard, thereby allowing import substitution by local florists who currently import fresh flowers from Korea, Taiwan, China, Malaysia, Australia, Ecuador and Holland.
- Explore opportunities for investment (both domestic and foreign) for the expansion of the production base to meet internal domestic demand and, where possible, develop more exports.
- Help to solve technical, infrastructure and logistical value-chain problems related to post-harvest, packaging, cold chain, transportation to market, redistribution

and cold facilities, cost of air freight and streamlining of the export procedures that would allow efficient access to domestic and foreign markets..

- Harness the resources of the Indonesian floriculture industry to develop and patent (possibly under UPOV) new products (orchids and exotic foliage) that will usefully improve the image of Indonesia abroad, as well as earning income for Indonesian breeders.
- Coordinate with the efforts of neighboring countries in ASEAN to propagate rare and endangered species orchids and re-introduce them into their original wild native habitats.
- Respond to the national indignation about theft of rare species of orchids from Indonesia, and take action to stem the illegal exports of such rare orchid species that currently flood freely abroad to Taiwan, Thailand and Australia into the hands of avid collectors and ruthless greedy agents. The first step would to make legal exports with CITES and other paperwork a quick procedure, enforcing inspection and developing a national campaign to raise consciousness on this subject.
- Enhance opportunities for growers to learn by means of more accessible agriculture extension, the Internet and travel abroad to other flower producing nations and plant pathology and propagation technical centers.
- Help to link the floriculture efforts of government research centers, academic research centers and private sector laboratories that now work in isolation away from a floriculture industry which is much in need of research and development.

Other government employees, specifically the director of the Agriculture Chemical Laboratory in Lembang, the Chairman of the Department of Food Crops and Horticulture for North Sumatra, the Director of the tissue culture laboratory and orchid propagation unit in Medan, echoed similar sentiments.

An agriculture extension agent present at the orchid conference held in Medan on July 16 wanted to know how to help in the area of development of the orchid industry. Regional governments are contracting farmer-specialists in Lembang to help improve floriculture throughout the country of Indonesia.

In addition, individual farmer leaders in flower-dedicated villages such as Lembang and Berastagi were very eager to receive any help to improve their production, post-harvest and transport problems. Individual farmers in the Medan area requested advice and counsel on everything from production, to export marketing. Many expressed a desire for new and improved plant material. In Bali, farmers wanted help with getting new varieties, new planting material and help with marketing.

Finally, leaders within the Orchid Society of Indonesia expressed strong interest in testing and propagating many of their orchid species and hybrids that may be very good as both cut flower and pot plants for sale on the international market. They expressed

a need for help sustaining their organization, publishing, and communicating with flower growers throughout the country. They were eager to learn about how they compared to exporting orchid industries in other nations.

Therefore, it appears from this survey that the time is right for AMARTA interventions. There is support from the private sector, from the village councils, from the government and from the government institutions. There is eagerness to receive any inputs AMARTA can provide such that the Indonesian floriculture industry can be modernized “and compete in export markets with Thailand or Singapore or Malaysia.”

Since traditional floriculture, a high-value horticulture industry, has already made significant progress in this flower-conscious country, a few low-cost interventions would be able to significantly improve capacity and farmer earnings.

If AMARTA helps to increase and improve floriculture production, who will consume this improved product, you may ask. According to interviews of florists and floral wholesalers, the peri-urban areas of Medan, Jakarta and Denpasar with their booming economies have unsatisfied floriculture demand at present time. The quality and species specifications are becoming more stringent, and imports by Indonesian wholesalers from Holland, Colombia, Korea, Australia have become popular. This leads to the conclusion that the local farmers are, at present, unable to produce enough product and to get their products to market in an efficient fashion. Transport cost is a problem that seems to affect growers in Barastagui particularly. Wholesalers speak of poor product, which is part is related to spoilage and bruising of the flowers on the descent to market. Helping traditional Indonesian growers to improve their variety offerings, the quality of these flowers and hence import substitution in their own market would bring multiple benefits.

USAID AMARTA interventions in floriculture will generate significant benefits and aim to:

- Double the current rural floriculture farmer employment, which currently stands at approximately 20,000 farm families.
- Increase farmer household income (already in evidence in Cihidueng).
- Increase the proportion of employment of women in floriculture to 60%
- Encourage woman ownership of floriculture businesses
- Eliminate the employment of school-age children in floriculture
- Increase opportunities for lucrative employment in the rural areas which will help inhibit migration to the cities. (Thailand’s orchid exports involve 5000 farm families; Kenya has 20,000 farmers producing export cut flowers and Colombia’s cut flower directly employs 70,000 farmers).
- Increase foreign exchange income for Indonesia. A goal of \$30,000,000 worth of floriculture exports by 2012 would be obtainable.

- Create a spill-over effect to other horticulture crops from improvements in flower-production, post-harvest and shipping methodology.
- Bring down costs of air freight by economies of scale and negotiation in groups among the perishables exporters.
- Improve Indonesian export competitiveness in horticulture, an area in which Indonesia has fallen far behind its ASEAN competitors.
- Improve the global image of Indonesia through a concerted effort to in-vitro propagate and re-introduce rare orchids into their natural habitat in the wild.

Recommendations for AMARTA interventions:

1. Do a census of Indonesian flower producers, ornamental plant producers, ornamental foliage producers, young plant producers, seed producers, pathology laboratories, tissue culture laboratories and agriculture chemical companies. Determine such factors as estimated volume and value of production, number of farm families employed, numbers of women, numbers of children under age 18, average hectares per farm, total hectares by important crop sectors, number of exporting farms and their categorization by size, value of exports, volume of exports, species exported, destination of exports, ownership and investment and export plans for the next five years. Specifically for orchids, numbers of orchid farms, total area in orchid production, number of orchid young plant producers, type, value of production, volume of production, export potential, potential to propagate indigenous species for replanting in the wild.

2. Set up demonstration plots of new plant varieties in order that they might be compared to current productivity and size of the virused and diseased plants introduced during the Dutch colonial period that have not recently been renewed and are still the mainstay of flower production in Indonesia.

1. Berastagui—Spray chrysanthemums
 2. Berastagui—Annual flowers obtained from Dr. Benny Tjia, MJ Flora.
 3. Medan—Hybrid orchids from Philippines, Thailand and from Perhimpunan Anggrek Indonesia in Jakarta
 4. Lembang—Phaleanopsis orchids from Bali, Taiwan, France
3. Provide flower growers with new pot-plant species for experimentation
1. Berastagui—ornamental peppers
 2. Berastagui—ornamental citrus plants
4. Hold conferences on plant hygiene and control of pests and diseases and the use of plant pathology laboratories and do-it-yourself field kits for testing.
1. Berastagui

2. Lombok
5. Develop capacity for plant pathology analysis
 1. Medan--Add a path laboratory to the tissue culture laboratory
 2. Bogor—develop a prototype field unit (like a MASH unit) of a plant pathology laboratory. Put three such laboratories for use in Berastagui, Lombok and highland Bali and implement training and evaluation of their effectiveness in solving pest and disease problems.
 3. Medan--Sponsor visits of Indonesian plant scientists at the tissue culture laboratory to MARDI in Kuala Lumpur for training
 4. Bring MARDI specialists from Malaysia to speak in Jakarta, Lumbock, Bogor and Berastagui.
6. Develop small lending libraries in floriculture communities with specific agriculture publications including those in English from Ball Publishing in Chicago, Illinois, and subscriptions to the English floriculture magazines such as Flower Tech (Holland), FloraCulture International (Holland), FloricultureToday (India) and Orchids (USA).
 1. Berastagui
 2. Lembang
 3. Taman Anggrek Indonesia, Jakarta
7. Together with Asosiasi Bunga Indonesia sponsor a potential foreign investor conference in Jakarta for Indonesian floriculture projects inviting the largest producers from Thailand, Singapore, Malaysia, Taiwan, Japan, Australia, the UK, Holland and of course Indonesia, and including bankers, government people, air transport companies, cardboard box countries, suppliers, floriculture production consultants and the press.
8. Together with the Office of the Directorate of Ornamental Plants, Directorate General of Horticulture, Jakarta, sponsor a conference of representatives of the floriculture value chain (growers, truckers, wholesale florists, retail florists) from throughout Indonesia to assess the problems of production of needed varieties, quality, distribution problems, promotion opportunities. Find efficiencies to avoid product loss on the way to market. Find out what varieties are most needed in the local market and the export markets. Panelists should include florist importers from Singapore, local Jakarta and Bali and Medan florists, floral wholesalers and local journalists.
9. Underwrite writing, photography, publication costs and distribution within Indonesia for one or more photographic books on native Indonesian orchid species to be done by Frankie Handoyo and his team from the Jakarta Orchid Society. They should be written in Indonesian and translated into English,

- French, German, Japanese and Mandarin. They should be listed for sale with international distributors such as Ball Publishing, but 10,000 free copies mailed throughout the world to libraries, orchid societies, government organizations and university agriculture research centers specializing in Orchids.
10. Select six orchid hybrids from each of the following orchid breeders (3 for use as cut flower plants and 3 for use for potted orchid plant sales) and finance putting them into tissue culture in Jakarta, Bogor, Denpasar and Medan, then distributing out to the orchid growers throughout Indonesia.
 1. Ayub Parnata, Bandung
 2. David Dowd, Bali Orchid Garden, Denpasar
 3. Rizal Djaafarer, Rumah Bung Rizal, Bandung
 4. Frankie Handoyo, Fragrant Orchids and Tropical Plants, Jakarta
 11. Support the projects selected by Dr. Benny Tjia and sent to AMARTA for sponsorship in July, 2007.
 12. Support the concept of a leader-grower-initiator's pilot farm and outgrowers in tropical exotic flowers and plants and orchids by David Dowd, Denpasar, Bali
 13. Sponsor a series of four meetings, one each in Bogor, in Lembang, in Berastagui and in upland Bali for technology sharing among the floriculture farmers of Indonesia. Subjects to treat include: IPM, criteria for choice of varieties, transport to market and market criteria for purchasing product.
 14. Participate in all meetings called by the DG, the Directorate of Ornamental Plants and the head of the Flower Association of Indonesia and cooperate with the their projects regarding the floriculture industry.
 15. Under the direction of Karen Sjarief, Flower Association of Indonesia, work out a supportive project role in export promotion with the Asbindo group of large floriculture exporters.
 16. With the same key leader, Karen Sjarief, initiate a supportive project in the big flower project in N. Sulawesi, in the village 30 km from Manado together with the mayor and city administrators of that village.
 17. Bring in one or more UPOV specialists (probably from Switzerland) to speak before the national and regional government officials of Indonesia.
 18. Contact names and institutions listed in Annex VII, Section VII Annexes, an Annex VI, see if there is interest in AMARTA's sponsorship of a conference on unique biodiversity of orchid species in Indonesia.

In several of the geographical regions of Indonesia listed above the delivery model for AMARTA aid intervention is different. In Bali we will work with a single mother farm and out-grower model. In North Java the interventions will work with both a farm

village cluster model and, separately, one or more large exporting growers. In Medan we envision working with a hobbyist group, to try to upgrade their level of professionalism. In Berastegi we will work with a leader-grower initiator, whose early use of technology will helpfully influence others. In N. Sulawesi, we will work with the mayor and city administration of a village. In regards to an orchid conservation program and the ticklish issue of UPOV vs. national legislation, we will work with government entities directly. In regards to developing an enabling environment for exporters, we will work with the national flower exporters association. Each intervention will be judged on its own merits. More importantly, each delivery model will also be assessed to determine how best to modernize the whole Indonesian floriculture industry.

In each case it will be the grower or grower group or key official who will prioritize suggested AMARTA interventions according to their needs and interests and the opportunity to measure results with a 3-year time frame. We hope that projects will be selected with the biggest potential impact on the floriculture industry in Indonesia. We hope for synergy with other projects (as might be the case with edible citrus and miniature ornamental citrus in decorative terracotta pots). The overall criteria will take into account growers' enthusiasm and the AMARTA budget. The objective of the interventions will be as much sociological and motivational as they are economical, though the income-increasing potential will be the rationale.

Successful AMARTA financed interventions should be given wide coverage in the international and local Indonesian press. Therefore, at all open public meetings, the press should be invited—radio, television, magazines, newspapers and filmmakers. Floriculture is a highly visible industry. Within the next three years success in modernizing the floriculture industry will inspire other industries of Indonesia to reinvent and modernize themselves, contributing to the overall economic and social progress of the country.

Recommendations by Region:

Berestagi

BERASTAGI is an area of sub-tropical to temperate hill country at 1300 meters.

Current production

Small farmers in BERASTAGI produce a wide range of temperate flowers, plants, trees that can be used for foliage and ornamental plants. The predominant commercial species is chrysanthemum field grown or grown under shade cloth and in shade-house.

The community of growers makes their living from cultivation of flowers. They do not which cover the whole value chain spectrum. They do not deliver to the market in Medan, nor do wholesaling or retail sales in that city market. Instead wholesalers in Medan send trucks up to Berastagi to collect the flowers at a central plaza. Their mark-up from that point to the sale to retail florists varies from 50% to 100%.

The Berastagi growers propagate chrysanthemums from cuttings taken from plants which are descendents of chrysanthemums that may have been introduced into Indonesia many decades ago under the Dutch colonial period. The losses of the transfer of the newly rooted cuttings, an activity of one family operations, to the fields where the cut flower chrysanthemums are produced may entail losses of 40% because of the time involved, the lack of an efficient delivery system from one farm to the next, and lack of overhead irrigation misting systems. Similar inefficiencies happen through the growing process.

The soil, volcanic in origin and very high in micronutrients, and a benign climate mean the harvested spray chrysanthemums have robust stems and a long vase life, and withstand several hours of delivery without packing except that they are rolled in newspaper and tossed in an un-refrigerated truck.

Production of spray chrysanthemum in the cultivation beds is uneven, requiring several passes during several days or even weeks to harvest the mature sprays to put into bunches. The growers say that it is the vagaries of the weather that make cropping for holidays difficult or impossible, however, better growing material and growing techniques would make for one-pass harvesting and ability to accurately time crops for holidays.

Farmers have not received much formal education, show limited interest or capacity to become large businesses or export. The local market in Medan is undersupplied. Land is difficult to purchase and expensive and must, in most cases be leased under contracts. For this reason bamboo shadehouse structures are of low tech investment, though adequate for their purpose, which is for production for the Medan market.

There is no plant pathology laboratory where growers can send problems found in the field for analysis. In July 2007, an outbreak of a pale yellow dot fungus on the underside of the chrysanthemum leaves, called White Rust, endemic to Indonesia had not been identified and treatments with Amistar and preventive sprays of Dithane M-45 had not been initiated. The whole production in the Berastagi area was threatened, and blackening and necrosis of the leaves would soon leave the product unsaleable, even in the Medan market.

The following is a SWOT analysis of the Berastagi growing community.

Strengths	Weaknesses	Opportunities	Threats
<p>Genuine love of plants and flowers.</p> <p>Experienced growers.</p> <p>Excellent volcanic soil</p> <p>Good climate</p> <p>Low cost shadehouse</p> <p>Strong grower organization and community values.</p>	<p>Isolation from normal agri. extension.</p> <p>Isolation from market information.</p> <p>No plant pathology laboratory access</p> <p>Old planting material with varieties that are not disease resistant.</p> <p>No access to new chrysanthemum varieties (perhaps because of UPOV problems)</p> <p>Useful protocols for production of ornamental plant crops have not been translated from English to the local language.</p> <p>Photo reference of common pests and diseases not available.</p>	<p>Send Benny Sembiring, a young farmer leader and other early-initiator farmer leaders to short courses on good farm practices.</p> <p>Include a representative of this group of growers in the national planning process for development of a floriculture Industry</p> <p>More closely involve the Agriculture University of Bogor (IPB) in the training of these farmers.</p>	<p>Increasing isolation from the national agriculture education programs</p> <p>Exploitation by the traders and truckers that leaves the growers mired in poverty</p> <p>Traditional growing systems are familiar and new growing practices may be rejected.</p>

Recommendations

Expert inventions underwritten by AMARTA, spread over a 3 year period could speed economic development of the Flora Bali tropical floriculture out-grower project:

- Provide Berastagi with a mobile pathology lab unit and literature on pests and diseases.
- Set up demonstration plots of improved chrysanthemum varieties under supervision of Benny Sembiring, a farmer leader, and help him to bring the first crop of flowers to market just prior to a holiday, so that he can double the normal sales price to the clients in Medan.
- Trial a small plot of ornamental pepper plants to be sold in pot
- Trial ornamental citrus in pots.
- Vertical integration of production and market by providing financing for purchase of a refrigerated truck for delivery to Medan florists.
- Underwriting of translation and or creation of training materials with Dr. Benny Tjia and the Institute Pertanian Bogor (IPB)
- Invite Ball seeds to develop a project in Berastagi
- Technical assistance and training in identification and treatment of pests and diseases in floriculture, in a regional integrated program
- Provision of visiting agriculture training experts who knew about plant growth, fertilizers and floriculture in general, and experts in the concept of preventive plant health.
- Finance travel of Benny Sembiring to Jakarta to participate as a representative of Berastagi in national floriculture growers' meetings.

These suggested AMARTA floriculture interventions would affect:

- Two hundred small farmers in Berastagi

AMARTA interventions and workshops in floriculture would be useful.

But important as well would be aid to the Government in making more efficient use of their existing agricultural consultants, extension agents and staff and facilities in the Berastagi area through upgrading their ability to handle the more demanding problems of perishable horticulture, specifically floriculture.

A program providing students of agronomy with 3-months of practical experience in Berastagi village would provide students with practical experience and farmers with a way to access new growing technology.

AMARTA donations

Planting material (chrysanthemum cuttings) to use in demonstration plots to compare with the material inherited from Dutch colonial days.

Obtain for the growers photo illustrated books on pests and diseases of cut flowers and potted plants. Ball Publishing Books on Flower Diseases. Translated to Indonesian.

Obtain a basic plant pathology laboratory equipment for 'field hospital' for diagnosis of diseases, pests and virus. Bright lights. Petri dishes. Microscope.

CONCLUSIONS BARASTAGI

Benny Sembiring is young, a leader and a good traditional grower. The plants are healthy and floriferous. His experiments with new shadehouses and planting methods have been successful as well. He would benefit from training courses, exposure to agronomy students on internships, training at IPB, the Agricultural University in Bogor, and possibly, a trip to the Ohio Short Course within Dr. Benny Tjia's program.

Improving his skills will improve the floriculture business in Berastagi and the whole local economy of the village. It should be transformed, within a few years, to a progressive agricultural village like Lembong.

Medan

MEDAN is in the lowlands at about 200 meters. Rain is heavy and conditions tropical.

Production is mostly orchids and foliages by a group of about 100 hobbyist orchid growers who are learning from each other. Competing orchid organization leaders have rendered the club structure inactive at the moment, but several dynamic individuals have gathered their friends around them to talk over problems and share solutions.

Strengths	Weaknesses	Opportunities	Threats
<p>Genuine passion for orchids and tropical foliage plants.</p> <p>Growers dedicated to flowers</p> <p>Good soil</p> <p>Good, though climate despite 2.5 m/yr rain.</p> <p>Inexpensive land</p> <p>Organic mulch for</p>	<p>Indonesia not a signatory to UPOV</p> <p>Poor logistics</p> <p>Bureaucracy in export process</p> <p>Rising value of Rupiah</p> <p>Old (virused) planting material</p> <p>No Plant Pathology lab</p>	<p>Professionalize and upgrade skills of excellent hobby growers.</p> <p>Specialize in orchids or other plant crops that are not patented</p> <p>Target local metropolitan market</p> <p>Shift to some IPM and biological pest controls.</p>	<p>Producers in other areas (Jakarta in the case of Medan) gaining market share in the Medan market.</p> <p>Tissue paper flowers taking over all of the bridal market for fresh flowers.</p> <p>Locally produced fresh flower inadequacy leading to substitution of flower usages by</p>

<p>compost is low cost</p> <p>Low cost greenhouse in bamboo</p> <p>Excellent volcanic soil</p> <p>Growing Indonesian consumer base for all floriculture</p> <p>Some foreign clients for pot plants and ornamental foliages.</p> <p>Economical cardboard cartons of top quality and good packaging materials.</p>	<p>Inadequate use of tissue culture lab</p> <p>Inadequate extension services</p> <p>Desire for plastic or polycarbonate roofs due to rain.</p> <p>Absence of IPM or similar</p> <p>Electricity available only 13 hours a day.</p> <p>Expensive chemicals.</p> <p>Expensive inputs of all types.</p> <p>40% duty on flower imports.</p> <p>50% - 100% mark-ups by floral wholesalers</p> <p>Useful protocols for production of ornamental plant crops are not translated to Bahasa Indonesian</p> <p>Orchid plant pathology books widely not available.</p> <p>Orchid growers have no group to bargain for low prices based on volume purchases of inputs or transport.</p>	<p>Growers create their own reference library</p> <p>Government brings more Tissue Culture Lab hoods into production.</p> <p>Volume propagation of new hybrid orchids for cut flowers and pot plants</p> <p>Program for reintroduction of rare orchid species into their original habitat</p> <p>Orchid growing classes for more amateurs</p> <p>Growers eager to learn and not set in their ways.</p> <p>Growers eager to improve their quality and productivity</p>	<p>candies and other gifts.</p> <p>Foreign flower breeders will refuse to sell to Indonesian growers because the country has not signed UPOV agreement.</p> <p>Growers from other countries may patent Indonesian hybrids.</p> <p>Other regions, like Jakarta or Bali, clamoring for aid, may get most of the interventions.</p>
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The growers of Medan have requested AMARTA help with;

- Workshops on ornamental plant production and use of integrated pest management techniques, plant pathology, plant selection for commercial criteria.

- Import and introduction of new orchid hybrids and creation of demonstration plots alongside traditional plants to demonstrate their superiority in flowering, length of stem vase life, productivity and resistance to disease. Suggested source of plants: VS Orchids in Philippines, Kasem Boonchoo or Bangkok Green in Thailand or a Singapore grower. Suggested recipient of plants, Tetty's new greenhouse.
- Selection of up to five dendrobium or other Indonesian orchid hybrids from Lembang for propagation and sale to commercial cut orchid and pot plant orchid growers, profits to go to the breeder.
- Aid to the government in obtaining plant breeders' rights protection for Indonesian growers under UPOV for locally developed hybrids,
- Financial assistance for creating a pathology lab at 'Laboratorium Kulture Jarengen, that has most of testing in kits that can go out into the field. . Include equipment and a reference library for a Plant Pathology Laboratory.
- Financial assistance in sending 3 of the personnel of 'Laboratorium Kulture Jarengen to train at the Malaysian Agriculture Research and Development Institute, MARDI, in exchange for the 'Laboratorium Kulture Jarengen's development of a program to provide a 24-hour turn-around service for growers of tropical floriculture products.
- Underwriting the expansion of the 'Laboratorium Kultur Jarengen, DINAS Pertanian Propinsi Sumatera Utara' in Medan and tripling the number of laminar flow hoods for tissue culture. Pay to train and upgrade the skills of the existing personnel. Connect them to MARDI, the tissue culture and plant pathology laboratory in Malaysia. Demand that farmers be given access to this DINAS Pertanian Propinsi Sumatera Utara laboratory and 24-hour turnaround service for answers to their problems regarding plant nutrition, and disease and pest problem-solving in production.
- Expand the number of orchid shadehouses at the Laboratorium Kultur Jarengen to include modern model facility for growing out small plants from flask in sterile cinder block or coconut husk charcoal, complete with overhead misting irrigation, spray irrigation, pad and fan cooling for the summer months. This would be a demonstration greenhouse only, to be replicated, if successful, with government funds at the same location where almost 5 hectares are available.
- Underwrite the hotel and per diem and local transport for several days in Kuala Lumpur for six other Indonesian growers from Medan to visit MARDI and nearby Malaysian orchid growers. (no airfare required, except if there is a layover fee in purchasing their air tickets to Bangkok, as the trip has already been planned by these seven flower growers.)
- Workshops in Medan for potential floriculture exporters in choosing and dealing with foreign clients and in dealing with plant quarantine agencies in Japan and the

EU. (The same expert can give the identical workshop in in the rest of the country.)

- Leadership of a series of price negotiating sessions between the growers desiring to export horticultural products and the head of sales of Singapore Airlines to obtain competitive per kg rates for floriculture to Amsterdam and to Tokyo. Same for Malaysian Airlines for destinations in Korea and Japan.
- Workshop in Medan for farmers and government employees in developing national quantity and quality goals for specific floriculture crops.
- Economic feasibility studies for one hectare of cut flower orchids and one hectare of potted plant orchid types for the Medan area. To be contracted with Dr. Wong of Kuala Lumpur. Publication and circulation of that study to orchid growers throughout Indonesia.
- Economic feasibility study for a production of five hectares of ornamental plants for cut foliage production in the Medan area, specific area to be decided by the commercial potted plant growers. Publication and circulation of that study to plant growers throughout Indonesia.
- Financing of four orchid growers to go to Jakarta to attend a conference where the head orchid breeder of Singapore Botanical Gardens is to speak on the subject of multiplying and reintroduction of rare orchid species into the wild.
- Time the above Jakarta visit of these four growers to meet with other Indonesian floriculture growers with export potential including David Dowd and wife of Bali Orchid Garden, Mrs. Tetty and Mr. Yunan and Mrs. Henny Leonardi and Mrs. Taty from Medan, Dr. Benny Tjia and Mr. Deddy Hadinata and Mr. Rizal, Adil Hendra, the DG of Agriculture from North Sumatra and from Eastern Java and have them design an a five year floriculture industry plant for both the domestic and export markets.
- Obtain commitment of Indonesian government financing for participation of Indonesian orchid growers in the World Orchid Congress in Singapore in 2011.

Suggested AMARTA floriculture interventions in Medan Indonesia would affect:

- Three large ornamental floriculture farms in the area of Medan, North Sumatra and 100 small orchid and plant out-growers.
- One model plot of new orchid hybrids for cut flower and potted plant sales.
- One model plot of tropical foliage plants and tropical flower demonstration farm.
- The upgrading of capacity and technical level of a regional tissue culture laboratory and the addition of pathology laboratory services for orchid and foliage growers in the area.

AMARTA interventions and workshops in floriculture would have a multiplier effect in more efficient production of food crops. The Government would make efficient use of their existing staff and facilities through upgrading their ability to handle the more demanding problems of perishable horticulture, specifically floriculture.

