
7 Conclusions and recommendations

7.1 The global context for PIC ornamental horticulture

Globally, horticulture has become a lead sector for poverty reduction in developing countries. Ornamental horticulture, in particular has driven growth in East Africa and Central America. This, however, has not been the case for the PICs. Floriculture product exports from the region are miniscule – with a significant floriculture trade deficit existing. This situation is surprising given the good agro-ecological conditions identified and apparent demand in Pacific Rim markets. The poor floriculture trade performance of the PICs contrasts markedly to that observed for the comparable regions of East Africa, Central America and the Caribbean.

7.1.1 World production and trade

The value of world production of floriculture products is estimated at around USD145 billion. Around 10 percent of this production enters international trade, with a projected growth of 3.5 percent annually through to 2012. Europe and the United States are the main markets. By far the leading exporter of floriculture products is the Netherlands, followed Colombia, Taiwan and East African producers. Tropical products are estimated to make up 4-5 percent of the total floriculture trade of which orchids and anthuriums make up 90 percent of this trade. Overall there is worldwide overproduction of tropical flowers. However, there are worthwhile niche markets available. Tropical foliage is a fast growing segment of the world floriculture industry and has been identified as one brighter spot for tropical ornamental products. The world trade in orchids exceeds USD 170 million annually. This trade is approximately divided between cut flowers (80 percent) and potted orchids (20 percent).

7.1.2 The emergence of East African producers

The value of Kenyan floriculture exports is now over USD200 million annually, with Ethiopia, Uganda and Tanzania all having significant industries. The emergence of East African producers as major exporters of floriculture products over the last few decades is of particular interest given that these industries are situated in tropical highland locations that are not agro-ecologically dissimilar to those found in the Highlands of PNG. A combination of factors has attracted substantial foreign investment into the East African floriculture sector, particularly from Dutch floriculture interests. These are listed as:

- outstanding agro-ecological conditions (PNG Highlands has equivalent conditions, poorer in other PICs)
- good infrastructure (roads, power, telecommunications, and water supply) in the most suitable production areas (Overall poorer in PICs - particularly in the PNG Highlands)
- substantial, frequent and reliable airfreight capacity (reasonable for Fiji, extremely poor for the PNG Highlands where it is the most critical limiting factor for floriculture development)
- proximity to global markets (PICs significantly disadvantaged with respect the largest markets of Europe and North America; PNG's reasonable proximity to Asian markets is offset by poor transportation links)
- low wages (wage rates significantly higher in most PICs)
- access to land on long term rental basis (land access a major constraint to foreign investors in horticulture in the PICs)

- high level of donor assistance to sector (support for the horticulture sector has not been a focus of donor support to the PICs)
- attractive government incentives (no particular incentive to agribusiness investors in the PICs).

7.1.3 Oceania trade in floriculture products

In 2006 exports from the Oceania region stood at USD 45 million and imports at USD 11 million. New Zealand is by far the largest exporter of floriculture products from region. Amongst the PICs only French Polynesia approach anywhere near significant exports of floriculture products, with the value of exports of the period 2002 to 2006 totalling around USD 330,000. Over the same period Fiji and the Cook Islands each exported around USD 60,000 of floriculture products. Australia is by far the region's largest importer of floriculture products, with imports over the period 2002-2006 totalling USD 26.4 million. Fiji, Cook Islands, PNG and Samoa all import floriculture products. While these volumes are small, they are significantly more than the value of floriculture products they export. Thus while the Oceania region taken as a whole has a substantial trade surplus in floriculture products, the PICs have a significant net trade deficit in floriculture products. The floriculture trade deficit for the Pacific islands contrasts markedly to that observed for the comparable regions of East Africa, Central America and the Caribbean.

7.2 PIC ornamental horticulture industries

This scoping study specifically covers Fiji and PNG. However, much of the findings are seen as relevant to the PIC region as a whole.

7.2.1 The Fiji industry

Overall the economic contribution of the Fiji floriculture industry is small. The annual contribution of the industry to GDP is estimated to be only around \$1.4 million – measured in terms of value added. However, this is a highly labour intensive industry and generates the equivalent of one full time job equivalent for every \$2,800 of value added that is created. Most of the participants are located on the main island of Viti Levu and concentrated around the main urban centers of Suva in the east and Nadi in the west. The vast majority of these participants are women.

South Sea Orchids (SSO), together with their contracted out growers (dendrobium orchids and anthuriums) and marketing outlets comprise the core of Fiji ornamental's horticulture industry. This group is made up of 82 growers, who have a combined total of 5 acres under shade. To this has to be added the over 100 heliconia and ginger growers who operate independently of SSO.

The growers

Dendrobium orchids sourced from the University of Hawaii (UH) are the most popular cut flower. There are 38 semi-commercial dendrobium orchid planting enterprises. At the nucleus of these growers is (SSO) with 70,000 flowering plants. Orchid sales through the SSO wholesale market system have increased steadily from around 7,000 sprays in 2001 to peak at 14,000 sprays in 2005, falling back to 10,000 sprays in 2006. The decline in the volume and value of sales in 2006 is attributed to some contracted growers selling outside the SSO wholesale system. Orchid growers who have followed the recommended package of practices have been able to earn worthwhile livelihoods.

Anthuriums sourced from Holland are the next most important cut flower. SSO now has 43 out growers of improved variety anthuriums. These growers command a total of around 60,000 flowering plants. In addition SSO currently has over 35,000 improved variety anthurium plants. Anthurium sales through the SSO wholesale have increased steadily

from around 20,000 stems in 2001 to stand at 63,626 stems in 2006. The small or micro anthurium enterprise offers similar grower returns to that obtained by orchid growers.

Gingers and heliconias are the most common flower sold in the local municipal markets, which is a growing segment. Over the years many new varieties have been introduced to Fiji – unfortunately often illegally smuggled into the country. The prices received for ginger and heliconia are significantly lower than that received for cut flower orchids and anthuriums and marketing risks are considerably higher. These negative considerations are offset to some extent by the higher yields obtained, the much lower capital cost of getting started and the much shorter lag between planting and production.

Several hundred small growers offer a wide range of potted plants and trees for sale. Many of these are women from villages and settlements. Plant sale events serve as the main point of sale for the potted plant growers.

Marketing

SSO established wholesale markets for orchids and anthuriums in Nadi and Suva in 2001. For the growers and end users, this development has meant that a degree of orderly marketing replaced a previously chaotic situation and has contributed significantly to an expansion of the local market.

There are 10 florists that are registered as businesses and operate out of shops. In addition there are now over 50 informal flower-arranging businesses operating out of homes. The growth in the small florist and flower arranging segment has been made possible by the creation of a wholesale market which provides a consistent supply of cut flowers, and by the availability of micro financing to commence operations. A notable feature of the florist/flower arranging segment of the industry over the last few years has been the entry of micro enterprises operated by indigenous Fijian women. These florists have high artistic skill levels, with many benefiting from various flower arranging courses provided over the years. With minimal overheads these micro enterprises can earn a worthwhile return on their skill and endeavours. The apparent profitability in small florist operations is reflected in their low attrition rate.

Trade in floriculture products

Floriculture exports from Fiji are small and declining. Exports have consisted primarily of heliconia cut flowers and cut foliage. Floriculture imports, in contrast to exports, are significant and have been increasing. Nearly 6,000 rose stems were imported in 2006 which represents a worthwhile import substitution opportunity. Only a 3 percent tariff is applied to the imports of floriculture products. In 2006 the International Centre for Trade and Sustainable Development undertook a Fiji case study of “Special Products and Special Safeguard Mechanisms”. It recommended that floriculture be nominated as a “Special Product” for tariff protection. This recommendation was based on the industries potential contribution to rural development and livelihood security. This scoping study concurs with this recommendation.

Indigenous orchids

Fiji has 164 species of indigenous orchids of which 51 are found only in Fiji. All these indigenous species are covered under CITES and cannot be shipped outside Fiji without a permit. It is suspected that smuggling does occur, although there have been no prosecutions made under the CITES regulation. Most of Fiji's orchid species fall into the dendrobium family. Perhaps the most famous of the Fiji orchids is the *D. tokai*. This orchid is one of the parents of the first Hawaiian hybrid dendrobium orchid. None of Fiji's indigenous orchids are grown commercially. CITES is important to preserving the biodiversity of Fiji's ecosystems. CITES offers Melanesian countries, including Fiji, an outstanding income earning opportunity. However, the good intentions of the conventions

are being lost because stakeholders at all levels are ill-informed regarding its provisions and what they are intended to achieve. Growers and exporters often only see it as an unreasonable hindrance and expense to doing business with no obvious benefits in terms of the preservation of endangered species. The CITES authorities on the other hand, often do not have the technical expertise to properly assess proposed transactions and determine whether or not they should be subject to the CITES convention.

Research, extension and training

Formal ornamental horticulture research is nearly non-existent in Fiji. Floriculture is not included in the curriculum at Fiji College of Agriculture or the University of the South Pacific at Alafua, Samoa. On the quarantine side, a few applied research projects have been undertaken to facilitate exports. SPC has undertaken research on “red ginger decline” and recommendations are made in this study to continue this work. SSO conducts ongoing experimentation on suitable planting mediums for improved variety anthuriums. The Ministry of Agriculture doesn't provide extension services for floriculture.

Training in floral art and ornamental horticulture was previously provided through SPC and USP. This training has been invaluable in developing the domestic demand for floriculture products.

The growing small-holder based floriculture industry has attracted a lot of interest, which has been fuelled by a considerable amount of media attention. Floriculture has been rightly perceived as an excellent way for households to generate income and employment. However, it is a demanding industry, where success requires considerable effort, skill and linkages to the market. Ill-informed new entrants without these essential ingredients face a high risk of failure. SSO's recently published small holder manuals are a response to this problem and provides an excellent resource for existing and would be industry participants.

Quarantine

Quarantine related issues have been identified as major constraints to the development of the floriculture industry. Some phytosanitary and quarantine problems can be attributed in part to the performance of the Fiji Quarantine and Inspection Service (FQIS). An abundance of misinformation and lack of communication on the part of all industry stakeholders greatly compounds these difficulties.

The importation of live plants is crucial to the development of an emerging floriculture industry. Quarantine procedures for issuing import permits are often seen as unnecessarily rigid, inconsistent and often unreasonable. This in part explains the continued high incidence of plant smuggling, which puts the floriculture industry and other agriculture industries at risk.

A major boost towards resolving many of the quarantine related issues is provided by the *Survey of Agricultural Crops and Commodities Project, 2003*. The pest and disease survey covered orchids, anthuriums, gingers and heliconias. Fiji's cut flowers face less quarantine restrictions than other horticultural exports. However, there are quarantine difficulties with cut flower exports. The prohibition of dendrobium orchid cut flowers into New Zealand is indicative of the problems faced with quarantine administration.

Industry organisations

A feature of the Fiji floriculture industry is the numerous support groups and associations. The most prominent of these are the SSO Floriculture Project and the Suva Orchid and Horticulture Circle. The SSO Floriculture Project provides a market outlet for some 70 out growers. The Suva Orchid and Horticulture Circle is a servicing group that has been in

existence since 1953. There are currently 300 active members. SOHC offers a range of classes in floral art which has facilitated an increase in demand for floriculture products.

The Fiji Floriculture Council

A Fiji Floriculture Council (FFC) was established in 1999 to prepare a strategic plan for the Fiji floriculture industry. The Plan has as its Vision: “the creation of a competitive world-class floriculture industry that contributes substantially to the prosperity of the people of Fiji” (1999). The FFC had 10 specific goals: 1) creating a “flower culture” within the tourism sector; 2) Fiji becoming a major exporter of floriculture products; 3) increasing income earning opportunities from floriculture; 4) enhancing skill levels and professional standards in the industry; 5) increasing the flow of information to the industry; 6) improving the quality of floriculture products sold on domestic and export markets; 7) improving quarantine arrangements for imports and exports; advising and coordinating new starters in the industry to minimize failures; achieving independence and increasing financial self reliance of the FFC; and, 10) securing technical and other assistance for the industry

The adoption of the FFC Strategic Plan coincided with the political turmoil of 2000. In this environment of political uncertainty and a depressed economy the FFC, was not able to effectively take root. However, the FFC is seen to provide an institutional framework that could be utilised to move the industry forward and there remains scope for the revitalisation of the FFC along the lines that was envisaged in the 2000 Strategic Plan for the industry. The Strategic Plan provides a framework for analysing the opportunities, constraints and requirements for the development of Fiji floriculture industry.

7.2.2 The PNG industry

Ornamental horticulture in PNG is a minor industry which is considerably smaller than that of Fiji. The PNG White Paper on Agriculture and the National Agriculture Development Plan have identified floriculture as having the potential to develop into a major industry. This potential is based on two distinct export opportunities:

- The export of temperate cut flowers and foliage.
- The export of products derived from PNG’s unique indigenous orchids.

The growers

There are four cut flower grower groups operating out of the Eastern Highlands. These are:

- The Kerefa Women’s Association (70 members growing a range of cut flowers and leaves and supply Exotic Blooms in Port Moresby on an intermitted basis)
- The Notofana Group (45 members growing tuberose for Exotic Blooms)
- Gilaheka Group (80 members growing cordyline leaves used in trial shipment to Melbourne)
- Komiufa Growers Group (part of Komiufa integrated rural development project, which is involved in ongoing discussions with a Singaporean investor who is interested in a joint venture for rose development.

