

# **The Market for the *Chamaedorea* Palms in North America and Europe:**

Opportunities for sustainable management and green marketing  
of the resource with improved benefits for local communities

by

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## Executive Summary

The Chamaedorea palm family is a large family of palms which generally grows in the under story of tropical forest throughout Latin America. It is an easily reproduced, shade tolerant species which is valued in the floral and horticultural industries for its size and shade tolerance which has earned it a steady market for potted plants for interior decorating and palm fronds for floral displays and a peak in demand during the Easter and Palm Sunday Holiday seasons.

The Chamaedorea palm family is presently very well established in international markets. The existence of this market that can be expected to remain fairly constant into the future appears to be contributing to the maintenance of the forest areas where the palm products are gathered. At the same time, the availability of the palm for harvesting from the wild and its market price have maintained production primarily in natural forest areas with some recent movement towards cultivation under tree or forest shade. Nonetheless, there have also been reports of reductions in wild populations due to over harvesting and primarily through habitat destruction.

According to published reports the gathering of palm fronds is an important source of income for many individuals and communities. This has led to the preservation of forest areas which shade the palm but has also led to the previously mentioned over harvesting. To be able to maintain and enhance the position of the palm as an important income generating activity and also to maintain its function in protecting natural forest areas, certification may be an option. By tying certification to production in natural forest areas as well as offering market premiums for forest gathered sustainable production, the production may improve both environmental and economic conditions in the natural areas and communities where it grows and is harvested by members of the local communities.

The palm family could be a candidate for certification efforts if the cost of certification is reasonable or can be covered by any premium paid for certified products. To do that requires identifying potential markets for certified production, or perhaps more important is attention to the quality of the certified production. More information is needed on the specific market sectors that might demand certified production and the costs and potential premiums available through certification. Attention must be given to the costs since certification costs have often been borne by producers in the past with no premiums in the marketplace.

There may be opportunities for marketing certified palm products in the US and Europe. In the US the principal markets may be niche markets since the floral industry has not pursued certified production, while in Europe there appears to be a growing market for certified products in the floral industry. Certification could be channeled through the existing certification efforts in Europe while specific niche markets are approached and explored in North America.

To be able to promote a program of certified palm production would require further exploration of specific markets for certified production and the identification of palm producing areas/communities that meet the basic tenure, chain of custody requirements for certification. In addition the information on the sustainable management of Chamaedorea species needs to be synthesized and any information gaps need to be addressed.

# The Market for the *Chamaedorea* Palms in North America and Europe: Opportunities for sustainable management and green marketing of the resource with improved benefits for local communities

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## Introduction

***Chamaedorea*** - Greek words for "dwarf/near the ground" and "a gift"<sup>1</sup>

The Greek meaning for *Chamaedorea* points to characteristics that have made palms of the genus popular in both the floriculture and horticulture industries. Highly ornamental and of a variety of species, their small size relative to other palms is appropriate, as a potted plant, for interior applications while, in the floral industry, they provide a good background for larger floral displays as well as being the palm of choice for Palm Sunday and Easter. Their low growing "near the ground" habit makes them especially appropriate for interior low light applications. This same habit and requirement for low light "shaded" environments has contributed, and may continue to contribute, to the maintenance of the forested areas from which seed and palm fronds are harvested.

Nonetheless, the same popularity of the palms has, according to some sources, led to the over harvesting of the palm and a decline in populations. This, combined with habitat destruction, has raised concerns about the long-term sustainability of the wild populations of *Chamaedorea spp.* The decline and loss of those populations carries with it an environmental and ecological cost as well as the loss of an important source of income for the farm families and communities that use palm gathering to generate income to complement their other productive activities.

This study explores the market for the different palm products, documenting the magnitude of the market, trends in the market, prices and margins along the supply chain and opportunities for green marketing and market and policy tools to reduce environmental impacts and enhance socioeconomic benefits at the local/producer scale. The study was limited to the North American and European markets (a parallel study was carried out in Mexico) and therefore will not directly address the contribution of the market for palm products to local livelihoods in the producing countries except through references found in the literature but will suggest ways that the existing market could make a greater contribution to local livelihoods in the producing countries.