The government would improve their world image with a well-publicized program for propagation and reintroduction of exotic species orchids into the native habitat. Indonesia is home to over 5,000 orchid species including Dendrobium, Phalaenopsis, Vanda, Paphiopedilum, cymbidium and Aerides. Hundreds of these orchid species are now almost extinct in Kalamantan and Iryan Jaya.

AMARTA donations and financing during three years:

- Planting material (orchid small plants or composite size seedlings) to use in demonstration plots. Estimate \$1.00 per plant X 30,000 plants CIF Bogor.
- Obtain for the growers photo illustrated books on pests and diseases of cut flowers and potted plants. Ball Publishing Books on Flower Diseases. Translated to Indonesian. Estimate \$10,000
- Obtain basic plant pathology laboratory equipment for 'field hospital' for diagnosis of diseases, pests and virus, including ELIZA testing kit. Bright lights. Petri dishes. Microscope. Estimate \$5,000.
- Training and travel to Kuala Lumpur as described above for 3 technicians.
- Training and travel to Jakarta for four growers as described above X 3 trips.
- Underwriting of a feasibility study for one hectare orchids tailored for Bogor. Estimate \$8,000

CONCLUSIONS MEDAN

The local domestic floriculture market in Medan has plenty of unfulfilled demand, and is "importing" from Jakarta. Attention in Medan should be focused on new varieties, increasing quality, eliminating pests and disease.

In the next three years there is no opportunity for growers in Medan to export their floriculture to foreign markets.

In floriculture exports all of the market acumen is in the distribution. It involves trucking to the airport, airplanes and reefer container ships. In Indonesia the airport logistics are bad, the cost of documentation high, the offloading of perishables at intermediary transfer point (Medan—Jakarta—Tokyo for example) frequent. Airline insurance does not get paid to the growers who suffer losses. Shipping by refrigerated truck in pallets is not available from the highlands to Medan. Sea freight to Europe takes 25 days. All of these factors lead to the conclusion that Medan growers should simply try to better serve clients in the Medan market.

Jakarta

JAKARTA is in the lowlands of West Java.

Current production

The farmers of the tropical West Central and East Java area produce a wide range of tropical flowers and ornamental plants and warm temperate cuttings and flowers. The size of the growers varies considerably.

Available information (some based on rumor) lists large growers whose facilities are designed for export to markets outside of Indonesia include:

Saung Mirwan, Ciawi, West Java, 16 ha, exporter of chrysanthemum cuttings to Japan

Alam Indah, Cipanas, West Java, 10 ha, exporter of chrysanthemum cuttings to Dubai and Japan

Melrimba, Cugenang, West Java, 12 ha, Phaleanopsis plantlets to Japan

Menfori Nusantara, Parung, West Java, 3 ha, Tissue culture and flower seed exports to Australia and NL's

Tropica Flora, Magelang, Central Java, 14 ha, Leather leaf fern foliage exports to Japan.

Selektani, Medan, 20 ha seed (annual and perennial) to Netherlands, USA and Japan

Wahana Kharisma, Malang, East Java, 6 ha, gerbera cut flowers

Ketemu Lagi, Bali, 3 ha orchids

Ostrafarm, Cipanas, West Java, 10 ha anthurium.

Farm belonging to Karen Sjarief's group, 4 ha, snapdragons and amaranthus

Benara Indonesian, 30 ha JV of Indonesians with Australians near Jakarta.

Export cut foliages

Korean Flower Association (KFA) said to own 2800 ha.

Said to be investing Rp. 800 billion.

Segulem, a 48 ha rose production owned by former Minister of Agri,

Hariyanto Dhanutirto

Hash Farm, an Indonesian-Dutch joint venture investment with possible

Vietnamese ownership as well, that will export Chrysanthemums and Roses.

Except for the first farm on the list above, the AMARTA consultant has not visited the above large farms. Prior to making decisions of potential help to these farms, a survey must be made.

In addition to the large farms listed above, there are hundreds of small farms, most of which are orchid growers. Propagation is by taking offshoots (keikis) off of the existing plants and rooting them, by purchase or by foraging trips to the wilds of the other islands. Losses of plants in this uprooting and replanting process is high and losses from the wild similar to plundering.

Many of the orchids are sold from a central facility in Jakarta built by the government. Taman Angrek Indonesia, Jl. Raya TMMII, Pinangranti, Jakarta 13560, Indonesia.

While once adequate, parking has now been taken over for a nearby shopping mall clients, and space within the facility are crowded.

The orchid growers in this facility make are no orchid cut flower exports from Jakarta to foreign markets, as paperwork is cumbersome. There is almost no official export of potted orchids, however informal exporting (sale to orchid buyers who come from abroad who secret the plants out in their luggage.)

The orchid growers essentially are working for close to no profit. They have little technical assistance from government agricultural extension advisory service, no soil and water analysis available, neither public or private. Plant production problems are solved by talking among the growers and by chatting with the local vendors of agri-chemicals. Despite this, orchid growing technology appears to be high. Growers have access to books on plant diseases and the Internet.

Strengths	Weaknesses	Opportunities	Threats
<p>Genuine love of orchids.</p> <p>Experienced growers dedicated to orchids.</p> <p>Good climate</p> <p>Distribution center in Jakarta.</p> <p>Growing Indonesian domestic consumer base</p> <p>Economical cardboard cartons of top quality and good packaging materials.</p>	<p>Indonesia not a signator to UPOV</p> <p>Bureaucracy in export process</p> <p>Corruption of officials supposedly enforcing legislation</p> <p>No in-vitro lab they trust to rapidly multiply unique and/or species orchids</p>	<p>Specialize in orchids or other plant crops that are not patented</p> <p>Target booming local metropolitan market</p> <p>Vertical integration of breeding and production</p> <p>Growers create their own reference library</p> <p>Work with government to create propagation laboratory</p> <p>Work with government</p>	<p>Producers in other areas around the world able to obtain Indonesian species orchids at ridiculously low prices.</p> <p>Pillaging of plants from the wild.</p> <p>Disappearance of rare species.</p> <p>Growers from other countries may patent Indonesian hybrids. Compete with Indonesian genetic material.</p> <p>Government ennui and</p>

<p>Indonesian Orchid Foundation and Indonesian Orchid Society are very active.</p> <p>Publication of <u>Native Orchids of Indonesia</u> by local experts.</p> <p>Many orchid experts in their 20s and 30s.</p>		<p>Program for reintroduction of rare orchid species into their original habitat</p> <p>Wild-orchid based tourism.</p> <p>Possibility of hosting Orchid Congress in Jakarta.</p> <p>Possible support from Ministry of tourism, Ministry of Finance and other Government bodies.</p> <p>Easy access to journalists and press for PR</p>	<p>lack of interest</p> <p>Some perception of orchid growers with social resentment and unrealistic idea that they are rich and need no financial help.</p> <p>Inability to publish further scientific books on orchids.</p>
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Recommendations

AMARTA should:

1. Make a census of farms over 10,000 sq meters and publish a detailed description of the floriculture industry
2. Until such a census is finished, deal with the leaders of the Indonesian Orchid Society.

Expert interventions that should be underwritten by AMARTA, spread over a 3 year period should solve important problems:

- Underwriting of further scientific orchid books to advance worldwide knowledge about the tens of thousands of rare native orchid species.
- Underwrite an attempt to determine the major species that should be saved, and the remaining numbers of plants left in that species.
- Fully underwrite a new publication by Frankie Handoyo, Ramadani Prasetya and other Indonesia experts. Make sure that this book is distributed for free to orchid societies around the world.
- Finance a propagation program for a dozen rare Indonesian orchids of importance for breeding, and split the small plants between a demonstration

plot of these plants in Jakarta near Taman Anggrek Indonesia, and, before the end of 2.5 years, a elaborately publicized reintroduction into the wild of Kalamantan and Irian Jaya of these orchids by a top and very popular government official.

- Underwrite the hotel and I&E and airfare for a dozen trips around the world of one or more of the members of the Indonesian Orchid Society to publicize this event abroad and for attendance to major orchid congresses.
- Underwrite a participation by six of the Indonesian Orchid Society in the World Orchid Congress in Miami, January 2008.

Underwrite educational program for children of school age throughout the country of Indonesia regarding this program of reintroduction of these once almost extinct orchids back into their native habitat.

Suggested AMARTA floriculture interventions in Indonesia would affect:

- 200 members of the Indonesian Orchid Society
- Estimated 70,000 members of the American Orchid Society
- Estimated 500,000 members of Orchid Societies around the world
- School age children throughout Indonesia.

AMARTA interventions and workshops in use of floriculture multiplication techniques to save Indonesian exotic orchids will enhance the appreciation of the public of the value of rare orchids, and raise consciousness about the morality and ethics of stealing natural treasures from the Indonesian forests.

CONCLUSIONS JAKARTA

The situation of the orchid growers in the Jakarta area lends itself, not so much to AMARTA technical agricultural support to increase orchid grower income, but to an even more noble project. This “Save our Orchids of Indonesia” campaign could change the perceptions of the average Indonesian about floriculture, about native plants, and about their country

Bali

DENPASAR and upland, Pancasari, BALI, is an area of tropical and sub-tropical sea level up to hill country at 1300 meters.

Current production

Small farmers in Bali produce a wide range of tropical, sub-tropical flowers, plants, trees and palms that can be used for foliages and ornamental plants. The predominant commercial species is orchid grown under shadehouse.

Commercial growers have activities which cover the whole value chain spectrum from orchid and tropical plant growing to wholesaling to retail sales operations to delivery and even to tissue culture and propagation. Larger than hobbyists, the family operations, with one exception, show limited interest or capacity to become large businesses or export. The local market is undersupplied. Land is difficult to purchase and expensive and must, in most cases be leased under contracts. For this reason greenhouse/shadehouse structures are of low tech investment, though adequate for their purpose, which is for production for the Medan market. The tourist trade is an integral part of the flower growing business and its ups and downs affect family income of the growers.

Post Harvest Handling, though not sophisticated and not involving cold store, is adequate as well and involves cutting, bunching and putting stems in vials with water or wrapping them in moist cotton.

The in most villages is rich loam and filled with micronutrients, the quality of the flowers and stems is excellent and vase life certainly domestic Bali market needs.

Motorscooter delivery boys take the flower, in bunches or bouquets, to a market of florist shops, restaurants and hotel.

Among the growers, one ambitious New Zealander, David Dowd, is interested in expanding Bali floriculture production, widening the assortment, importing other species from abroad, and building an export industry. He speaks fluent Indonesian. He firmly believes in the approach where a modern central farm transfer technology to small outlying growers, and purchases the product that they are able to grow in order to sell to the wider market. This out-grower system fits very well into the local values and family and community structure of Bali.

Supporting this grower is probably the best way to revitalize Bali floriculture.

The downside is that some donor agencies that may become involved in the project may reject the idea of a foreigner receiving funds for what are projects designed to stimulate agricultural progress in Indonesia.

The following is a SWOT analysis for dealing with Flora Bali and its' out-grower farm.

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> • Genuine love of plants and flowers by both David Dowd and the Indonesian farmers. • Experienced 	<ul style="list-style-type: none"> • Rising value of Rupiah • Rising value of land • Other options for employment with high 	<ul style="list-style-type: none"> • Able to target both the booming local market and foreign markets • Ample air cargo capacity 	<ul style="list-style-type: none"> • Strong competition from Malaysia and Thailand will force specialization in more unusual plants and orchids. • Growers

<p>growers.</p> <ul style="list-style-type: none"> • Top level science background and good plant growing technology • Excellent volcanic soil • Good climate • Ample opportunity to expand production by adding more out-growers. • Low cost shadehouse • Tourism develops both local and foreign interest in exotic plant species and orchids. • Good logistics and air cargo freight 	<p>earnings for the farmers.</p> <ul style="list-style-type: none"> • All farmer training materials must be developed on the demonstration farm. • Useful protocols for production of ornamental plant crops must be translated from English 	<p>to Japan, Russia and other major markets.</p> <ul style="list-style-type: none"> • Vertical integration of production to include truck delivery to clients • Training materials may be useful to other Indonesian groups that would contribute to their creation. • Volume propagation of new hybrid orchids for cut flowers and pot plants • Profits to be had from increasing use by hotels of potted orchids and cut orchids. 	<p>from other countries may patent Indonesian hybrids (no UPOV)</p>
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RECOMMENDATIONS

Expert inventions underwritten by AMARTA, spread over a 3 year period could speed economic development of the Flora Bali tropical floriculture out-grower project:

- Have him provide a budget for AMARTA funding for his project for the introduction of gingers and other tropical flowers in a JV with the Bali Botanical Gardens, similar to the joint-venture put together by Ball Seeds in Chicago with the National Botanical Gardens of South Africa. He also thinks that something

might be done with the Department of Primary Industry of the government of Australia in Northern Territory, Darwin Australia, a tropical floriculture area.

- Selection of various unique orchid species or hybrids from Flora Bali for propagation in tissue culture (a 2 year process) and sale among orchid growers in Medan and Lembang, profits of the sale to go to the breeder.
- Technical assistance and training in identification and treatment of pests and diseases in floriculture, in a regional integrated program
- AMARTA might help by providing agriculture training experts who knew about plant growth, fertilizers and floriculture in general, and experts in the concept of preventive plant health.
- He needs to be connected with an experienced grower, strong in finance, who can help him with feasibility studies on a wide range of foliage and plant products (the same person who does the feasibility study on 5 ha of foliage plants for Medan.
- He needs for AMARTA to pay Benny Tjia to fly over to help him once very two months for two days.
- Invite to him to Jakarta to attend the meeting of other orchid growers when the head orchid breeder of Singapore Botanical Gardens arrives to speak at a national conference in Jakarta on the subject of multiplying and reintroduction of rare orchid species into the wild.
- Underwriting of his travel expenses to attend the a floral export industry workshops as may be called by Karen Sjarief or the DG of Agriculture from East Java, for the purpose of designing a five year floriculture industry plant for both the domestic and export markets.
- Obtain commitment of Indonesian government financing for participation of Indonesian orchid growers in the World Orchid Congress in Miami, Florida, January 8-11, 2008, and in the World Orchid Congress in Singapore in 2011.
- Finance three of his farmer outgrowers to participate in the Ohio Short course experience as is being organized by Dr. Benny Tjia.

These suggested AMARTA floriculture interventions would affect:

- Two dozen small farmers in Bali
- One model orchid and tropical flower demonstration farm owned by David Dowd, Indonesian-speaking Australian resident in Denpasar.

AMARTA donations

Obtain for the growers photo illustrated books on pests and diseases of cut flowers and potted plants. Ball Publishing Books on Flower Diseases. Translated to Indonesian.

Obtain a basic plant pathology laboratory equipment for 'field hospital' for diagnosis of diseases for his farm.

CONCLUSIONS BALI ORCHID Garden

David Dowd, is an excellent orchid grower. The plants are healthy and floriferous. His experiments with other diverse tropical plant exotics have been successful as well. He sees this as the best way he can serve Indonesia by providing employment, technology and income to the rural area. He networks easily not only with out-growers, but with growers, academics and government people throughout Indonesia.

Currently the floriculture market in Bali is short of orchids, anthurium, some heliconias and philodendrum David Dowd is keen not just on fulfilling this domestic Bali and taking his product for sale in Jakarta but his business plan includes export to Asian markets and to Europe.

David Dowd has had very positive experiences when dealing with the Indonesian government and with the private sector. It would be opportune to have him attend a price negotiating session between the growers desiring to export horticultural products and the head of sales of Singapore Airlines to hammer out a lower price in order to promote the export of high value horticulture products from Indonesia, a price competitive with Malaysia and Costa Rica.

David Dowd could work easily and efficiently with the Bogor Botanical Gardens laboratory tissue culture unusual "species orchids" of Indonesia and start a program to reintroduce these species back into their natural habitat, selecting the most promising orchids that meet cut flower or pot plant commercial criteria.

David Dowd's experience would be helpful to government (national and local) in properly developing export floriculture on the tea plantation at Gunung Mas or on a project near Manado, N Sulawesi.

He would be helpful to the Ministry of Agriculture plant quarantine office in helping them to function in a more-timely and effective manner.

David Dowd sees great export potential in a very wide assortment of tropical floriculture.

David Dowd has energy and ideas and wants to organize Indonesian farmers like Subac. He would be a good man for the purpose of linkages of farmers to foreign markets.

West Java

BOGOR, BANDUNG, LEMBOCK AND CIHIDEUNG, in West Java, is an area of temperate climate hill country at and around 1300 meters altitude with a mild climate year around.

Current production

Though these towns are not geographically contiguous, the farmers, including perhaps up to 10,000 farm families, produce a similar and very wide range of annual and ornamental perennial, plants and, in the case of Lembock, even topiary trees. The predominant commercial species grown are field grown roses in plastic bags and pots in Lembock, Experimentation in new plants and new sizes of plants, growing under shadecloth and in shade-house and even in poly greenhouse is visible in all of these villages.

95% of the families here make their living from cultivation of flowers. They do not participate in the whole value chain spectrum. They do not deliver to the market in Jakarta or the other large cities in Java, nor do they do wholesaling or retail sales in the city markets. About half the farmers sell direct to clients at “farmgate” and about half of the farmers distribute for their neighbors. Mark-up to the final wholesaler, such as the glamorous Bina Flora in Jakarta Pusat, must be high, as the comment there was that the good quality locally grown roses and chrysanthemums were MORE expensive than imports from Holland.

Despite the apparent good influence of government agriculture extension agents, activities of the academic institutions such as Agriculture institute of Bogor (IPB) and such brilliant pioneer growers as Ayub Parnata, Dr. Benny Tjia, and the inspiration of large floriculture projects such as Saung Mirwan (16 ha Japanese chrysanthemum and lisianthus cutting grower) and Rumah Bunga Rizal,(Phaleanopsis orchid plant grower and pot orchid seller), the farmers still attempt to grow a wide range of products that are not improved varieties (more productive, disease resistant) and in small quantities of each flower in each plot resulting in inefficiencies and lack of economy of scale.

The soil, volcanic in origin and very high in micronutrients, and a benign climate means that the product has robust stems and looks attractive. Yet, all of the efforts of the growers could result in much higher productivity and a better quality more acceptable in the market that could be sold at a higher price, if better cultivars were imported from abroad.

Despite high tech facilities in Bogor there is no smaller plant pathology laboratory where growers can send problems found in the field for analysis, at a low cost, with 24 hour turn-around service and recommendations for what prevention and control methods should be used.

The following is a SWOT analysis of the Bogor, Bandung, Lembock and Cihideung areas gives a brief idea about these flower-growing communities.

Strengths	Weaknesses	Opportunities	Threats
Genuine love of plants and flowers. Experienced traditional growers. Excellent volcanic	Isolation from end market. No quick plant pathology laboratory access	Send Benny Sembiring, a young farmer leader and other early-initiator	Increasing isolation from the national agriculture education programs Exploitation by the

<p>soil</p> <p>Good climate</p> <p>Low cost shadehouse</p> <p>Strong grower organization and community values.</p> <p>Relatively closer relationship with academic and research institutions than elsewhere in the country</p> <p>Some integration of education and production</p> <p>Problem-oriented interdisciplinary training and research</p>	<p>Old planting material with varieties that are not disease resistant.</p> <p>New flower crops still in the experiment stage (Dr. Tjia) and not yet out with the growers.</p> <p>UPOV problems in protecting locally produced hybrids</p> <p>Useful protocols for production of ornamental plant crops still not widely used.</p>	<p>farmer leaders to short courses on good farm practices.</p> <p>Include a representative of this group of growers in the national planning process for development of a floriculture Industry</p> <p>More closely involve the Agriculture University of Bogor (IPB) in the training of these farmers.</p>	<p>traders and truckers that leaves the growers mired in poverty</p> <p>Traditional growing systems are familiar and new growing practices may be rejected.</p>
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RECOMMENDATIONS

Expert inventions underwritten by AMARTA, spread over a 3 year period could speed economic development of the Flora Bali tropical floriculture out-grower project:

- Farmer-leaders such as Adil Hendra, need more books on growing technology and information on pests and diseases
- Farmers need access to cheaper long-term (3 year) financing for obtaining new planting material (potted roses).
- A concept of a mobile plant pathology lab, like a field hospital MASH unit, should be developed and at one unit deployed near the growers, where they could get immediate solutions to their pest and disease problems and their fertilization inquiries. They could be gifts of AMARTA and given to farmers in Cihideung village in Cihideung, Parangoong, Bandung. Employees to be trained at IPD, the Agricultural University in Bogor.
- Obtain subscriptions to various floriculture production magazines and to FloraCulture International and Flower Tech, and several copies of Floriculture

Plants and Diseases from Ball Publishing for village leaders such as Andil Hendra of Cihideung.

- Finance establishment of 20 experimental plots of the most promising annuals being produced by Benny Tjia into the village production system, and finance his oversight of their introduction into the local floriculture economy.
- Get the latest Danish ornamental capsicum seed down to Cihideung.
- Get 8-10 of these growers, including the large ones like Deddy Hadinata and Dr. Tjia, and the small farmers like Adil Hendra, up to Horti Fair in Amsterdam in October, and then out to visit rose and “other plant” flower nurseries including CBA, Sahen, NIRP, Rosen Tantau, Meiland in the Netherlands, and then go on to visit a potted rose nursery in Denmark, where they can bring back (see below) rose plants from Roses Forever.
- Get the Danish breeder of pot roses, Roses Forever, in to Cihideung for a sales pitch to these farmers.
- Involve Adil Hendra and other key leaders in this group in any national floriculture industry planning groups with the other big growers around the country of Indonesia.
- Finance the participation of at least six, including Adil Hendra of the village of Cihideung, to the Ohio State Short Course—see Dr. Benny Tjia. As long as the farmers return to the Bogor, Lembock and Cihideung, this Ohio State Short Course educational opportunity should be financed by AMARTA every year for the length of the program.

These suggested AMARTA floriculture interventions would affect:

- 10,000 farm families in this upland Indonesia area

AMARTA interventions and workshops in floriculture would be useful throughout this area. But important as well would be aid to the Indonesian Ministry of Agriculture in redesigning the organization of dissemination of production information including more efficient use and organizing their existing agricultural consultants, extension agents and staff and facilities in the Bogor, Bandung, Lembock and Cihideung area through upgrading their ability to handle the more demanding problems of perishable horticulture, specifically floriculture.

A step-up in the size and scope of the IPB program providing students of agronomy with 3-months of practical experience in the area of these four villages of Bogor, Bandung, Lumbock and Cihideung would provide students with practical experience and farmers with a way to access new growing technology. It would be important to analyze how best AMARTA could contribute to this effort that would train a whole generation of students in floriculture and a whole group of floral farmers in the best methods for growing and packing their flowers.

AMARTA donations

Planting material (commercial hybrids of roses for both potted roses and rose cut flowers) to use in demonstration plots.

Obtain for the growers photo illustrated books on pests and diseases of cut flowers and potted plants. Ball Publishing Books on Flower Diseases. Translated to Indonesian.

Obtain a basic plant pathology laboratory equipment for 'field hospital' for diagnosis of diseases, pests and virus. Bright lights. Petri dishes. Microscope.

CONCLUSIONS BOGOR, BANDUNG, LEMBOCK AND CIHIDEUNG

Exciting developments in temperate floriculture are already taking place in these Java highlands. Access to city markets in Indonesia as well as export markets in Japan and other countries is already working, though marketing could be improved. The plants are healthy and floriferous. Experiments with new shadehouses and planting methods have been successful. But a whole group of farmer-leaders would benefit from exposure to training courses, exposure to agronomy students on internships, training at IPB, the Agricultural University in Bogor, and possibly, a trip to the Ohio Short Course within Dr. Benny Tjia's program. Where this can be encouraged and financed by AMARTA, this should be done. In fact, all of the ideas of these pioneering educators like Benny Tjia should be fully underwritten under the AMARTA program.

Improving his skills will improve the floriculture business in Bogor, Bandung, Lembock and Cihideung and the whole local economy of these towns and villages will continue to improve.

4. Consultant Activities

The USAID/DAI AMARTA Project contracted an Agriculture Value Chain Survey (AVC) for tropical floriculture in Indonesia, and an assessment of the potential for developing a viable tropical floriculture export Industry. In 2005 the value of exports of Fresh Cut Flowers was the following:

- Europe 3 billion Euros
- Colombia 800 million Euros
- Ecuador 500 million Euros
- Kenya 300 million Euros
- Israel 150 million Euros
- Singapore 20 million Euros (and aiming at a 10-fold increase in 5 years)
- Indonesia 3 million Euros

Almost half of the Indonesian fresh cut flowers go to South Korea, and the exports are handled by a Korean trader. Why is the cut flower industry of Indonesia so insignificant? (See EXIM Chart). The consultancy was designed to find the answer to this question, and to see if a floriculture industry could become important in Indonesia.

The survey began in Singapore to explore what floriculture products could be imported from or exported to Indonesia, and if it might be possible to attract Singaporean investment in floriculture projects in Indonesia or if joint ventures with Singaporeans might be possible. The consultant then traveled to Indonesia to survey the situation in:

- Medan, North Sumatra
- Berastagui, North Sumatra
- Bogor, East Java
- Denpasar, and upland Sembung and Pancasari, Bali
- Bandung, Lembock and Cihideung, East Java
- Jakarta

Activities and interview results of the three week consultancy of July 2-26, 2007 included the following:

July 2 and 3, 2007 Travel from France to Singapore (Montpellier-Paris-Singapore)

July 3, 2007 Tuesday

Pick-up at the Changi airport at 7 pm upon arriving from Paris by **Ms Rona EE**, member of American Institute of Floral Designers (AIFD), lead floral designer and part of the family owners of **Sing See Soon** florist. (65) 9683 7772. singseesoon@gmail.com

Dinner with the Rona Ee and with Sebastian Ee, Flowers by Sebastian and his girlfriend, Mary, at seafood restaurant, until 1 am. Sebastian Ee's telephone is (65) 81395892. flowersbysebastian@gmail.com Discussions of the Singapore flower and foliage import and export industry, from the point of view of the Ee family. They import flowers from many sources including Holland, Colombia, Australia, China and Korea. They export fresh cut flowers to Hong Kong, China and Japan. Both Rona and Sebastian Ee are "events" consultants. They do wedding floral design and party planning. They are called to work abroad. Most recently they have done the wedding of a princess of the royal family of Jordan, a very large party in Jakarta, and parties in Korea and Philippines. They both have done floral arrangement demonstrations and teaching in the US and the Netherlands.