In the Mt. Hagen District, there are some 50 women who grow cut flowers for sale locally. These include a range of temperate flowers, cordyline leaves, indigenous orchids and some tropical such as heliconias. A similar number of flower growers were identified in the Morobe Province, including a ginger and heliconia grower who airfreights cut flowers to Port Moresby. The areas around Port Moresby are dry and harsh and not well suited to growing horticultural products. There is one small commercial grower of tropicals (gingers, heliconias and anthuriums) situated 10 km outside Port Moresby. Tropical cut flowers and

orchids are also commercially grown at the Port Moresby National Botanical Gardens. Some Highland households in the settlements along the Sogari road grow ornamentals as a source of cash income.

Marketing

In Port Moresby, there is a small but growing floriculture marketing segment emerging. There are now 5 flower shops operating, which use both local and imported cut flowers. Two operate out of the largest supermarkets. There are no commercial florists operating in other urban centers.

There is no wholesale market for flowers operating in PNG. This marks a significant difference with Fiji, where the establishment of a wholesale market has been driving force in the development of the domestic market. The selling of flowers and plants in municipal markets is not feature in PNG, unlike the situation described for Fiji and that exists in Honiara and Port Vila. The absence of these markets poses a major barrier for micro enterprises wishing to enter the floriculture industry and is a major constraint to the development of the domestic floriculture market.

From time to time, there have attempts to export tropical cut flowers and foliage from PNG. The most ambitious effort was in 2003 when a test shipment of floriculture products (lilies, heliconia, gingers, celosias, orchid and cordylines) was made from Goroka in the Eastern Highlands to Aalmsmeer in Holland. This trial showed that it is technically feasible to ship cut flowers to Europe, although it is a risky and high-cost business. Despite the high expectations of the promoters and the favourable comments made about the quality of the leaves sent, there has been no follow-up interest in PNG as a supply source.

Exotic Blooms made a trial shipment of a selection of cordyline leaves to Melbourne in July 2006. The shipment was rejected by the Australian Quarantine. However, the exporter reports that these quarantine issues have been resolved and that they are ready to recommence shipments.

Indigenous orchids

A viable commercial orchid industry has yet to be established in PNG, despite the size a diversity of the resource and the substantial international demand that has been identified. There is now an opportunity to reverse this situation that is both commercially viable and environmentally sustainable.

PNG has more indigenous orchid species than any other country in the world. Overall, PNG accounts for around 10 percent of the some 30,000 known orchid species. The success of the *Orchidaceae* within New Guinea and its adjacent islands is the result of adaptation to diverse ecological conditions. Many of these orchids are horticulturally attractive and/or are of considerable botanical interest. As a consequence PNG orchids have been highly sort after and extensively exploited for over a century. Unfortunately, there has been little or no benefit to PNG's rural people.

All PNG orchids are covered by Appendix 2 of CITES. The export of wild collected plants is strictly prohibited. Under current regulations export of indigenous orchid plants is only permitted if they are second generation hybrids (F2) which were originally propagated from seed. These requirements preclude the viable commercial production of orchids due to the infrequency of flowering in wild and the long lead time required for propagating from seed.

Orchid conservation has been unsatisfactory in spite of efforts to enforce the ban on the removal of adult plants from the country. This valuable resource is being degraded due to loss of habitat and over-collection of certain species, driven by the illegal export of plants.

The only legal income currently generated by rural people from indigenous orchids is from small scale eco tourism activities and from plants sales to local collectors.

There are currently no commercial growers of indigenous orchids. In the past, there were commercial orchid nurseries operating in PNG. However, these are no longer viable under PNG's CITES regulations. The trading in indigenous orchids is largely limited to supplying the illegal export market.

The depletion of PNG's indigenous orchid resource and the absence of programs to develop a commercial industry based on resource conservation are reflected in the poor state of PNG Botanical Gardens, particularly in Lae. During the 1980s, the condition of the Gardens rapidly changed from a world class botanical reserve to a poorly maintained park in a state of disrepair and neglect. It is not appreciated by decision makers that a well managed and funded botanical garden has the potential to generate substantial economic social and environmental benefits and thus represent a good investment of public funds.

7.3 PIC comparative advantage and opportunities in ornamental horticulture

7.3.1 The Fiji industry

The FFC's ambitious Vision of the Fiji floriculture industry is based on a combination of factors: favourable climatic conditions; a relatively favourable pest and disease status; a nascent production and marketing structure already in place; a substantial under-supplied tourist based market; a strong non-tourist local market, a strategic location with respect to Pacific Rim markets; competitive labour costs compared with most other competing producing area; and, good air and air freight linkages. The Fiji Scoping study analyses each of these factors in turn to assess Fiji's comparative ornamental horticulture.

Fiji offers generally good climatic conditions for growing tropical flowers. However, unlike the Highlands of Papua New Guinea, Fiji does not offer any significant advantages in terms of climatic conditions for temperate floriculture products.

Fiji has a significant advantage in terms of its pest and disease status compared to many other producing areas. The future of the ornamental horticulture industry depends on the maintenance of this relatively favourable status. Fiji has been fortunate to maintain this status, despite the poor assessment of the performance of the industry and the quarantine service.

Based on the Hawaii experience, the tourism market for floriculture products in Fiji remains significantly under realised and provides the basis for a major industry. The key for Fiji developing a significant tourism based floriculture industry is for a "culture" to develop in the tourism sector that places priority in the use of high value flowers.

The non-tourist domestic market in Fiji remains undersupplied. A two to three fold increase in ornamental floriculture product consumption is a realistic prospect over the next few years if the supply of good quality products can be made available at reasonable (reduced) prices. Expansion beyond that level is probably not achievable without the substantial agribusiness investment that has characterised the floriculture expansion in South East Asia, East Africa, Central America and Hawaii. The challenge facing the existing Fiji floriculture industry and government policy makers is to be able attract foreign agribusiness investment into the industry without jeopardising the livelihoods of the participants of the existing industry.

Fiji's location does not afford any particular advantage on international floriculture markets. Overall Fiji's landed prices for cut flowers are too high and volumes too low to be competitive. There may be niche markets for speciality products such as certain types of leaves and off season orchids into Hawaii. These markets have yet to be proven.

Ornamental horticulture is a labour intensive activity, with wages rates and labour productivity will be key determinates of competitiveness. Fiji's floriculture industry has no particular comparative advantage in terms of labour costs and probably is at a distinct disadvantage when skill levels are factored into labour productivity.

Tourism creates a large domestic market for Fiji's floriculture products. The flights that bring the tourists also provide the outward freight capacity for the potential export markets for high value products such as floriculture products.

Fiji has good airfreight access to all Pacific Rim markets. This gives Fiji a major advantage when compared with other Pacific island exporters of floriculture and horticulture products. This advantage does not extend to competitors in South East Asia and Hawaii, particularly when freight rates are taken into consideration.

The overall conclusion is that Fiji's comparative advantage in ornamental horticulture firmly lies in supplying the domestic market. The industry is making good progress in realizing this comparative advantage to the non-tourist domestic market. The industry has been less successful with respect to the tourism segment. Nevertheless the comparative advantage with respect to the tourism market remains in tact. Niche export opportunities have been identified for speciality leaves and for indigenous orchids sold in compliance to CITES.

7.3.2 The PNG industry

The key determinants of PNG's comparative advantage in ornamental horticulture are: the agro-ecological environment; market opportunities; physical infrastructure; the financing environment for agribusiness; the policy environment and the institutional environment.

The agro-ecological environment

A suitable agro-ecological environment is a fundamentally necessary condition for establishing a substantial ornamental horticulture industry. There are sizable areas of PNG that meet this necessary requirement. The range of altitude, temperature and soil variability of the country has created an enormous ecological diversity. It is the highlands region of PNG that offers the best potential for horticulture and floriculture development. Parts of the highland region provide ideal conditions for growing temperate vegetables and flowers. At elevations of around 2,000 meters, the year round range of day time temperature is 22 to 30°C and the night time temperature range is 6 to 12°C. In most locations, at this elevation, there is considerable solar radiation. Rainy days are usually restricted to less than 100 days. These are almost identical conditions to those found in the highlands of East Africa, Ecuador and Colombia, which are amongst the world's leading floriculture regions.

The areas most suited to growing temperate horticulture crops are in the Western Highlands and Eastern Highland. This is due to a combination of ecological conditions, population pressure and accessibility. The New Guinea lowlands and islands offer excellent growing conditions for exotic tropicals. The areas around Port Moresby, which are best located in terms of proximity to transportation links, are poorly suited in terms of growing conditions.

Market opportunities for exotic tropical

Gingers and heliconias, from all sources, are excluded from the Australian market due to quarantine restrictions. There is small market available for gingers and heliconia in New Zealand. However, without direct flights this market cannot be contemplated.

A PNG exporter has indicated a readily available market of a tonne a week in Australia for exotic leaves from the Highlands. This view is not supported by market research by Pacific Islands Trade and Investment Commission which found very few importers even interested in dealing with the Pacific islands. This is primarily because the volumes were seen as too low and risk is perceived as too high compared with Asian suppliers.

Japan probably offers the best export market potential prospect for exotic tropicals from PNG. It is one of the world's largest flower importing countries – with niches available for high-quality exotic flowers. There is a direct flight Port Moresby to Narita, thus shipments would be feasible.

For the foreseeable future, it is the domestic market that offers the best demand prospects for tropical cut flowers and foliage. In PNG, local market demand is seriously constrained by the absence of a wholesale market, erratic supply, and high prevailing prices. The development of wholesale markets in PNG could be expected to have a similar positive impact on the demand for floriculture products.

The total potential market for tropical cut flowers and foliage is estimated at several million kina. This estimated is based on the Fiji experience - adjusted for the population, income level and income distribution. If temperate flowers such as roses were readily available at a reasonable price, a worthwhile domestic market could be expected amongst the growing urban middle class.

The market for indigenous orchids

The market for PNG indigenous orchids can be divided into two broad segments:

- “bringing the world to PNG orchids” (the eco-tourism market – which is not dependent of CITES compliance).
- “sending PNG orchids to the world” (the export market – which is dependent on CITES compliance).

The magnificent Papua New Guinea Orchids News website has created significant awareness for a potential global market. Some orchid eco-tourists belong to a small but dedicated group of enthusiasts who are specifically interested in orchids. However, for most tourists interested in PNG's natural environment, orchids represent another attraction along with birds of paradise, spectacular scenery and exotic cultures. There is significant scope for the expansion of eco-tourism in PNG, including tourism specifically related to orchids. This development will depend on more investment of the type proposed by Highlands Orchids (NHO) and more promotion of PNG's unique eco-tourism attractions. In the future, tourists and visitors might be able to purchase hybrid PNG orchid plants (with a CITES certificate) to carry back to their home countries as gifts and souvenirs of their PNG experience. Total non-resident visitor arrivals are estimated at only around 70, 000, compared with some 600,000 for Fiji. The overall development of orchid based eco-tourism faces the same constraints that limit the growth of tourism numbers to PNG generally. These include the poor market perception of PNG's law and order situation and air service and other infrastructure limitations.

A substantial export market has been identified in Asia for potted hybrid orchids. The best opportunities are for small plants with large flowers. Some would be sold to orchid collectors. However, it is expected that main market would be as upmarket household

beautification item for high income consumers who live in confined residential spaces. Exporters of indigenous orchids will not face the almost insurmountable supply chain constraints faced by cut flowers and foliage. Since potted orchids are relatively non perishable, a realistic option is to devise systems that assembled orchid plants at Lae for direct sea freight to Asian markets.

Any PNG hybrid orchid that is popular in the market is likely to be tissue cultured by competing business. Thus a sustainable marketing strategy for PNG hybrid orchids will involve two components:

- developing a certification program that would enable orchids to be sold as “genuine PNG sourced orchids”
- having a breeding program in place that allows for the ongoing pipeline of new PNG orchids ready for introduction into the market.

Physical infrastructure

Adequate physical infrastructure is also a basic necessary condition for the efficient marketing of perishable horticulture products. PNG, when compared with East African floriculture areas, falls well short of meeting this basic requirement.

For perishable cut flowers, transportation constraints more than offset any advantages PNG may have in terms of agro-ecological conditions. The establishment of the Highlands Highway in the mid-1960s opened up the prospect of PNG having a major commercial horticulture industry taking advantage of the excellent growing conditions. This potential is far from being realised due to inadequate maintenance, lack of supporting feeder roads and poor security. There are no direct road link to the main Highland production areas and the main urban center of Port Moresby and the international airport. Fresh produce therefore must be trans-shipped by air or sea.

Overall, domestic airfreight capacity is limited; freight rates are high and the quality of service less than satisfactory. International air freight capacity is also limited. There are currently daily flights from Port Moresby to Brisbane, weekly scheduled flights to Singapore and Narita, Japan. At present, Port Moresby is PNG’s only international airport.