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<sup>1</sup> What's in a (Botanical) Name? (© 1999, Robert Lee Riffle)  
[http://www.iconx.com/html/riffle\\_botanical\\_glossary.html](http://www.iconx.com/html/riffle_botanical_glossary.html)

The principal sources of data for this study were: 1) a review of published government documents and databases on trade statistics; 2) personal and phone interviews with wholesalers and retailers; 3) a mail or survey of retailers and wholesalers to explore their use of the palms and knowledge of green marketing; 4) review of relevant cases of certification and green marketing of non-timber forest products and information gathered from groups directly involved in efforts to certify non-timber forest products. A trip was made to Texas and Florida to meet with major importers/wholesalers of seed and palm fronds and visit nurseries producing seed and potted palms for the nursery/interior landscape industry.

## General Information

The genus *Chamaedorea* includes over 100 different species and the trade names assigned different species are specific to the particular industry in which it is used. The nursery industry because it is involved with the growing of the palms generally uses commercial names but also uses the associated scientific names. But the floriculture industry generally uses trade names which may or may not be related to the specific species used, often assigning different names to different sized examples from the same species and also working with a relatively small number of species.

The genus and the species most commonly used in both industries have biological/physical characteristics that recommend them for specific uses and, at the same time, have tended to make it more financially beneficial to produce many of the traded products in Mexico and Central America under natural shade conditions. There has not been an effort to move production into artificial shade conditions in Mexico although there has been movement to cultivate the palms under natural forest shade, a factor that has probably protected some forested areas from changes in land use. The cultivation of the palm to supply a growing market presents challenges and opportunities for “green” trade initiatives.

### *Species used*

#### **The Cut greens Trade**

There is a great deal of variation in the trade names used for the *Chamaedorea* palms in the cut greens trade. Commodore is the generic trade name used to describe all Latin Greens possibly coming from the Mexican “Camedor”. Latin Greens should be distinguished from greens of other origin (e.g. Florida, Western). Trade names have become commonplace based on the various physical features of different species. Jade, Emerald, and Teepee describe wide-leaf, medium- to narrow-leaf. It is likely that the wide leaved greens are *C. oblongata*, while the medium leaved greens are probably *C. elegans*, while the narrow leaved greens “tepe” are most likely *C. tepejilote*. Although other species are probably involved in the trade, *C. elegans* and *C. oblongata* seem to be the most common. Table 1 provides a list of some of the common and scientific names used for different species.

Continental Greens, one of the largest importers of cut greens has three varieties with wider and shorter leaves which go by the names of Medium (narrow), Wide (long) and Wide (regular) the term wide referring to the width of the face of the leaf. They also have a Jumbo (Chiapas), Jumbo (Regular), Giant (Narrow), Mayan and Tepe, all with narrower and longer leaves. Moore Greens has a different set of names (see box on the next page). Simpson’s Greens of Florida,

who import greens exclusively from Guatemala, sells Jade and Emerald, Jade being the shorter, wider leaf and Emerald being narrower and wider.

### Box 1 - Use of *Chamaedorea* in the Floral Industry

**Jade** is a wide-sized shiny light-green leaf of about 6" to 10" long and 1-1/2" to 2-1/4" wide at about two-thirds the distance from the stem and then an abrupt taper at the tip of the stem. Stems have alternating leaf patterns (left, right, left) with the top two merging as a single co-joined leaf. Overall height is about 18" to 24". Cut and banded in bunches of 25 stems. Delivery and post-harvesting may cause some stems to be removed from bunch. Pricing is based upon a 20 stem bunch allowing for some dumpage. There is a *very poor market* for this product in the Detroit market. Attempts over the years have never worked out well as this product has the **lowest shelf life of the three**. We have no historical data in our files at this time. It is no longer on our price list, however it is listed on the web-site as we do have a source for this item. It has probably been over ten years since the last time a sale for made from our shop.