July 4, 2007 Wednesday

Interview Mr. **Too Peng San**

Owner, **Toh Orchids**

President of the Flower Exporters' Association of Singapore

No. 84 Sungei Tengah Road End

Choa Chu King Suburb

Singapore 698986

Tel (65) 6 760 4822 / 6 760 5020

Direct Hand Tel (65) 9752 0580

www.tohorchids.com.sg

tohorkid@pacific.net.sg

Mr. Too Peng San sees Singapore is one of several regional players. The major Singapore production is in Malaysia (Mr. Too has a 35 hectare JV in Johor Bahru, Malaysia). Singapore and Malaysia are complimentary. The costs of labor and land are too high in Singapore and land is scarce. "The high price pressures stimulate us to export higher quality, freshness and good connections to the markets. We easily serve the West Coast of the US, the Maldives, the Seychelles and other markets with direct flights.

“We service wholesalers and large retailers in the UK—even spas through wholesalers and we have a client called “American Club’ with 200-300 members in the US that we label boxes for and send direct to clients by UPS. Mothers’ Day and Christmas are big sales days for orchids for that client.

“Only a handful of exporters in Singapore ship out 15% of the world’s tropical orchids. The sales peaked at S\$32,000,000 a few years back, but economic recession in our major market, Japan has brought that export sales number down by 50%. “But we think the market in Japan is coming back. My son, who manages the operations at Toh Orchids and I just renewed our 20-year lease on our land here in Singapore.”

“Our strongest point in Singapore is the high quality of orchids and our genetic bank which will guarantee our potential for the future. The genetic orchid improvements are coming out of the Singapore Business Cluster (see interview with Mrs. Lam below) at the Singapore Agriculture and Veterinary Authority (AVA), at the Singapore Botanic Gardens and from our hobby growers in the ASEAN region (Orchid Society of Southeast Asia—OSSEA) like Professor Syed Alsagoff. Most of the material being produced however is in the line of potted orchids.”

“We have had some big successes like the pale pink, large-flowered Dendrobium, D. Lucian Pink, which was an improvement of D. Toh Pink done in 1993. The latter was not a licensed or protected variety and competitors ‘stole’ it from me. Now we are sitting around in Singapore and waiting for ‘someone’ to come up with other great cut flower varieties. The Hybridizer has to ‘match’ to the market—catch the eye of the consumer, and have a wide variety of hybrids that are cheap enough for the grower to afford them. There are, after a long hiatus, some in the pipeline that should be available in time for the WOC 2011 here in Singapore. Furthermore Singapore has now signed UPOV and there is gene research and color gene manipulation and we expect that if they (the scientists) can create better rice for Burma, we can create dendrobium orchids with impact that will sell in volume and bring high returns. A new dendrobium, “D. AVA” has already been registered.

“Regarding Singaporean investment interest in Indonesia, we have the motivation because Singapore lacks domestic market and land, but there is some antipathy between Singapore and Indonesia and the logistics are bad. The positive appeal of Indonesia for Singaporean growers is that the volcanic soil is good and the labor is cheap. Qlso, the Bandung area is like the Cameron Highlands area in Malaysia, which is controlled by Malaysian producers. Production there would give us an array of product from tropical to sub-tropical and temperate.

“There is Taiwanese investment in Indonesia. “8” is a farm owned by Taiwanese and producing phaleanopsis orchids and anthurium for export to Korea. But we see that the investment has to be very big and the Singaporeans have to control the power.

“We had a lot of investment in the production of Oncidium “Golden Shower” in Johor Bahru, but the production changed to the improved Oncidium “Gower Ramsey” variety and is now grown very well in Taiwan. Now in Johore we grow Mokara , Aranda,

Aranthera. We let the Thai growers handle the low price market and we go for exclusives and give them a “price umbrella” at the upper end of the line.

In Singapore the land lease is for 20 years. It is based on “cooperation”, which means that we will have small farms in Singapore but most of the production in nearby countries. Singapore will continue to grow the “spice” in the orchid market while the nearby countries will provide the “main course” to the major markets. “Thai floriculture exports have reached around US\$200,000,000.”

“Indonesians, if they are serious, will have to join together and set up a collective tissue culture laboratory. But before that they will have to know their market and start from there. A tissue culture laboratory serves to propagate, but the growers have to know what plants to multiply to please the market and that grow easily.

“The Wiltech Agro (Willington Orchid) experience shows what can be achieved in Indonesia. (a huge Indonesian farm on Pulau Bulan, an Indonesian island near Singapore, a project led by the Singapore entrepreneur, Major Neo, who died in 2005, the project reverting to Indonesian control and abandoning orchids for cut foliage and more industrial projects). It was not a technical failure. It was not an industry failure. But there was a political change in the Indonesian government. Banks took over and could not run a flower farm. The Salin group acquired the whole island from the banks. They went out of orchids and most of the foliages, and thought they grow some Pachira plants, they are going to use the island for shipyards and wharfs for their shipping operations.

“But the Indonesians will have problems. Management organization is a problem. You have to give opportunities to small farmers and give them thins to grow and find them a market for them. This is ‘nuclear growing’ and they will have to perfect that model. The problem is the human factor, the poor logistical facilities and the packaging. But, we all are geographically positioned near China, a giant vacuum cleaner for product of all types.”

To scale up Singapore's flower industry, the Singaporeans are looking to create a flower exchange or a marketplace where international players can gather to buy and sell. Industry players say they are considering various trading mechanisms such as the Dutch or open auctions to be located in Singapore.

Singapore's flower export industry is now worth some S\$40m (\$25 million US). They are aiming to increase it tenfold in the next five years.

July 5, 2007 Thursday

Visit to **Mandai Orchid Garden**. This is a tourist orchid garden that is a part of the company called, Singapore Orchids Pte Ltd, 200 Mandai Lake Road, Singapore 729827, Tel (65) 6368 0672. www.mandai.com.sg

vanillapod@mandai.com.sg

This tourist garden with many vanda, aranthera, mokara and aranda orchids is a popular venue for local Singaporean weddings.

July 5, 2007 Thursday continued

Interview: **Tim Wing YAM**, Director of Orchid Breeding, **Singapore Botanic Gardens**, National Parks Board, Singapore.

Tim Wing YAM is 48 years old and has spent 15 years at the Singapore Botanic Gardens. The SBG falls under the National Parks Board, which is part of the Singapore Ministry of National Development, (as is the Agriculture and Veterinary Authority, and their Research Director, Mrs. Lam, was interviewed later in the day. See below.) All financing is from the Government of Singapore. The SBG and the AVA are the only two support institutions helping the Singapore flower growers, and they do very little for cut flower growers.

Orchid breeding is one of the purposes of the SBG. Currently there are 1,000 species and 2,000 hybrids found in the Gardens' collection and every year more vibrant hybrids are added. It is the largest display of orchids in the world. The crossing of orchid plants and the successful seed propagation in tissue culture at the SBG was begun in 1928 by Professor Holttum and he discovered that the right symbiotic fungus must be present to get the seeds to grow in the media and obtained his first successful hybrid cross in 1932. Since then the SBG has registered 470 new orchid hybrids. Most of their breeding is done for the gardens itself and consist of tall landscaping plants with long life on the plant and striking shapes and colors. Mokara Singa Gold is one of the best known but there are many and most are named after famous visitors and dignitaries, who have come to the SBG on official state visits. Splendid examples include a mahogany red dendrobium called D. Hifikepunye Pohamba, a cross of D. Jaqueline Concert X D. Intan Delima registered in November 2006, as well as a white dendrobium called D. Faisal El Fayez, named after a Jordanian prince, which is a cross of D. Masahito and Hanako X D. phalaenopsis.

A second mission at the SBG is their conservation program. There are 180 to 200 orchids native to Singapore of which 70% are on the way to extinction on the island. They have developed an orchid seed bank and a program to reintroduce native orchids into their native habitat. They succeed in reintroducing about 200 plants per year. In 2006 they introduced 4 new species to their natural habitat in Singapore:

1. *Grammatopyllum speciosum*, the "Tiger Orchid" yellow and green with brown spots, is an epiphytic orchid plant, an example of which survives 100 feet above the ground in Saba, weighing one tonne. It has two-meter long sprays and flowers 8 cm in diameter.
2. *Bulbophyllum membrenaceum* of which only one single species plant has been found in Singapore.
3. *Bulbophyllum vaginatum*, a gregarious blooming species, where all of the blooming from all of the orchids happens at the same time and lasts only two days.
4. *Cymbidium finlaysonianum* which though its flowers are not showy, has beautiful silver and gold edged leaves much appreciated by the Japanese and Chinese culture and is not

terrestrial as most cymbidiums, but an epiphyte. Its inflorescences are 2 meters long and the flowers are chocolate-greenish in color.

In 2007 Yam Tim Wing is working on saving and reintroducing into its native habit a species called *Cymbidium bicolor*, of which there is only one plant left and they have succeeded in collecting and germinating the seed and the offspring are one-foot tall.

Other responsibilities at SBG include bringing the conservation message to children of Singapore, teaching them about native natural plants in hopes that future generations will continue to save native orchids from the encroachment of urbanization. “Without orchids, we cannot breed.”

Yam Tim Wing cooperates with experts in Guangxi Province in China, which also has very rare species of native orchid and spoke at their conference in 2004. He also spoke at the Malaysian Native Orchid Conservation Conference on conservation. His concern is that most of the countries of Southeast Asia grow seedlings but do not actually replant in the natural environment.

He is also, together with his other colleagues, is preparing the program for the World Orchid Congress to be held in Singapore in 2011. This WOC is held every three years in a different country around the world, the last being in Dijon, France in 2006. There he will give a speech on the history of the SBG program over the last 80 years. He also hopes to present new orchid hybrids. (He will send me information as they appear.)

The new orchid hybrids must be new and exciting to people meaning with bigger flowers or interesting shapes or unusual colors or fragrance. He thinks he will have ten new dendrobiums by 2011 that will have been given “trade names”. One new one is named “8” which is a lucky number in several of the Asian cultures.

YAM Tim Wing also teaches classes in genetics and plant breeding at Ngee Ann Polytechniauem, entertains SBG visitors, teaches orchid-growing classes to the public, publishes research papers, and works with gifted students sent to him by the Ministry of Education the various protocols of research, how to do analysis and how to write research papers. He publishes in the Malaysia Orchid Review, Orchid Biology and other peer review journals on subjects such as “orchid seed germination” a subject of interest to the scientific community because, in orchids, the time from pollination to maturity may vary from one month to up to 1.5 years. (He will send an orchid conservation article.)

July 5, 2007 Thursday continued

Interview: **Lee Tiang LAM-CHAN**, Head of Horticultural Research, Horticulture Branch: Sembawang Research Station, **AVA**, Government of Singapore. Lorong Chencharu, Singapore 769194, Tel (65) 6751 9820m <http://www.ava.gov.sg>

Lalm-chan_lee_tiang@ava.gov.sg

Mrs. Lam is responsible for the governments research work on all agricultural products, so most of her budget goes to vegetables and pigs and other domestic animals, but she personally is keenly interested in orchids and AVA serves as the secretariat of the

Orchid Business Cluster (OBC), a grouping of the growers, exporters, floriculture associations as well as various bodies of the Government of Singapore, which was formed in 2003.

The objective of the OBC is “to garner the resources of Singapore’s Exporters and growers to formulate strategic plans to strengthen Singapore’s position as a world-renowned exporter of tropical orchids and to move the industry forward in today’s fast changing business climate.” It aims to:

- Identify and address challenges of the Singapore Orchid Industry
- Enhance marketing and promotion of Singapore orchids worldwide (trade missions and trade shows in Singapore and abroad and the WOC to be held in 2011 in Singapore, activities sometimes supported financially by the International Enterprise Singapore and by the Singapore Tourism Board.)
- Explore opportunities for overseas investments and expansion of production bases in the region (Johor Bahru, China, Vietnam and possibly Indonesia)
- Harness the resources of the orchid industry to develop new products.

The first exports of Singapore cut flower orchids began in the 1950s. Exports reached S\$2,000,000 in 1970 and peaked at S\$34,300,000 in the early 1993, but in the recent years the cut flower exports have dropped back to around S\$14 million. The majority of these orchid exports go to Japan. The falling off of the Japanese economy a decade ago meant that not only fewer orchids were imported, but shorter cheaper Dendrobium orchid sprays from Thailand because of their lower air transport costs took market share from Singapore. This was the cause of many Singapore orchid farms closing and reopening in Malaysia. In 2007, of the exported Singaporean orchid cut flowers about 40% are actually grown in Johor Bahru province of Malaysia. Meanwhile Singaporean growers are specializing in high-value orchids and have become known for their top-of-the line orchid hybrids.

Floriculture exports as a whole were S\$54.2 million in 2006, exceeding by far the exports of orchid cut flowers, because the category includes the export of S\$13-14 million of aquatic plants, of which Singapore is the world’s major exporter, cut foliage and ornamental plants. The aquatic plants are exported to, in order of importance, UK, Germany, the rest of Europe and Japan.

The role of the Singaporean government is given by a statutory law which gives the AVA responsibility for the regulatory role including the issuance of Phytosanitary certificates and CITES certificates required for export. The AVA is very pro-industry in their relationship with the growers. On the other hand they leave all export marketing and clients, collections and so forth to the individual growers who compete aggressively for foreign markets.

The government has a seed germination and small plant tissue culture propagation service and charges S\$50 per orchid pod and \$S .50 per plantlet. There are anywhere from 5000 to 5,000,000 seeds per orchid pod (though of course limiting the propagation to 5000 is normal). The Research center at AVA does only 150 to 200 orchid pods per year. The private sector may be much cheaper, perhaps only S\$.20 per plantlet.

Local orchid breeders, some of them very experienced, also contribute new varieties.

The main floriculture exports of Singapore are cut flowers and cut foliage. The latter may be grown in Johor Bahru but the treatment and post harvest is done in Singapore and this is considered a value added prior to export. Exports are of Dendrobium (over 50%) Mokara, Aranda and Aranthera. Exports of other orchids are from other countries, for instance Vanda and Cymbidium are done in Thailand and Taiwa, which have better climates and are closer to the Japanese market.

Value added in Singapore is defined as service and efficiency and the use of the Changi airport which offers 70 airlines and service to 51 countries and 152 cities with 3250 scheduled flights per week. There is a cold room available in the airport, but the growers must pay for that service, so most of the exporters do just-in-time deliveries in their company-owned cold trucks.

Batan island, Bintan Island and Karimum island, near to Singapore, are only one hour by ferry and, though in Indonesia, can take advantage of the Singapore infrastructure.

The largest orchid grower in Singapore is Orchidville with 43 hectares, followed by Ki; Seng with 16 ha but most of the Singapore orchid farms are 2-5 hectares. Everyone does their own exports and they do not share client information.

In Singapore the orchid industry is here to stay, says Mrs. Lam, head of research at AVA. Singapore has been designated as a “Garden City” and a “Green City” and the government is very supportive. An enormous hotel and casino complex is being built and that will require orchids in large quantities. Since there is no more land for growing floriculture crops, productivity will go up and automation as well making use of more skilled labor. The object will be to specialize in premium quality. The idea is then to export the technology and have other nearby country growers make use of the Singapore facilities. Entrepreneurs are not AVA’s mandate but the entrepreneurial attitude is of great cultural importance in Singapore and the private sector will undoubtedly do this on their own.

Research and Development are up to the floriculture industry in Singapore but they must seek it out. At their disposal is the Temasek Life Science Institute which offers molecular manipulation for gene insertion and DNA fingerprinting (though so far they have not done this in orchids except for Professor Chia who inserted a firefly gene in orchids in the 1990s), the Nanyang Technology University (NTU) and the National University of Singapore and several polytechnics. These institutions can potentially help growers with nutrition, automation and fertigation. The Singapore Botanical Gardens (SBG) which is under the National Parks Board, and a sister organization to AVA, no longer does cut flower breeding or evaluation.

The office of Mrs. Lam at the AVA also serves as the secretariat of the Orchid Business Cluster (OBC), which was established in May 2003. The objective of the OBC is to “garner the resources of Singapore’s exporters and growers to formulate strategic plans to strengthen Singapore’s position as a world-renowned exporter of tropical orchids...” It aims to:

- Identify and address challenges of the Singapore orchid Industry
- Enhance marketing and promotion of Singapore orchids worldwide.
- Explore opportunities for overseas investments and expansion of production bases in the region (Johor Bahru, Indonesia, Vietnam, China trade missions); and
- Harness the resources of the orchid industry to develop new products.

The Orchid Business Cluster (OBC) is comprised of representatives from various floriculture associations, growers, exporters as well as government bodies.

- Orchidville Pte Ltd (Chairman)—see interview below with Joseph Phua
- Floriculture Association of Singapore
- Singapore Floriculture Association
- Singapore Flower Exporter’s Association
- Singapore Hortiflora Federation
- Singapore Orchid Growers’ Association
- International Enterprise Singapore
- Singapore Tourism Board
- Asia Orchids Pte Ltd
- Fun Florist and Nursery
- Globe Eximport Pte Ltd, Katong Flower Shop Pte Ltd, Mandainia Orchid Group
- Premium Orchids Singapore
- Agri-Food and Veterinary of Singapore (Secretariat)
- Toh Orchids Singapore
- Tropifame Floral Design School
- Woon Leng Nursery
- World Farm Co. Pte Ltd

- Zion Orchid Enterprise

July 5 2007 Thursday continued

Orchidville Pte. Ltd.

10 Lorong Lada Hitam

Singapore 778793

Tel 6552 7003

www.orchidville.com

orchid45@singnet.com.sg

Interview and lunch with the owner, Joseph Phua. Orchidville, is the owner of a nursery, a florist shop, a restaurant, an events planning and wedding service and does retail and wholesale export and import. He also gives ten flower workshops per year at the hotels (which triple the value of the product and furthermore encourages the hotels to use orchids.) He provides hotels with arrangements, design and vases, and does functions such as weddings and incentive parties up to midnight and is busy to 2 am in the morning clearing out the floral decorations and vases from the function rooms. He does lobbies and guest rooms as well. The Orchidville production area covers 43 hectares and concentrates on Mokara orchids.

He says that Singapore hotels and the public in general think of orchids as sort of backyard flowers and underestimate their value, whereas the Japanese will pay S\$ % for one stem of dendrobium and in the US they will pay S\$ 1.50 per stem at retail. In Singapore he can only get S\$0.50 per stem. Tourists to Singapore see orchids as relatively exotic and rare and there are 5,000,000 tourists that visit Singapore each year.

The Phua family (siblings of Joseph Phua) have immigrated to California and purchased the Oakland Flower Market Center and import from the Orchidville farm in Singapore. The family says that the cost of living is lower in California than in Singapore and there are more business opportunities.

Two million dollars of orchids are exported to Oakland, California. The US market may have much bigger potential for Singapore orchid sales than these imports would indicate. Some of the stores in the San Francisco area take from 20,000 to 50,000 stems per week and Mr. Phua has received requests for 200,000 orchids from one retail store alone for a wedding event. There are five to six airlines that service the Singapore-SF route and the price is S\$ 5-6/kg plus an additional S\$ 1 security and fuel surcharge. This is high, and so in many cases he does not send the longest stems of orchids to save on freight and keep the retail price in California within reason.

Orchidville has ancillary activities. There is a restaurant called Forrest and even though it has only been opened one month, it is booked already for 6000 dinner guests for the end-of-year festivities. July 21 there are 200 people coming to High Tea, August 31, another 100 guests booked for High Tea, and there are 3 weddings planned for November with 350 and 450 guests each. Nonetheless, the future of Orchidville in five years is “difficult to say”. One of the main problems is lack of workers. In Singapore the living cost standard is high and there is no public health care. Employing one worker costs S\$ 2000 per worker per month plus 400 per week for each worker that must be paid to the government plus full medical coverage. He says it costs S\$5000 for 5 days in the hospital and this has to be paid for workers whether from Singapore or India or Bangladesh (some of which are simply sent back to country of origin if they become ill).

In Malaysia, one hectare costs S\$10,000 with water, road access and electricity. Malaysian workers are paid 800-900 ringgit and 600-900 for farm workers whereas it costs S\$ 2500 for a similar worker in Singapore.

Joseph Phua does orchid breeding like a number of other growers in Singapore. He breeds for cut orchids. Those plants that do not serve as cut flower orchid producing plants can be sold as pot plants he says. He has five criteria for selection of orchid plants for cut flowers;

1. The market can accept the variety
2. There is high productivity per plant
3. There is tolerance to weather change (flowers should not be damaged by heavy rainfall)
4. Disease resistance
5. Vase life in excess of 2 weeks (Thai varieties only last a week in vase)

Joseph Phua says that he does his own orchid crosses and then sends the seeds to Thailand and pays S\$.60-.70 for Thai the labs to grow out the seedlings, instead of paying the S\$1.00-1.20 in Singapore. He gets back 10 cm seedlings from the Thai tissue culture lab. That way he has his own hybrid seedlings. In 2005 he already started breeding a whole new group of cut flower and plant orchids for the World Orchid Congress to be held in 2011 in Singapore. He will be doing the selections in 2007 and has hopes that there will be available a 1,000,000 Singapore orchid plants for sale in 2011. He expects that another million will be sold from other Singapore growers and about 3,000,000 from growers fro; the ASEAN region (mainly Thailand). He says that Singapore has signed UPOV agreement and that the fingerprinting is available and the National Breeders’ Rights respected so the royalties should start coming in to growers.

He says the strong bright colors popular in the since the late 1990’s (like Purple Highland and Aranthera yellow) should be going back to pastels by 2010. He says that this ability to follow color trends is one of the things the Singapore breeders must do, because they must sell their plants at a higher price. Singapore labor costs four times as much as Malaysian labor.

Again he mentions that getting workers is almost impossible in Singapore and that when the big hotels and casinos are built, it will be even more difficult. It is easier to hire a chef (Malaysian) than get farm laborers in Singapore. Singapore workers want the prestige jobs and look down on farm work. He admits that it may be easier for the owners of smaller orchid farms of say, two hectares, when there are lots of family members to do the work and the Government of Singapore allows the hiring of one foreign guest worker for every family member working on the farm.

July 6, 2007 Friday

Hock Wee Nurseries Sdn. Bhd.

Lot 3550, Jalan Tai Hong

81900 Kota Tinggi, Johor, Malaysia

Tel +607-883 6291 m 883 6296

hockwee@pd.jaring.my

HP Chee Hock Lee +6019-7129-168 answers his phone 24 hours a day.

Interview and visit to Singapore packing center then drive to Johor Bahru for a visit to the farm, lunch, another farm visit (there are four farms and I visited only two) and a dinner with conversation that went until I am with **LEE Chee Hock**, 39, his wife, Mai Leng, his brother LEE Chee Wee, 38, his sister, Cheryl, 35, and their mother, Mrs. LEE. The largest orchid and foliage farm in Malaysia is run by this family, started by Mrs Lee's late husband.

This second generation team of two brothers and a sister, with their mother doing office, accounting and finance, are a very strong management team and sell their product under the label, "**Zion Orchids**" and the farm, with its office, cool store and shipping center in Singapore, are frequently referred to as Zion Orchids.

Zion Orchids has 500 acres total under their control, of which they own 300 acres on four farms and lease an additional 200 acres. They also buy from and pack for 20 additional growers of foliage and tropical flowers that may constitute another 100 acres. They are expanding in 5 acres at present and looking to purchase more land and possibly a 100-1000 acre existing oil palm plantation.

They would be interested in working with a similar operation in Indonesia, perhaps in joint venture, but where they owned the land. Chee Hock LEE has already done tentative investigation in Indonesia. Their farm operations manager is familiar with Indonesia and their top managers are Indonesian and they have 400 of their total of 500 farm laborers and supervisors who are Indonesian guest workers in their operations in Malaysia. The 50 remaining workers are from south India or Bangladesh. "It would be fairly easy to move part of our work force with a couple of good managers from our operation into Indonesia if we could find the right conditions including the chance to

own the land ourselves. We could also work in a joint venture in which we would put up the technology and the seed, participate in the investment, and divide profits after the initial investment had all been paid back. There are various formulas that would work with us.”

Zion exports about 25-35 tons of ornamental cut foliage and floral product per week, of which 40% goes to Japan, and of that 8 tons per week to one client, YMS in Osaka and a much smaller weekly standing order goes to Classic Japan. The remainder of the exports is spread among 40 clients throughout the world including the US, Europe, the Middle East and Australia.

All of these exports go from Changi airport in Singapore. Since 2005 the product is mostly labeled as originating in Malaysia, but they remove the Malaysian logo from the export paperwork when going to New York, San Francisco and Seattle because it is “easier to get through PQ if it is assumed to have originated in Singapore.” The phytosanitary certificates are reissued from Singapore and the CITES is issued by Singapore’s AVA. The JSB form is from the Department of Agriculture (DOA) in Singapore.

There are apparently over a million Indonesian workers in Malaysia. The 400 who work for Zion Orchids are almost all 18-28 years old and male and on a three-year contract renewable up to five years. The most intelligent and talented workers who want to stay on are rehired in supervisory and agronomist positions and trained within the organization. The farm manager of one of the farms that I met was a mature and responsible Indonesian man who had been with Zion orchids 18 years.

Entry-level laborers make 16 Ringlets per hour (S\$ 1 = 2.24 Ringlet = US\$1.37). They work ten hours per day and then go to S\$1.50 per hour for overtime. Workers, who live and eat at the farm, like to work at least four and often six hours of overtime per day. So an entry-level Indonesian worker earns US\$16 or more per day.

The longer the worker is at Zion his hourly wage increases (going from say 16 to 20 Ringgits per day). They also go from living three men to a room suite with bath and kitchen, to just two men per room suite and then in the third year have a room, kitchen and bathroom to themselves.

The Indonesian salary is only one fifth a Singapore salary and only one-third of a Malaysian salary.

Tropical floriculture production in Malaysia has many advantages for ‘foreign’ entrepreneurs such as the LEE family. The soil, the abundant underground water availability, the climate, the nearness to Singapore are huge comparative advantages for their tropical cut flower and foliage operation. But in 1970 part of the farm (which is on the highest ground in the region) flooded not just once, but twice. Nonetheless, this was just a minor setback. They want to expand. Acquiring land in large farm plots of 100 acres plus is difficult for non-Malaysians and the price is going up because oil palm, the competing crop, is going up in price as palm oil is being turned into bio-fuel.