A key element in the successful marketing of perishable products is the timely communication between growers, traders, buyers and transport providers. PNG growers and traders are only now starting to reap the benefits of the telecommunications revolution. This situation is expected to dramatically improve with competition now occurring in mobile telecommunications.

The policy environment

It is encouraging that for the first time, floriculture has been included in overall national policy and long term planning documents for the agricultural sector. Furthermore, there has been a significant financial, albeit notional, allocation to achieve the floriculture objectives outlined. However, absent from these policy and plan documents is reference to how agribusiness will be encouraged to invest in ornamental horticulture sector. Such investment has been critical to the success of the East African floriculture export industries.

The strong recognition by the White Paper on Agriculture in the commercial potential of indigenous orchids provides a strong overarching policy framework, under which the necessary specific policies to facilitate investment and conservation in the sector can happen. As a result of the current lack of investment and conservation incentives, rural people are missing out on substantial income opportunities and a unique resource is being depleted.

The financing environment

The availability of rural finance in PNG is seen as a major constraint to investment in ornamental horticulture. Commercial banks and the Development Bank have largely withdrawn from rural lending. Land usually cannot be offered as security and most agribusiness assets have low salvage value and thus are of limited value as security.

The institutional environment

There are a number of groups and associations involved in PNG's floriculture industry. These are fragmented and weak, with respect to commercial industry development. Research, extension and training capacity in ornamental horticulture is also poor.

NAQIA has a critical role to play in facilitating the importation of the improved planting material needed for the commercial development of the temperate and exotic tropical flower segments. A special focus is needed on this requirement. The inadequate funding and resourcing of NAQIA poses long term threats to the ornamental horticulture industry.

There is no policy in place for the administration of CITES that allows the sustainable development of the indigenous orchid industry.

Overall assessment of PNG comparative advantage

PNG offers some outstanding agro-ecological conditions for cut flowers and foliage and some niche market opportunities have been identified. However, in terms of export market development these are more than offset by intractable marketing and other constraints. It is highly unlikely that PNG would be able to establish a cut flower export industry comparable to the industries of East Africa and Central America. However, a much more modest cut flower industry could be developed built around on a significant expansion of the domestic market with some niche export of specialty products such as leaves.

PNG has the potential to establish a major commercial indigenous orchid industry build around exporting unique hybrid plants and expanding eco-tourism activities, provided regulatory and policy issues pertaining to CITES are what?.

7.4 Requirements to realise opportunities

7.4.1 The Fiji industry

The Scoping Study identified as a realistic medium term vision for the Fiji industry "A competitive ornamental horticulture industry that makes a significant contribution to the livelihoods of a significant number of Fiji's households" An important first step in the realisation of this vision is the re-establishment of a Floriculture Council that is commercially orientated and sustainable. The Scoping Study identified the following facilitating goals for a revamped Council: 1) a "flower culture" within the tourism sector; 2) the consistent export of niche floriculture products; 3) increased earning opportunities; 4) enhanced skill levels and professional standards in the industry; 5) improved flow of information to industry stakeholders; 6) improved quality of products and services; 7) improved quarantine arrangements; 8) improved stakeholder understanding of CITES and the value of indigenous plants; and, 9) increased technical and other assistance to the industry.

The Council now needs to be reactivated with a Board elected under bi-laws that ensures representation of all segments of the industry with adequate representation of commercial drivers of the industry. A professional secretariat needs to be appointed to implement policies and to manage the day-to-day operations of the Council.

A “flower culture”

The Strategic Plan recommended that activities be directed at creating awareness of what the flower industry has to offer in terms of enhancing the quality of Fiji tourism product. This is now of greater priority given that ornamental horticulture becoming a major industry depends on expanding linkages with tourism and not on developing major export markets.

Consistent export of niche products

Providing up-to-date information on the quarantine requirements of importing countries is seen as a particularly important requirement. Additional recommendations that stem from the niche market export opportunities identified by this Scoping Study are (with the proposed collaborating institutions in parenthesis):

- Providing up-to-date information to the industry on CITES and how it impacts the export of orchid plants (*FFC, Environment Dept, USP Herbarium*).
- The development of an appropriate policy for non timber forest products that would facilitate the legal commercial development of Fiji’s indigenous orchids (*FFC, ACIAR, SPC, Environ. Dept., MAFF*).
- The FFC needs to make ongoing representation to FQIS on market access issues (*FQIS, FFC, and NZ MAF*).

Increased income earning opportunities

Applied research could make a significant contribution to achieving the goal of increasing income earning opportunities from floriculture. “Red ginger decline” was identified in the Scoping Study as a problem warranting priority research attention.

Enhanced skill levels

The SSO out-grower project has shown that smallholders can successfully grow demanding cut flowers if the right training, supervision and direction are provided. However, overall skill levels at all levels are inadequate. To provide the required training and supervision for an expanded industry additional professionals are required. Ornamental horticulture needs to be included as a part of the Fiji College of Agriculture (FCA) curriculum as a first step. Landscaping and nursery trades, together with a floral art certificate course need to be included in the TPAF curriculum. At least 2 or 3 people need to be trained in floriculture from an appropriate overseas institution.

To enhance the skills and professional standards of the industry the FFC needs to:

- work with the USP, FCA and TPAF in the design of the floriculture/ornamental horticulture curriculum
- facilitate donor and technical support for the development of training materials for the industry
- coordinate workshops and short term industry training programs
- identifying appropriate overseas training for the industry.

Improved information flows

This Scoping Study has provided the foundation of a data base all participants in the industry. The maintenance of this database should be an ongoing activity for the Council. With a database established a regular industry newsletter could be prepared and distributed by the Council. The newsletter would contain regular features on production, marketing, quarantine, CITES etc.

Radio in Fiji remains the most important source of information. Thus it would be an appropriate activity for the Council to develop a regular “Fiji Flowers” radio feature. It was recommended that the Council establish a “Fiji Flowers” web-site to disseminate information about the Fiji floriculture industry to buyers and other interested parties. Over time, it was anticipated that the web site would be increasingly used to disseminate information to members of the Fiji industry.

More is required in providing realistic information about industry opportunities and the requirements for success. The Council has a role to play in bringing together potential growers and marketers and in providing an on-going service in small business training in floriculture and in the preparation of business plans for floriculture enterprises. This work should be undertaken in collaboration with the National Centre for Small and Medium Enterprise Development.

Improved quality

A positive approach to encouraging quality improvement should focus on two main areas:

- Obtaining, presenting and disseminating information on the quality requirements of various markets.
- Providing quality certification that will enhance marketability of those who achieve the standard.

It is recommended that a “Fiji Flowers” quality assurance and certification scheme be established. Those floriculture businesses that are able to meet the code of practices and quality standards established by the Council, would receive the “Fiji Flowers” seal of approval.

Improved quarantine arrangements

Quarantine significantly impinges on production and marketing of floriculture products. Major inconsistencies were also identified in quarantine requirements and procedures for the commercial importation of floriculture planting material. As the recognised representative of the industry, the FFC would be expected to play a key role in resolving these inconsistencies.

Fiji Quarantine has been agonisingly slow in negotiating quarantine “pathways” for fresh produce exports and having them approved by importing countries. A comprehensive review is needed, of Fiji’s quarantine regulations and procedures as they relate to floriculture. Technical assistance will be needed for such a review.

Niche export markets for various gingers, heliconias, and foliage products have been identified. There is very little understanding of what quarantine treatments are available and permissible and what is their cost and efficacy. There is a need for a collaborative applied research project that makes this information widely available to the industry in a form that is readily useable.

CITES and indigenous plants

The FFC is seen as the appropriate organisation to represent the interests of the industry in CITES related issues, and to provide information to the industry on the requirements of CITES and on the potential opportunities it creates. A CITES seminar would be an appropriate starting point for improving understanding of CITES as it relates to the ornamental horticulture industry.

The development of a gardeners guide to Fiji’s plants is recommended. The purpose is to bring about awareness of Fiji’s native ornamental plants and the role they can play in the garden/landscape. It is expected that such a publication will be a reference for students,

professionals, and gardeners/landscapers in other Pacific islands. It is proposed that such a project would be under the auspices of the USP Regional Herbarium with support from SPC and ACIAR.

7.4.2 The PNG industry

A five fold increase in PNG's domestic market for floriculture products is seen as a realistic prospect, if the identified constraints can be ameliorated. The development of all PNG's horticulture industries depends on adequate public investment being made in physical infrastructure, particularly transportation infrastructure. Working within the limits imposed by the existing infrastructure there are measures that can be taken to expand the cut flower and foliage segment of the industry. Such measures lie in areas of training and skill upgrading, institutional development and policy development. The rehabilitation and upgrading of the Lae Botanical Gardens is also seen as central to the development of the PNG ornamental horticulture industry and in particular the indigenous orchid segment.

Training and skill upgrading

There is a need to develop basic skill levels in the growing, handling and arranging of floriculture products. A first step would be to re-establish the set of courses offered by the Port Moresby National Botanical Gardens. The Fiji experience has illustrated the value of providing adult education and outreach training programs in floral art. Leaders from active PNG floriculture groups would benefit greatly from participating in the proposed SPC/SSO/CTA/ study tour to Fiji in 2008. For the longer term trained professionals are needed to provide the required training and supervision for industry development. Horticulture and floriculture needs to be included in the curriculum of the relevant tertiary institutions. This should include landscaping and nursery trades. Technical assistance will be required in curriculum development. The industry also requires a minimum number of people trained in floriculture from appropriate overseas institutions.

Institutional development

The PNG floriculture industry could benefit from technical assistance in the establishment of wholesale marketing arrangements. This would include the establishment of small wholesale markets in the main provincial centers. PNG participation in the CTA/SPC/SSO study tour to Fiji would be a useful starting point by providing exposure to a successful Pacific islands marketing system.

Both the Fiji and PNG scoping studies identify the need for an industry organization that provided sound industry leadership in the areas of policy formulation, dealing with government and other agencies, education and information, setting standards, and promotion. To be successful such an organization needs to be small, commercially orientated and sustainable.

For temperate cut flowers such as roses there has rapid technological change in terms of new varieties suitable to high land tropical conditions. The PNG industry needs access to the best available material if it to compete. Information on what planting material is available and its market desirability and suitability to PNG conditions is required. Technical assistance in this area would have to work in close collaboration with the farm supply companies and NAQIA.

Policy development

It is the indigenous orchid segment of the ornamental horticulture that has been identified as having the greatest potential for developing to a substantial rural income generating industry. However, the application and administration CITES in PNG has precluded investment in the sustainable commercial development of the indigenous orchid industry. To overcome this problem PNG needs to develop an appropriate policy for the

conservation and commercial management of indigenous orchids and other minor forest products. Providing technical assistance in the development of this policy is a major recommendation of this Study.

Lae Botanical Gardens

The redevelopment of the Lae Botanical Gardens is seen as a priority in the development for the ornamental horticulture and in particular the indigenous orchid industry. A feasibility study is required that involves a thorough benefit cost analysis to demonstrate to decision makers the returns from such an investment. It is expected that the feasibility study would be used as a basis to attract private investment in the venture.

Regional collaborative effort on the development of indigenous orchids

It is proposed to establish a breeding program which utilizes genetic materials from several Pacific island countries into one central location for the purpose of developing 'Pacific Plants' that can then be distributed back to the floriculture industries of the Pacific islands for mass propagation and resale. It is recommended that such a program be initiated under the auspices of SPC. The structure of such a project is complex as it involves multiple government departments; quarantine, forestry, plant protection, as well as international treaties such as CITES and plant variety rights (PVR). Thus a feasibility study is required to determine the viability of such a project, together with resource and implementation requirements. The feasibility study should also identify appropriate regional and international partners and donors. The feasibility study will require specialist expertise in plant breeding and the commercial aspects of orchid hybridization and marketing. Expertise will also be required in international trade policy and regulations relating to the movement of plant materials. Successful implementation will require the participating countries to coherent minor forest products policies that encourage investment and sustainable commercial development of orchid resources.

7.5 Recommendations for ACIAR/SPC involvement with the ornamental horticulture industries in the Pacific

7.5.1 The Fiji industry

The Fiji Scoping Study identified a number of potential activities for ACIAR/SPC in the development of the ornamental horticulture industry. These are listed as:

- Red ginger decline research (*identified collaborating partners: FFC, Research Div. MAFF, SPC, ACIAR, DPI NT (Aust.)*). The Northern Territory Department of Primary Industries recently undertook a successful project on the nutrition of ornamental ginger. It is proposed that similar research work can be done with ornamental ginger in Fiji to combat the growing problem of red ginger decline.
- The development of a Gardeners Guide to Fiji's Native Plants (*identified collaborating partners: USP (Regional Herbarium), ACIAR, SPC*).
- The development of pilot "Fiji Flowers" quality assurance and certification scheme (*identified collaborating partners: FFC, ACIAR*). A market research based pilot project is seen as the appropriate first step to successfully establish a quality assurance program. ACIAR's new agribusiness research program might be a possible source of support for such a pilot project.
- A review of Fiji's quarantine regulations and procedures relating to floriculture (*identified collaborating partners: FFC, FQIS, SPC, ACIAR, AQIS*).
- The development of cost effective quarantine treatments for ornamental exports (*identified collaborating partners: FFC, FQIS, MAFF Research, SPC, ACIAR, University of Hawaii, AQIS and NZ MAF*).