**Tepee** is a narrow-sized dull-dark-green leaf of about 8" to 12" long and 3/8" to 3/4" wide at about one-fourth the distance from the stem and then a gradual taper at the tip of the stem. Stems have alternating leaf patterns as above with a similar co-joined leaf top. Overall height is about 22" to 34". Cut, banded, and priced as above. There is *modest demand* for this product as it serves to give strength or stiffness to its use in floral arrangements. Due to the nature of slim leaves, this characteristic thus prohibits high demand.

**Emerald** is a medium-sized medium-green leaf of about 8" to 12" long and 1" to 2" wide at about one-fourth the distance from the stem and then a gradual taper at the tip of the stem. Stems have alternating leaf patterns as above with a similar co-joined leaf top. Overall height is about 22" to 32". Cut, banded, and priced as above. There is *high demand* for this product as it gives fast cover economically as used in floral arrangements and is more lacy and flexible than that of the stiff Tepee. Some customers that are of larger size do indeed purchase case quantities at times. But with Michigan retailers receiving wholesale deliveries on a daily basis, why stock up their coolers. Dun & Bradstreet show us at 54 turns per year on inventory. We handle fresh flowers, foliages, supplies, and for Christmas time wreaths and garlands.

All three of the above mentioned products come from Mexico primarily. They are also available from Guatemala, and other Central American countries. In Mexico, it is predominantly from the Chiapas area. .

Source: Steven Moore, Moore Greens

**Table 1 – Common and scientific names of Chamaedorea species used in the Foliage**

Common Name	Species	Country	Source
Xate	<i>C. oblongata</i> <i>C. elegans</i>	GT	Morell (1990)
Palma xiat (Hoja ancha)	<i>C. oblongata</i>	MX	Unknown
Palma xiat (Hoja angosta)	<i>C. seifrizii</i>		
Camedor	<i>C. spp.</i> , <i>C. elegans</i> has greatest demand	MX	Sanchez-Marcelino
Palma camedor	<i>C. elegans</i>	MEX	INIFAP, Manual para la produccion de P. Camedor,2000
Xate hembra	<i>C. elegans</i>	GT	Robles-Valle, 1999
Xate macho	<i>C. oblongata</i>		
Cambray	<i>C. erumpens</i>		
Xate	<i>C. elegans</i>	GT	Marmillod, 1997
Jade	<i>C. oblongata</i>		
Camedor, Palma camedor, Cambray negrita, Palmilla de hojas angostas, Palma fina, Tepejilote, Xiat (Chiapas, GT)	<i>C. elegans</i>	MX	Red Mexicana de Germoplasmo Forestal IV, Ficha tecnica #10
Palmilla	<i>C. radicalis</i>	MX	Olivo, et. Al., 1996

**Source: Prepared by author**

### **The nursery industry**

Although potted plants often have common names, the industry buys and trades seed and vegetative material by species. According to a report on the California market by Hodel (1988), 99% of the total number and 85% of the total value of Chamaedorea in Horticulture is found in two species, *C. elegans* and the *C. seifrizii* complex<sup>2</sup>. *C. costaricana* is the third palm listed by Hodel in his study but with a much lower volume than the other two.

Although produced in much lower quantities, there are a number of other palms that are produced for the Nursery industry. The Florida Nurserymen and Growers Association which lists most of the major producers in the state lists a total of 9 species of Chamaedorea offered at the wholesale level. Hodel (1988) lists a total of 15 species in his report on Chamaedorea production in California. Edmondson's (1989) study of the Florida Nursery Industry listed 15 species. Table 2 lists the species mentioned in those sources. The list of species varies but the principal species remain the same.