Regional thinking by Singaporeans is part of the entrepreneurial attitude. They want to put the farms where there is respect for the law (farm ownership will not be challenged and taken over by local government and where stealing and under-the-table payments to bureaucrats are not problems). The language problem must be surmountable. (Mandarin speakers of Singapore manage to work in Chinese, English, Basse Malay and some, but not all, of the Indonesian dialects). They look askance however at the Indonesian government's proposal to turn Bintan Island in Indonesia, and close to Singapore, into an island for growing of fruits and vegetables and flowers with Singaporean technology and buy-back arrangements.

Major Neo, a brilliant Singapore-based entrepreneur, was for a time an admired orchid grower and a great success story in the production of Singaporean-Indonesian orchids. With millions of dollars of investment from the Salim (Indonesian) industrialist group and the Indonesian government he put in 100+ hectares of orchids, a similar plantation of tropical greens, a pig farm a furniture factory on one of the islands off of Singapore. He stopped expanding in 2000 and the orchid and foliage exports stopped entirely in 2005 when Major Neo passed on. The farm, taken over by the Indonesian banks and the Salim industrial group, who became official owners of the island. Orchid production and exports closed down and the farm now produces just small amounts of tropical foliages and plants for domestic Indonesian sale. It is rumored that the farm will become shipyards and industrial complexes in the future for the Salim Group.

Singapore and Malaysia together produce only about 3% of the orchids produced in Thailand, but they are the top quality, long-stemmed orchids of the worlds' commerce. Thailand has 40,000 acres of floriculture and 5000 registered growers (some with several farms). They have 250 growers registered though only 100 export. Thailand farms use a great deal of Burmese laborers, who are paid only one third of the salary that must be paid as minimum wage to Thai farm laborers. About a dozen of these farms are very large, 200 lakh and over 100 acres. Most of the product is the mass market dendrobium orchid or orchid bouquets with three stems.

Indonesia, as a tropical floriculture production area, compares favorably to orchid and tropical foliage production in Singapore and Malaysia, but not to production in Thailand. The sheer economic size of the Thai farms exceeds anything elsewhere. Indonesia has cheap land and very good climate in several areas (Medan was cited) but the cost of raw materials is high and the logistics for export, even regional movement of product for domestic sale, amounts to a trade barrier that inhibits any formation of a local industry. The chemical costs are too high "because of government taxes and incentives needed to get import permits." For instance, a chemical, Agrimix, produced in Germany which costs 220 ringitts in Germany and only 40 ringitts from a factory producing a similar generic chemical in China, costs ten times more in Indonesia than in Germany. A kilo of fertilizer which costs \$1 per kilo sells for US\$5 in Indonesia.

The small orchid plants that most growers in the ASEAN region purchase in Thailand are very expensive for the small Indonesian grower-importers, if they are available at all, because the Thai orchid breeders operate a bidding system and prefer to sell to clients who can take a minimum of one million plantlets. The larger Singapore-Malaysian

growers band together in groups to bid for their purchase and may pay only S\$.10 per tissue culture seedling 10 cm tall at least, whereas the plantlets of similar size cost S\$ 0.65 in Singapore. The Singapore material may be guaranteed to be virus free, however these plants frequently do not produce well. LEE Chee Hock says that he prefers to use the Thai virus plants because there is both good and bad virus. 'Virus only inhibits growth and flowering if the plant is not strong, and to keep it strong you only need to add sufficient organic material.'

Composting at Zion orchids is an art and a science. The majority of it is oil palm kernel waste to which has been added crushed crab shells, composted garlic skins, composted wood shavings (from the furniture factories, chee oil and other organics. They do not use Vitamin B (touted by the Thai and used by the Indonesians) but instead substitute Brewers' Yeast, and industrial waste from the Singapore beer factories.

Plant nutrition is taken care of with good soil preparation, then injection of nutrients as they are needed. Beds are started, harvested over at least four, but generally five years. Then the orchid plants is pulled out and replanted in larger plastic pots, and produces orchid sprays for another three years. Grading of material in the fields is a constant process, and constantly plants that look inferior are removed from the rows and replaced with new plants. When the plants that have reached five years are repotted, as much as 90 percent may be thrown out, but the stems of the strongest plants are forced to produce new shoots and repotted.

A Dendrobium plant is expected to produce 80-100 sprays of orchids over its five year life. (We counted and there were 82 and 84 stem scars on two randomly selected 4-year old plants in his field.)

The majority of the area of the farm (but less than half of the value of exports) is ornamental cut foliage. Intercropping of various ornamental foliage plants is the rule. (All are grown under shade cloth, and sometimes under fruit trees or oil palm for the first three years). The intercropping of species helps to keep nutritional balance in the field. The nutrition that the roots of one species extract from the soil is different and balances out the micro-elements used by a complimentary plant group intercropped with it.

In Malaysia, pests attacking tropical foliage plants are fairly limited. Basically Zion orchids has to deal with thrips, spider mites, mealy bugs and snails. "Systemic fungicide must be applied with caution and judiciously", says LEE. 'Too much can act as a growth retardant'.

Cost of land can vary greatly and may be as low as US\$1000 in central Malaysia, but in the area of Kote Tinggi improved land with road, electricity, water runs US\$ 40,000 per acre. It takes about \$0.40 per square foot to build the structures and about \$17,000 to dig a water pond 400 feet x 120 feet by 18 feet deep that will serve 5 acres. On that acreage you would need planting material that would be about US\$57,000 for orchid plants or \$11,000 for tropical plants. They plant five acres of tropical foliage for every one acre of tropical flowers. The LEE family estimates they have invested about US\$15 million so far in their Malaysian operation.

They have depended upon a very experienced older professor of horticulture, WONG Kiang Ho, president of the Commercial Grower Orchid Association in Malaysia to do their economic feasibility studies (60) 76631529 office and (60) 19 75 29 188 HP.

At Zion Orchids there is a decided market orientation. LEE Chee Hock takes their Japanese retail chain, cash and carry and wholesale buyers into the forests of Malaysia to select new foliages, then commit to grow a million or five million of each item as an exclusive for that specific foreign client. He goes with his clients, YMS in Osaka, and the largest clients of YMS to florist exhibitions and to visit retail concept stores such as to Far East Flora and other stores on Thompson Road in Singapore or to “Fantastica” the much admired 4-story retail florist shop in Kuala Lumpur, which is now being copied in Japan. The other brother, LEE Chee Wee takes European clients such as the Carrefour supermarket buyers, on market trips as well.

“We are commercial growers. We do not breed orchids or foliages. We do not do research. We only follow what our customers want and plant what they need in slightly less than the quantities that the market demands so that we can charge a price that gives us a reasonable economic return and also makes our customers a good profit for themselves. This way our clients ask for more and feel that they are getting a good price. We need our clients to make a profit. We need to make a profit. It works if you grow with your clients over time. This has been our success.”

The Zion orchid line of tropical foliages include Dracaenas Cordylines, Monstera Deliciosa, various species of palms, soft ferns, cycads, Agloenama, Sansevieria and about 200 others. Tropical flowers include orchids (Mokara, Dendrobium, Aranda, Aranthera, Oncidium) and Heliconias.

July 7, 2007 Saturday

Email interview with **Allan Neo**, owner of **The Orchidman**, a Singaporean with a large production in Singapore, The Orchid Station, run by his brother, Anthony Neo, and a floral import/distribution operation in Australia. orchidman@tpg.com.au and Anthony@ordstn.com.sg Anthony Neo has only been in the business for three years, so Allan Neo, who is recommended as a world orchid authority by Surapon Sanguthai, owner of the second largest orchid export company in Thailand, preferred to answer my questions by email.

Allan Neo purchases floral products from Thailand, Singapore, Malaysia (both Johore and Cameron Highlands), Vietnam as well as Indonesia. He is a relative of Major Neo of Wellington Orchids.

“There is not much change in the landscape of growing in Singapore. In fact it is moving backwards. But in Johore, yes, lots of changes. No more Oncidium orchids but mainly Aranda/Mokara farms. There are still dendrobium farms, but nothing compared to Thailand. Our weather is just to wet to grow good dendrobium. AS for Cameron Highlands, the best we can get from there is world standard spray chrysanthemums destined mainly for the Japanese market.

“As for Indonesia, yes, I do make regular visits to buy both foliage and cut flower products from them. We do buy mainly foliage of leather ferns as well as floral product of anthurium from farms that are run by corporate companies.

“These are the items that have reached international quality standard. There are still plenty of growers, both big and small, that service the local (domestic Indonesian) market. In fact with the rising Rupiah currency, it makes exports less attractive. The local market is still a force to reckon with.

“I am not sure about supports from the Indonesian government, but with the people that we get to know in our import businesses, they are either well-to-do family businesses, part of a corporate company. I am not sure if any government support would enhance and encourage new players or would be able to grow products that will ultimately meet international industry standard.

“And mind you, Jakarta airport does not have the best facilities or connections worldwide with competitive freight rates.

“In this era that we are working with, we need to talk volume of business and reliable freight services with competitive rates. Unfortunately this is lacking in Indonesia.

I cannot recall any big overseas investors into the flower industry in Indonesia. All local Indonesians are running it. And you will be disappointed. They are in general not exporting volume.”

July 7, 2007 Saturday continued

The consultant spent the afternoon with Sing See Soon florist owner, Rona Lee, watching her do the bouquets and flower arrangements for nine weddings, and accompanied one of her brothers for delivery of arrangements to the ballroom of the Intercontinental Hotel in downtown Singapore. Visits to various hotels to admire flower arrangements in the lobbies including the Le Meridien hotel.

Recommendations from Sebastian Ee were to contact their Jakarta supplier, Ms Binawati, mobile phone, +62 81 6895110 or +62 21 639 4808 at the office. (See July 24, below.)

July 8, 2007 Sunday

In the morning, visit to florists along Thompson Road in Singapore (many flower shops open). In the afternoon, visit to hotel lobbies to observe floral arrangements. In the evening, flight from Singapore to Jakarta.

July 9, 2007 Monday

Breakfast meeting at Sultan Hotel Executive level dining room with David Anderson, Chief of Party, DAI in Indonesia. Direct Line (62 21 571 1988. david_anderson@dai.com

Proceed to AMARTA office, BRI II Building 28th Floor, Suite 2806, Jl. Jend. Sudiman No. 44-46, Tel +62 21 571 3548. Meet office personnel at AMARTA in Jakarta

Flight from Jakarta to Medan.

July 10, 2007 Tuesday

3.5 hour drive with David Anderson and Bharaty from the DAI Medan office towards the south of Medan to the town of Tiga Dolok Village, Simalungun.

Visit to Mr. **Pandopotan Pane**, owner of **Tiga Dolok**, a cut-flower dendrobium orchid farm, which is connected to a one hectare farm closer to Medan, also owned by Mr. Pane. Mr. Pane is an orchid grower with 25 years experience. We were accompanied by Mr. P. Pane's son, Hasnul Pane, age 30, a quiet young man. The Tiga Dolok farm is 4.5 hectares of greenhouse on 9 ha of area.

This principally dendrobium orchid farm is at an altitude at 700 meters is considered to be better than the one in Medan, the land is cheaper, and the climate sunnier and drier, which is good for growing dendrobium. Here on these 4.5 hectares they sell Rp. 60 million per month, most of it in Medan. There are 36 employees. (He also mentioned that there were 40 workers, so perhaps some are seasonal.)

Almost all of the dendrobium sprays are priced according to how many open flowers they have. Each flower is multiplied by its 700 rupiah price, regardless of the color or length of the stem. The average flower stem has 4 open flowers. Mr. Pane is not open to the idea of pricing by stem length, or by color or variety. In fact, "because that is what the market buys" he only has three hybrid choices for his clients; D. Sonia Bom 7 and D. Sonia Bom 17 (Thai bi-colored lavender and white two-tone orchids); D. Parafit, (Thai white) and D. New Ekapol, a mauve-purple. He does not buy from the Thai breeder directly, but buys from a dealer in Jakarta. Most of his plants are actually formed from plants on his own farm, either from kiekies (side shoots) or from the stems of older orchid plants that have been cut off and re-sprouted. There is no selection criteria, no elimination of inferior or non-productive mother plants. Currently the farm has 60,000 plants, a low planting density but the 4.5 ha but that land includes not only the area devoted to mature plants in production in 10 inch pots but the area devoted to all young plants and aisles and the house and the roads.

Of concern is not the low number of dendrobium plant density on the farm but the low productivity of these plants in terms of sprays per plant over the plant lifetime (which includes 2 years coming into production, then two to three years of production. He is getting 3000 sprays per week. 4-5 flowers per stem. Ideally he would get 5-7 blooms per stem and twice that many sprays per week. In other words, with better farm management, better plants, less shade, better nutrition and disease control he could more than triple the amount of product he could sell.

The greenhouse structures are wide-span sawtooth roofs constructed in wood. The shadehouses are covered with plastic and underhung with 60% shade netting that is UV treated. The shadecloth is purchased locally. In fact all inputs on the farm are Indonesian except the planting material.

Mr. Pane expects has turned much of the farm operations over to his son, as he is now in his 70s. He expects his son to make his career running this farm. His goal is that

together they will plant out all of the 9 hectares area of that farm and he expects that the additional production will be exported out of Indonesia, but he does not yet know where. He recommends a visit to Taman Anggrek (Garden Orchid) in Jakarta.

July 11, 2007 Wednesday

Visit to the original cut flower orchid farm in Medan, now 25 years old, of Mr. P. Pane, the owner of the Imelda Florist farm in Tiga Dolok Village which we had visited the previous day. The structures have a chimney designed roof for good ventilation (he did not do this on the newer farm that we saw the previous day because it was “too expensive”.) Around the shadehouse structures are narrow moats with water and fish, another innovation that he abandoned in his new farm because of cost.

The technology from the farm is in good part obtained from Mr. Siregar, president of the North Sumatera Orchid Society, a small grower who mainly grows orchid seedlings from flask to sell to the members of his orchid society.

All irrigation of the orchid plants is with hand-held hoses. He does have cement water mixing tanks in which he prepares water with fertilizer for use two days a week, and water with fungicide or insecticide for two days a week. There is no overhead irrigation. Each bench has a trough underneath, as in Thailand, which gets filled with water to create evaporation and higher humidity in the dry season. In these shadehouse, the tough plastic is held to the wood rafters with wire, looped through holes torn into the plastic with no grommets. In this design, the shadecloth is placed over the plastic so that the sun will not deteriorate the plastic so fast.

Mr. P. Pane keeps not statistics on productivity per plant or per bed, and works with just the average, a number of flower sprays sold by the number of plants. “All the same three hybrid plants anyway,” he says. Therefore he has no criteria for selection and elimination of individual plants that are not producing well. He believes that there is no need for more rigorous selection and replacement of poor plants with new better hybrids of different colors. Therefore he rejects the idea of keeping records of productivity of each of his three hybrids, much less productivity per row or per plant. He already “knows” that his plants produce 8 stems in year #3 and 8 stems in year #4, or in other words 16 during the productive life of the plant. (compared to 80-100 in Malaysia at Zion Orchids.)

There is bud drop on some of the flower sprays, which he attributes to insect damage, but may also be related to the hybrid, as some dendrobium hybrids have bud drop naturally. This does not affect his pricing system as he prices by the open bloom and not by the spray length or quality.

Fertilization seems to be a problem as the locally produced commercial fertilizer is not specifically for orchids. He has tried fish emulsion fertilizer (there is a fish farm next door to this property, but the fish emulsion is actually a commercial one produced in Indonesia.) He only tried it three times. “The fish odor attracts red mice that eat the orchid plants.”

The main thing that Mr. Pane wants from AMARTA is a new UV filter fiberglass roof for his shadehouses, because he cannot afford to buy them since they cost too much. Then he would not have to change the roofs so frequently.

July 11, 2007 Wednesday

Tetty Florist, is a backyard operation located at Jalan Pelajar No. 171-Teladan, Medan. The area is said to be one hectare, and is probably only half of that, but the production of orchids (potted orchids sold in bloom, mostly dendrobium) is excellent. **Tetty** sells as much as she can produce, which is about 1000 potted orchids per month. She sells many of them for as high as Rp 70,000 each. It takes here six months to grow out the small plants that she buys to blooming size. She purchases these small plants for Rp. 5000 each (Rp 7500 with transportation to her operation). The pots cost Rp 1000 each (terracotta pots with big holes in about a 10-inch diameter size. She pays Rp 50,000 for a bag of charcoal growing media which fills “lots of pots”. She also grows on tree fern which costs Rp 25,000 and is “difficult to get and expensive” but the plants grow very well.

Because Tetty is so successful selling in the local Medan market, she has decided to expand, and has bought a 600 sq meter plot of land about 20 minutes driving time away, and also in urban Medan. She figures the orchid plant acquisition will cost her Rp 30,000,000 for 100 sq meters. The money for the expansion is bank financing at 10%

Most of Mrs. Tetty’s knowledge about chemicals is acquired from the salesmen of the chemicals that she purchases. These include;

- Dithane M-45 fungicide
- Dekastar 6-13-25 “which strengthens the plants roots”
- Liquinox Start, Vitamen B+
- Arfo 30 EC, an insecticide which she uses twice per week.

Mrs. Tetty has no access to a Pathology Lab, has never heard of a water test, and does not know about sending leaves to a Path Lab for analysis. The closest laboratory of this type may be in Jakarta or Bogor—to be investigated.

Though Mrs. Tetty has purchased orchid books, she could benefit by having more books on orchids and on orchids pests and diseases, and by access to the internet, but she does not have a computer and does not speak English well enough to learn much through that means.

She has few educational resources except her own experience and talking to other hobbyists. She plans to go with a group of 6 colleagues to visit Thailand in September, 2007 and since the plane trip is via Kuala Lumpur, she would like to see nurseries in Malaysia in KL and even in Johore.

IDEA. Mrs. Tetty of Tetty Florist is a good potted orchid grower with good marketing skills in her local Medan community. She is keen on new ideas and the application of new techniques. She shares her knowledge widely and with great enthusiasm. Helping to finance her trip to visit the Malaysian Agriculture Research and Development Institute, MARDI, in KL and one or more orchid growers in Johor Bahru, Malaysia would make a good contribution to her knowledge base and that of many other Medan growers, providing a multiplier effect.

IDEA Two separate economic feasibility studies, one on a 1 hectare potted orchid farm and one on a 1 hectare cut flower orchid farm unit would contribute greatly to the expansion of the industry in Medan, because though the growers want to expand, they have neither an ideal prototype of shadehouse or orchid growing bench or irrigation system in mind, nor any idea of the cost of items that they do not have like fertigation systems and thus do not know how to build a farm much less how to explain their projects to the banks in a way that they can get financing. Hiring this done by an expert in potted orchid plant production, and another similar feasibility study done for and orchid cut flower growing would be valuable to all of those Medan area orchid growers contemplating expansion or even improvement in their current physical facilities.

The two orchid feasibility studies could be done by the professor emeritus of orchidology, and current president of the Malaysian Orchid Society based in Kuala Lumpur, who did the studies for Zion Orchids. WONG Kiang Ho, president of the Commercial Grower Orchid Association in Malaysia, (60) 76631529 office and (60) 19 75 29 188 HP (See address list attached.)

July 11, 2007 Wednesday

Visit to a small orchid grower called Orchid Sari, Jl. Melati No. 1, Komp. Pemda, Medan

This grower, Mr. F. Simatupang/ Sari sells 30-50 potted orchid plants per month.

He uses the following chemical inputs:

- Gaviota 67 for blooming
- Grow More for rooting
- Vitamin B once a week
- A fungicide once a week
- An insecticide once a week (varying brands)
- A bactericide when working with small plants.

July 11, 2007 Wednesday

Visit to Mr. **Yusman** of Yusman Florist, Selayang USU, Medan—a grower of a small amount of orchids and a grower of a very wide assortment of high quality potted

tropical foliage plants. His sales are said to be 700 potted orchids per month plus an unknown quantity of potted ornamental plants. He rents space in a large complex owned by the Medan city government, along with about 25 other potted plant growers.

His set-up, perhaps 500 sq meters, is good. His shadecloth is suspended high, perhaps 5 meters above the plants which allows them ample air movement, very conducive to good orchid growing. In parts he uses split bamboo for the benches. In others he uses Eternit roofing panels. He experiments with 60% shadecloth and also with using three layers of fishing net (cheap) to get the same effect. He has obviously read widely and done a lot of reflective thinking and has come up with practical, resourceful solutions to his growing problems.

We also visited a retail operation owned by the same Mr. Yusman. They are located at Jl. H. Adam Malik in Medan. There he sells all types of potted orchids (both hybrids and species from the wild) from his own small farm but also from many others and also imports. He offers all kinds of foliage plants in decorative pots including bonsai trees and euphorbias. Here his volume is 1000-2000 potted orchids per month plus a large number of potted tropical ornamental foliage plants.

His orchid assortment includes Dendrobium, Oncidium, Cattleya, Arachnis, Aranda, Renanthera and Phaleanopsis orchids, both local and spotted hybrids from Taiwan. Species orchid material collected from the jungles of Kalemantan and Iran Jaya. None of this is labeled with either name of the specimen nor the price nor growing recommendations.

His ornamental foliage plants include colorful red and bi-colored Aglaonemas, Diffenbachia, Dracaena and domestic Indonesian caladiums of very nice quality in mottled red and red and green. Again, none of this carries tags with plant names or growing instructions.

IDEA A feasibility study for a 5 hectare farm specializing in cut ornamental foliage and another done for a farm production of tropical potted ornamental plants, identifying the optimal characteristics, would be very helpful to all of the ornamental foliage plant growers in the Medan area. These two studies will have to be done by a world recognized authority on tropical foliage and ornamental plants, ideally an experienced grower who already has a farm with MPS certification from Europe. Arne Svinningen of Green Farms Ltd. might be approached on this. Arne.svinningen@greenfarms.net. He is familiar with green plant production in the Netherlands, Indonesia, India and Malaysia. He has an economically successful operation in Sri Lanka, which is the largest in that country and which produces what European and Middle Eastern clients consider the best quality coming out of the tropics and whose product is as close to 'organically grown' as can be done in that industry.

July 11, 2007 Wednesday

Visit to organic fruit and vegetable packing company. Very high tech, hygienic. Very large. Peppers, tomatoes and many products are packed there under strict standards and refrigeration and shipped to Japan.

This is a fine example of what can be done with refrigeration, refrigerated truck reefers and careful attention to logistics. The company is newly purchased from a previous owner, and the current manager seemed not to know if it was profitable.

July 11, 2007 Wednesday continued

Mr. H. Ir Tula **Siregar**, “Siregar”, is the head of the **Orchid Society of North Sumatera**. He is retired and making additional retirement income from propagating orchid plants for sale to other growers from seedling plants in flask that he buys from Jakarta. His operation is in his backyard, most of it shaded by a giant mango tree, but also under shadecloth. He has just completed nine months of growing of dendrobium under both 60% shadecloth panels and 40% shadecloth panels, and has seen for himself that the dendrobium orchids produce many more flowers under less shade, “which costs much less than the 60% shade.”

With still a bit of entrepreneurial spirit, he envisions opening his own private pathology lab to service the orchid and plant growers in Medan. This he says he may do next year. His investment is “very big”, perhaps Rp 100 million (\$10,000) but he claims to have enough to invest. He will avoid banks. He claims that bank interest would run between 15% and 20%.

He has not, interestingly enough, met the head of the orchid societies of Malaysia and Singapore, and apparently does not know Mrs. Yusuf Kalla, wife of the vice President of Indonesia, who is currently head of the Indonesian orchid society. This would confirm rumors that his orchid society of North Sumatera is currently almost inactive, or indeed in dormancy.

Siregar notes the following:

- The quality of most of the orchid seedlings purchased in Jakarta is poor.
- There is no standard size of nursery and all nursery expansions are based, not on economic information but are emotional decisions made by people who are simply passionate about orchids.
- Indonesia does not specialize in any particular species of orchids, whereas Thailand is known for Dendrobiums and Taiwan for its Phaleanopsis.
- He intends to expand his orchid production by going into cut orchids and has four acres to do so. His friend, Mr. Pane will be expanding his current operation to a little over 4 hectares. So he figures that sometime in the next 5 years they will have to target the export market. He does not know which export market. He does not know anything about what the export market would demand.

IDEA Organizing into grower groups, exporter groups would be enhanced if the growers were to work together to have their own stand to demonstrate North

Sumatera orchids at one of the international exhibitions. Two such shows are coming up. The World Orchid Conference Trust (WOC Trust) sponsors an event every three years in a different country. In 2008 it is in Miami, Florida. In 2011 it will be in Singapore. The Indonesian government financing is probably available through the Ministry of Tourism or Ministry of Development.

People to contact include:

- Mrs. Yusuf Kalla (wife of the vice president of Indonesia and Chairman of the Orchids Society of Indonesia based in Jakarta.)
- Mrs. Rossi Aprianto (wife of the Minister of Agriculture and very involved in the Indonesia Orchids Society.)
- Mr. Peter Furniss, American Orchid Society and Trustee of the WOS Trust.
sweetbayfarm@charter.net
- Dr Kiat W Tan, American Orchid Society and Trustee of the WOS Trust
Kiat_Tan@nparks.gov.sg
- Mr. Johan Hermans (Royal Horticultural Society) and Trustee of the WOS Trust
jhermans@museumoflondon.org.uk
- Mrs. Joyce Stewart (Royal Horticultural Society) and Trustee of the WOS Trust
joycestewart@onetel.com

July 12, 2007 Thursday

ASA Flora Indonesia, Taman Setia Budi Indah, Blok YY-16, Medan 20131 Indonesia. Tel +62 61 77822967, HP +62 81163 0069

OTM /asam Medan-Tuntungan. This is an ornamental pot plant nursery, who exports to Korea, Netherlands and Germany.

Mrs. **Henny Leonardi**. Henny@asaindonesia.com

This outgoing and energetic woman grows ornamental plants, some of which she sells locally in Medan, but most of which she exports to Korea and the Netherlands. Her plants are grown both in soil and in pots. Almost all but the cycads are under shadecloth, 40% shade though she puts them under 60% for preparation for shipping. The shadecloth is strong on bamboo posts and this is not only cheap, but very tidy. The farm has a clean and well-managed aspect.