7.5.2 The PNG industry

The Fiji Scoping Study identified a number of potential activities for ACIAR/SPC in the development of the ornamental horticulture industry. These are listed as:

- Policy development for minor forest product development (identified collaborating partners: ACIAR with the PNG Forest Authority, Papua New Guinea Forest Industries Council, CITES Management Authority).
- Adult education programs ornamental horticulture and floral art (identified collaborating partners: SPC, USP, UPNG, UNITECH (University of Lae), PNG Floral Arts Society, CTA (EU), SSO (Fiji)).
- Technical support for national tertiary institutions in the development of ornamental horticulture skills (ACIAR/SPC, Charles Darwin University, TAFE institute of N. Queensland, Vudal University)
- Survey and evaluation of gingers and Heliconia varieties in PNG and Fiji (SPC, PNG Floral Arts Society, SSO (Fiji)).
- Technical advice on the establishment of wholesale marketing system in PNG (ACIAR, PNG Floral Arts Society, SSO)
- Feasibility study and a plan for the re-development of the Lae National Botanical Gardens (identified collaborating partners AusAID/ACIAR, National Forest Institute, Singapore Botanical Gardens).
- Providing information on new varieties and sources of seed (ACIAR, DPI (NT), PNG farm supply businesses, NAQIA, PNG Floral Arts Society)
- Industry organization development (ACIAR, MAL (PNG), DPI (NT), PNG Floral Arts Society).

7.5.3 Regional Collaborative Efforts

A number of the recommended activities for ACIAR and SPC are regional in nature. These are:

- The development of framework for indigenous orchid hybridization for Melanesian countries that is compliant with CITES and facilitates the exchange and commercial development of indigenous orchids (ACIAR/SPC with USP Herbarium, National Herbarium Netherlands, Leiden, University of Queensland at Gatton, country CITES Management Authorities).
- The development of appropriate policy framework for the countries of Melanesia to deal the sustainable commercial development of minor (non-timber) forest products.
- Technical support for national and regional tertiary institutions in the development of ornamental horticulture skills.

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9 Appendixes

9.1 Fiji Pest and Diseases vs. Hawaii Pest and Diseases for selected floriculture products

Fiji	Hawaii
Orchids	Orchids
<i>Dendrobium, Vanda,</i>	<i>Dendrobium, Vanda,</i>
<i>Cymbidium, Phalaenopsis</i>	<i>Cymbidium, Phalaenopsis</i>
Insect scientific name	Insect scientific name
<i>Aleurodicus disperus</i>	<i>Cerataphis orchidearum</i>
<i>Chelisoches morio</i>	<i>Macrosiphum luteum</i>
<i>Chrysomphalus aonidum</i>	<i>Orchidophilus aterrimus</i>
<i>Orchidophilus atterimus</i>	<i>Orchidophilus peregrinator</i>
<i>Pseudococcus dendrobium</i>	<i>Xylosandrus compactus</i>
[<i>Pseudococcidae</i>]	<i>Nezara viridula</i>
<i>Parlatoria proteus</i>	<i>Chrysodeixis eriosoma</i>
<i>Mirridae or Reduviidae</i>	<i>Contarinia maculipennis</i>
Disease pathogen scientific name	<i>Pseudococcus dendrobiorum</i>
<i>Glomerella cingulata</i>	<i>Pseudococcus beardsleyi</i>
<i>Phyllosticta capitalensis</i>	* <i>Misidentified as P. elisae</i>
<i>Pseudocercospora sp.</i>	<i>Pseudococcus longispinus</i>
<i>Burkholderia cocovenenans</i>	<i>Brevipapus phoenicis</i>
<i>Pectobacterium cypripedii</i>	<i>Diaspis boisduvalii</i>
<i>Monographella cucumerina</i>	<i>Furcaspis biformis</i>
<i>Schizophyllum commune</i>	<i>Pinnaspis aspidistrae</i>
Virus scientific name	<i>Pinnaspis buxi</i>
<i>Cymbidium mosaic virus</i>	<i>Vinsonia stellifera</i>
<i>Odontoglossum ringspot virus</i>	<i>Dichromothrips corbetti</i>
	<i>Frankliniella occidentalis</i>
	<i>Frankliniella shultzei</i>
	<i>Haplothrips gowdeyi</i>
	<i>Heliothrips errans</i>
	<i>Heliothrips haemorrhoidalis</i>
	<i>Hercinothrips femoralis</i>
	<i>Thrips hawaiiensis</i>
	<i>Thrips palmi</i>
	<i>Thrips tabaci</i>
	<i>Eurytoma orchidearum</i>
	<i>Bemisia tabaci</i>
	Disease pathogen scientific name
	<i>Fusarium Primer</i>
	<i>Fusarium proliferatum</i>
	<i>Phyllosticta Primer</i>

	<i>Phyllosticta capitalensis</i>
	<i>Phytophthora infestans</i>
	<i>Phytophthora nicotianae</i>
	<i>Phytophthora nicotianae</i>
	Virus scientific name
	<i>Cymbidium Mosaic Virus</i>
	<i>Odontoglossum Ringspot Virus</i>
	<i>Tomato Spotted Wilt Virus</i>
	<i>Potviruses</i>

Fiji	Hawaii
Anthuriums	Anthuriums
Insect scientific name	Insect scientific name
<i>Coccus hesperidum</i>	<i>Xylosandrus compactus</i>
<i>Crenidorsum aroidephagus</i>	<i>Elimaea punctifera</i>
<i>Encyrtus sp.</i>	<i>Nipaecoccus nipae</i>
<i>Hemiberlesia palmae</i>	<i>Brevipalpus phoenicis</i>
<i>Icerya seychellarum</i>	<i>Diaspis boisduvalii</i>
<i>Microterys sp.</i>	<i>Pinnaspis buxi</i>
<i>Parasaissetia nigra</i>	<i>Pulvinaria psidii</i>
<i>Paratrechina vaga</i>	<i>Vaginulus plebius</i>
<i>Pheidole oceanica</i>	<i>Veronicella leydigi</i>
<i>Selenaspis articulatus</i>	<i>Chaetanaphothrips orchidii</i>
Disease pathogen scientific name	<i>Chaetanaphothrips signipennis</i>
<i>Helicotylenchus australis</i>	<i>Echinothrips americanus</i>
<i>Helicotylenchus microcephalus</i>	<i>Frankliniella occidentalis</i>
<i>Meloidogyne sp.</i>	<i>Aleurothrix antidesmae</i>
<i>Radopholus similis</i>	<i>Aleurotulus anthuricola</i>
<i>Rotylenchulus reniformis</i>	<i>Crenidorsum sp.</i>
	Disease pathogen scientific name
	<i>Aphelenchoides fragariae</i>
	<i>Calonectria sp.</i>
	<i>Colletotrichum Primer</i>
	<i>Colletotrichum gloeosporioides</i>
	<i>Dasheen mosaic virus</i>
	<i>Helicotylenchus erythrinae</i>
	<i>Pythium Primer</i>
	<i>Pythium splendens</i>
	<i>Radopholus similis</i>
	<i>Rhizoctonia Primer</i>
	<i>Rhizoctonia sp.</i>
	<i>Xanthomonas Primer</i>
	<i>Xanthomonas campestris pv. dieffenbachiae</i>

Fiji	Hawaii
Ornamental ginger	Ornamental ginger
Insect scientific name	Insect scientific name
<i>Ceroplastes rubens</i>	<i>Anoplolepis longipes</i>
<i>Coccus hesperidum</i>	<i>Monomorium floricola</i>
<i>Dysmicoccus brevipes</i>	<i>Paratrechina vaga</i>
<i>Hemiberlesia palmae</i>	<i>Solenopsis geminata</i>
<i>Parasaissetia nigra</i>	<i>Technomyrmex albipes</i>
<i>Pentalonia nigronervosa</i>	<i>Aphis gossypii</i>
<i>Pinnaspis strachani</i>	<i>Pentalonia nigronervosa</i>
<i>Planococcus minor</i>	<i>Chelisoches morio</i>
<i>Pseudococcus orchidicola</i>	<i>Sophonia rufofascia</i>
<i>Pulvinaria urbicola</i>	<i>Planococcus citri</i>
<i>Tetramorium bicarinatum</i>	<i>Pseudococcus virburni</i>
Disease pathogen scientific name	<i>Pseudococcus longispinus</i>
<i>Meloidogyne sp.</i>	<i>Coccus viridis</i>
<i>Sphaeronema sp.</i>	<i>Hemiberlesia rapax</i>
	<i>Pulvinaria psidii</i>
	<i>Pinnaspis strachani</i>
	<i>Sciothrips cardamomi</i>
	Disease pathogen scientific name
	<i>Helicotylenchus sp.</i>
	<i>Marasmius</i>
	<i>Meloidogyne Primer</i>
	<i>Meloidogyne sp.</i>
	<i>Mycosphaerella Primer</i>
	<i>Mycosphaerella hedychii</i>
	<i>Phyllosticta Primer</i>
	<i>Phyllosticta zingiberis</i>
	<i>Pseudomonas Primer</i>
	<i>Pseudomonas solanacearum</i>
	<i>Pythium Primer</i>
	<i>Pythium sp.</i>
	<i>Radopholus similis</i>
	<i>Rhizoctonia Primer</i>
	<i>Rhizoctonia sp.</i>
	<i>Rotylenchulus reniformis</i>

9.2 Summary report of the visit to Hawaii by Aileen Burness (March 2nd – March 9th 2007)

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Summary of activities and interviews

Day	Activity
Friday 2nd March	Arrive in Honolulu from Fiji
Friday 2nd March	Meeting with Ben Kodama (Orchid grower and nurseryman)
Friday 2nd March	Meeting with Dave Thompson (Mea Pacific Traders – Maile lei importer)
Saturday 3rd	Travel to Hilo
Saturday 3rd	Meeting with Andrew McGregor, visits to the cut flower markets
Sunday 4th March	Visits with McGregor to cut flower markets and retail flower outlets
Monday 5th March	Meeting with Calvin Ksewake and Andrew Kobata – University of Hawaii
Monday 5th March	Visit to University of Hawaii Anthurium Experimental Unit – Interview with Joana
Tuesday 6th March	Meeting with Mike Inouye (Pacific Floral exchange)
Tuesday 6th March	Meeting with Robert Stearns at (Lelani foliage)
Tuesday 6th March	Return for tour of Pacific Floral Exchange with Mike Inouye
Wednesday 7th March	Picked up plants purchased from Mike at Pacific Floral Exchange – final meeting
Wednesday 7th March	Return to Honolulu
Thursday 8th March	Meeting with Ken Leonard – University of Hawaii
Thursday 8th March	Meeting with Dave Thompson (Mea Pacific Traders – Maile lei importer)
Thursday 8th March	Meeting with Chevy Yara (Watanabe Floral Inc.)
Friday 9th March	Meeting with Maggie Lalatine (Marriot Hotel – Honolulu)
Friday 9th March	Return to Fiji

Review of activities and interviews

Ben Kodama (Orchid grower and nurseryman)

Business used to propagate orchids using tissue culture, now they have stopped and are importing from Thailand. Kodama reported that it is cheaper to buy tissue culture flasks from Thailand than to produce them in Hawaii. Kodama used to do cut flowers but now solely produces pot plant orchids. He imports flasks from Thailand, grows them out in pots and then ships them to either Japan or mainland USA - Florida, California etc. Hawaii

floriculture industry has a deal with Fed Ex to provide good freight rates and handling practices to distribute the products.

Important note: Shift from production of orchid cut flowers to orchid pot plants has opened a niche market for Fiji because there is less Dendrobium cut flower orchids in Hawaii. It was reported that many customers would rather buy University of Hawaii varieties of Dendrobium orchids that are Hawaiian grown because they last longer than those imported from South East Asia. It was reported that the orchids imported from South East Asia have nearly half of the buds unopened and these usually do not open.

Dave Thompson (Mea Pacific Traders – Maile lei importer)

Currently imports Maile leis weekly from the Cook Islands. Fiji was previously approached as another possible supplier however this never eventuated despite being investigated and found to be viable. Thompson reported that he was still interested in importing from here if there was someone who could supply consistent leaves. Thompson gave a formal letter of interest to Fiji producers for Maile leaves.

Thompson reports:

- It has worked out really well for the rural areas of Cook islands
- They received funding for refrigeration to hold the leaves
- Main imports are from the Cook Islands which he supplies to the floriculture market in Hawaii, mostly supplies florists through the main wholesale market Watanabe Floral Inc
- He could supply the mainland markets if he had enough leaves and a consistent supply.

Visit to Hilo farmers market

Numerous small anthurium and orchid growers sell their flowers at the Hilo market every Friday, Saturday and Sunday. A feature of the market quality of the flowers and there relatively low price of the flowers on offer compared with Fiji. Simple flowers arrangements utilizing used A10 cans as base were observed. This method could be utilized by our Fiji growers.