### **Physical/biological characteristics influencing trade**

The palms of the Chamaedorea genus used in the floriculture and horticulture industry have characteristics which make them popular and which, combined with the markets, may help them contribute to a more sustainable use of the resource. In addition, those characteristics, combined

<sup>2</sup> The *C. seifrizii* complex is *C. seifrizii*, the Florida Hybrid (*C. seifrizii* x *C. erumpens*), and *C. erumpens*.

with market forces, appear to have led to the preservation of areas of their natural habitat and guaranteed that the production of palm products has continued in their natural areas of occurrence providing opportunities for income generating activities for local communities.

**Table 2 – Chamaedorea palm grown in nurseries in California and Florida**

<b>Edmondson, 1989 (Florida)</b>	<b>Florida Nurserymen and Growers Association (2001)</b>	<b>Hodel, 1988 (California)</b>
<i>C. elegans</i>	<i>C. elegans</i>	<i>C. elegans</i>
<i>C. seifrizii</i>	<i>C. seifrizii</i>	<i>C. seifrizii</i>
<i>C. seifrizii - Florida Hybrid</i>	<i>C. seifrizii - Florida Hybrid</i>	<i>C. seifrizii - Florida Hybrid</i>
<i>C. amabilis</i>	<i>C. cataractarum</i>	<i>C. cataractarum</i>
<i>C. cataractarum</i>	<i>C. erumpens</i>	<i>C. costaricana</i>
<i>C. costaricana</i>	<i>C. hooperiana</i>	<i>C. elatior</i>
<i>C. ernesti-augusti</i>	<i>C. microspadix</i>	<i>C. ernesti-augusti</i>
<i>C. erumpens</i>	<i>C. radicalis</i>	<i>C. erumpens</i>
<i>C. glaucifolia</i>	<i>C. humilis</i>	<i>C. metalica</i>
<i>C. metalica</i>		<i>C. microspadix</i>
<i>C. microspadix</i>		<i>C. neurochlamys</i>
<i>C. radicalis</i>		<i>C. oblongata</i>
<i>C. stolonifera</i>		<i>C. potchutlensis</i>
<i>C. tenella</i>		<i>C. satorii</i>
<i>C. tepejilote</i>		<i>C. tepejilote</i>

**Uniform growth characteristics from seed gathered in the wild**

As one nursery owner commented, *C. elegans*, the most widely cultivated palm for the nursery industry is fairly simple to produce. Seed gathered from wild populations, as long as it is cleaned and has the poor seed removed, will produce plants with uniform growth, shape and form. With that kind of performance from wild seed, there is little incentive to do any selection of seed and develop seed orchards to produce a uniform product that the market requires. Although this increases the pressure on wild populations for seed collection, it also discourages moving seed production under artificial shade in seed production farms as has been the fate of many non-timber forest products. Because the seed is harvested from natural forests, it provides local communities a motivation to maintain the forest because it is a source of income for them.

**Seed production dynamics**

As was previously mentioned, the most popular species of *Chamaedorea* in the nursery industry is *C. elegans* accounting for approximately 97% of the *Chamaedorea* production in California (Hodel, 1988). *C. elegans* is insect pollinated (Marshall, 1989)(Guerra, 2001) and therefore cannot be produced outside of its naturally occurring ecological zones unless it is hand pollinated, an expensive process. This makes gathering seed from wild populations in its natural habitat, or at the least its area of natural distribution, the most economical means of supplying seed to the nursery industry. This again puts pressure on natural populations but provides further incentive to preserve the forest that is the natural habitat of the species.

Edmondson (1989) mentions that in 1988 there were already efforts to cultivate the species in Mexico and a personal conversation with the Guerra family who are one of the original and largest importers of seed, confirmed that both farmers and larger scale producers are establishing *Chamaedorea* plantings for seed and foliage production but under forest or tree cover. This is further supported by numerous accounts of projects in Mexico promoting the cultivation of *Chamaedorea* as an income generating option for rural communities primarily for foliage production.