She ships six to eight 40' sea containers per year. In Netherlands she deals with a sales agent, who does not tell her about the clients he has in that country. The agent receives the plants and then delivers the plants to one or another of the Dutch nurseries for re-acclimatization of the plants which takes from six months to a year in climate-controlled

greenhouses. After this holding period when the plants produce new and abundant foliage (and in the case of bougainvillea, come into flower) the plants go to the flower auction for sale. Sea freight takes 25 days to Holland, and a 40' refrigerated reefer costs 3500 Euros landed and offloaded in Holland. The freight is more than the cost of producing the ornamental plants.

Henny competes in her markets with Malaysia and Costa Rica. Her major marketing attribute that she promotes to make her sales is her low prices. She says her low prices depend on her low production costs but also good quality. She says that her climate is better, land cost and labor cost is much cheaper than in Malaysia and that the soil itself is much better and that organic fertilizer is cheaper. She produces her compost from rice hulls, corn stocks, cocoa husk peat, skin of coffee seeds and other available agricultural bi-products.

Her product line is not very extensive but includes *Raphis excelsia*, *dracaena marginata*, *polysia*, and cycads. She does well with *Zamiakulkas*, a dark green foliage grown in soil for two years, then pots up in a 17 cm pot (60-70 cm tall) and ships to Korea. She grows her *Raphis* palm for three years to 90 cm size. She grows *Jatropha* in 90 cm heights as well. The best color is orange. She plants 4 stems in a pot and twists the stems together in twos and gets a beautiful ornamental trunk. She sells the *Polysias* both locally and to Korea, and she offered it to her agent in Holland but he was not interested.

Henny would like to expand AVA's sales of bougainvillea. She has a local white-flowered bougainvillea but it is not good for pruning into balls and clients like the round plants. She therefore imports bougainvillea seed from Kenya. It is good and has big flowers. She can grow it in all sizes and wanted to know what size would be the best in the export markets. I said that she would have to talk with each client and work out a program specifically tailored to his market.

Henny thinks that new products are risky. They have different insects and fungi with which she is not familiar. She has no laboratory to study them and no agriculture extension experts to help her with pests and diseases. She tells an anecdote of *Sanseveria* planted in Malaysia that all got a virus and exports to Korea and Japan, where it is popular, had to be suspended. "I need to look for EASY plants" she emphasized.

She had the opportunity to take some of her products to Horti Fair in November in Holland. She and six other growers put their product in the government stand. "The government encourages small farmers and we are about 100 farms. But the only thing is we had to pay to ship our plants and to get there and it was very expensive." The participation in the Horti Fair exhibition did not apparently increase her sales.

Henny is very familiar with air freight and its costs. Her brother-in-law is a pilot for Martin Air on the Miami to Amsterdam route, and the major product carried is Colombian cut flowers. She says air freight is too expensive from Indonesia for shipping plants.

She could use some help with post harvest problems of wilting, but this would probably be best-served by getting her access to a pathology lab to test water and leaves. There is, for the moment, no pathology lab in North Sumatera and she does not know where to search for such a laboratory in Indonesia.

INTERVENTION Henny says her main problem is marketing. She would ship to other clients in Europe but does not have any contacts. The consultancy gave her the addresses for two large growers in Italy (400+ hectares each), Vivai TorSanLorenzo and Piante Faro, who import semi-finished ornamental plants by the container-load from Philippines, China, Vietnam, and other sources. (See address annex)

July 12, 2007 Thursday cont.

Berastagi Region, 2 hours southeast of Medan, has a Karo village devoted to flower production, Raya Village, with 30 cut flower growers. The altitude is about 1300 meters. The climate is sweet year around with heaviest rainfall in December and January and lowest rainfall in the June through August period.

The consultancy accompanied by Erick and Bharaty from the DAI Medan office met with head of the florist group of this village, Benny Sembiring.

Benny Sembiring grows vegetables and chrysanthemums. His chrysanthemums are grown in a bamboo construction shadehouse 6 meters high, strong, good netting, very clean, and a very functional design for their purposes and level of production technology, unless of course overhead irrigation is desired. He also grows chrysanthemums in the open air. Other products grown in the open air include hot peppers, cabbages, roses and other vegetables.

INTERVENTION. The chrysanthemum cuttings are hand planted in rows that are not neat to Benny's satisfaction. Planting guides were described using boards and nails.

INTERVENTION The Berastagui village growers were plagued with a fungus, almost round in shape, 5mm diameter, fuzzy, pale yellow, attacking underside of the leaves of the chrysanthemums, causing necrosis and blackening of the foliage after post-harvest and shipping within the next 24 hours. Leaves turn black, curl and drop off. Photos were taken and sent email for identification and prescription of treatment to a foreign specialist. The opinion was that it is a soil borne fungus that can live in the soil for 4-6 months. The basic solution, apart from application of fungicides, is crop rotation. Chrysanthemums must not be cultivated in the same location for a couple of years once the fungus becomes a problem. The specialist suggested that for definitive analysis the leaves should be taken to a tissue culture laboratory and the fungus cultivated to make sure of final diagnosis. This was done by the consultant, and the leaves given to Dr. Benny Tjia in Bogor.

NOTE: A week later: Dr. Benny Tjia identified the fungus (pale yellow raised spots leading to necrosis of leaves, accentuated with moisture and heat) after looking at the photographs as "White Rust", *Puccinia Horturea* or *Puccinia Horturnensis*. He says that

it is endemic in Indonesia. The control, he says is the spray application of AMISTAR, an expensive Syngenta product, once a week for six weeks or until the problem disappears. He recommends starting with even the very small plants. Application should be underneath the leaves if possible. After the fungus is under control, then a preventive program should be instituted spraying DITHANE M-45 once a week, “forever”.

This field visit was followed by a visit to the Raya Village flower markets and photos of the vendors. Then we went to visit to the central community rotunda where flower growers bring their bunched flowers and then wait together chewing betel nut and telling jokes for the truck to take their floral products from Raya Village down to Medan. This village specializes in cut flowers. They do not grow decorative cut foliage or ornamental plants.

IDEA Introduce new hybrid chrysanthemums including *Chrysanthemum santanis* by bringing cuttings from Royal Van Zanten or CBA in the Netherlands. This may be complicated (or impossible) because Indonesia is not a signator of the UPOV agreement, which is the International Union for protection of New Varieties of Plants.

IDEA Introduced other types of flowers including asters, alstroemeria, freesia, hypericum, lilies, limonium statice, dahlia, gypsophila and even tulips and bulb flowers, none of which the consultant saw on the visit. Since Indonesia is not one of the 64 signator nations, it may also be impossible to arrange these imports.

IDEA Produce ornamental pepper plants in pots. See address list for contact of genetic source of seed in Denmark.

IDEA Produce ornamental citrus trees in pots. See address list for contacts in Italy of producers of potted ornamental citrus.

IDEA Introduce a trial of the tray system for planting chrysanthemum cuttings from existing plants. The 38 size tray would be best, but 78 could be tested in a trial. A carton of trays would be sufficient. These trays are probably available in Jakarta.

IDEA Give a workshop for the villagers on pest control using chemicals and IPM with the use of beneficial insects and other biologicals to all of the villagers. Describe the purpose of a Pathology Laboratory, and how to send samples of leaves, email photographs of leaves, water samples and soil samples, how the cultures are grown in the laboratory, how conclusions are drawn and how to interpret the results. Describe the use of a Tissue Culture Laboratory. Describe the positive aspects of importing new improved virus free, disease resistant, planting material for cut flower crops.

IDEA Expand the tissue culture laboratory, ‘Laboratorium Kultur Jarengan, DINAS Pertanian Propinsi Sumatera Utara’ in Medan to include a Plant Pathology Laboratory, and give these villagers access to the laboratory for their nutrition, and pest problem-solving in production. (See below.)

July 13, 2007 Friday

Consultant accompanied by Bharaty and Erick from the DAI/AMARTA Bogor office visit the tissue culture laboratory in Medan.

Laboratorium Kultur Jarengan

Dinas Pertanian Propinsi Sumatera Utra,

Jl. Jend. Besar Dr. Abd. Haris Nasution No. 6,

Gd. Johor Medan,

(Balai Benih Induk)

Employees include:

Mr. Borbor Harattap, head of the tissue culture laboratory Tel 0813 61673436

Ms **Iovie Roselyna**, 061 77745862 dressed in red in the photographs

Ms. Herawan 085 270 694916, laboratory assistant to Iovie.

This government-owned and operated tissue culture laboratory and orchid seedling and young plant greenhouses are used for production of orchids and ornamental plants. **Mr. Dirjam**, the agriculture specialist, dressed in military uniform, works with the Department of Agriculture of the region of North Sumatera. Their offices, with 30 employees are on the site, which is 5 hectares, a part of which is built in shadehouses and the laboratory.

Directly involved in growing the orchids is **Mr. Zulkarnaen** and his assistant.

There is considerable additional available space at this conveniently located Medan site for putting in new facilities to grow out tissue culture seedlings and meristem plantlets in compots and on to small plant stage. Starter planting material for the growth of the whole regional orchid industry (both pot plant and cut flower orchids including dendrobiums, oncidiums, renanthera, arachnis, aranda, phaleanopsis, miltonia and various other species) could be propagated at this site and sold at a modest cost to the local growers. (Cost would have to be set between the cost of good Thai meristem plantlets in flask which is about Rp 1000 per plantlet, and cost of purchase of compot seedlings ready to plant into pots which are the equivalent of about Rp 6500 per plantlet.) The initial orchid seed or source for apical tips would have to be imported from Singapore, Philippines, Thailand or elsewhere, but the propagation could all be done at this site for the Indonesian growers.

Mr. Bintara Thahir is the Chairman of the **Department of Food Crops and Horticulture for North Sumatera**. He studied 3 months in Boston and made a visit to Los Angeles so speaks a bit of English but uses a translator. He can be reached at ending@distanprosu.go.id and there is a web site, www.distanprosu.go.id

He assumed his responsibilities after Soeharto left. His major concern is rice, corn, tomatoes and taro. Geographically he is concentrating on Karo—Berastagui and

Simalangan. He has some interest in agloenema ornamental plants and a lot more in orchids. He would like to request from USAID some experts for the tissue culture laboratory for training his existing employees.

IDEA Expand the tissue culture laboratory capacity by providing access to training and by buying some additional equipment. At present there are only three laminar flow hoods. Though the lab technicians do flask work with orchids here, the lab techs also have responsibility for tissue culture of banana, ginger, tomatoes and so forth. Add three laminar flow chambers just for propagation of orchids. Add more racks for flasks. Add the backup equipment including sterilization machines and so forth to go with the three orchid-dedicated laminar flow chambers. Add modern computer and systems for inventorying and tracking material. Add library and subscriptions to various floriculture journals. Add classroom with desks and screens for projection to have training facilities for groups of growers from Medan and Karo areas.

IDEA Expand the 'Laboratorium Kultur Jarengan, DINAS Pertanian Propinsi Sumatera Utara' in Medan to include a Plant Pathology Laboratory, and train personnel. Give farmers access to the laboratory for their nutrition, and pest problem-solving in production.

IDEA Expand the number of shadehouses to include modern model facility for growing out small plants from flask in sterile cinder block or coconut husk charcoal, complete with overhead misting irrigation, spray irrigation, pad and fan cooling for the summer months.

July 13, 2007 Friday continued

Spring Flowers

Jl. Talaud No. 16

Medan 20212

Tel (62 61) 4535328

Hans Kodenta, owner, known as Hans. K

"Hans Flower", formally known as Spring Flower, is a wholesaler of cut flowers, supplying cut flowers like lily chrysanthemum and carnations, anthurium and asters to the florists in the local Medan market. Hans, a Chinese entrepreneur in his early 30s works out of his mother and father's home. It is a big white house with a red roof and decorated with dozens of red-flowering Euphorbia planted in big blue and white ceramic pots. Various workers unload and repack flowers on the floor of the patio and in part of the kitchen and the years. There is a small vertical cooler, which is two meters wide and as tall as a refrigerator. There is plenty of water and buckets, and an ample supply of white tissue paper and newspaper and one (or more) delivery trucks. Barking dogs guard the place (are perhaps to be eaten.)

The cut flowers come from Berastagui and Jakarta. Hans points out that the gerbera daisies from Berastagui are smaller than those from Jakarta, because the seed of the Berastagui gerberas was from Holland produces smaller diameter flowers than the seed for the larger gerbera varieties obtained from China.

The main difficulty, as Hans sees it, is that he has electricity only 13 hours per day. Running the generator costs and what he considers to be an excessive amount because he must buy gasoline.

Another difficulty he suffers is the variability in the quality of the flower products he can get, the supply that is inadequate, particularly at festivals peaks, and the lack of new varieties and colors. Lengths are fine. Vase life is adequate. Price is fine. But quality is a problem. He pointed out the fungus on the leaves of the chrysanthemums and the necrosis of leaves from some sources both in Berastegui and Jakarta.

INTERVENTION: We called in Hans' mother, Mrs. Annie Kodenta, who was an English teacher and who speaks Dutch, and agreed to attempt to translate, on a trial basis, the educational material that would be written in English on how to solve the problem with the chrysanthemum fungus. Annie Kodenta has four children, all grown. Her oldest son is in pharmaceutical distribution. Her two girls are married and living in Jakarta. Only Hans is left and she thinks she would be helping Hans' enterprise to grow if she were to translate.

IDEA. If this translation of the chrysanthemum fungus material from English to Indonesian went well, Mrs. Annie Kodama agreed that she would consider translating whole texts on Plant Diseases, and similar literature from English. She was not so sure about the Dutch. She is 79 and does not use the computer. Bharaty, head of the flower project at the Medan AMARTA/DAI office will be the catalyst on seeing how far we can go on this.

Bharaty also has a friend, Sarah, who translates from English to Indonesian and could translate texts on production of Chrysanthemums, Anthurium and Gerberas and basic texts on irrigation and on use of fungicides, pesticides in small areas and on IPM.

It was also noted that Mr. P. Pane, the orchid grower above, also speaks Dutch.

As the interview drew to a close, Hans of Spring Flower used his hand phone and called Jakarta to talk to his flower supplier there. They agreed that the flower supplier would pick the consultant up on Tuesday in Jakarta and tour her to Bogor and to see flower producers in the Bogor-Jakarta general area. (This may be impossible for simply lack of time in a busy schedule. The consultant is to fly to Bali that Monday evening.) Wholesalers include Heru, telephone 0813804 18579 and Hendra 62 19 339 3080. Arrangements were made to meet them on Monday afternoon July 23 or Tuesday July 24 around 10 am.

July 13, 2007 Friday continued

A programmed visit to a cluster of 10-15 orchid growers who do this for a living was not achieved. Lack of time. It was Friday the 13th and not at all surprising that this was not accomplished.

On the other hand, rainfall data for Medan was requested and received, and total rainfall is indeed rainy in Medan, close to 2.5 meters per year. Unless the dendrobium orchid production is protected with polyethylene plastic greenhouse cover, this is too much for a commercial production dendrobium orchids which will suffer from fungus because of the climate.

July 13, 2007 Friday continued

Frans Flower

Komplek Tomang Elok.

Medan

Mr. Frans and his ethnic Chinese partner (unknown name) are the key people. For fifteen years the company has exported cut foliage to Japan. Mr Frans says that they are just businessmen, with backgrounds in complete different industries, but that they got this idea of growing and exporting foliage from friends in the business in Japan. They say that they can compete because the land in Indonesia is 10% the cost of land in Malaysia, fertilizer (organic) is cheap, labor is cheap. Their concerns are that freight cost to foreign markets is high. Medan to Fukuoka, Kyushu is US\$ 2.30/kg on Singapore Air. Medan to Tokyo via Kuala Lumpur is US\$ 2.00/kg.

“The product array is limited because of the high cost of freight. We can only grow foliages with light weight stems,” he said. Stems of current cut foliage product mix, which is mostly *Dracaena Florida Beauty*, *Agloenema* and *Massangeana* cane come in 50-90cm lengths, weighing an average of 110 grams per stem. They sell for an average of 58 Yen per stem in Japan. One third of that landed price is air freight. They ship 13000 stems per month or 1.3 tons. One box (there are two sizes according to which size the client has demanded) holds 8) pieces. He bunches in ten or in twenty according to the product and the client desire. He has his own box for shipping to Fukuoka, HM Flowers. It is superior quality cardboard and printing gray on white.

They also ship *Sanseveria* leaves to Japan, a market they picked up because there is a blight in Malaysia and Korea, the competitors. He fears a similar attack and does not know how to figure out if he has it.

INTERVENTION Consultant suggested sending leaves for testing to Jakarta or Bogor plant pathology laboratories.

Currently Mr. Frans and partner ship to Tokyo 30,000 units per month in 150 boxes each week. To Fukuoka they send 160 smaller boxes per week in 13000 stem shipments.

They use a compost of activated charcoal from cassava waste sugarcane processing, coir, cow manure, chicken manure and wood shavings and hold for one month. They top dress the plants in the field with coco fiber to contain the moisture and inhibit the production of weeds.

Their partner in Tokyo invested 3 million Japanese yen in the business when they started up. They think that they are profitable, but are not exactly sure. They do not know their costs. They do not master these money details. They did not say if they had paid back their Japanese partner or if they considered his input to be equity, not a loan.

Most of the foliage product that they ship is used in funeral arrangements in Fukuoka, Kyushu and is sold on the flower auctions around Japan by their Tokyo client for the same purpose. Their partner (their Tokyo client) pays them in 60 days.

They say that they would like USAID to give them long-term working capital. We assured them that AMARTA/DAI/USAID had other objectives and commitments to other more specific short-term projects.

INTERVENTION. The packing of the foliage in the boxes, according to the consultant, was too loose with two problems resulting. 1. The foliage tips bruised when hitting the end of the box. 2. The air freight cost per unit was not being minimized. A system used in Colombia involving staking with stakes padded with newspaper and nailed through the box sides with flattened metal bottle caps was described, as was an overhead hydraulic padded press to press the foliage into the box before staking. This was discussed in detail.

July 13, 2007 Friday continued

Discussion in the evening at the DAI Medan offices with regional director Arman Ginting. Arman agreed to put Bharaty in charge of the orchid and floriculture component of the project, giving her advice and back-up, but full authority for the project success.

Conversation was cut short because the power went off, the lights went out, and it was too dark to see. We went our separate ways. Unfortunately there would be no time for a second meeting on Monday as Arman Ginting would be out of town until late, and the consultant, after the workshop, had a plane to catch to Jakarta. Arman requested that a copy of the consultant's report and recommendations to be sent to both him and Bharaty.

July 14, 2007 Saturday

Preparation for Monday presentation at the DAI office until the electricity went out at 13:00. Lunch with Bharaty and Rizal in shopping center next door. Return to hotel to work at the Business Center the rest of the day.

July 15, 2007 Sunday

Follow-up on chrysanthemum virus research. Preparation for Monday's presentation and workshop.

July 16, 2007 Monday

Taty Nursery in Medan Tuntungan was the venue for a workshop meeting of 62 orchid growers, government extension officers and other flower trading company representatives. Bharaty gave an introduction as did Mrs. **Taty Habib** of P4S Taty Nursery, Jl. Bunga Ncole No. 40, Telp (061) 8362619, Medan Tuntungan Km. 12, Kode Pos 20136, and also of CV. Taty Nursery & Galery, HP 0811 608 596. The consultant provided a slide presentation illustrating the lecture topics and showing photos of orchid production and exhibition in many countries including Singapore, France, Malaysia, Thailand, Panama, Madagascar and Indonesia. (Workshop program is attached. Copies of photos left on AMARTA computer in Medan.)

Questions from the audience regarded how the growers in the Medan area could access a plant pathology laboratory, how they could visit or build a relationship with the Malaysian pathology laboratory in Kuala Lumpur, MARDI, how they could find out about soil nutrients and what was the way to find out about UPOV, the agreement on protected plant breeders rights.

July 16, 2007 Monday continued

At 2:00 pm the consultant and Bharaty met with **Khairul Mahalli** is the Managing Director of a **Cargo Freight Forwarding** Agency in Medan, PT. **Sahara Tranindo**, Phone +62 61 4153133, Mobile +62 811 613 4413, mahali@mdn.centrin.net.id, and www.saharatranindo.com

He described the usual permits for imports of cuttings and ornamental plants including the packing list, the invoice, the Plant Quarantine document, the Certificate of Origin, and if required, the CITES permit.

Import duties vary, and may also be adjusted according to circumstances. Regular importers have a customer ID from the Trade and Industry Department and therefore VAT is reduced from, for example 7.5 % to just 2%. Also, the Department of Agriculture can recommend to the Director General of Customs to reduce import

duties to zero for “farmers” and lab analysis samples and import items less than 10 kg should be duty free.

The cost of the agent who does all of the export documents is Rp 150,000 per shipment as the minimum or a contracted rate, and this includes PA, certificate of origin, CITES (usually obtained in Bogor and valid for one year.) There is a privately owned cold room at the Bogor airport and costs about Rp 50 = USD .05.

The cargo agent can do documentation rapidly but wants to know three days prior to the shipment, because advance reservation of cargo space is preferable.

Since 2006 there has been no export or import of orchids in North Sumatera. Merak has imported Chrysanthemum cuttings and seeds from Amsterdam, and Zebra from Guernsey.

July 16, 2007 Monday continued

Return from Medan to Jakarta

July 17, 2007 Tuesday

The consultant and Asep of the DAI/AMARTA office in Jakarta drive to Bogor to meet with **Benny Tjia, Ph.D**, Technical advisor of Pt. Mandiri Jaya Flora, Jl. Cilandak Tengah II/35, Jakarta 12250. Tel/Fax 62 (0)21 765 7969. International tel/Fax 72 (0)251 316241. contact@mjflora.com. www.mjflora.com

Dr. Benny Tjia, 68, is one of the world’s foremost authorities on tropical plants, particularly potted flowering tropical plants including Heliconia, Gingers and Ixora among others. He has published in many industry journals. He was, at one point, a professor at the University of Florida in Gainesville, Florida. His wife Jenny is a Dutch-Indonesian, a lawyer. His daughter is married to an American and lives in the US. The son was to be married to a Korean shortly after this interview and would soon be established in Sarasota Florida as a professional tennis instructor.

His farm, PT. Mandiri Jaya Flora (**MJ Flora**) produces at two elevations, 600 meters and 800 meters, encompassing a total growing area of about 12 hectares. Among its product mix are a myriad of quality cut foliage, tropical cut flowers and bulbous plants, tip cuttings, micro cuttings, rooted cuttings, air layers, canes, tissue culture, flowering landscapeas well as indoor plants. Cultivation is mostly intensive, the plants protected under plastic and shade structures. The principle growing media used is cocofiber dust, and therefore most of the plants can be exported rooted and in pots, even to countries with stringent importation inspections like Japan, USA and the Netherlands.

Dr. Benny Tjia produces virtually all of the commercial and not-so-commercial species of tropical flowers and plants. His heliconia collection is the best in Indonesia. He has

ornamental pineapples, ornamental musa, clathea, curcuma, 'Tulip Ginger', Hydrangea, Solanums, Wax Gingers, and 'Shampoo Ginger.'

He also has a wide collection of foliage including Cordylines, Philodendrons, Dracaenas, Asparagus, leatherleaf fern, Asplenium, Pittosporum, Calathea, Liriope, Monstera, Codiaeum, Ligustrum, Eucalyptus, Podocarpus, Taiwan Leaf and Hedera and palms such as Phoenix roebelini.

Dr. Tjia also has several hectares of "trial garden" planted in annual flowers where he is testing 164 species of popular commercial annual flowers including orthocanthus, salvia locantha (purple) and many caladiums. He believes that many of them will bloom throughout the year in Bogor, and may actually become perennials.

IDEA Dr. Benny Tjia says that agriculture sector in Indonesia has not kept up with its ASEAN neighbors. It needs production, innovation and technology. He suggests an AMARTA donation of Rp 33,550,000 for a Forum Florikultura Indonesia (FFI) for bulletins, mini workshops and demonstration gardens and workshops in Jabotabek, Rp 42,000,000 per year for an ornamental demonstration garden at his place, and USD 2500 per student (six students per year would be ideal) to spend on student educational training activities in The Ohio Program, at Ohio State University.

Dr. Benny Tjia, is committed to multiple and somewhat conflicting priorities in research and training and though he owns and manages 30 ha of production in Bogor, is not ready to focus on floriculture exports and therefore should not be asked to accept even more burdens such as working on in an Floriculture Export Association group, for this would take too much of his time.

July 17, 2007 Tuesday, continued

Saung Mirwan is a chrysanthemum cutting operation owned by Japanese investors. The manager is F. **Deddy Hadinata**, d.hadinata@gmail.com, saungmirwan@saungmirwan.com. The address is Desa Sukamanah, Kampung Pasir Munchang, Kecamatan Megamendung, PO Box 181 Bogor. Tel (0251) 241269.

Saung Mirwan is 16 hectares, one of the biggest commercial floriculture farms in Indonesia. It is a professionally run operation specializing in chrysanthemum cuttings. Mr. Deddy Hadinata, the manager, toured us around. In one room we watched 400 girls grading chrysanthemum cuttings prior to packing.

Saung Mirwan also a joint venture with Agrium B.V. of Holland for the production of lisianthus and this joint venture is called **Miraflora**. They will make their first shipment in February 2008, and this, like the carnation cuttings, will go to Japan. Their main color will be white, but also they will have a little pink. The colors are determined by the Japanese market. One shipment is 500 kg, and they expect to ship two shipments per week.