*Calvin Ksewake and Andrew Kobata
– University of Hawaii*

Comparing the Fiji floriculture industry with the Hawaii industry it was reported that a lot of the things that happened in Fiji mimic the industry in Hawaii. The difference is that Hawaii was already very accustomed to buying flowers and had been trained in using flowers. Anthurium production has been widely encouraged by the University; they visit the growers and address

constraints. Hawaii has a valuable planting medium in the volcanic cinder. Andrew looks after a lot of the foliage growers, helps to diversify their products. The Ministry of Agriculture works out what the best things to grow are and how exactly to do it, they also

develop new varieties that they breed and distribute to the growers. There are associations that are specific to products that help with market access.

Mike Inouye (Pacific Floral exchange - Hawaii Tropical Flower Council)



He is a large grower of orchids and anthuriums – he has a grower's scheme similar to SSO and lots of his growers were really playing up, he has had to modify his tactics to filter out the bad growers and focus on the really serious ones. Through his growers he brings in a lot of anthuriums, orchids, gingers, heliconias, and leaves. He buys and then packs and ships to the mainland. His big job is to make sure that high quality products come in and then are handled properly before being shipped out. Most of these flowers go to the mainland. They

use vasil, bamboo orchid leaves and a few anthuriums to create ready made bouquet products that can just be opened and then put on the shelves. Wholesale supplier to florists, retail markets etc. Tour of facility showed all of the grading and packing practices for export.

Robert Stearns (Lelani foliage – President off Hawaii Export Nursery Association)

Producer of various foliage types including vasil (cordyline), dracaena, they grow plants in 3 gallon pots in volcanic cinder and then shipped in the big pots to nurseries in the US. Pot plant foliage for offices, homes etc. Almost entire nursery is above ground in a semi-quarantine state. They are certified as quarantine post.

Ken Leonhardt – University of Hawaii

Regarding expansion of the Fiji floriculture industry; Guzmanias and bromeliads are recommended, proteas are also a possibility if there is a suitable growing area. Problem in Hawaii is that a lot of people don't want to work as gardeners. Nursery only pays \$8 an hour. Roses have a lot of problems in our tropical climate and might be more trouble than they are worth. Vanda or oncidium orchids 'gal ramsey' will be a good expansion for the Fiji industry, providing a bigger range of flowers to be able to sell on the market. Tissue culture is going to be cheaper to import from Thailand. You have to import all the materials to do tissue culture so might as well just import the flowers or planting materials. Said he would collect foliage plants and send them down to Fiji. He thinks that the leather leaf fern (from Florida and Costa Rica) would be a good cut foliage product for domestic and export markets. But like the protea it needs to be grown in high altitudes. Ti leaves, or dracaena that we may not have here he could help bring it in as mother stock.



Chevy Yara (Watanabe Floral Inc.)

Watanabe is a very large wholesale and retail supplier of floriculture products in Hawaii. Yara is the assistant buyer and expressed interest in purchasing from Fiji growers. In particular there is an interest in Dendrobium orchids during Hawaii's winter months October to March which coincides with Fiji's peak production months. Preliminary discussions regarding price were positive. Factors still left to explore are freight space and cost. Yara also

reported that there is an opportunity for cut foliage and gingers and heliconias during this same winter period.

Maggie Lalatine (Marriot Hotel – Honolulu)

They have an in house florist that sources some materials from the wholesale market and some from a small nursery in the back of the hotel. The only thing that the hotel brings in is the leis which are for conferences and special groups. The in house florist makes the deals.

9.3 Survey of Tourist Industry Operators

Survey of tourist industry operators

FLORICULTURE PRODUCT PROCUREMENT

1. Where do you usually source your cut flowers, foliage and ornamental and landscape plants from?

Source	Product			
	<i>Cut flowers</i>	<i>Foliage</i>	<i>Potted plants</i>	<i>Landscape plants</i>
Hotel landscape				
Hotel nursery				
Local florists				
Flower wholesaler				
Local nursery				

Other source.....

2. On which basis do you decide how much CF/F/O/L to purchase?

- A fixed amount is purchased regularly,
- Amounts purchased change every week, depending on my needs
- Other

(Specify:)

3. What are the approximate quantities of CF/F/O/L each month? (Estimate amounts per product and according to period of purchase-low or high season- if applicable)

Quantity purchased/week	Product			
	<i>Cut flowers</i>	<i>Foliage</i>	<i>Potted plants</i>	<i>Landscape plants</i>
Low season				
High season				
Irrespective of season				

4. How often do you buy CF/F/O/L?

Frequency of purchase	<i>Cut flowers</i>	<i>Foliage</i>	<i>Potted plants</i>	<i>Landscape plants</i>
<i>Daily</i>				
Twice or more times per week				
Once a week				
Once everydays				
Other (Specify:.....)				

5. What factors do you take into account when purchasing CF/F/O/L?
(Rank 1 to 4, with 1 as the most important criterion)

Factors of relevance	Cut flowers	Foliage	Potted plants	Landscaping plants
Price				
Quality				
Availability of supply/consistency of supply				
Range of products available				
Size of supply for products available				
Other (Specify:.....)				

6. Please rank the most important criteria you use to assess potential suppliers of CF/F/O/L (Rank 1 to 6, with 1 as the most important criterion)

- The supplier has available a diversified range of products
- Quality of products supplied
- Reliability of the supplier in terms of continuity of his CF/F/O/L supply throughout the year
- Price of product
- Willingness of suppliers to deliver to my premises
- Other (Explain:)

7. What delivery requirements do you enforce at your enterprise? (More ticks allowed)

- All products should be delivered at my premises
- All products should be delivered before a given time during the day
- Deliveries can be made by a courier service
- Other (Specify:.....)

8. How much in advance do you tell your suppliers about the quantity of CF/F/O/L you need to buy?

Terms of notification	Cut flowers	Foliage	Potted plants	Landscaping plants
One week or more				
2-3 days				
The day before				
Other (Specify:.....)				

9. How do you usually pay your suppliers of horticultural/floriculture products?

- Advance payment (Specify percent:)
- Cash payment
- 15-30 days credit
- 30-90 days credit

10. Do you have an in-house florist?

11. When you have weddings who does your flowers/bouquets?

12. When you have conventions who does the flowers?

13. What factors would need to change in order for you to start buying more of your floriculture products from outside sources?

OTHER INFORMATION

Please fill in details below:

Hotel Name:
Number of stars:
Total number of rooms:
Address:
Tel. & Fax No :
Name & charge of person interviewed:

Name of surveyor:	Place of the interview:
Date of interview:	Progressive number of interview:

9.4 ACIAR/SPC Ornamental Horticulture Scoping Study: PNG Trip Report



Prepared by Andrew McGregor, August 2007

9.4.1 Summary itinerary

- July 18th – 19th Lae
- July 20th – 21st Port Moresby
- July 23rd – 24th Programmed for Goroka and Eastern Highlands (cancelled due non operation of Air Niugini)
- July 25th – 26th Mt Hagen and Western Highlands
- 27th – 28th Port Moresby

Lae (July 18th – 19th)

Stakeholder Meeting

A stakeholder meeting was held at the Lae NARI Conference Center on the morning of July 18th. The Ornamental Horticulture meeting was combined with the Annual Conference of the Women in Agriculture NGO. There were 51 participants at the Ornamental Horticulture meeting. They were from the following locations: Markham; Bubia (Lae); Butibam (Lae); East Sepic; Enga; and Western Highlands

A list of the participants is presented in annex 1. Various participants provided an impressive set of flower arrangements – these were of the highest standard of the flower arrangement provided for the 3 meeting held during the field trip. These floral arrangements were initially provided for the ANU Crawford School Workshop of Pacific Islands Agriculture that was held the previous day.



The Women in Agriculture Conference was opened by ACIAR PNG Director Dr Jacqui Wright. Andrew McGregor then made a presentation on Floriculture in the Pacific Islands and outlined the Scoping Study. The following power point was presented.



What is scoping study looking at

- Opportunities
- Performance
- Constraints
- Recommendations to overcome Constraints
- Identifying activities for ACIAR



The world scene

- World production in floriculture products USD 80 billion – 10% exported
- Leading exporter is the Netherlands, followed by two South American producers Colombia and Ecuador.
- East African countries are the leading emerging suppliers.

African nations suppliers to the EU
 Kenya-\$200 million
 One grower ships 1.5 million roses daily
 Uganda-\$36 million
 500,00 roses for Valentine's Day

Project a 3.5% annual increase to 2012

Why the success?

Tropical Floral Production

- Tropical products 4% to 5% of total trade
 \$400 to \$500 million
- Orchids and Anthuriums 90% of tropicals traded



Conflicting story on demand for tropical floriculture products

- UH study identifies good growth for tropical floriculture products in travel and tourism, luxury hotels, resorts and restaurants.
- EU study - Worldwide overproduction of tropical flowers decreasing prices and lack of demand.

What does PNG have special to offer the market?

Markets

Exports

- Large scale exports of temperate flowers (East African model)
- Niche markets for tropical
- Domesticated indigenous orchids and palms



- Hotels and tourism
- Corporate sector
- Landscaping
- Local people



Fiji experience



a small industry with a large number of participants.

- Some 200 semi-commercial cut flower growers and a few small commercial growers.
- One cut flower wholesaler
- 26 florists that are registered as businesses
- 40-50 informal flower arranging businesses that operate out of their homes.
- 12 retail nurseries that sell a range of potted plants and garden supplies.
- Several hundred small growers a wide range of potted plants and trees for sale.

Fiji industry entirely based on local market

- We are not competitive on export markets



Our future lies in supplying local markets

- Hotels – the Hawaii model



The local domestic market

- Importance of a wholesale market
- Supply generating its own demand



After this presentation the participants were divided into four groups and were asked to address the follow questions re ornamental horticulture development and then report back to the main meeting

- What are you doing
- What are your plans (what would you like to do)
- What do you see as the opportunities
- What problems do you face
- How do think ACIAR might contribute

A summary of the presentation from each group is provided in annex 2:

Grower visits

Following the meeting site visits were undertaken to four growers (indigenous orchids and heliconias) who attended Workshop.



The field visit revealed an impressive array of indigenous orchids that would likely have commercial potential. The most common orchid was Morobe Shower (*Dendrobium lineale* Rolfe), which seemed to have outstanding cut flower characteristics (seasonality, spray yield, appearance and vase life⁴⁶).

Lae National Botanical Gardens

Mrs Endo Taanis Guaf the Education Officer National Botanical Gardens.

The National Botanical Gardens (NBG) covers an area of 56 hectares and is now administered by the National Forest Institute (NFI) The Lae NBG began development at its current site in 1949. In conjunction with the National Herbarium these gardens became a consolidated centre for botanical research, education, and recreation. Throughout the 1960s and 70s the National Botanical Gardens was renowned nationally and internationally. It became a major tourist attraction and an attractive recreation area for the residents of Lae. However with the abrupt decline in funding in the 1980 the condition of the Gardens rapidly declined changing from a “world class botanical reserve to a poorly maintained park in a state of disrepair and neglect” (National Botanical Gardens Development Plan 2000)⁴⁷. Since that time there is reportedly some improvement in the state of the gardens with modest increase in the funding allocation. However, the Gardens remain a long way from their former glory and well below their potential, with the National Botanical Gardens Development Plan is yet to receive funding

⁴⁷ *The Development Plan for the PNG National Botanical Gardens, Lae. Prepared by Roderick Spivey 2000.*

In the past a significant number of 3,200 species of orchids know to be found in PNG where held at the Lae NBG. This collection has now been substantially depleted. Every year the NBG mounted an orchid expedition was sent to a different part of the country. These expeditions are no longer held.

The experience of Singapore has shown how central a thriving Botanical Gardens is the development of a ornamental horticulture industry. Such a facility has a major contribution to make to tourism and recreation amenity. It is envisaged that a revitalized NBG would play a central role in the artificial propagation and hybridization of indigenous orchids for commercial development. The implementation of the National Botanical Gardens Development Plan is seen as a priority.



Port Moresby (July 20th – 21st)

Stakeholder meeting (July 20th)

A stakeholder meeting was held at the National Research Institute Conference Room. A list of the participants is presented in annex 2. The participants included Wolfgang Bandisch, former Director of the Port Moresby Botanical Gardens, growers, florists and representatives of the National Training Council. Youths from squatter settlements interested in floriculture also attended.



Dr Jacqui Wright introduced the study and Andrew McGregor then made a presentation on Floriculture in the Pacific. There was then a wide ranging discussion on the opportunities, problems and constraints faced by PNG's ornamental horticulture industry. Some key points of discussion were:

- the floriculture trade figures significantly under estimated imports into PNG
- the need for training
- the absence of floriculture markets (in municipal markets, no floriculture markets)
- the high level of expectations for the PNG Floral Arts Society now that government was now available. (There did not seem to be any clear understanding of what the Society would do other than to hold meetings out in the Provinces.).

Meeting with Wolfgang Bandisch and Bob Tate (July 20th)

Wolfgang Bandisch is a recognized international authority on PNG orchids. He was the former Director of the Port Moresby Botanical Gardens and founder of website orchidspng.com.