In contrast to the case of *C. elegans* is *C. seifrizii* which is wind pollinated. Much of the seed used for the nursery industry now comes from plantings growing in nurseries and very little from Mexico or Guatemala. Bernecker's nursery in Homestead, Florida has a seed orchard from which they produce all of the seed they require. *C. seifrizii* is their specialty.

### **Complementary seed and foliage production**

According to the Guerra seed business, the producers they deal with produce foliage for the floral industry also harvesting seed for the nursery industry providing two sources of income from their plots. The Guerra's didn't have much information on the foliage harvest since they only deal with the seed. They did mention that they had problems in the past because while producers harvested the palm fronds they often cut the stem carrying the seed. To remedy this, they had given the producers "twist-ties" to tie the seed stem to the main stem of the palm to keep it out of the reach of foliage cutting.

### **Production costs for seed and foliage**

The combination of low costs for seed and foliage production and a relatively low market price for *Chamaedorea* palm products has tended to maintain the production of the palm products under natural forest conditions. For other floral crops much of the production that once may have been carried out under natural shade conditions has been moved into artificial shade conditions. In the case of *Chamaedorea*, this has not happened and is probably not likely to happen in the near future because of production costs. Continental Greens does maintain production farms in Mexico where the palms are produced under tree shade. (Continental Greens, personal communication)

### **Low light requirement**

The low light requirements for *Chamaedorea* palms has made them attractive for interior decorating businesses and also requires that they be produced in a shaded/forest environment. In guides for plants for interior decorating the *Chamaedorea* species are recommended for interiors with low light conditions and are used extensively for that purpose. Their natural occurrence under low light conditions in forested areas contributes to the permanence of forest cover in areas where the foliage and seeds are harvested. The seed and foliage production provides an incentive to local communities to maintain the forest. This incentive could be increased through certification as long as there would be an increase in benefits to the local communities doing the harvesting. If the effect of the costs of certification were reflected in lower costs paid to the individuals and groups doing the harvesting, they would be less likely to maintain the forest.

### **Response to heavy harvesting (*C. radicalis*)**

Evidence from research on the response of *C. radicalis*, although not yet conclusive suggests that the response of the palm to heavy harvesting, combined with market dynamics may exercise a control on the overexploitation and possible destruction of the local populations. Endress [Endress, 2001 #2] found that a sample of *C. radicalis* in which leaves were removed 4 times pre year (the most intense harvesting in his study) resulted in the palm producing leaves that were smaller than the minimum size required by the market. This diminished size effectively removed those palms from the harvest and provided them a rest to recover from the intense harvesting they had been subjected to. As mentioned these are preliminary results and only apply to *C. radicalis*. If the preliminary results can be confirmed and if they apply to other *Chamaedorea* species, they would offer hope for a natural restraint to unsustainable levels of harvest.

### ***Cultivation outside of Mexico and Guatemala***

#### **Floriculture - Cut greens**

Based on the sources consulted, the majority of the foliage used in the cut greens trade originate in Mexico and Guatemala with the largest percentage coming from Mexico. Although seed and potted plants are produced outside of those two countries, foliage production is pretty much restricted to the two countries. The reasons for that are largely economic in nature. To produce the foliage outside of their natural areas of occurrence would require an investment that would raise costs above what could be justified by the prices paid for the foliage. In North America outside of Mexico, in addition to cost considerations, climatic conditions would not allow for the production of the foliage. Although the plant can withstand light freezing, the foliage is affected making it unsuitable for the cut greens trade (Tom Phennel, Bernecker's).

Since the palms began entering North America, the primary source of the foliage has been natural forest areas in Mexico and Guatemala, with a small amount coming from Costa Rica and other Latin American countries. By the late 1980's, there was growing concern about unsustainable harvesting of the palms and the resulting scarcity, which motivated both producers and the companies importing the palm to start cultivating the palm, but under forest conditions. There have been government programs in Mexico and Guatemala to promote the cultivation of the palms primarily for foliage and research programs to determine how to sustainably manage and harvest foliage.