July 17, 2007 Tuesday continued

Flight from Jakarta, Java to Denpasar, Bali

July 18, 2007 Wednesday

Pick up of consultant at hotel by Ms. Luh Made Purnawati known as “Purna” of the AMARTA office in Bali. Proceed to office at Jl. By Pass Ngurah Rai No. 88, Denpasar, Tel (62-361) 288 124, luhmade_purnawati@dai.com . Meet staff including Henry Harmon, Senior Technical Advisor to Wintrock, the general contractor under AMARTA and AMARTA office director. Henry Harmon joins Purna and the consultant for the day’s visits to the following orchid growers:

Flora Bali, 106th Noja, Denpasar, Bali 80237 Tel +62 361 225 847.

www.florabali.com www.florabali.multiply.com This family-owned operation in the southern area of Bali includes a couple, 65 years old, **Arnold Muti**, Arnold@florabali.com and his wife M. Sylvia Nurdhiani and a bright young daughter who is an accountant and a son-in-law, Ifan Winarno ifan@florabali.com, who is IT specialist, now grooming to take over at Flora Bali. This couple has a 2-year old daughter and the grandfather hopes this operation will stay in the family. We only met the grandparents, Arnold Muti and wife Sylvia. Arnold Muti is an economist from West Timor who came to Bali after he got his degree and started in growing orchids. They imported orchid 75,000 plants in in1980 and sold them a year and a half later for Rp 12.5 million, and saw how profitable the business could be. Now they have three plantations, one of which is at 1500 meters, and a plantation of Dragon fruit, ten retail shops, and the biggest production in Cymbidium and Phaleanopsis orchids and ornamental plants in Bali.

The original cymbidium orchid that they imported, a mauve color, from Japan, has become known as the “Balinese Cymbidium”. Recently this grower imported an array of new colors, bringing in thirty new hybrid crosses from Australia. (Odd that it took them 30 years to do this.) They also grow a limited array of Dendrobiums hybrids (old) and ornamental foliage such as cordyline and Dracaena Florida Beauty. Part of the orchids are purchased from tissue culture in East Java, taken from flask, made into compots at Flora Bali, and then planted in containers for pot-plant sales. They indicated that their son-in-law and daughter, once they have learned the business, have goals of tripling the size of their orchid operation, and think that the Bali Orchid Society (now one hundred hobbyist members) might easily grow to 10,000 growers. They envision supplying these orchid growers of Bali with all of their inputs including chemicals and orchid plants.

All of the Flora Bali distribution is done from their ten wholly-owned orchid shops. There is no export. There they sell orchid arrangements, loose orchids and a full range of orchid supplies, pots, fertilizers (Dynagro), fungicides, insecticides and so forth. They claim to be the exclusive distributor from the US and Europe on most all of the orchid chemical products on the island. Tourists come to the shops as well. There they sell Dendrobiums for Rp.15,000 to 30,000, Phaleanopsis for Rp. 40,000 to 50,000 and

cymbidium orchids for Rp. 4,000,000 and up. They have a web site, www.florabalil.com, and another which is www.florabali.multiply.com. The orchid supplies are sold at what might be described as a very comfortable, mark-up.

There are three production operations for their orchids and foliages. The first one is in Denpasar, about a hectare. There is one in Sembung, 25 km from Denpasar, at 350 meters of about 7 hectares (rented land from the village chief) and 21 employees, where they grow cymbidium orchids and ruscus foliage. This, the largest of the three farms, has two hectares in Dragon Fruit as a diversification project, from which they harvested 10 tons last year and sold locally. Then there is a farm in Pancasari at 1500 meters in West Bali about 54 km from Denpasar, which is one hectare and has one employee. There Flora Bali grows orchids including Dendrobium, Cattleya, Vanda, Phaleanopsis, Cymbidium, Oncidium Golden Showers, James Storei, Maggy Oei, Vanda Douglas, (no rananthera or miltonia.)

They tried exporting to the Netherlands twice. Kees von Reit, a Dutch consultant exported Raphis Excelsia palm foliage for them twice and they lost money both times. The exports were made via Surabaya by refrigerated truck.

INTERVENTION. The owner wanted suggestions for other products to grow. I suggested agloenema, anthurium, Heliconia Caribbea, Ginger and Birds of Paradise.

They do not own the land. Buying land would cost, in the area of the large farm, Sembung, about \$250,000 per hectare, but they rent on a 30 year lease agreement for \$100 per hectare per year, payable every two years. Therefore they pay US \$14,000 every two years for leasing their 7 hectares, a much better option. Apparently Balinese families hold on to the land, and obtaining very large parcels by purchase is very difficult. Leasing is relatively easy and convenient.

In cut foliages, they have thirty kinds including cordylines (red small, red big and green), Philodendron (20,000 plants) Florida Beauty (green, yellow, Milky Way), Massangeana cane (white, green, yellow), crotons in various colors, Song of India, Song of Jamaica, Sanadu, Monstera Deliciosa, Dracaena compacta (dark green with lighter stripe which is a widely available local foliage that is “cheap” and known as Sari Gari), Sanglung Siri Blanda, a plant with a red Seed,.

The owner is the president of the Bali Rotary, which meets weekly at the Bali Hyatt. The 30 members support the education of 35 children among their other charitable tasks. He seems to know everyone we meet and the children run up to him wearing Rotary backpacks with their school books. The average salary in Bali is USD300 per month. Less than 1% of children complete the university. 50% drop out after elementary schools. The Rotary provides its children with four changes of clothes (2 school uniforms, 1 athletic uniform and 1 Boy Scout uniform, plus belts, shoes and so forth.)

Dinner with Henry Harmon and Ella, and Richard Arnold, a guest in from Bangkok who shares an office there with the DAI founder, Mickelwait.

July 19, 2007 Thursday

Henry Harmon, Purna, the staff member from the DAI Denpasar office, and the consultant visit a tourist orchid garden center, Bali Orchid Garden, near Denpasar, and follow up with a visit to their upland growing operation. Both are very professionally run, and the quality of the orchid plants is excellent.

Bali Orchid Garden is owned 85% by **David Dowd**, 63, and his wife, from New Zealand. He is the Managing Director. The remaining 15% of the company is owned by his son, a financial advisor who lives in London. The retail store and orchid garden is managed by a young woman named Kadek.

The Bali Orchid Garden tourist center is on one hectare located at Jl Bypass Ngurah Raim Tohpati, Bali, Tel (62) 361 466 010. dowdvet@aol.com, info@baliorchidgarden.biz, www.baliorchidardens.com 081 337 587 038. There is also a 4 hectare farm on land leased from ten different people. There he has 8 employees. He had an orchid center in Jakarta, but recently moved it (55 tons from 6 hectares) to this farm.

David Dowd is in his third career. His background is medical, an anatomy specialist, and veterinarian, in Australia. He and his wife, a physician in Australia, moved permanently to Bali, and he now applies his scientific disciplines to orchid, anthurium and ornamental foliage plant growing. He has become an excellent orchid grower. The plants are healthy and floriferous. His experiments with other diverse tropical plant exotics have been successful as well.

David Dowd speaks fluent Indonesian and had totally adopted Indonesia as his home. The philosophy of the upland growing operation is to serve as a 'mother farm' that will demonstrate how to grow products and teach out-grower farmers who will supply the central packing house for sales in Bali. He sees this as the best way he can serve Indonesia by providing employment, technology and income to the rural area where he lives. His home is actually up at the second farm.

Currently the floriculture market in Bali is short of orchids, anthurium, some heliconias and philodendrum says David Dowd. (This considering tourism is down at present.) He says that the Japanese, Taiwanese and Korean tourists are coming on short pre-packaged 3-4 day visits with virtually no spending, so he is unsure of the future market, but thinks tourism should pick up again. It is somewhat expensive to get the stop at Bali Orchid Garden to be part of the tour. 40% of the entrance fee must be paid to the guides and the drivers plus they get 20% of any sales. He says that restaurants pay 30-35% go Bali guides and drivers for bringing in tourists.

David has diversified beyond the usual orchids, anthurium, heliconia and the usual line of foliages. He has bicolored *Alpinia* "Sunset", *Heliconia* "She", *Pittosporum* "Cracker Jack", *Pittosporum* "Blush", *Costa* "Petra" and *Costa* "French Kiss", *Costa* "Kiss of Death". He obtains these unusual plants from Bogor and also from Darwin, Queensland.

David Dowd is keen not just on domestic Bali and Jakarta sales, but his business plan includes exports of *Heliconia* and *Ginger* to the Netherlands. He asked where he could

get the plant quarantine requirements for the Netherlands. I explained that they were the same as the EU and would be available on the Internet.

INTERVENTION. Henry Harmon, two days later, did the research and found the forms and sent them by email to David Dowd, who was apparently more than pleased with this service.

David Dowd has had very positive experiences when dealing with the Indonesian government. He finds the plant quarantine people in Bali very cooperative and willing to facilitate exports. He says that soil sample analysis can be done at Udaiyam, the local university for USD 15, and results can be back to the grower in a week. He says that there is a big need for a tissue culture lab for flower growers. He says that there are facilities at London Sumatra and private labs in Singapore and Jakarta, but access is often denied. Bogor Botanical Gardens has a lab as well.

IDEA, use the Bogor Botanical Gardens laboratory could tissue culture unusual “species orchids” of Indonesia and start a program to reintroduce these species back into their natural habitat, selecting the most promising orchids that meet cut flower or pot plant commercial production criteria for distribution to Indonesian orchid growers desiring to export.

David Dowd at the Bali Orchid Garden has bred or acquired several unusual orchids including the “bat orchid” Genera Tacca species orchid from Sumatra, pink Tilandsias, species antelope dendrobiums, floriferous dendrobiums with six-foot long canes and a 21 day vase life as a cut flower. (See photos). Several of these should be propagated and promoted as Indonesian orchids for export.

IDEA. Selection and propagation of orchids from this farm, particularly species dendrobiums, would be a large contribution to world orchid growers who are looking for new species to propagate.

David Dowd also has a project for the introduction of gingers (*Alpinia purpurata*, Zinzebar, etc) in a JV with the Bali Botanical Gardens, similar to the joint-venture put together by Ball Seeds in Chicago with the National Botanical Gardens of South Africa. He also thinks that something might be done with the Department of Primary Industry of the government of Australia in Northern Territory, Darwin Australia, a tropical floriculture area, but apparently the government there has other priorities and funding is not available.

David Dowd sees a problem with the cost of air freight. He says that Singapore Air charges USD 6.00/kg from Denpasar to Amsterdam, and that is a stumbling block.

IDEA It would be opportune to have a price negotiating session between the growers desiring to export horticultural products and the head of sales of Singapore Airlines to hammer out a price/kg of around USD 2.80/kg so products from Indonesia would be competitive with Costa Rica. This would have to be a floriculture industry strategy and a negotiation based on projected exports during the next five years.

David Dowd's suggestions for rapidly developing an export floriculture industry in Indonesia include that the Department of Agriculture proceed with the idea of utilization of part of the Government owned tea plantation 20 km from Bogor, at Gunung Mas, for export floriculture. He also thinks that there would be a second project in Sulawesi, about 20 km from Manado at about 800 meters altitude, with exports by plane from Manado to Singapore. He also thinks a Bali production area could be serviced by cargo freight with a Tupelo Bomber aircraft connecting through Singapore or Bangkok to Europe and to Russia via Japan.

His Bali Orchid Garden brochures are written in English, and Russian. He puts fliers for "room decorations" in the travel agent brochures and in the hotel room folders. Travel agents get a 20% commission. He barter entry to the garden for 50% discount and makes 7-700 Euros per visitor depending on what they purchase.

He thinks that the government could make plant quarantine more effective and function in a more-timely manner. He also thinks that there is to reduce airport cold storage costs down from the current \$50 per ton. This discourages refrigeration of floriculture export product, and is counter productive, and will actually inhibit floriculture exports from Indonesia.

David Dowd thinks that AMARTA might help by providing agriculture training experts financial experts who knew about plant growth, fertilizers and floriculture in general, and experts in the concept of preventive plant health.

IDEA David Dowd has not met Dr. Benny Tjia and the latter could help him with many technical and practical expert interventions. To get this accomplished, Dr. Tjia would have to be hired by the AMARTA project.

David Dowd sees great export potential for floriculture. He can produce or buy hanging heliconia *H. Rostrata*, at US\$.05 in Bali and sell it in New Zealand for \$5.00. He can buy claw Heliconia for \$.30 and sell it \$5.00, providing \$.60 net to the growers. He can buy *H. Red Torch* for \$.03 and *H. gold Torch* for Rp 100 and sell for \$5.00 each abroad.

Currently at Bali Orchid Garden he sells 10,000 stems of Heliconia per month and delivers them to the local florists using a fleet of motorbikes.

CONCLUSION David Dowd has energy and ideas and wants to organize Indonesian farmers like Subac. He would be a good man for the purpose of linkages of farmers to foreign markets.

July 19, 2007, Thursday continued

Visit to the home of **Stephen Monkhouse**, co-owner of a fairly new company, **Milo Bali Adelaide Orchids**. He was the owner of the well-known Adelaide Orchids in Australia, but has divorced his wife and moved to Bali and has a partner (also his fiancée), Lina, who helps him in this new venture. The other co-owner of this new venture, Milo Bali Adelaide Orchids is Milo, flamboyant floral designer of Italian origin in

Denpasar and president of the Bali Orchid Society. Currently their office address is in Stephen Monkhouse's home, Monkhouse Ville, Jl. Sekuta Gg. Jepun No. 2, Sanur, Denpasar 80228, Bali, Mobile 081 8550393, Home 0361 282992. They also have a small nursery in Singaraja, Bali. www.milobailiadelaideorchids.com
Stephen@milobailiadelaideorchids.com.

In the home there is a very small new tissue culture center with a few orchids in flask which were said to be zygopetalums.

Stephen Monkhouse also has a 2 ha nursery where he has 15,000 plants and employs 5 people, and this is located up at 1200 meters altitude.

Since he hopes to live the rest of his life in Denpasar, he hopes that other orchid growers will use his flasking facilities at his laboratory. He normally charges Rp 35,000 for flasks with 40 small plantlets from his laboratory. (He mentioned later 55 plantlets in the polycarbonate tub with lids-type flask, and Rp 55 per plant—check this). He says that it takes him 6-8 months from orchid seed germination to sale size in the flask. His flasks are imported, polycarbonate tubs about 4-inches high, which he claims will mean his “flask” plants are much larger than the competition and easier to remove from the flask and put into “compots”, an orchid industry term describing 20 or so small orchid plants, removed from the agar gel medium of the flask and put in a 4-inch plastic or terracotta pot where they begin growing as real plants. (Other growers say that such plastic pots get too hot and they prefer glass bottles. It seems an open debate.)

Stephen Monkhouse sees commercial opportunities for an Indonesian floriculture industry, including cut flower cymbidium orchids, anthurium and pot plant *pathopedulum* orchids and zygopetalums which bloom twice a year and could be raised in Bandung or Malaing, near Surabaya. He says that Phaleanopsis orchids take 18 months out of the flask to flowering stage, and one tiny flowering plant can be sold for Rp 50,000. He mentions Ekakareja near Jakarta and 3 acres of phaleanopsis. (?)

He notes however that all of these plants would take time, at least 3-5 years into production.

July 19, 2007, Thursday continued

Return from Denpasar, Bali to Jakarta.

July 20, 2007 Friday

Depart from Jakarta for a 3 hour drive to Lembang, Bandung with Asep of the DAI AMARTA office in Jakarta and a hired taxi.

Visit to **Rumah Bunga Rizal** (Flower House Rizal) owned by **Rizal Djaafarer** and wife. It is an orchid garden of considerable size open to orchid growers and potential orchid growers from all over Indonesia. Jl. Raya Maribaya Km. 2.4, Lembang-Bandung

40391. Tel/fax (022) 2786321, direct hand phone to Rizal 081.22.33.5657, rizalorchids@yahoo.com www.rumah-bunga-rizal.com

This is 55, athletic, with a mustache, and an excellent commercial orchid grower. He has friends throughout the orchid world including Kasem Boonchoo in Bangkok. This operation sells about 1000 orchid pot plants per month. They also do tissue culture and sell about 100 flasks of orchids per month. Rizal has done more than 11,000 orchid crossings since 1987.

Rizal started out as an architect who, as a hobby, began collecting cactus plants and then turned to orchids. When he is not there the operation is run by Alep, who showed us around and answered technical and taxonomic questions with competence. Alep is production director, one of 100 Muslim orphans sustained by Rizal's charity, sent to primary school then to high school, and then out to the world to work if they have talent, or back to the orchid farm if they merely have capacity to do a laboring job. Alit was their top discovery, and he returned to take charge in the greenhouse and has been with Rizal for 20 years.

He exported orchids twice in 2007 and it took him one month to get the paperwork together. This paperwork delay took place, despite the fact that Rizal trains government employees entering retirement to take care of orchids. Two to four times a month he receives 40 students for two days of training. Pertamina sends their employees when they are at retirement age at 55.

The main production at Rumah Bunga Rizal is Phaleanopsis orchids. They have made a thousand crosses in the last few years. But they also have a collection of parent orchid plants and species orchids, including the rare Bulb. Flecheriarium from Papua.

July 20, 2007 Friday, continued

Visit to **Florina** preserved flower factory in Lembang. The factory is located at Jl. Anggrek No. 8, Cikole, Lembang, Bandung, Tel (62-22) 2789805-06. floraimpian@floraimpian.com Here they preserve real flowers, at 80% humidity using 30C heat in a chemical solution for 15 days, then fumigate and dry for 3 weeks and ship to Korea and Japan. Their foreign clients make the dried flowers and foliage into other products. Preserved Bear Grass (imported from the northwestern US) is a specialty.

Here at the factory they also take on some production of finished products, in this case, today, we saw the painstaking production of Barbie Dolls with preserved flower dresses. They are having difficulty marketing and need help. There is apparently a change in ownership going on at the factory and a reorganization and the factory is almost totally closed down.

Siman Slamet, the current owner was not there, but called Asep a day later, saying he had just arrived in Jakarta from a trip abroad, and he wanted the consultant to meet him for lunch at a Jakarta restaurant. I declined this potential export marketing intervention as I planned to still be on tour in the Lembang area. See July 25, morning interview with

Juharli Hambali, managing director of Flora Impian Indonesia, and Sandi Liem, Sales Manager of Florina.

July 20, 2007 Friday, continued.

Mr. **Ayub Parnata** of Cikole, Lombok, aged 76, received us into his home for a long chat and gave us a tour of his orchid growing facility. Jl. Tangkuban Perahu No. 157 RT. 06/07 Gamblok Cikole Atlas, PO Box 8482 Lembang – Bandung. Phone/Fax 62-22-2789286. Nursery phone 62 22-2785338. paskalorchidsco@bdg.centrin.net.id

Ayub is one of the world's most reknown orchid specialists. He knew the grandparents of Benny Tjia. He founded the Indonesian Orchid Society more than 50 years ago. He is currently Chairman of the **Asosiasi Petani Anggrek Indonesia (APAI)** or Indonesian Orchid Farmers Association. He is a recognized orchid breeder. He has several orchids registered with the Royal Horticultural Society in London that include his name or his wife's name in their official name. William Cafesto, a Frenchman, working with the Taiwan Growers Association helped him to translate his articles for the Revue de la Societe Francais d'Orchidophile, 17, quai de la Seine, 75019 Paris. He also helped him to register five new dendrobium species that he discovered in the wild, including *Dendrobium parnatanu* a yellow-flowered species, and *Dendrobium racieanum*, named after his wife, which he found in Irian Jaya in 2003.

He showed me *Renanthera Storiei* x *Kalsum* (*R. Storie* + *Philippinensis*), and an *Ascoglossum* that are unique, as well as an impressive *Arachnis* orchid, *Maggie Oei* X *Dtps Iron Side* "Wonder Mountain", which appears to have potential for a commercial cut flower orchid plant. At present, of the latter, there is only one large plant and a smaller keiki potted and under heavy shade. The large plant has bloomed twice since it was raised from seed, and at next blooming will be undoubtedly crossed again, hopefully with one of the strong commercial dendrobium cut flower varieties.

He also showed a stunning black *Alocasia* from Brunei, which he has named "Lady in Black" and he can hardly wait to show it to Greg Hambale, the *aglaonema* specialist who lives in Bogor near Dr. Benny Tjia. All of these plant breeders in the area are long-time friends.

Mr. Ayub Parnata went on to invent a liquid organic fertilizer and growth regulator for not only orchids, but for citrus and all plants, called Bio Top. The instructions are to dilute 1 part of Bio Top with 500 parts of H₂O and spray on the foliage and stems. Apply once a week, either early in the morning or in the late afternoon. The liquid is 100% organic, with no preservative and an unlimited shelf life. It is a natural insecticide and fungicide that leaves no residue. It is friendly to the environment and safe for humans and cattle. The factory producer is PT Sugeh Cipta Santosa, Bandung, Indonesia. They have a sales agent in Western Australia, but none elsewhere, and yet it is currently being imported into China for use on thousands of hectares of citrus. He sells by the sea container. A palletized container has 11,600 liters of Bio Top and a loose container has 16,000 liters per container. That is how it is imported into China. The raw materials

come from a factory in Mumbar (?) Indonesia that processes 200 tons of raw fish per day.

Ayub Parnata, who is perhaps skeptical of corporate profit-making in floriculture, seeing the field as a more oriented to helping marginal farmers.

Ayub Parnata is not, as one might assume, a chemist. He spent his career buying and selling houses in the family real estate business, and orchids and chemistry are just a hobby for him. His philosophy is one of researcher and teacher. In regard to orchids, though he is interested in registering his novelty hybrids, he has made no move to commercialize them, and is not judging them by commercial criteria such as stem length, vase life and so forth. The benefits of UPOV do not particularly interest him. He is more attentive to the income producing potential of selling Bio Top, his liquid organic fertilizer. But on the other hand, he sells his fish-based organic food supplement capsules at a price low enough that he can distribute them to all of the farmers in the area so they will be strong and healthy. It is improbable that he will be a key figure in the development of a future Indonesian floriculture export industry, except as an “eminence gris” and inspiring father figure.

The consultant and spent the night at the hotel in Lembang.

July 21, 2007 Saturday

8 am departure from hotel in Lembang for many visits, on foot, to flower farms in Cihideung, a village totally dedicated to floriculture. The visit to the village was made possible by Tomy Perdana, 35 getting his PhD in Social Agro Agronomy in Bogor, who drove his own vehicle, and by Asep from the AMARTA office in Jakarta.

The floriculture village is called Cihideung. **Adil Hendra** is the president of the flower growers and flower traders’ organization, Asosiasi Petani & Pebagang Tanaman Hias Cihideung, or **APPTHC**. Adil’s residence is Jl. Ters. Sersan Bajuri Kp. Panairan, Rt 03/10, Cihideung. Hp 08157192216. [REDACTED] He is in his 30s, very intelligent, very knowledgeable about flowers, a natural leader. He speaks a bit of English.

In Cihideung village there are 4072 households, of which 3100 are in floriculture. Of these 1900 families call themselves farmers, meaning they sell directly from their flower gardens to intermediaries who do the marketing, and 1200 who call themselves traders, meaning that they sell the flowers and plants that they grow to the clients directly, going further up the value chain. Besides the 3100 farmer families, the latest census also indicates that there area 100 decorator households.

In all, the villagers of Cihideung grow flowers on 150 hectares per year. In one open section there are 16 hectares of roses (the largest production of roses in Indonesia) where twenty years ago there was rice paddy. All of these roses are grown from grafting. (The original material to graft is apparently obtained by importing cut flowers

from Korea and Malaysia according to what I understood and there is no access to commercial rose planting materials, top grafts, or budwood.)

The village grower group manages a “kiosk” for grower inputs and from it buy their fertilizers and pots for use of all of the growers at a lower price.

In Cihideung they grow 115 genera of flowers and plants. Very few of the farmers specialize and most grow several things. The main production is of roses. Most of these are grown as pot plants. They have 20,000 to 30,000 pots of roses. Most of these are rose plants that they have “made” from grafting, from what is referred to locally as “oculus”. The second major product of Cihideung is Chrysanthemum, produced as both cut and potted spray chrysanthemums. The third major product is Aglaonema. The fourth is Dendrobium orchids, or Anggrek. The fifth item of importance is gerbera, a product which Adil Hendra both breeds and crosses. Other products include Hydrangeas and red Cordyline.

This village of foliage plant producers maintains their own staff of 150 villagers who do agriculture extension service. In 2005-2006 some 20-30 of these extension workers from the village offered weekly floriculture job training in Medan, Central Java, Eastern Java, North Sumatra and Banten (2.5 hours from Jakarta).

They use standard texts written in Indonesian such as Standar Prosedur Operasional (SPO) Anggrek Dendrobium, Direktorat Tanaman HIAS, Direktorat Jenderal Bina Produksi Hortikultura, Departmen Pertanian 2004.

The growing media that works best for them is composted goat manure mixed in water with commercial fertilizer from Norway, in powder form in various combinations of NPK. They usually top this up, both in the pots and in the field, with rice hulls. The chrysanthemum cuttings from the mother plants are grown in a charcoal made of rice hulls. The same is used for growing ornamental capsicums pepper plants in pots. The recipe is 10 kg of goat manure and 1 oz of palm sugar (red sugar) marinated together for one month, then, after the sediment is taken out, the liquid is sprayed on the plants. In small pots of chrysanthemums and orchids, the media used is crushed pakis (tree fern). In orchids they fertilize with 20-20-20 and later with 30-10-10, a fertilizer called Grow More from Gardena, California.

Cihideung village also does their own sales and distribution throughout Indonesia. Sales representatives from the village sell in Sumatra and in Java—going out some times as much as 3 days by truck to Berastegui and Medan. In Kalimantan they deal with local trading partners.

All of this flower production and organization, extension work, cooperative buying of inputs is done by the people of Cihideung without the help of government. Adil Hendra does know and admire Dr. Dinyati, the Director General of Agriculture of Western Java, but so far there has not been a government support of their projects. (It was Dr. Dinyati who urged visiting this village by the AMARTA consultant.)

According to Asep, the AMARTA Competitiveness/Value Chain Specialist, these agriculture extension agents are employed by regional government using reserves

distributed to them from the Regional Minister of Finance, who has the authority to use these decentralized funds distributed by the central government for any purpose that they choose. Several (North Java, East Sumatera) have been interested in developing floriculture. This gets the approval of the national government.

The thinking at government level has evolved. Under Soeharto, the government focused on food crops almost exclusively. Among their methods, they made use of farmers' groups. Farmers' groups made Indonesia self sufficient in food crops by 1984 according to FAO. The government therefore continued to support these organizations. But over the years, it was seen that growing paddy did not really improve the economic lot of the marginal farmers, and prosperity escaped them. But a few villages found a modicum of prosperity by switching from rice to high-value horticulture, in this case, of Lombok, to floriculture. Asep pointed out that the children all had their school uniforms and none were working in the fields with their parents. The Lombok houses were all freshly painted, the floors of the houses in tiles or cement and not tamped earth. The area around the homes was immaculate and "landscaped" with hundreds of potted plants, waterlilies in pots, bonsai trees. There were motorbikes and small trucks and people talking on cellular phones. Everyone seemed healthy, well dressed and smiling. He pointed out the 16 hectares of potted rose plants. "That used to be rice paddy twenty years ago."