Bob Tate is the Executive Officer for Papua New Guinea Forest Industries Council. The focus of the discussion was on the opportunities and requirements for developing a substantial commercial industry based on PNG's indigenous orchids. This covered:

- The types of indigenous orchids that would be suited for commercial markets. The best opportunities were identified as potted hybrid orchids – these should be small plants with large flowers.
- The most likely markets are in Asia (Japan, Singapore, China and Korea)
- In compliance with CITES these hybrid orchids would need to be artificially propagated. The plantlets would need to come from a central tissue culture laboratory from where they could be distributed to out growers who would then grow them to marketable size. These plants would then come back to a central facility for finishing and distribution to the market
- PNG already has a significant number of primary orchid hybrids that would provide a basis for starting up such an industry.



- It would be necessary to have a continuous pipe line of commercial orchids coming through the system for export. This is required to accommodate changing tastes and preferences and once an orchid has been exported it can be tissue cultured. The appropriate certification would be critical for maintaining market share.
- Bandisch and Tate are of the view that such an industry has huge potential. However they believe that the necessary investment will not occur until there is in place an appropriate policy to encourage the development of minor forest products.
- Bob Tate indicated that some members of his Council would be interested in investing in the sustainable commercial orchid development provided appropriate policy framework was in place.

Visit to road side seller along the Sogari Road – July 21st

There were some 20 sellers of pot plants located outside a large cemetery on the Sogari



road approximately 10 km outside Moresby. The sellers were mainly Highlanders from the nearby settlements. They usually only operated at the weekend, except for the Saturday's when the monthly Ella Beach craft market was in operation. The main customers were middle class people who drove out from Moresby to purchase plants. Weekly gross revenue was reported to range from K20 to K120. Some had regular customers who would come to their small home nurseries.

Meeting with Sally Napolioni (Exotic Blooms) – July 21st

Exotic Blooms operate a florist outlet in Anderson's Supermarket. Exotic Blooms have been sourcing cut flowers and foliage from 3 – village groups around Goroka for 3 years. Sally has provided training of these women with funding provided by the Small Holder Support Services Pilot Project (SSSPP).

The 3 groups are:

- The Kerefa Women's Association
- The Notofana Group
- Gilaheka Group



The Kerefa Association has 70 members (including around 15 men) that grow a range of cut flowers and leaves. Cut flowers are air freighted on a weekly basis to Exotic Blooms.



Kerefa Women's Association was the 1st group with which Exotic Blooms worked and was initiated through the group leader Margaret Harvey. It was by described by Sally as a "trial and error" process in terms of training and marketing.

The Notofana and Gipaheka Groups: These were more recently established groups and the most active. They now supply Exotic Blooms on a weekly basis. They also supply Goroka business houses. The Notofana Group has 45 members and Gipaheka Group_80 members. The Notofana Group and concentrating on tuberose, while Gipaheka group mainly have cordyline leaves. Combined the two groups have over 45,000 plants. Both have built their own resource and training center. They were both involved in the trial shipment of leaves to Melbourne.

Trial shipment of leaves to Melbourne: A trial shipment of selection of cordyline leaves was made Melbourne in July 2006. The shipment was rejected by the Australian Quarantine (insects were found and leaf stems were not denatured in accordance with AQIS requirements). Exotic Blooms maintain these quarantine issues have been resolved and they have an approved quarantine treatment and they are ready to recommence shipments. Exotic Blooms are very bullish about this market suggesting they could supply a tonne a week to Australia and could expand their export to European markets (SSCF Pilot Project Report on the Floriculture Project for Notofana Women's Group and Gipaheka Group in Goroka, Eastern Highland). This optimistic view is not supported by the Sydney based Pacific Islands Trade and Investment Commission (PITIC) who did an assessment of Exotic Blooms Trial shipment. The PITIC report found that the landed price from Fiji and PNG were 50percent to 200percent higher than Australian wholesale prices. There were major issues of volume, consistency of supply and quality (species, colours, sizes, post harvest handling and packaging). The PICIT (2006) report notes that "post-harvest handling, refrigeration and cool chain integrity needs to be established or we can forget it". It is difficult to see how leaves from the Highlands in the present situation, could be competitive given the high cost and unreliability of freight. Exotic Blooms reports a freight rate of K7/kg from Goroka to POM (with a rate of K8.80/kg POM Melbourne which requires transshipment through Brisbane). Over the past year consignments have been off loaded an average of once every two weeks. There are no cool store facilities available at the Goroka airport. The cost of packaging is another major constraint.⁴⁸

⁴⁸ In 2005 the Lae based AMALPACK gave the following quotes for manufacturing carton suitable for flowers: flower packing box (medium size, 900 mm x 450 mm x 250 mm) at K10.53 per unit; and large size (1220 mm x 450 mm x 250 mm) at K12.92 per unit; and a fresh bloom box with lid (1012 mm x 140 mm x 107 mm) at K4.52 per unit. All prices based on orders of 1000 units; all prices excl 10 percent VAT.

9.4.2 Programmed visit Goroka and Eastern Highlands (July 23rd – 24th)

A stakeholder workshop involving the 3 flower growing groups listed above was scheduled for July 24th. This had to be cancelled due to the repeated cancellation of Air Niugini flights. The unreliability of air services is symptomatic the problem of exporting perishable fresh produce from the Highlands.

A meeting was held with John Hunt the SSSPP Project Manager who provided the financial support for the training program for the 3 groups. He shared a number of reports on the SSSPP training program.

Mt Hagen and Western Highlands (July 25th – 26th)

Stakeholder workshop

A stakeholder meeting was held in the Christian Revival Church Hall Mt Hagen on the morning of July 25th. A total of 47 women from villages around Mt Hagen attended. Various participants provided an impressive set of flower arrangements.

ACIAR PNG Deputy Director Cathy Pianga assisted with the workshop and outlined the scoping study. A blackboard presentation was Andrew McGregor on Floriculture in the Pacific (a PowerPoint presentation was possible due to the failure in multimedia system). Overall the black board proved a more suitable media for this presentation.



This was a particularly enthusiastic group of participants. After the background presentation of Andrew and Cathy, the participants were divided into four groups and were asked to address the follow questions re ornamental floriculture and then report back to the main meeting

A summary of each presentation from each group is provided in annex 2:

- What are you doing
- What are your plans (what would you like to do)
- What do you see as the opportunities
- What problems do you face

- How do think ACIAR might contribute

There was a lot interest in the small holder floriculture training material that had been prepared in Fiji by South Sea Orchids with funding provided by CTA.

- Small-holder Flower Production: A Pictorial Handbook
- Floriculture in Fiji as a Small and Micro Business

Copies have been sent to representatives of the group. The meeting agreed that this group will make a request to prepare similar training material for tuberoses grown in the highlands. They are keen to participate in a Fiji study tour proposed by USP/IRETA for 2008. A number of group leaders have been identified who benefit from such a visit.





Port Moresby (July 27th – 28th)

Meeting Mr Barnabos Wilmot (Manager Wildlife Enforcement Dept)

The focus of discussion was on commercial development of indigenous orchids.

All PNG orchids are covered by Appendix 2 of CITES and their trade is regulated by a 2003 Act of the PNG Parliament. Under current regulations orchid propagation must originate from collected seed. This poses a major constraint in terms of the infrequency of flowering and the long lead time propagating from seed. However, according to Wilmot propagation by tissue collected from the wild could be considered on a case by case basis if it can be demonstrated that this will contribute to the conservation of the species.

To export an orchid under CITES it needs to demonstrate that it did not come from the wild. F2 hybrids are no problem – F1 hybrids could be considered on a case by case basis. A propagation protocol would have to be approved by the PNG CITES Management Authority in the Department of the Environment. Such a protocol should be developed in conjunction with the Department.

According to Barnabos a draft policy on Minor Forest Products had been formulated a few years ago with financial and technical assistance from the EU. However, this was not taken up. However, according to Kanawaii Pouru, the Managing Director of the PNG Forest Authority, there is a need to formulate and enact an appropriate policy.

Barnabos is of the view that the smuggling of indigenous orchids out of PNG is rampant. He believes that the detection rate is about 1 percent. There is no detection infrastructure or equipment at the air and sea ports and they rely entirely on tip offs to catch people. There is no restriction on importation of orchids into PNG.

Meeting with Romius Waki, Gelm Limited

Romius is from Goroka but is working in POM with AusAID. He is an environmental scientist by training and is involved with the development of an integrated development in his home area of Komiufa area in the Eastern Highlands. This includes a substantial floriculture component. He has had discussions with a Singaporean investor who is interested in a joint venture for rose development.

Meeting with Peter Cusak, International Finance Corporation (IFC) PNG Country Coordinator.

The IFC sponsored the PNG floriculture study tour to Fiji in 2005. The PNG Floral Arts Society was created to facilitate the trip to Fiji. He is disappointed that there have been

tangible benefits following from the Fiji visit. The Association has not been operational with the participants dispersing to do their own thing. There was no attempt made to develop an SSO type model in PNG, which was one of the objectives of the Study Tour. IFC have not had any large scale investor interest in floriculture development.

Meeting with Anton Benjamin. Secretary Ministry of Agriculture and Livestock (MAL)

We discussed Floriculture in Ministry's White Paper on Agriculture (2005-2014: Toward National Food Security) and in the National Agricultural Development Plan (2007 – 2016)

The White Paper contains the following entry re Floriculture.

Flowers, like many agro-forestry plants, provide fragrance use in pharmaceutical industry to produce essential oils, perfumes, cosmetics, and ornamental decorations. Flower oil marketing is commercially viable in other developing countries when supported with adequate processing and marketing facilities.

Many orchids varieties found in the country are unique to PNG. Each habitat has its own orchid flora. Some species are widespread in areas with similar habitat; while others are confined to very restricted localities. Many orchids have considerable horticultural potential. Repeated sectional and intersectional crossing and backcrossing to generate newer types has almost limitless possibilities.

Policy Statement

The Government shall promote floriculture to supply niche market.

Policy Objectives

- To encourage more participation of individuals and farming communities in floriculture.
- To provide incentives to encourage private sector investment in the floriculture industry.
- To encourage post harvest technology development including preservation, processing and packaging of various flowers for local and overseas niche markets.
- To develop market access for export of native flowers.

In the National Agricultural Development Plan floriculture is included in the as part of Horticultural Crop Development as Objective 5. It states:

To develop the floriculture industry in PNG

Strategies

- Assessment of opportunities, constraints and potentials of the various types of flowering plants for floriculture industry in PNG. This will involve a nation wide survey that was to be conducted in 2007 (yet to be undertaken). K700,000 budgeted in 2007.
- Promote floriculture and capacity building for women and youth in rural and peri-urban areas. This will involve 4 awareness trainings a year per region. K2.05 million budgeted over 10 years, with K250,000 in 2007
- Identify funding sources for reviewing the floriculture industry in 2007 (funding yet to be identified).
- Increased production through establishing regional nurseries and distributing cuttings. The target is one nursery in each region with 30,000 cuttings distributed per year. K400,000 allocated per year over 10 years
- Identify domestic and export markets for the cottage floriculture industry. K300,000 allocated per year over 10 years.

The National Agricultural Development Plan has a total notional allocation to floriculture development activities of K9.75 million, K700,000 included MAL's 2007 Budget. These funds will largely be used to conduct national and regional meetings the PNG Floral Arts Society. A launch was programmed for Sept 2007.

Visit to Ella Beach monthly craft fare and plant sale (July 28th)

There were around 15 put plant and cut flower sellers at this monthly event. For most this was there main market outlet. There sellers reported that they earned K100 to K250 after deducting their entry fee and transportation costs. The sellers were also the growers of the plants and most came from settlements around POM. Some of the sellers were also present along the Sogeri road the previous Saturday. They found the Ella monthly market much more remunerative, with many more buyers present.



9.5 Australia Trip Report October 7th-14th 2007

Meeting Date & Time	Contact	Place
Tuesday October 9 th , 2007 2:00 pm	Jan Hintze Jungle Plant and Flower Farm 89881771	Darwin City

Jan picked me up from the airport and we had lunch on Mitchell St. in downtown Darwin. Jan proceeded to give me an overview of the cut flower industry in Darwin. Within an hour of Darwin there are 15 full time growers and 15 part time growers. Main flowers grown are gingers and heliconias for sale to domestic and export markets. There is also small scale orchid and anthurium production almost entirely for the local Darwin market. There is one major wholesaler who buys from about 12 growers and exports interstate to wholesale markets. He is responsible for about 80 percent of the flowers coming out of Darwin. Jan also exports interstate about three times per week depending on availability of freight space. It is illegal to import gingers and heliconias into Australia to protect the ginger spice industry, so it is a closed market. Darwin and N. Queensland are the primary producers of gingers and heliconias. For the ginger and Heliconia segment N. Queensland does about twice as much as Darwin, main production areas are Cairns and Townsville.

NT Horticulture Association and Cut Flower Group is the industry organization supported by the Australian government, there are 3 industry officers located at Coolinga. Meetings

are held every couple of months and the group works together to develop research projects, share information, sell plants to each other etc.

There are three main markets where growers can sell directly to customers. Only about 5 women sell directly to customers at these markets. Jan explains that conferences are a very unique way to sell flowers, when a conference is going on you approach the group and display your product and then deliver on the day they are leaving. There is usually a lot of people with a lot of money who need to buy presents but don't have much time. It is important that your customers are really interested in flowers if they are going to just buy the cut flowers, good to have communal flower arranging demonstrations at churches, halls etc. Very important is the quality control issues – you must be prepared that you are not going to sell all of your flowers. You might get only one shot with some of these customers and if they are getting poor quality you lost them for life. Jan is attending the Ginger flower festival at Yandina on the Sunshine Coast at the end of January or beginning of February.