The promotion of cultivation of the palm could lead to less production within ecologically important forested areas. If that were to happen, there may be less reason for communities and farmers to maintain those forested areas and ultimately could lead to changes in land use and the loss of forested areas. If a program of certification could reward production of foliage from natural forested areas managed under a sustainable management regime, it could provide an important incentive for forest preservation.

#### **Horticulture**

In contrast to the foliage used in the floriculture industry, seed and potted plants used in the nursery industry are being produced outside of Guatemala and Mexico. With the exception of *C. elegans* seed that can only be produced in Mexico and Guatemala without hand pollination, the seeds of the other major species used in the nursery industry are increasingly produced in the

United States and other countries with appropriate growing conditions. In Florida seed production and gathering has become a cottage industry with seed collected from private owners who have planted the palms as ornamentals. This makes it very hard to determine where seed comes from and the amount of seed produced in the United States and how much is imported from Mexico and Guatemala. Here again, the fact that differing seed sources have little impact on the growth of the palms makes seed, as long as it is viable, from a wide variety of sources marketable.

The United States prohibition of the import of plants with soil eliminates the production and export of potted plants from Mexico or Guatemala as an option for value-added processing. Some but not all European countries also prohibit the importing of plants with soil. Others allow it with the proper permits, certification and phyto sanitary inspections and control.

## ***Major uses of Chamaedorea Palms***

### **Floriculture**

The *Chamaedorea* palms have specific uses in the floral industry based on their special physical properties and, in some cases, very traditional uses. Although they are small compared to other palms they are generally used in large showy displays as a backdrop to flowers and other greens. They also provide support to those displays. Events calling for those displays include weddings funerals. Funerals were most often mentioned as an event where the palms are used. In some cases, they were the only events the palms were used for. In all of those cases the palms are used as part of a floral display or arrangement so they are not priced separately.

The other major use for the palms that represents a spike in demand is for the Easter season and particularly Palm Sunday. That is the only type of sale where the palms are sold as fronds or bunches of fronds and not as a floral arrangement. Nonetheless, the web site of a flower and cut greens supplier in Great Britain that carries the *Chamaedorea* palms (*C. elegans* and *C. erumpens*) included a special section of Easter Palms but the *Chamaedorea* species were not included in that section so there may be some variation in the use of palms with the North American market using them to a greater degree for Easter.

There are several characteristics of the palms that have made them attractive to florists. Some have already been mentioned - stiff backdrop and filler greens for large displays. Another important characteristic of the palms is their relatively long shelf life of anywhere from two to three weeks. We discussed this with a floral designer in Minnesota who had worked in several small communities before transferring to one of the major retailers in the Minneapolis-St. Paul Metropolitan area. She mentioned that florists in the smaller communities tend to prefer cut greens to flowers because they have a longer shelf life. Another comment that was mentioned by florists was the versatility of the palms and the ability to trim the leaves back to shape the palm and remove poor tips without hurting the appearance of the frond.

Two to three retailers (one was a specific designer) representing less than 10% of those interviewed mentioned that they were not using *Chamaedorea* palms because they were old-fashioned and that they would now use other greens instead of the *Chamaedorea*. Other florists also mentioned that palms were being used in Tropical displays for upscale clients for their parties.

## Horticulture

The use of *Chamaedorea* palms in the horticultural industry includes: i) seed for the production of potted plants and nursery stock; ii) potted palms used for interior decorating; iii) nursery stock used for exterior landscaping; and iv) palms produced in limited quantities for collectors.