Adil Hendra thinks that the village farmers need to progress further and to "go beyond traditional farming methods." He seeks new technology, tissue culture lab, information on pests and diseases, cheaper financing for obtaining new planting material. He thinks that there ought to be a plant pathology lab, at least a small one, near the growers, where they could get immediate solutions to their pest and disease problems and their fertilization inquires.

IDEA Finance a model pathology lab, a "field hospital" near the farmers in Cihideung village in Cihideung, Parongoong, Bandung..

IDEA Get Adil Hendra of the Cihideung village subscriptions to various floriculture magazines such as FloraCulture International and Flower Tech, and several copies of Floriculture Plants and Diseases from Ball Publishing.

IDEA: Get the latest Danish ornamental capsicum seed down to Cihideung.

IDEA: Get Adil Hendra up to the Horti Fair in Amsterdam in October, and from there, on to Denmark to study potted rose growing—possibly after Horti Fair as an side tour.

IDEA Get the Danish breeder of pot roses, Roses Forever, in to Cihideung for a sales pitch to these farmers.

IDEA Involve Adil Hendra in any national floriculture industry planning groups with the other big growers around the country of Indonesia.

IDEA Get Adil Hendra and selected extension of the village of Cihideung, if any speak English, to the Ohio State Short Course—see Dr. Benny Tjia.

July 21, 2007 Saturday continued

Visit with the woman Engineer who is head of the Agriculture Chemical Testing Laboratory in Bandung. Ir. Hj. **Lilis Irianingsih**, MP, who has a Master's degree in Agricultural Technology. Ka. **Laboratorium Kimia Agro Lembang**. Jl. Raya Tangkuban Parahu, Km. 22 Cikole, Lembang 40391. Tel 022 2784949. HP 0812.2351.958. Lilis_Irianingshi@yahoo.com.

This very bright and amusing lady heads up a staff of 8 in Lembang. Officially she directs the Pemerintah Daerah Propinsi Jawa Barat, Dinas Pertanian Tanaman Pangan, UPTD Balai Proteksi Tanaman Pangan Dan Hortikultura Instalasi Laboratorium Kimia Agro Lembang. She and her husband live in Bandung. He is a psychologist.

She talked of her concerns about the imports of apples and pears from China. They have, in their investigations, found the same active ingredients that are found in such deadly chemicals as Paraquat, Malathion, Supermetrin, Alpha Spermetrin, Difenokonozole, Dyanchipo and Korbofuran. These are carcinogens. If they do not kill people now (particularly children) then they will kill them later. Indonesian public health is at risk.

She is also concerned about the Paraquat that the farmers use on "paddy" or oil palm. It is reduced by 30% in processing of palm oil (therefore officially becomes harmless), but the same Paraquat is being used by the rice growers throughout the country. Even in small amounts, and unprocessed, it is a slow killer, absolutely lethal.

Imports of fruit from any country are supposed to be taxed, licensed, import duties paid and be subject to testing for illegal pesticides. Unfortunately there are two problems with this control that make it ineffective in protecting public health. First, she cannot report her findings because it might end up in the media, or she might lose her job. Second, even if they did stop licensing importers of Chinese apples and pears, that would solve only have of the problems since 50% of the imports into Indonesia are illegal.

July 22, 2007 Sunday

Transcription of consultant's hand-written notes into computer.

Dinner meeting with David Anderson regarding AMARTA floriculture project and remaining days' objectives.

July 23, 2007 Monday.

The consultant and Asep of the AMARTA/DAI project went to a 10 am meeting at the Ministry of Agriculture.

Ahmad Dimiyati, Phd, Director General (DG) of Ministry of Agriculture, Republic of Indonesia, Jl, AUP, Nom 3, Pasar Minggu, Jakarta Selatan 12520 Tel 021 7806881, dimiyatia@indo.net.id and Ir. Agus Wediyanto, “Agus”, M.Sc, Director of Ornamental Plants and Floriculture also attended. Tel 021 78842941, 781 4545, 78842942 dit_hias@hortikultura.go.id

Dr. Dinyati’s described his Road Map (master plan) of floriculture. In order to create an export industry. He wants to:

- Strengthen the link among hobbyists, breeders, growers, traders and exporters
- Get them to work in an integrated way with a more commercial motivation
- Develop a concept of Indonesian flower uniqueness

He supports flower industry participation in exhibitions such as Horti Fair in Holland, and local flower exhibitions in Jakarta. There will be the Indonesian annual flower Expo in Lombok in 2007 and in Tomohon, North Sulawesi in 2008.

Dr. Dimiyati would like Nancy Laws to speak at the National Seminar on Floriculture on November 22, 2007 in Jakarta. He will invite young entrepreneurs of Indonesia to that meeting to encourage investment in the flower business.

He aspires for Indonesia, which has over 30% of the native orchid species of the planet and only 3% of the world commerce in floriculture, to raise the Indonesian floriculture exports to 30% of world floriculture trade. He would like Indonesia to be known for flowers as are other countries such as Thailand, the Netherlands and Singapore.

In order to do this, he feels that it is important to involve people at all levels, including of course, the current head of the Orchid Society of Indonesia, who is the wife of the vice president of Indonesia, Mrs. Yusuf Kalla and the Minister of Trade.

July 23, 2007 Monday continued

Meeting with three of the most active at **Pencinta Anggrek Indonesia (PAI)** Indonesian Orchid Enthusiast’s, well-organized orchid market location, a facility provided by the Government and rented by the various sellers of orchid pot plants. Taman Anggrek Indonesia, Jl. Raya TMMII, Pinangranti, Jakarta 13560, Indonesia.

Andi Widjaja “Andi”, of the Perhimpunan Anggrek Indonesia, Cabang DKI Jakarta (Jakarta section of the Indonesian Orchid Association), Tel 021-58683914 andiw64@centrin.net.id,

Frankie Handoyo, Fragrant Orchids and Tropical plant, Tel 62 21 71582902, +62 81 58735260, frangrant.orchids@gmail.com, www.orchidsindonesia.com Author and lecturer on orchids

Musin Yohan, Dipl.-Ing, Director PT Leybold Didactic Indonesia, with degrees in physics and chemistry, is an orchid photographer of note. Tel 021 5270915, leybold@cbn.net.id

These three orchid professionals do much of the educational work, expositions and publications of the Indonesian Orchid Society. They do this with government approval but no financial support, insufficient membership income, and finance out of their own pockets or with a little income from the sale of a book on Indonesian Orchids that they have self-published. Quite understandably they feel abandoned, and they doubt the credibility of politicians that say that they would like orchids and or floriculture to be an important export industry.

The members of the Indonesian Orchid Society displaying and selling at this center are small businesses. The nurseries all have a wide variety of orchids, but dendrobium orchids are the most on display. They sell only potted plants.

They say that none of the Indonesian firms in that location export orchids. Apparently some have tried, but export permits require up to a month to obtain, and by then the foreign clients have lost interest. They pointed out, as we visited the various selling stalls, that all of the material for sale is potted orchids, many of them potted species orchids from Kalamantan or Irian Jaya, but there are also locally bred hybrids of these species and crosses with orchids from other countries, and the assortment of material is impressive. They concentrate on the local market because “exporting needs long procedures. It is difficult to get export permits, and by the time they can be obtained, the customers have lost interest or, they are so expensive, that there is no profit in exporting in small quantities, and most of the clients are hobbyists who want just a few species orchids from Indonesia sent to them to widen their collections.

They note that despite the government intention of controlling exports with their system of permits and the export paperwork, unknown but very large numbers of species are disappearing abroad, to Thailand to Australia to Taiwan, in the suitcases of professionals from those countries who come to visit. The implication is that this practice is depleting the orchids in their natural habitat.

Dendrobium spray orchids are available in the stalls in profusion and, though native in Indonesia, are not exported from Indonesia, but rather associated, in the public mind, with Thailand. Phaleanopsis orchids which find an ideal natural climate in Indonesia, with the perfect humidity, temperature and luminosity, are grown, and exported, not from Indonesia, but principally from Taiwan. Indonesian breeding efforts and Phaleanopsis hybrids are being ignored in the world commerce of these plants—and meanwhile the best results of the Indonesian breeding efforts are being taken, without acknowledgement from Indonesia to other countries. They consider this a travesty. They think the government should correct this situation.

The three hosts tell me that the government does little, but that they would like to sit together and talk about what the government (and AMARTA) could do to help the industry development.

The three hosts concur that they need a government tissue culture laboratory for their use. They think that these should be provided by government, because none of the growers trusts a private tissue culture laboratory to not take part of the plants as their own (one orchid may produce 50 to 50,000 seeds and germination is not even in the flasks and it is easy to steal in the laboratories. This practice is, unfortunately common in Thailand and other countries, and they think it might happen in Indonesia.)

The three took us to visit various booths, including one managed by **Mrs. Soeharto**, who greeted us as she attended clients and sold them potted orchids.

We also visited H&W Orchids, Kavling 16, Taman Anggrek Indonesia Permai (TAIP) Jl. Raya TMII Pinangranti, Jakarta Timur, Indonesia. Tel. Op.: (02) 840 4025, 840 4111, 840 4141 hw_orchids@hotmail.com and hworchids@yahoo.com owned by Mrs. Erny Hasan Cahyanto, Mobile (62-812) 949 5754, Chairman of the Orchid Society of Jakarta. They sell Indonesian Orchid species, Hybrid orchids and orchids in flasks.

INTERVENTION Photographs were taken by the consultant of the above three gentlemen and also for **Erny Hasan Cahyanto**, Chairman of the Orchid Society of Jakarta and her mother, Wenny, for publication along with an article on this problem in *FloraCulture International*, with editorial offices in Amsterdam, and possibly in the American Orchid Society bulletin, *Orchids*, edited in Delray Beach, Florida. Publication lead times are approximately three months for FCI and one year for *Orchids*, but when published we will make sure that a copy gets to the Chairman. Such promotion of the activities of the Orchid Society of Jakarta would be of interest around the world.

July 23, 2007 Monday continued

Meeting of the consultant and Asep of AMARTA with **Karen Sjarief**, Chairperson of the **Asosiasi Bunga Indonesia** (Indonesian Flower Association), referred to as **ASBINDO**, a group of exporting or potentially exporting flower companies. Kompleks Liga Mas Indah, Perdatam, Jl. Dduren Tiga Indah Raya Blok i/12, Jakarta 12760 Tel: (021) 7976442, asobunga@indosat.net.id k_sjarief@hotmail.com At the meeting was the executive director of the Indonesian Floriculture Association, **Rosana Harahap**.

ASBINDO was founded in 1990 and has approximately 100 members all of which are floriculture enterprises who are exporting or who have export potential. About ten of these companies are influential and involved in the export of chrysanthemum cuttings, orchid seedlings, tissue culture seedling, and flower seeds of annuals and perennials. Karen has been the chairperson for six years, having been re-elected into a second term. ASBINDO has three divisions, one for training (and they have rooms for large meetings at their office), production and promotion. They now work closely with the Directorate of Floriculture, a position under the DG of Horticulture, which was actually established in 2003 at the proposal of ASBINDO.

One of their concerns is government regulation and enforcement (or lack thereof) of rules on imports of farm inputs and exports. With the move to regional autonomy, regulations are unevenly applied and the need for payments for what should be free

government services becoming more prevalent. Each regional government has applied new regulations that have, in some cases, biased the regulative atmosphere in which floriculture exporters operate.

The government officials seem unconcerned with these problems because they think that flower growers are rich. They are not sensitive to the potential of floriculture as an enhancement of the image of Indonesia, an industry that creates employment, good working conditions in rural areas for women, foreign exchange and profits. They do not realize that floriculture and high value horticulture are the most efficient way to raise the level of technology in agriculture in Indonesia—and speed self-sufficiency in food crops and turn these food crops into export industries as well. Floriculture exporting companies do this through their on-the-job training in the most demanding agriculture industry in the world.

The government officials have not realized that 100-200 hectares of floriculture crops are currently being exported to such prestigious international companies as Syngenta (Holland and Switzerland), Ball Seed (USA) and Sakata (Japan) or will soon be exporting around the world. The dimensions of this in terms of current and projected value of exports and volume of exports is not known.

The list of important Indonesian floriculture grower/exporters provided include:

Saung Mirwan, Ciawi, West Java, 16 ha, exporter of chrysanthemum cuttings to Japan

Alam Indah, Cipanas, West Java, 10 ha, exporter of chrysanthemum cuttings to Dubai and Japan

Melrimba, Cugenang, West Java, 12 ha, Phaleanopsis plantlets to Japan

Menfori Nusantara, Parung, West Java, 3 ha, Tissue culture and flower seed exports to Australia and NL's

Tropica Flora, Magelang, Central Java, 14 ha, Leather leaf fern foliage exports to Japan.

Selektani, Medan, 20 ha seed (annual and perennial) to Netherlands, USA and Japan

Wahana Kharisma, Malang, East Java, 6 ha, gerbera cut flowers

Ketemu Lagi, Bali, 3 ha orchids

She also listed soon-to-be exporting farms:

Ostrafarm, Cipanas, West Java, 10 ha anthurium.

Farm belonging to Karen Sjarief's group, 4 ha, snapdragons and amaranthus

Benara Indonesian, which produces Ixora Royal King. though not in the ASBINDO association at present, is a 30 hectare joint venture with Australians. The export cut foliages from Karawang near Jakarta.

Note that there appear to be more large growers than those mentioned on Karen's list.

There is said to be a Korean investor, Korean Flower Association (KFA) that owns 2800 hectares and is said (by Juharli Hambali of PT. Flora Impian) to be investing Rp. 800 billion.

There is a 48 ha rose production operation called Segulem, owned by the former Ministry of Agriculture, Mr. Hariyanto Dhanutirto,

In Singapore, it was mentioned that there was a very large company named Hash Farm, an Indonesian-Dutch joint venture investment with possible Vietnamese ownership as well, that is located in Indonesia and will export Chrysanthemums and Roses.

IDEA AMARTA might finance an industry survey of big growers, and publish an internet site and/or folder that would list the growers, the location, the number of hectares, the types of product, percentage exported and to which foreign markets, names of the managers, phones, addresses, emails, the names of the owners (or an indication of what nationality owns which portion of the corporation) and the approximate investment in Rupiahs (under 100 billion Rupiahs, over 100-500 billion Rupiahs, 500-750 billion Rupiahs and over 750 billion Rupiahs would be sufficient) and a message from the top manager of each firm to the readers of the web site or booklet regarding their product. This survey is urgent, and could be done by telephone and email by Bharaty in AMARTA's Medan office.

Karen Sjarief says that Indonesian floriculture grower/exporters hope to enlarge the area dedicated to export floriculture.

As Chairperson of ASBINDO, Mrs. Karen Sjarief, is keen on geographically diversifying and extending production of export floriculture in other regions. She visits a new floriculture development in Tomohon, North Sulawesi one or twice a month. This North Celebes region is 30 km from the capital, Manado. The connections to Singapore are good. There the production will be of seeds and also tissue culture of Phayus Tankerville (north Sulawesi endemic). Tomohon local government has devoted 900 ha for the pilot project. The mayor is very enthusiastic. Karen requested that the consultant visit Sulawesi in November around the time of the planned November 22 flower meeting, and will be speaking with Dr. Amad Dimiyati, the DG of Horticulture regarding this possibility.

Karen Sjarief spoke of the importance of government support in creating a progressive floriculture export industry, and the influence the high value horticulture and the floriculture industry briefly enjoyed under Megawati who set up the administrative structure that includes the DG position which is key at present time. Karen's goal is to "turn floriculture into a business." She is dismayed that "no one in the government believes it is a business, not even my husband..." (her husband is influential in the Department of Public Works.) Yet on the other hand she knows that world trade in floriculture exceeds US\$ 7 billion. She is in contact with other flower exporters' associations such as ASOCOFLORES of Colombia, a country that exports USD 800,000,000 per year in fresh cut flowers alone.

INTERVENTION Karen Sjarief has sought information on the by-laws of other floriculture associations. This will be provided by the consultant.

Karen Sjarief spoke of the benefit of the consultant's possible meeting with two people immediately. One was the Minister of Trade. The other was the president of the Indonesian Orchid Society, Mrs. Yusuf Kalla (wife of the vice president of Indonesia and Chairman of the Orchids Society of Indonesia based in Jakarta.) Karen called the Ministry of Trade but found that the Minister, herself, was accompanying the president of Indonesia on an official visit to Korea and was in Seoul. Mrs. Kulla was also not available either. It was decided therefore that the consultant would stay in email contact with Karen Sjarief and an attempt would be made to arrange these meetings upon the consultant's return to Jakarta for the meeting that the DG, Dr. Ahmad Dinyati, had announced for November 22, 2007.

At the November 22 meeting, Karen wants agreement on specific objectives for the floriculture industry for 2012. She wants a five-year plan for the numbers of hectares in floriculture, the employment objectives, the goals for total value of exports. She will share her own initial thoughts on these matters with the consultant within the week by email.

IDEA AMARTA should underwrite a series of workshops of all of the large Indonesian floriculture growers together with government people, and those from the private sector (airlines, cargo agents, box manufacturers, etc.). The initial suggestions for people to include would be David Dowd of Bali Orchid Garden, Tetty Leonardi, Mr. Yunan and Mrs. Taty from Medan, Deddy Hadinata, Rizal Djaafarer, Bintara Thahir, the Chairman of the Dept. of Food Crops and Horticulture from North Sumatra, Adil Hendra, head of the grower group in Lumbang, Lilis Irianingsih, Mr. Bintara Thahir and the DG from Eastern Java, Dr. Ahmad Binyati and Ir. Agus Wediyanto and Karen Sjarief of the Indonesian Flower Association. In addition the large grower exporters of ASBINDO would need to send representatives, (perhaps rotating growers into three seats).

The objective of the workshop would be to agree in writing on a five year floriculture industry plan that would encompass both the domestic and export markets. Agus Wediyanto should probably co-chair this meeting with Karen Sjarief. It would be their job to communicate the results to the Ministers of Agriculture, Minister of Trade, the Vice President and other key political figures, who would be able to **make Floriculture Exports a National Priority of Indonesia.**

Ayub Parnata and Dr. Benny Tjia of Bogor and Hasnul Pane, Siregarand of Medan, and other experienced flower growers, scientists and academics who are not directly concerned with or even interested in floriculture exports should be put, not into the industry planning group directly, but be asked to serve in the capacity of a Board of Advisors to the above mentioned working group.

July 24, 2007 Tuesday

On the recommendations of Rona Ee, AIFD, and Sebastian Ee, AIFD, Singapore floral designers, and family owners of Sing See Soon Wholesale in Singapore, the consultant went to call upon Ms. Binawati, of Bina Flora, floral wholesalers/exporter/importer in Jakarta. The two firms were said to work closely. Indeed, when the consultant arrived, together with Denny Risyad of DAI/AMARTA, another colleague of Sebastian Ee, Damien Koh, AIFD, also of Singapore, was in Bina Flora “rearranging their floor layout design.” www.damienkoh.com

Binawati Kusmin, President Director, PT. **Bina Flora**, Lestariim Jl. Kartini Raya No. 68, Jakarta Pusat 10750, Tel: 6394808, 6394821, 6394867. Ms Binawati’s mobile phone is +62 81 6895110 binawati@cbn.net.id.

Bina Flora is a world-class florist shop that is a “one stop shop” for floral designers of Jakarta. Elegant displays of silk and artificial flowers, baskets, vases, floral accessories, gift items and both imported and local fresh-cut flowers and leaves and imported and locally grown pot plants. They had two large floral coolers filled with white lilies, roses, tulips, Eryngium, Allium, Hydrangea, Lavender, Magnolia, Maple leaves, Ranunculus, branches and twigs and a variety of foliage. Bina Flora gives “short courses” on floral design and use professional tutors to help flower enthusiasts “to discover their creativity.”

Bina Flora imports from Holland (tulips, alstroemeria), China (Lilies, roses and Brassica), Taiwan (lilies, calas and oncidium), Australia (“Kiwi sticks”, leucadendrom, and yellow Berzelia) and from Ecuador (large long-stemmed roses). Bina Flora also purchases from local Indonesian growers such items as lilies, gerberas and leatherleaf fern. However they buy very few Indonesian roses.

“If there is a big order, there is NEVER enough local supply of the quality that we need for our clients. Locally grown roses are insufficient in each color group. For instance if we need 60 cm. cream roses for a wedding, there may only be three or four, not enough to make up even one full bouquet. The quality of most locally roses is sub-standard,” explained one of the employees.

The meeting with Binawati was upstairs in their boardroom. We were joined by her husband, HO Lip Tek, an engineer by training, who is a representative of a dozen foreign manufacturers of bathroom fixtures such as Grohe and Kohler. We are also joined by one of their sons, who had just returned from Seattle, where he studied floral design and English for six years.

Mr. Ho says that the reasons that there is not enough good flower production in Indonesia, include, as he sees it, the following:

The growers are small and need money to buy land and seed and greenhouses and there is no financing system or bank where they can borrow to finance their growth. He thinks low-cost financing is essential.

Though there is traditional technology, there is no new technology that would allow the Indonesian flower farmers to produce quality that is acceptable today.

There is a lack of high quality planting material.

It is very difficult to import seeds chrysanthemum cuttings, grafted rose plants, and flower bulbs (cost, bureaucracy, high cost of freight for small orders.)

As a result, the available quantity of good Indonesian flowers is very small, and

At present, good cut flowers, grown in Indonesia, cost MORE than flowers imported from Taiwan, the Netherlands, China, or Korea.

Binawati seemed in agreement. She said that she would be pleased to join together in the Jakarta floriculture meeting to be called November 22, 2007, and to help with selection of quality criteria for each cut flower and foliage species. If she does that, these criteria can be used as guidelines for Indonesian growers in the floriculture industry of the near future.

July 25, 2007, Wednesday

A meeting was held at the AMARTA offices with Juharli Hambali of PT Flora Impian Indonesia Indah, and Sandi LIEM of of Florina, the factory that preserves flowers and foliages in Lembang regarding marketing for is preserved flowers (the factory is basically closed down for lack of foreign clients.) The consultant gave advice on where to look and where to do direct advertising, but declined to help. The product is not within the consultant's area of expertise and is sold to "hard goods" wholesalers in the US and Europe, who are a separate group of clients from those that purchase fresh floriculture products.

Mr. Hambali was helpful in providing names of three large growers (listed above in the section on Karen Sjarief and ASBINDO).

The consultant prepared 350 photographs taken during her Indonesian floriculture survey tour and put them on CD Rom to give to David Anderson, Director of DAI/AMARTA as a training tool. In the afternoon she worked on the written report.

July 26, 2007 Thursday

Morning visit to the Jakarta Flower market by the Consultant.

5. Contacts

All of the contacts made during the floriculture survey were listed in this report in section IV, Consultant Activities. In addition the following names and addresses may be helpful to the project.

I. For a potted ornamental citrus project in Berastagi:

Tintori, Oscar

Via Tiro a Segno, 55/61

Pescia (PT) Pistoia 51012, Italia

Tel (39) 0572 429191

Fax (39) 0572 429605

Alberto Tintori, Responsible for sales.

His brother, Giorgio Tintori, runs the nursery

Office@oscartintori.it

www.oscartintori.it

www.giardinoolegliagrumi.it

They grow citrus plants in containers for ornamental purposes.

They have 400 varieties of citrus. They export 60-70%

Giambo' Piante di Giambo' Vito

Via Nazionale C/da Bazia 98050

Furnari (ME) c.a.p. 98054 Sicilia, Italia

Tel: (39) 0941 802051, 0941,802051

Fax: (39) 0941 335,1254577

Owners: Vito Giambo'

Signora Adriana Clemente Giambo', his wife. They speak only Italian.

Mobile phone for Vito Giambo' 335,8410538 or 335 1254577

Giambovito@tiscalinet.it

10 ha. Specialize in the production of ornamental citrus and ornamental olives in pots such as Pink lime, Bergomot (Citrus Bergamia), Clementine (Citrus Clementina), Purscha (Citrus Prusha), Grapefruit (Citrus Paradisi), Hand of Buddha (C. Medica var Sarcodactylis), Cedro (Citrus Medica) Kumquat (alberetto and obowati), Chinotto (Citrus Myrtifolia), Calamondon orange (Citrus Madurensis), Meyere lemon (Citrus

Meyerii), Kucle (Fort. Margarita X C. Clementina), Kumquat (Fortunella), Mexican Lime (Citrus Aurantifolia), Tahitian Lime (Citrus Latifolia), Limequatt (C. Limonia x For. Japonica), Limon, Mandarine Orange (Citrus Reticulata), Satusuma (Citrus Unshiu) etc.

Their commercial pot sizes are 18cm, 20cm and 22cm.

Their plants are 0.5 meters to 1 meter height

They sell about 400,000 citrus plants per year.

They send out about 150 trucks per year with their exports.

They have 200 European clients in 14 countries, principally Germany, France and UK. Many of the clients are garden centers and landscapers throughout Europe.

www.giambopiante.it

www.giambopiante.com

Giambovito@tiscalinet.it

2. Contact for an Ornamental Capsicum Pepper project in Berastagui:

This company supplies genetic selections for container-growing of potted decorative capsicum pepper plants:

Ex-Plant A/S

Kirkegyden 129

5270 Odense N, Denmark

Tel (45) 6618 9622

Fax (45) 6618 9623

info@ex-plant.com

www.ex-plant.com

3. Contacts with Italian importers of potted ornamental plants for Mrs. Henny Leonardi, Director ASA Flora Indonesia, Medan, Indonesia

Vivai Torsanlorenzo

Via Campo di Carne 51,

00040 Tor San Lorenzo – Ardea (Roma) Lazio

Tel (39) 06 91 01 90 05, 0773 756254, 0773 738080

Fax (39) 0691 011602

www.vivaitorsanlorenzo.it

info@vivaitorsanlorenzo.it

Dott. Mario Margheriti, President, Speaks Italian only, but his 3 daughters and staff translate for him.

m.margheriti@vivaitorsanlorenzo.it

Liana Margheriti—Youngest daughter of Mario Margheriti, Speaks English

(Handles transportation logistics and trucks)

Serenella Lampieri—Sales department—speaks English and French fluently

Gruppo Vivai Torsanlorenzo has a consolidated area estimated to be 430 hectares which 29 are covered with plastic or glass greenhouse. Group sales estimated at €25 million. They are Italy's largest ornamental plant farm and specialize in high quality shrubs and trees for landscaping of public areas and parks throughout the world. They have a distribution center in Dubai and also in Eastern Europe. For instance, this year they sold 1.5 million plants to the municipality of Istanbul. They import from other growers around the world, sometimes with delivery direct to our clients.