Meeting Date & Time	Contact	Place
Wednesday October 10 th 8:30am	DPI Horticulture staff – Megan Connelly, Mark Hoult, Doris Marcsik	DPI JEB meeting room

Megan Connelly – Extension officer

Doris and Mark – Research and Development

DPI has engaged in breeding with Zingibers, Psitocorums, and more recently cucurmas. Breeding program is very interesting with different breeding techniques. The psitocurm basically involved sowing a whole bunch of different seeds and then looking for new traits to come up. The zingiber breeding was more in depth and involved actually crossing parents, the new varieties that were developed were named and licensed under PBR, these rights were then sold to a group of growers which formed a company and it became their responsibility to grow, multiply, market, and sell the plants and to maintain the PBR license. All of the information including costs and structure of this project were made available for our use. Cucurma breeding was done along those same lines and these were primarily for the potted plant sector, they have beautiful colour and could be used as plant hire, in the landscape or sold at plant sale events.

Whether DPI have bred the species or are just introducing it, they do intensive screening and evaluation of the plants. Assessment is based on performance in a particular environment, time of flowering, stem length, vase life etc.

We discussed the possibility of importing materials from Darwin and it became apparent that what we really need is a survey of all ginger and Heliconia varieties that are available in Fiji. Along with the survey could be evaluations looking at size of the flower, keeping quality, flowering season and many other characteristics. This could be done on behalf of the FFC and then all of the information made available to all the growers, this would be very useful if growers are considering importing gingers or heliconias because they might be spending a lot of energy to bring in something that is already there. There is a lot that can happen with quality standards if these are outlined in an informational sheet.

I was also given a list of nurseries and other contacts that will be very useful in developing these ideas.

- David Dow has done a lot of work in Bali to commercialize indigenous orchids and other plants and will be a contact for our PNG work.
- There is a guy named Tony from N. Queensland who has a good tissue culture facility for gingers and other tropicals.

Mark explained that he believes Adeniums would be a very popular ornamental in Fiji and the Pacific. These plants which are native to South East Asia have hundreds of different colours and are easily imported via seed.

Meeting Date & Time	Contact	Place
Wednesday 10 October 10:30am	Diagnostics staff: Brian Thistleton (Entomology), Barry Conde (Plant Pathology), Jose Liberato (Plant Pathology).	DPI BAL Building

The biggest issue with relation to the ornamentals industry is this Fusarium wilt related to Banana that attacks some Heliconia varieties especially 'sexy pink', they think that it is directly related to the genome of this plant. Many Heliconia varieties are not susceptible. We must be very careful when importing heliconias from Australia because chances are that it has the Fusarium. If we can bring them in under TC than we might be alright.

There is also an Alpinia Borer that hollows out the stems. You can tell its damage because the new leaves begin to die off and then the plant slowly dies off. They have a chemical control that has to be applied every week for four weeks in order to make sure and get the insect in all of its life cycle. They are also working on some pheromone trials to control this insect.

Related to our problem of Red Ginger Decline. They suggest a project that looks at all the possible causes with the most obvious first.

- Nutritional deficiencies – potassium
- Pythium spp.
- Nematodes

Some suggestions for addressing each of these possible causes are:

Nutritional deficiencies – potassium

- Analysis of healthy and sick plants through field trials – move some of the sick plants to a new site and see if they still exhibit the same characteristics.
- Analysis through lab tests of the plant matter from a healthy and then a sick plant.
- Plus and minus fertilizer field trials to see how the sick plants respond, use a high potassium fertilizer (banana fertilizer).
- Even if we decide that this is a nutritional problem, there are a lot of trials to be run to determine how much is the right amount of fertilizer, when should we apply it etc.

Pythium spp.

- A lab analysis to isolate and culture it on plates and send it off to a pythium specialist for testing.

Nematodes

- Sampling of sick and healthy plants for the presence of nematodes and then send them off to a nematode specialist.

Meeting Date & Time	Contact	Place
Wednesday 10 October	Scott McDonald School of Science & Primary Industries 89467254	Charles Darwin University Casuarina campus



Meeting with Scott McDonald was in response to the need for skills development in the ornamental horticulture industries in the Pacific. Charles Darwin University in Darwin offers courses in Horticulture from the certificate level right through to a Diploma. Certificate I level covers the basic skills with an intro into the science of soils, propagation, botany etc. When you graduate with a certificate you are termed a skilled labourer. When you enter the certificate II course you specialize a bit and graduates can be termed as horticulturists, this was previously considered the 'trade level'.

What seems to suit our situation in Fiji is a competency based training program. This can be achieved through a series of 'skill sets' which cover the entire range of units necessary to attain a certificate. Each skill set can be offered as needs based training; combining the relevant units to be taught as a stand alone skill set e.g.

Grounds Management, Nursery Management, Cut Flower Production, etc. A participant can attend one skill set related directly to his/her field and receive a certificate of attainment for those units. The other option is to attend all of the skill sets and at the end the participant receives a Certificate II in Horticulture from the respective University or training provider.

It is assumed that this training program will be short term with an emphasis on capacity building in the area of ornamental horticulture. Thus, faculty from the Fiji College of Agriculture, USP, and staff of MAFF will be encouraged to attend. This foundation of training will equip its participants with the skills to advise, implement, and eventually instruct other members of the industry.

A potential framework for such a project is as follows.

- A training provider is identified that has the appropriate staff to deliver horticultural training with an emphasis on tropical ornamental production. The staff must be equipped to handle the unique cultural classroom dynamics. Possible providers identified through this trip were Charles Darwin University located in Darwin and North Queensland Institute of Tafe based in Cairns. There is also a range of private training providers that might be suitable for such a project.
- The certificate program will be run as 'skill sets' with 4 units of competency covered in 4-5 training blocks, each lasting around two weeks.
- Training blocks can be offered at different sites depending on the focus of the units e.g. Cut Flower production can be at SSO in Nadi, Grounds Mngt can be at a resort on the Coral Coast etc.

Meeting Date & Time	Contact	Place
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Thursday 11 th October 8:30am	Evert, Ironstone Lagoon Nursery	Berrimah
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Ironstone is a large retail and wholesale nursery supplying a diversified range of plants from over 1000 species. Of particular interest was the potting soil that this nursery used. A range of ingredients were brought on site including composted green waste from the city municipal dump, river sand and coco peat. An old cement mixer was used to blend these ingredients which were then steam sterilized inside of the mixer. This type of soil sterilization is part of a set of best practice package that many of the nurseries in Australia adhere too.

Also of interest was one of the types of potting bags used by this nursery, these bags were thick woven plastic (like our rice sacks) with handles on either side, there were some with round bottoms and some like the traditional PB bags used in Fiji. These were preferred by the nursery in many cases because they were easy to lift (either by hand or machine) and also easy to ship and store. A couple of brands and suppliers were recommended to me.



This nursery has had some recent dealings with resort developments in Dubai however there have been problems with plant brokers and owners which has meant that there are a lot of plants grown for the development that might not be shipped.

Shadehouse construction at this nursery was of several styles, one being the hoop house and the other being similar to the type of construction used in Fiji for cut flowers. A few little alterations make this design unique and long lasting.



Meeting Date & Time	Contact	Place
Thursday 11 th October 10:00am	Ian & Irene Hennessy, Hennessy Flowers	Elizabeth Valley

Ian has set up a tissue culture lab in a modified shipping container on his Elizabeth Valley property. The facility is well equipped and has had considerable investment in terms of time and money. The initial concept for this facility was to propagate new cut flower cultivars for distribution to other growers. The lab has been going for about 3 years now and Ian has been successful in propagating gingers and one type of Heliconia. The plants he has propagated in TC have grown out and are healthy full size plants. Up until this point he has primarily been concerned with proving that the technology does work at his facility. Ian is now interested in taking orders for small amounts of high quality plants.



Ian and Irene’s ginger and Heliconia farm is very well maintained. They supply one main wholesaler who buys 3 times a week and will take anything they can supply, the quality standards of these flowers are very high. This wholesaler purchases about 80percent of the flowers produced in Darwin. Along with the wholesaler, Ian and Irene also sell to one local florist, one person who goes to the Saturday market, and several shops and business houses as ready made arrangements.

The ginger and Heliconia beds are well maintained with a ride on mower for in between the rows. All of the plant material that is cut is left in the rows to serve as mulch and compost. Ian attributes the good organization of his farm to the wide spacing that he uses. There are very few problems that they face except the occasional sun scorch or chilling injury characteristic of this dry tropic climate.



Ian has a wide range of Heliconia varieties that do very well at this site. Ian likes the darker colour varieties because they do not show scratches and damage as easy. The claws are the hardiest of his plants. Heliconia ‘Richmond Red’ is a beautiful dark red variety that has a very superior flower, I don’t believe that this variety is in Fiji.

Meeting Date & Time	Contact	Place
Thursday 11 th October 1:30am	Darryl South, Darwin Plant Wholesalers	Lambell Lagoon

This is the largest nursery in Darwin. They have and incredible system for shipping plants to states around Australia. Currently about 70percent of sales are made out of Darwin with the remaining 30percent to the local market. DPW is strictly a wholesaler.

The potting mix used is made up of coco peat (imported from Sri Lanka), river sand, and peat. The nursery is very well mechanized with potting machines, this is necessary

because there is a real shortage of labour in this area. The farm is about 40 minutes drive from Darwin City.

Of particular interest at this nursery was the wide range of frangipani varieties for sale. Frangipani is this nursery's single biggest product. Many of these varieties have been imported with assistance from DPI and some have even been bred in Darwin. Daryl has been very creative in getting these plants and then renaming them and marketing them with this new name, there is a "Darwin Series" that is very popular in the southern states. This year DPW has sold between 80,000 and 90,000 frangipani plants alone.



The production technique for frangipani was described to me as follows; Cuttings of about 3-4 inches are taken from dormant mother plants around June or July. These cuttings are then held in a cool shady place with paper wrapped around them for about 3 days. It is important to get the sap to stop flowing however you do not want them to dry out too much. The cuttings are then planted into a very well drained mix and watered regularly. These plants will then flower around October and can be sold flowering or grown out for a season and sold the following year a little bit bigger.



Daryl also recommends the use of the woven plastic bags for certain situations; he gave the following contact for sourcing these bags and a range of other products:

- Steve Turner, Wongara Horticulture, Perth, 93025200

Meeting Date & Time	Contact	Place
Thursday 11 th October 3:30am	Simon Smith, The Plantsmith, 0408897059	Howard Smith

Simon's business is based primarily on potted colour. He brings in plugs from Queensland and then grows them out and sells to the retail outlets. His primary plants are: catheranthas, turinia, marigold, impatiens (New Guinea), gerberas, begonias, coleus etc. He said that he purchases around 500 plugs for \$30 from N. Queensland. He also recommended a number of plants that he believes we should look into.

Simon is one of the growers who was given the cucurmas from Doris and is supposed to be propagating them and releasing them to sell. He said that he is having trouble getting someone who will tissue culture them.

Simon is president of the NT Nursery Association, he suggested that we become members of this association. He gave a catalogue of grower and supplier names in Australia for further contacts.

Meeting Date & Time	Contact	Place
Friday October 12 th 2007 8:30am	DPI Horticulture, Pathology and Entomology staff – Megan Connelly, Mark Hoult, Doris Marcsik, Brian Thistleton, Barry Conde, Jose Liberato	DPI JEB meeting room

In this meeting we attempted to wrap everything up and address any remaining issues. Barry Conde from the plant pathology department expressed his interest in being part of a team to explore the possible causes of red ginger decline. He has recommended a 3 year project to examine all possible causes; nutritional, pythium, root knot nematode. He has proposed his contribution as 3 weeks per year for 3 years. We discussed the process for implementing this project and tied it into nutritional work that Mark and Megan have been involved in with Alpinias.

We then discussed some possible structure set ups for the FFC using lessons learnt from the Australian experience. It was recommended that we work towards combining the cut flower and nurseries into one association at least in the early stages. They expressed their opinion that a paid secretariat was the only way to proceed; this secretariat would create a new face for the association and umbrella everyone (commercial growers and hobbyists). With relation to the Government and their involvement, they suggested getting what we can and then tell the government exactly what you are going to achieve in one years time (make it realistic) and the go for it, a success at this level will make them take the FFC seriously.

Among the many things that are proposed for the FFC it was clear that they should work towards getting sound information for the crops and varieties that are grown. The DPI has done this kind of work and calls them CDL's (crop description lists). This baseline information is made available for any growers who are interested. In particular a survey of the gingers and heliconias found in Fiji with some basic evaluation i.e. flowering times, stem length, vase life etc.

There are also many production practices known as 'best practices' that are common to cut flower and nursery production, these can be outlined and prescribed to all members of the FFC.