- By far the greatest quantity of palms are produced for interior decorating and are sold through nurseries, garden centers, department stores and other retail outlets.
- The seed for that production comes from Mexico, Guatemala and palm plantings in Florida, Texas and probably Hawaii and California.
- Palms for landscaping purposes is limited to those areas where the climate permits – Ex. Florida, Texas, California and other southern states and tropical and sub-tropical regions of the world.
- The palms sold to collectors are often provided through specialized channels and are often the most destructive types of collection because they seek out rare palms that have limited populations that may become greatly diminished by these specialized collectors. To quote Don Hodel (1988), an expert on *Chamaedorea* Palms:

“Perhaps of greater concern is the quasi commercial collection of mature plants, seedlings, and seeds of several highly ornamental and often very localized and rare species by plant hobbyists and enthusiasts. This type of wholesale collecting has wiped out entire local populations of some of these species. Coupled with habitat destruction, the future for these species is not a bright one.”

## History of use

### Floriculture

Jim Everett’s grandfather began exporting the species from Mexico in 1947-48. He was the first to do so. He was a Spaniard. In around 1954 Jim’s father began Continental Greens in Texas. Continental Floral Greens now has significant property in Mexico that produces *Chamaedorea*. The President of Mexico has honored them for their efforts promoting the conservation of forests as well as providing a source of employment. Still, Jim maintains, 99.5% [revised later to 95%] of the production is wild (semi-natural system), only 5% is cultivated on farms.

Commodore’s profitability peaked in the early to mid sixties. Many businesses were forced to close when they did not diversify from importing Commodore. Commodore now represents the third or fourth most important cut green both in volume and profitability (Leatherleaf cited as a bigger one). He [Jim Everett] commented that they probably still import it in part because his father and grandfather did it, and that’s what he is going to do (Jim Everett-phone interview and personal interview with Jerome Everett, 2001).

*Chamaedorea* is imported from Mexico and Guatemala by a limited number of businesses that probably isn’t more that 10 in total. There are others who have been in the business for many years as well as more recent entrants (10 years). As will be discussed later, the demand for the palms, although with fairly large year-to-year fluctuations, has been fairly steady in the long term. One factor that might change this tendency in the future is the proliferation of projects promoting the cultivation of the palm in Mexico.

Although it is hard to estimate demand from Europe as the data for *Chamaedorea* is not individually reported but grouped with other cut greens, there does not seem to be unsatisfied demand for the palm. If the additional production does not replace natural production which is lost to over harvesting, there exists the potential to flood the market with palm fronds and seed, and depress prices as has often happened with development projects that have ignored markets or incorrectly predicted market demand.

## Horticulture

The beginnings of the trade in seed and potted *Chamaedorea* palms began in the early 1940's with Luciano Guerra who imported *C. elegans* to Florida while Leo Bernecker is credited with introducing *C. seifrizii*. (Edmondson, 1989) These two species now are the two most important species in the US horticultural industry and are also exported to Europe. According to Luciano's sons the business started when their father went down to Mexico to help an uncle with his hotel. A visitor from Florida noticed the palms growing in the hotel garden and asked Luciano to provide him seed which he did for a time. One year Luciano, due to poor communications, purchased more seed from his suppliers than his Florida buyer could use and ended up driving to Florida selling the excess seed along the way. From that time on the business continued to develop and most of the handful of importers selling seed are somehow linked to the Guerra's in one way or another. (Conversation with Juan and Luciano (Jr.) Guerra, March, 2001).

The trade in seed has been fairly steady with a substitution of seed produced in the United States and from cultivated plots in Mexico and Belize over the years. (Edmondson, 1989)(Guerra, personal communication) Berneckers is now self sufficient in the production of *C. seifrizii* seed that has been their specialty producing high quality potted plants. The seed suppliers have become more sophisticated over the years utilizing techniques to test seed viability and properly store seed. The suppliers/importers have developed expertise in the trade and have set up networks of suppliers as well as production areas in Mexico. They also play the role of traditional middlemen lending money to their suppliers when they have emergency needs.

Just last year the Chinese entered the market for seed contacting the major producers in the US. They contacted 4-5 seed producers/importers requesting a certain quantity but then purchased from the first supplier to meet their needs leaving the others out of the deal. This has made some skeptical about that market but it nevertheless is a potential market for the future. Because of a growing market for potted plants in the US and Europe and possibly China, there may be an increased demand for seed and potted plants in the future.