Piante Faro

Via provinciale per Riposto, 184

95010 Carruba di Riposto, Catania (CT) Sicilia, Italy

Tel: (39) 095 964900 PBX

Michele Faro, son of owner, head of production.

Dr. Mario Faro, son of owner and head of sales. He speaks Italian, French and some halting English. Tel (39) 3484 005913

Piantefaro@piantefaro.com

www.piantefaro.com

Founded in 1975, Piante Faro grows Mediterranean tropical and subtropical plants on 400 hectares of which 30 ha are greenhouse. Sales of Piante Faro are € 18,000,000 per year. Piante Faro has 300 workers and export 1,500,000 plants per year. They have a sophisticated pathology laboratory and a small plant operation that will double the number of units that they can export. Though their main market is France they have clients everywhere. They even ship cactus to Taiwan. Their main clients are landscape architects, wholesalers, other growers and supermarket distribution organizations. Piante Faro grows 400 species, 1000 varieties (See web site for the list of 229 of those species and photos.) They have 300 workers. Their estimated sales are €18 million. Piante Faro purchases €500,000 worth of plants per year.

4. Contacts for training of tissue culture laboratory and pathology laboratory personnel:

MARDI, Malaysian Agriculture Research and Development Institute

G.P.O. Box 12301

50774 Kuala Lumpur

Malaysia

(603) 943 7222 x 750

Contact: Hamidah Sulaiman, head of the tissue culture laboratory and plant pathology. Mrs. Sulaiman can be very helpful, could possibly be convinced to take one or more Indonesian employees of the Medan tissue culture lab into her laboratory for training.

4. Contacts for obtaining tissue culture plantlets of cut flower dendrobium orchids

V S Orchids Inc

33 Farmers' Garden, Arnetta Center, Cubao

Quezon City, Philippines

Tel (63) 912 807 6468

(63) 912 807 6469

(63) 2 911 3604 retail shop

Fax (63) 2 911 0103

Mrs. Rolita Spowart is a world recognized expert and judge of orchids also has a commercial plant production facility. She has worked with Dr. Ken Leonhardt of the University of Hawaii-Manoa for ten years on improvement of cut flower dendrobiums. She has produced 600000 plantlets in compot for a project in Panama and might have compots available for shipment to the AMARTA project in Indonesia at about \$.95 per plantlet of her specially bred plantlets.

Bangkok Green Co. Ltd.

42 Moo 6 Budthamonthol, 4th Road, Kratornalon, Sampram

Nakhornpathom 73220, Thailand

Tel (662) 4292877-9, 429 2021.

Fax (662) 429 2528 or 2458

bkkgreen@a-net.net.th or bkkgreen@ego.co.th

The above emails are not current. Check google for Bangkok Green.

Prongruth Yonguthvichai, Product Manager and son of owner, Surapon Sanguthai

Kanokorn, daughter of owner. Speaks good English

Owner is Surapon Sanguthai

This is the second largest cut orchid exporting farm in Thailand. They have a very large tissue culture laboratory for their own purposes, cooperate with Dr. Ken Leonhardt of the University of Hawaii, and might provide good plants at a reasonable cost for the AMARTA Project.

Orchidville Pte. Ltd.

10 Lorong Lada Hitam

Singapore 778793

Tel: (65) 7552 7003, Fax 7552 7796

www.orchidville.com

orchid45@singnet.com.sg

Mr. Joseph Phua has a number of new cut flower dendrobium crosses in his inventory. He may be willing to share.

Hock Wee Nursery

Lot 3550m Jalan Tai Hong

81900 Kota Tinggi, Johor, Malaysia

Tel +607 883 6291, 883 6296

Fax +607 883 5026

hockwe@pd.jaring.my

Mr LEE Chee Hock mobile phone +6019 7129 168

Grower of 500 acres of orchids and foliage should be asked the name of his best Thai source of orchid material—known to be a clean lab, and selling flasks of 40 tissue-cultured plantlets at US\$ 4.00 when purchasing in volume.

Ken Leonhardt, PhD

University of Hawaii Department of Horticulture

3190 Maile Way Room 102

Honolulu, HI 96822-2232 USA

Tel (I) 808 956 8909.

Fax (808) 956 3894

Leonhard@Hawaii.edu

This extension professor of orchids can provide dendrobium orchid seed only, from his own breeding greenhouse. Be sure to specify whether you wish to purchase cut flower orchid type or pot plant orchid type. Please note. Best to order by referring to the Dendrobium parentage rather than color as Dr. Leonhardt is color-blind. He can mail seed, but it must be grown out in a tissue culture laboratory. Price of seed to be negotiated.

Says their owner, Dr. Margheritti, "All of the market acumen is in the distribution. It involves trucks routes, planes and so forth. In Italy the airport logistics are bad and we have difficulty in getting good workers.

6. Acknowledgements

I would like to extend my sincere thanks to David Anderson and the AMARTA staff, whose efforts in logistics and information were the backbone of this whirlwind trip around Bali, Java, and Sumatra.

I would also like to extend my very warm thanks to Bharaty, Asep, Purna, Denny, Henry Harmon and David Anderson as well as Betty and Renie who acted as my counterparts and my traveling companions during various parts of the consultancy and whose local knowledge and tireless traveling made the project efficient and effective.

7. Annexes

ANNEX I: Information for AMARTA Tropical Floriculture Project

ANNEX II: Orchid Workshop Agenda

ANNEX III: Introduction Of The Speaker At The Orchid Growers' Meeting July 16, 2007

Annex IV: Flower Exports of Indonesia

Annex V: Floriculture for Food Security, by FAO Horticultural Crops Group Plant Production and Protection Division

Annex VI: Activists Involved in Developing Policies Affecting Genetic Resources

ANNEX I

Information for AMARTA Tropical Floriculture Project

Questions asked in Indonesia by Nancy Laws on July 9-24 2007

Background information on North Sumatra, Java and Bali, the three areas under consideration for AMARTA floriculture interventions should include: the range of altitudes of each area, climate data by month (rainfall, temperature ranges humidity), the closest cardboard box manufacturers, poly-plastic and/or shade cloth producers in the area, closest facilities such as cold rooms currently available, closest airport, and closest international airport and the facilities for handling perishables at these airports. Closest pathology laboratory. Closest tissue culture laboratory and what plant products are within its realm of experience. Additional information needed:

1. History of any floriculture industry in the area
2. History of any large floriculture projects in Indonesia including: where, who invested, size of investment, financial institutions (bank, government) involved, when investment made, current status, number of hectares currently in production, export experience.
3. Economic feasibility studies done previously by Indonesian academic institutions or foreign consultants on any Indonesian floriculture products such as tropical ornamentals (flowers such as orchids, Heliconia, ginger, tropical foliage such as palms, dracaena, croton, ficus, ornamental plants or trees, propagating material and small plants, seed), subtropical ornamentals (Birds of Paradise or anthurium flowers or leatherleaf fern foliage) or temperate zone ornamentals (roses, chrysanthemums, carnations, statice, asters, alstroemeria, and bulb flowers such as iris and lilies). Please obtain copies.
4. Availability of land to purchase in blocks of 100 acres or more, that has electricity, telephone and good road access and abundant water supplies in each of the areas under consideration, and cost of purchasing such land.
5. Estimated hourly cost of agricultural field labor (minimum wage plus benefits) in each of the areas.
6. Estimated monthly salary of agronomists in the area and what background and training they would have had.
7. Major universities providing degrees in agriculture.
8. Agriculture research facilities.
9. Indonesian Government incentives for large new agricultural projects.

10. Investment funds and bank financing (giving terms) available (public and private) for new agriculture ventures.
11. Potential of exporting floriculture (fresh flowers, fresh cut ornamental foliage, live potted plants and trees) in conjunction with other time sensitive export perishables (fresh fruits, fresh vegetables, live animals, women's and children's fashion apparel, computer parts, airplane parts, architectural components such as carved doors for atriums of new bank projects). Potential for leasing planes for dedicated perishables air freight. Cost. Destination.

ANNEX II

ORCHID WORKSHOP

Monday, July 16, 2007

9:00-14:30 including a box lunch

Taty Nursery Field, Medan, Tuntungan

9 am	Introduction, Bharaty, AMARTA project director for Floriculture, DAI, USAID.
9:15	<p>Slide presentation and lecture topics presented by our guest speaker, Nancy Laws, AMARTA/DAI, a project funded by USAID:</p> <p>I. CITES and rare orchids and use of commercial propagation methods for reintroduction of rare species into natural habitat. The growing world commerce of orchid cut flowers. What role can Indonesia play?</p> <ul style="list-style-type: none">• Orchids in Madagascar. Photos in Antananarivo flower market. Propagation in vitro and reintroduction of endangered orchid species into the natural habitat. Potential for doing this with species orchids from Kalemantan and Iran Jaya. Cooperation on this with Orchid Society of Indonesia in Jakarta.• Orchid growing in Singapore. Photos from Orchidville, Singapore.• Photos of Orchid Arrangements in Singapore. Are we producing quality and variety sufficient for our clients' needs? Complimenting orchids with other flowers and cut foliage. Analysis of foreign markets.• Photos from the World Orchid Congress, Dijon France, 2005. How to build a stand for exhibition of orchids in a foreign market. What is competitive marketing? How can we enter foreign markets efficiently and at least cost?• How to choose new orchid varieties. Pot plants. Cut flowers (length, vase life, color, floriferousness, disease resistance, non-bruising in transport, flower shape and size, availability of planting material.) A Photo Tour of Singapore Botanical Gardens.• Photos of flower growing in Medan and Berastagui, in North Sumatera. Advantages and strengths, disadvantages and weaknesses, opportunities, and threats from disease.• Photos of fertilization problems at Mr. Pane's farm in Tiga Dolok Village, Medan. Photos of fungus problems on Benny's chrysanthemums in Berastagui. Photos of leaf fungus problems as seen at the wholesale florist, Spring Flower in Medan. Need for a Pathology laboratory accessible to all growers, anytime, with 24-hour turnaround at a cost they can afford. An industry problem that

	<p>must be solved.</p> <ul style="list-style-type: none"> • Photos of HLL orchid farm in Panama. Photos of stud orchid collection used for tissue culture of cut flower orchids. Discussion of where to purchase plants. What size? What price? How to plant? • Examples of photo catalogues of orchids from V.S. Orchids in Philippines and Kasem Boonchoo in Thailand. Sample of cut flower orchid from Bangkok Green, second largest exporter of orchids from Thailand. How to buy. Buying in quantity. Lead times. • Photos from Zion Orchids, Malaysia. The mass producer of cut flower orchids. A feasibility study for a fresh orchid cut flower project in Indonesia. A feasibility study for a potted orchid project in Indonesia. One hectare with moveable shade, mist system irrigation overhead and flushing irrigation from hoses. Tables. Pathology laboratory. The works. Who can do the study. Would it help to have a prototype? <p>Break for 10 minutes.</p> <p>2. The business of growing fresh cut ornamental foliage for use in flower arrangements. Temperate, sub-tropical and tropical foliages.</p> <ul style="list-style-type: none"> • Zion Orchids, Malaysia photos continued. The mass producer of fresh cut ornamental foliages. Feasibility studies for foliage products. Who can do these studies and get the economics right? Is it a good investment in Malaysia? Can they do it cheaper in Indonesia? Do we want them here? What if they come? Joint venture? <p>3. Ornamental plants in world commerce.</p> <ul style="list-style-type: none"> • Ornamental plant, shrub and tree growing in Italy in photos. Can they be clients for Indonesia? What products? Bougainvillea? Cycads? Native plants? New species? • Photos from Horti Fair 2005 in the Netherlands. The problem of logistics and transportation. The challenge of exhibiting orchids, cut flowers, cut foliage and plants.
10:30-10:40	Questions and Answers
10:40-11:30	Box Lunch courtesy of DAI, AMARTA project handed out to participants
11:30-12:30	Discussion: What do we want to do together? What help do we need?

12:30-13:00	Closing remarks, Bharaty, AMARTA project, DAI. Closing remarks, Mrs. Taty.
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ANNEX III

INTRODUCTION OF THE SPEAKER AT THE ORCHID GROWERS' MEETING

July 16, 2007

Nancy Laws is an US citizen living in France. She has her MBA degree from Stanford University in California. She is an expert in the world commerce of floriculture. Floriculture includes:

- Fresh cut flowers, both tropical flowers and temperate flowers including roses.
- Fresh cut foliages suitable for ornamental purposes in flower arrangements.
- Potted green plants and potted flowering plants.
- Potted shrubs and trees and palms.
- Seeds of ornamental crops
- Small plants and in-vitro seed grown and tissue cultured plants
- Bedding plants

Nancy has been a fresh cut flower importer in Miami, Florida for 13 years, importing from Colombia, Ecuador, Costa Rica, Panama and other Latin American countries. She sold flowers throughout the United States and Canada. In 1988 she sold the company to become a floriculture marketing consultant for the United Nations International Trade Centre UNCTAD/WHO in Geneva, Switzerland. She worked later as a floriculture expert in the Food and Agriculture Organization, FAO in Rome, Italy. Then she took jobs with the European Union and with USAID.

Nancy writes for seven floriculture journals published in Holland, the US, Russia, Italy, Spain, Ecuador and Ethiopia.

She also owns part of a 10 hectare dendrobium orchid farm in Panama.

She has worked in 48 countries around the world on floriculture projects. She has been a speaker at floriculture conventions in the US, Italy, India, Colombia, Costa Rica, Tunisia and Japan.

This is her first visit to Indonesia. She has been here one week, almost all of the week in Medan and Berastagui. She likes your country very much. She likes the people. She also likes the food.

Today she will talk to us about orchids. She will also talk to us about the cut foliage and ornamental plants. She will illustrate her remarks with photographs that she has taken in Holland, Singapore, Malaysia, Panama and here in our area of North Sumatra.

There will be time for questions and answers. There will be time for group discussion. And there will be time for lunch. We hope that at the end of the day you will have learned not only from Nancy, but from your neighbors and friends today at this workshop. There is much to share about a subject, floriculture, which is a passion for us all.

Annex IV: Flower Exports of Indonesia

FLOWER EXPORTS OF INDONESIA

NILAI : us\$

Commodity	Destination	2002	2003	2004	2005	2006	Jan-07
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	JEPANG	1,696,383	628,685	510,280	258,621	251,094	48,913
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	HONGKONG	35,650	6,384	29,292	10	15,188	3,000
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	KOREA SELATAN	13,190	-	460,209	1,824,640	1,844,704	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	TAIWAN	20,568	6,559	1,912	7,008	2,225	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	REP.RAKYAT CINA	2,204	-	50,640	211,347	193,225	24,810
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	THAILAND	-	8,374	1,451	18,666	35,528	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SINGAPURA	373,873	237,212	392,568	290,055	229,718	7,399
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	PILIPINA	-	-	-	4,126	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	MALAYSIA	29,032	3,018	27,880	56,038	16,031	11,173
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	KAMBOJA	-	-	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	BRUNAI DARUSSALAM	2,403	1,478	1,938	3,604	113	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	VIETNAM	-	-	-	-	42,457	12,513
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	INDIA	-	-	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SAUDI ARABIA	1,795	4,339	2,926	1,167	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	KUWAIT	-	3,875	3,964	645	5,780	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	YORDANIA	-	-	2,212	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	LIBANON	-	-	1,224	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	PERSERIKATAN EMIRAT ARAB	7,599	36,752	39,010	40,486	17,477	-

FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	QATAR	-	-	677	-	-	-
FLOWER EXPORTS OF INDONESIA, Continued							NILAI : us\$
Commodity	Destination	2002	2003	2004	2005	2006	Jan-07
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	BAHRAIN	-	-	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SIPRUS	2,831	-	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	REP.AFRIKA SELATAN	-	-	-	16,062	200	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	MAURITIUS	-	931	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	AUSTRALIA	56,065	160,374	321,723	248,461	68,224	2,302
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SELANDIA BARU	-	70,956	1,323	5,811	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	FD STS MICRONESIA	-	-	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	NIUE	560	-	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	AMERIKA SERIKAT	311,973	242,059	242,238	468,200	304,930	1,227
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	KANADA	96,336	178,943	67,957	79,016	172,958	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	EKUADOR	-	-	265	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	ANGUILA	-	468	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	INGGRIS	690	-	2,556	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	BELANDA	99,130	322,930	9,882	11,800	4,184	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	PERANCIS	-	-	1	1	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	JERMAN	1,928	19,457	32,614	2,884	505	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	BELGIA	-	42,804	-	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SWISS	-	-	-	-	-	-

FLOWER EXPORTS OF INDONESIA, Continued

NILAI : us\$

Commodity	Destination	2002	2003	2004	2005	2006	Jan-07
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	DENMARK	-	609	-	-	2,150	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SWEDIA	-	-	-	320	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	ITALIA	-	-	1,007	-	-	90
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	SPANYOL	71	53,658	-	-	1,300	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	PORTUGAL	-	-	-	-	650	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	YUNANI	-	-	-	-	248	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	POLANDIA	-	-	-	-	2,395	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	BULGARIA	-	-	-	-	187	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	UKRAINE	-	-	2,645	-	-	-
FRESH CUT FLOWERS FOR ORNAMENTALPURPOSES	FEDERASI RUSIA	-	713	-	-	-	-
DENDROBIUM ORCHIDS FRESH	SINGAPURA	-	-	-	-	-	-
ONCIDIUM ORCHIDS FRESH	SINGAPURA	-	-	-	-	-	-
OTHER ROSES CHRYSANTHEMUM FRESH	HONGKONG	-	-	-	-	-	-
OTHER ROSES CHRYSANTHEMUM FRESH	SINGAPURA	-	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	JEPANG	14,472	228,485	33,124	1,999	94	5,968
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	HONGKONG	93,276	65,593	71,125	28,346	59,032	7,700
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	KOREA SELATAN	5,238	38,814	80,268	5,115	6,724	58,543
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	TAIWAN	-	200	675	665	3,993	-

FLOWER EXPORTS OF INDONESIA, Continued

NILAI : us\$

Commodity	Destination	2002	2003	2004	2005	2006	Jan-07
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	REP.RAKYAT CINA	4,900	28,422	131,386	83,878	84,044	24,792
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	THAILAND	-	-	-	-	3,264	2,919
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SINGAPURA	1,900	7,868	91,393	321,971	138,382	99,696
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	PILIPINA	-	-	-	-	-	3,000
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	MALAYSIA	32,653	168	3	2,042	54	2,100
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	BRUNAI DARUSSALAM	-	1,100	-	327	2,184	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	VIETNAM	-	2,236	-	-	224,674	59,089
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	INDIA	-	2,345	-	10	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SRI LANGKA	-	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SAUDI ARABIA	-	-	3,711	280	3,019	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	KUWAIT	542	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	YORDANIA	-	-	-	1,971	2,791	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	TURKI	-	-	3,480	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	PERSERIKATAN EMIRAT ARAB	2,168	1,512	1,370	11,202	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	QATAR	-	-	1,283	-	1,590	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	BAHRAIN	-	-	1,136	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SINEGAL	-	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	MAURITIUS	-	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	AUSTRALIA	14,737	28,115	5,120	29,121	155,344	21,381

FLOWER EXPORTS OF INDONESIA, Continued

NILAI : us\$

Commodity	Destination	2002	2003	2004	2005	2006	Jan-07
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SELANDIA BARU	-	-	60	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	FIJI	-	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	AMERIKA SERIKAT	25,902	4,054	6,170	11,066	111,164	32,770
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	KANADA	3,903	-	1,775	1,140	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	ARGENTINA	5	-	1,279	1,057	1,545	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	EKUADOR	-	-	1,758	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	REPUBLIK DOMINICAN	-	20	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	NETHERLANDS ANTILLES	-	-	-	441	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	GUADELOUPE	-	-	25	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	INGGRIS	-	414	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	BELANDA	3,400	-	6,213	7,482	32,146	4,350
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	PERANCIS	600	-	3,758	-	70	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	JERMAN	106	45,237	16,787	3	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	AUSTRIA	-	132	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SWISS	-	19	-	-	6,139	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	DENMARK	-	72	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	NORWEGIA	-	864	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	ITALIA	-	14,522	-	-	43,068	14,049
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	SPANYOL	-	-	446	2,794	19,115	-

FLOWER EXPORTS OF INDONESIA, Continued

NILAI : us\$

Commodity	Destination	2002	2003	2004	2005	2006	Jan-07
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	PORTUGAL	-	13,167	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	POLANDIA	-	-	-	231	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	RUSIA	-	-	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	UKRAINE	-	2,933	-	-	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	REPUBLIK CZECH	-	-	-	4	-	-
OTHER FRESH CUT FLOWERS FOR ORNAMENTAL PURPOSES	FEDERASI RUSIA	106	-	-	-	-	-
Total		2,956,189	2,516,870	2,670,739	4,060,113	4,109,907	447,784

Annex V

Floriculture for Food Security

by : FAO

Horticultural Crops Group

Plant Production and Protection Division

Wilfried O. Baudoin ; Cecilia B ; Dora Chemonidou; Nancy Laws; Mimoun Mohktari;
Ercan Ozzambak; Nancy Laws

Draft: September 2006

Abstract

The paper provides information on floriculture and ornamental plant production in developing countries. Flower and ornamental plant production have become a component of improved food security and better livelihood in developing countries. Within the trade liberalization process, developing countries can seize the opportunities to develop their ornamental plant industry as means to create employment and generate income.

The paper illustrates how FAO has been instrumental in exploring and developing initiatives where developing countries have taken advantage of their biodiversity and comparative advantages to supply local demand or to compete on export markets. By providing assistance to its member countries in developing the floriculture sector, FAO supports the global endeavour for the conservation of plant genetic resources and the implementation of the global plan of action as adopted at the Leipzig conference in 2002.

FAO is committed to improve food security in order to reduce by half, the 800 000 million people that today are malnourished, hungry and even die from lack of sufficient food.

In order to change the situation and to develop adequate strategies, FAO, the Food and Agriculture Organization the United Nations, called for the first World Food Summit in 1996, which was followed by a second World Food Summit in 2002. At these meetings, the head of States and Governments took the commitment to join efforts and resources in order to half the 800 000 million suffering from hunger and malnutrition by 2015. At the same occasion food security strategies were outlined and a universal declaration of the “right to food for all” in terms of adequate diet in quantity and quality was solemnly adopted. The food security concept not only refers to providing enough calories for survival, it includes a nutritious and diversified diet that allows for a healthy living. The challenge is to ensure the availability and access to food for all in all places and at all times. Whereas there is no debate about the capacity of the world’s ability to produce enough food, the problem relies in the ways and means to make it accessible to the less

endowed and poor bracket of the population. There for the food security strategy is unavoidably linked to the poverty eradication strategy that is the emphasis of the Millennium Development Goals (MDGs) pursued by the United Nations and its specialised agencies like FAO.

Food security is characterised by the ability of the household to meet its daily energy needs while consuming a balanced diet that provides all the essential nutrients, and consists of the major food groups. While many rural families endeavour to achieve food security by producing directly for their own use, others, because of their particular circumstances e.g. land shortage, do not have the ability to produce sufficient food to meet their diversified needs from their own resources. One avenue that is open to them is the production of high value horticultural crops which can be exchanged in the market place for basic foodstuffs.

Among horticultural crops, flower crops have considerable earning potential.

In this paper presented on occasion of this international Eucarpia Symposium, the paper presented by FAO will illustrate it's endeavour to assist member nations to develop their floriculture sector as a means of creating employment and income leading to improved livelihood for the less endowed. Promoting the development of the floriculture sector in the developing countries is also a means of contributing to another universal commitment related to safeguarding the biodiversity.

The international flower trade is still growing at a rate of 2% per year, leaving the opportunity to developing countries to catch a share of this expanding business.

Conclusion

More countries in the world have an interesting ornamental plant diversity that could gain added value in the future, either through direct development of commercial floriculture or through breeding of new flower crops. Scientists are encouraged to seek and develop these opportunities that have a comparative advantage for the developing countries and thus creating a source of income and contributing to their food security status. Among these opportunities are the breeding and propagation of local traditional ornamental species that are adapted to the natural agro-environmental conditions allowing to intensify their cultivation with minimal investments.

Annex VI

Activists Involved in Developing Policies Affecting Genetic Resources

From: Nancy Laws, July 2007

Sisule F. Musungu
Intellectual Property Project
Programme on International Trade & Development
South Centre
Geneva, Switzerland
Tel: +41 22 791 81 65
Email: musungu@southcentre.org

Peter Matlon
The Rockefeller Foundation
420 Fifth Avenue
NY, NY 10018
USA
Tel: +1 212 852 8237
Email: Pmatlon@rockfound.org

Victor Mosoti
FAO Legal Office
Development Law Service
Viale delle Terme di Caracalla
00100 Rome, Italy
Tel: +39 06 5705 6666
E-mail: Victor.Mosoti@fao.org

Erica Pencak
Environmental Law Institute
1616 P Street, NW, Suite 200
Washington DC 20036
USA
Tel: +1 202 939 3822
Email: pencak@eli.org

Susan Bass
Environmental Law Institute
1616 P Street, NW, Suite 200
Washington DC 20036
USA
Tel: +1 202 939 3809
bass@eli.org

Todd Barker
Meridian Institute
29 Tarbox Road
Jericho, VT 05464
USA
Tel: +1 802 899 2625
Email: tbarker@merid.org

Carl-Gustaf Thornström
SARE/SLU
Swedish Biodiversity Center
P.O. Box 7007
SE-75007

Uppsala, Sweden

Tel: +46 18 672717

E-mail: carl-gustaf.thornstrom@cbm.slu.se

Michael Halewood

International Plant Genetic Resources Institute

Via dei Tre Denari 472/a

0057 Maccarese

Rome, Italy

Tel: 39 06 61 18 294

Email: m.halewood@cgiar.org