Meeting Date & Time	Contact	Place
Friday October 12 th , 2007 2:00pm	Jan Hintze, Jungle Plant and Flower Farm, 89881771	Lambell Lagoon

Jan's farm at Lambell Lagoon is on a property of 20 acres. The land was formerly a commercial nursery however Jan now uses it to grow gingers, heliconias, costus and cucurmas. Currently there is about 10 acres under production.

Touring the farm you are continuously surprised at all the different colours and varieties of flowers grown. Jan has 8 different torch gingers all of different colours from white to dark red and all the pinks in between. Jan explains that each of these varieties has a vase life of atleast 10 days. I saw another unique Alpinia called *A. spisiosa* that has bell shaped flowers and takes on its most attractive appearance when the outer bracts are carefully pulled back. The main foliage that Jan grows is *Alpinia galangal* which is primarily grown as a spice however it also has an incredible vase life and the leaves do not curl. Another unique ginger was the tulip gingers which look like the torch ginger except they do not open. Jan grows a range of 'beehive' or 'shampoo' gingers with colours ranging from white to dark chocolate. Some of these beehive gingers are closed bract varieties and

therefore will never open. Jan explained that the best way to determine maturity is when the day flowers are coming out on the third and fourth bracts.

Helionias is Jans real passion and this is very evident in the huge range of colours and sizes. A variety called *H. orthotricha* is very unique and not widely available in Fiji, if available at all. *H. orthotricha* comes in many colours and combinations of colours and is a very strong, clean looking flower that can have up to 10 bracts and span more than one foot wide. Jan recommends these flowers be developed in Fiji as they are a favourite of the wholesalers and street marketers. Claws remain the primary Heliconia that Jan grows and she usually sells them with 3-4 bracts open. Other heliconias that really stood out were a pink claw variety, a flower called 'hot rio night' which twists in a serpentine fashion and has a really unique appearance. Jan has observed that some varieties of heliconias that twist in this serpentine fashion can be encouraged to do so by the addition of a high N fertilizer. Jan suggests that this contortion is a result of the hybridization of upright and pendulum varieties, these flowers are very unique and would stand out well in hotel and office arrangements. *H. bourgeana* is another variety that is worth mentioning; this flower is a true red and has unique cup shaped bracts.



The other secondary crops grown at Jan's farm were the cucurmas and costus. Cucurmas were one of the crops that Doris from DPI has been breeding and Jan has a collection of these hybrids. There is also an indigenous cucurma that is very beautiful. In the conditions in Darwin all of the cucurmas go dormant during the dry season which is also their winter. As the wet season starts to roll around, October-November the cucurmas start to come up again. Some of the varieties will flower before they get any foliage, other varieties will get some foliage and the flower. Doris was initially breeding these plants to use as cut flowers but has found that they have great potential as potted colour and in landscapes. The costus is a small flower that grows on canes in a similar fashion as alpinias, the flowers will either open or remain closed looking like a strawberry depending on the variety. Costus also have quite unique foliage, especially near the top of the growth where some of the colour from the flower also appears in the leaves.



Many of the Heliconia varieties that are present at Jan's farm are the result of seed brought into Darwin and grown out. There is an incredible amount of variation when growing heliconias from seed and this is one of the reasons that the growers in Darwin have so many unique varieties. Jan shared the basics of propagation of heliconias from seed beginning with collecting, germinating and growing out. Jan reckons that most Heliconia varieties will germinate from seed in about 6 weeks with some taking as long as 14 months, from germination to first flowering is about 2-3 years; these figures were confirmed by Ian Hennesey and Doris.

With regards to production, harvest and postharvest handling there were some great lessons learned,



although there are many practices that will not directly apply because the climate is quite different in Darwin to that found in the South Eastern parts of Viti Levu. Jans whole business is focused around quality control, she believes that every flower has to be of the highest quality whether it is for shipping interstate or sold at the local market. This was reflected in the flowers being held in the geodesic dome that is her packing house, there was great uniformity in maturity, height and overall appearance. Jan also practices heavy mulching with the parts of the plant that she does not remove for sale. Almost all of the cleaning of dead leaves and excess plant matter is done in the field and everything is left there, this provides a layer of mulch and helps to return the nutrients in the plant matter back into the soil.

Meeting Date & Time	Contact	Place
Saturday October 13 th 2007 7:00am	All flower and potted plant vendors	Parap market

The Parap market is the largest street market in Darwin. There are a wide range of vendors selling fresh produce, hot food, handicrafts, and ornamental plants. In total there were seven plant vendors at the market; four selling potted plants exclusively and three selling cut flowers and potted plants.

The potted plant vendors had a range of common and exotic ornamentals not much different than what is sold by Fiji growers. A few differences between the potted plant vendors in Darwin and those in the Pacific were that they did not just have one of any type of plant, there was always 4-5 of a particular plant type. The second major difference was the selling price of the plants, at the Parap market plants started at \$1 and went up to \$50 for a flowering orchid. Generally the plants sold at the market in Darwin were much less expensive than those sold in the Pacific.



Cut flowers were sold at the Parap market as individual stems or in bouquets. There was a wide range of Heliconia types available, especially at Jan Hintze’s stall. The maturity and quality of the flowers for sale was very uniform throughout the market and of a high standard.

There was only one vendor with orchid cut flowers and plants. He is relatively small scale and supplies just the local Darwin market. His primary income earning activity is importing TC dendrobium orchids and growing them out for sale as flowering plants. He sources all of his dendrobium orchid material from Thailand and reports that they are very consistent and cheap.



9.6 Workshop Final Report



9.7 SPC/ACIAR Workshop on Developing the Ornamental Horticulture Industry in Fiji

20th August 2007

Main Hall at Butt St .Church. Suva Fiji

9.7.1 Overview

The workshop was attended by 58 people representing various sectors of the Fiji Floriculture Industry. A complete list of the participants and the organization they represent is provided as annex 1. The workshop was officially opened by Mr. Sakiusa Tubuna, the Chief Economist from the Ministry of Agriculture (MAFF). Mr. Tubuna expressed his appreciation for the initiative taken to develop this industry and pledged the full support of MAFF in pushing this industry forward.

The agenda for the workshop is provided as annex 2, in total there were 9 speakers. A primary focus of the workshop was to present the findings from the ACIAR Scooping Study on the Income Generating Opportunities: Fiji Case Study, this report was well received by the participants. The general comments from the floor were in support of the conclusion that the real potential for developing the Fiji Industry lies in the domestic tourist and non-tourist market.



The findings from the Survey of Tourist Industry Operators were presented and discussed in depth. There was particular discussion from the floor regarding this matter as several of the private sector participants have been trying to engage the hotels with floriculture



products for the past 12 years with very little success. The Managing Director for Tadra Flowers supported the findings of the survey and added that their experiences with regards to hotels and payment was credit of 60-90 days or greater. He also supported the conclusion that unless the industry offers the hotels something that they cannot do themselves there is very little room for growth. This is highlighted by Tadra Flowers sales to hotels of dendrobium orchids and anthuriums only as requested by their guests. The hotels have not been able

to effectively and efficiently produce these cut flower types on their own premises. When opened up to the floor, there were several suggestions made about how we could 'crack the tourism sector', all of these suggestions revolved around a body that acts on behalf of the industry with adequate time and financial resources to implement these strategies.

The discussion of what plants are suited to Fiji's conditions was particularly well received by the participants. There was real interest in the prospect of growing roses in Fiji. Mr. Burness, who presented on this subject, brought forth the results of a feasibility study done on rose production in Fiji. The report generally said that it was not feasible to do commercial scale rose production for the export market; however, with the right variety Fiji might be able to produce adequate roses for the domestic market. Participants, including florists and flower arrangers were excited about the prospect of more affordable roses, however, Mr. Burness made a point that these flowers would not be the same calibre as export types and that the industry would have to change its perception of the rose in order to fully adopt this product.



There was also great interest raised about the possibility of importing new varieties of ornamental plants. Mr. Burness stressed that people are always looking for something new and will be willing to pay dearly for new or exotic flowers/plants. Photos of new varieties of bromeliads including Guzmanias were shown to the participants and were received with great enthusiasm. These plants were described as being very well suited to the potted plant hire business. Finally, new varieties of gingers and heliconias not available in Fiji were displayed in photos and ignited great interest from growers, florists and flower arrangers. Gingers and heliconias are the backbone of the floral art segment of the industry and make up the majority of floral displays. The prospect of importing some of these new varieties would have an impact on many small businesses.

The representatives from Fiji Quarantine and Plant Protection were well received and their presentations were informative. The discussion that followed was very productive in that there were questions from the floor and answers from the representatives. A few participants took the opportunity to voice their complaints regarding the inefficiency of the government services; the response from the presenters was cordial. An important point that was raised was that these government services were there for the industry however many of the activities, such as facilitating importation of new planting materials, were time and resource consuming and therefore not feasible to undertake for every 'backyard grower'. It was therefore recommended that a body representing the industry consult with the stakeholders and engage the government agencies with requests that are viable and represent the interest of many stakeholders.



The dynamic presentation of Marika Tuiwawa, Curator of the Regional Herbarium, was a highlight of the workshop. Mr. Tuiwawa pictorially described that potential that lies in Fiji's native plants. These plants have limited potential in the domestic market just as they are, however, according to Mr. Tuiwawa there is unlimited potential when these plants are used in breeding programs and CITES approved for export. Mr. Tuiwawa identified many orchid and other species that he believed were well suited to this type of development. He also identified the lab at SPC, Suva and another in New Caledonia that could be possibly facilitate such work.

In the final discussions of the day it was endorsed by the participants to reactivate the Fiji Floriculture Council (FFC) and make it more commercially orientated. It was also endorsed to pursue funding for a small secretariat that would allow the FFC to actively pursue the priorities of the Fiji industry.



Participant List

SPC/ACIAR Workshop on Developing the Ornamental Horticulture Industry in Fiji

20th August 2007 Main Hall at Butt St. Church Suva Fiji



Name	Organisation
Mike Waters	Tadra
Ana Roseville	Florist
Agnes Balawa	Palm Court Florist
Ula Tiko	Florist
Aileen Burness	SSO
Don Burness	SSO
Debbie	SSO
Lily Powell	Grower
Maureen Chang	Grower
Pelenaisa Luma	Grower
Lori Morris	Grower
Sue Clark	Grower
Sala Derenalagi	Grower
Verona Lucas	Grower
Ana Mackenzie	Grower
Dr Laisa Naivalulevu	Grower
Ropate Ligairi	Fiji College of Agriculture
Paula Waqainabete	MAFF Fiji
Sakiusa Tubuna	MAFF Fiji
Name	Organisation
Ateca Cakautini	Quarantine
Ravi Shankar	Quarantine
Moti Lala	Plant Protection KRS
Losalini Toganivalu	Plant Protection KRS
Savenaca Nacanitaba	NCSMED
Mitchtoshi Yagita	NCSMED
Mary Taylor	SPC
Eddie Stice	Fruits of the Earth
Steve Yam	Hop Tiy
Kalara McGregor	Koko Siga Landscapes
Shanti Devi	SOHC
Milika Vuli	SOHC
Sera Tupua	SOHC
Losana Naulumatua	SOHC

Seini Duri	SOHC
Fane George	SOHC
Prem Andrews	SOHC
Manowar Gounder	SOHC
Teresa Manuel	SOHC
Satya Singh	SOHC
Elizabeth Pickering	SOHC
Lavenia Padareth	SOHC
Adi Koila Nailatikau	SOHC
Name	Organisation
Andrew McGregor	Koko Siga
Adi Matai McGregor	Koko Siga
Timote	Grower
Kyle Stice	Koko Siga
Reapi Masau	SPC
Bale Venilove	Koko Siga



SPC/ACIAR Workshop on Developing the Ornamental Horticulture Industry in Fiji

20th August 2007



Main Hall at Butt St. Church. Suva Fiji Phone: (679) 33 05 844 Fax: (679) 33 05 668

9.8 Agenda

Time	Activity	Presenter
0830 – 0900 Registration		
0900 – 0915	Official opening	Sakiusa Tubuna Chief Economist MAFF
0915 – 0930	Role of SPC and regional partners in developing ornamental horticulture in the region	Mary Taylor (SPC)
0930 – 1000	Overview of the report – Where have we come from and where are we headed?	Andrew McGregor (Scoping Study Coordinator)
1000 – 1015 Discussion		
1015 – 1045 Coffee / Tea Break		
1045 – 1115	Status of the Fiji Industry – A small industry with a large number of participants. Survey of hotel operators	Kyle Stice (Horticulture researcher)
1115-1140	Linking floriculture with tourism – A report on a recent visit to the Hawaii industry	Aileen Burness
1140 - 1200	What plants are suited to our conditions	Don Burness (Horticulturist)
1200 – 1230 Discussion		
1230 – 1330 Lunch		
1330 – 1400	The potential of Fiji's native plants – Love them or lose them	Marika Tuiwawa (Curator – Regional Herbarium)
1400 – 1415	Our pest and diseases status	Losalini Toganivalu (Senior Research Officer, Plant Protection)
1415 – 1430	The role of Quarantine in assisting and protecting the Fiji industry	Mere Salusalu (Fiji Quarantine and Inspection Service)
1445 – 1515 Coffee / Tea Break		
1515 – 1600	The way forward	Andrew McGregor (moderator)