## The World Floriculture and Environmental Horticulture Trade

The trade in *Chamaedorea* seed, foliage and potted plants forms part of what is called in the United States the floriculture and environmental horticulture trade. Floriculture includes cut flowers, cut cultivated greens, potted flowering plants, and potted foliage and bedding and garden plants. Environmental horticulture includes nursery plants such as trees, shrubs, ground covers, vines, and fruit and nut plants; bulbs, turf grass, and unfinished plants and propagation materials such as cuttings, plugs, seedlings, and "lining out" stock used by other growers for growing on. *Chamaedorea* is primarily used in the floriculture trade as seed, foliage or potted plants (in different presentations and sizes). The extent to which *Chamaedorea* enters into that trade is often indistinguishable because it is often combined with other cut cultivated greens for

reporting purposes. Nevertheless, the growth in cut greens is generally proportional to the increase in the demand for floral products since cut greens are often used in floral arrangements.

Because it forms part of that trade, outside of differences in consumer preferences, the demand for *Chamaedorea* products will probably follow the general trends in the industry. The floriculture and nursery industries have been growing in recent years and demand has been growing both for flowers and foliage in the cut flower and greens sector as well as for potted plants for interior decoration.

Below an overview of the World market is presented. (In Annex, market overviews for the United States and Canada are presented which were extracted from recent studies of the industry in the United States and Canada and present good summaries of trends in the industry). Following the general market overviews, specific information on the market trends for *Chamaedorea* is presented where that information was available. The most detailed information was available from the US where records are kept of seed and foliage entering the country through border posts although authorities warned that the information is not always complete as some ports of entry are too busy to record details of the trade. In Canada, the information is for cut greens as specified in the codes of the Harmonized Tariff schedule used by the US and Canada. In the European market specific information on *Chamaedorea* was not available but general trends in the market are presented.

Overall, world markets for floriculture and environmental horticultural products have been increasing in North America and Europe with South American cut flowers taking a greater share of the market. In Europe there have been efforts to certify environmentally and socially “friendly” production (more on this in the section on opportunities for certification and green marketing). In North America there has been little or no movement towards guaranteeing ecologically and socially sustainable production. Retailers surveyed were not aware of any efforts to certify flower and cut-greens production and very few were even aware of what it meant to certify production.

## **Market Overview**

### **The World Market**

World markets for cut flowers are organized primarily along regional lines with Asia-Pacific countries supplying cut flowers to Hong Kong and Japan. African and European countries are the main suppliers to Europe’s markets with the African nations of Kenya, Zimbabwe and Zambia functioning as producers for export with the majority of their production being sent to Europe. In the Americas the major market is the United States with Columbia and Ecuador sending 70% of their production to the United States although they are also producing for the European market.

Germany is the largest importer of cut flowers followed by the United States. Nonetheless the growth in German imports leveled off in the early 90’s while the Netherlands, the United States and Japan have shown rapid growth. The Netherlands re-exports 70% of the flowers it imports through its auctions. Developing countries have rapidly increased their share of the market over the last decade. More favorable growing conditions, low production prices, foreign investment and rising fuel prices which have a greater impact in developed countries have helped make developing countries more competitive.

World demand for cut flowers has been increasing by about 6-9% per year while the value of trade in potted plants in 1990 was 14.2 billion dollars, 21% higher than in 1985 and was expected to increase to 20-23 billion dollars in 2000 (de Groot, 1998). Production to meet this demand has been gradually shifting to developing countries often with investment from foreign investors, banks and wealthy individuals. According to de Groot, the managers of these farms are often hired from the major producing countries in Europe.

### ***Trends in the Floriculture and Environmental Horticulture Trade***

Van Liemt (1998) identified several trends in the World cut flower industry that represent changes that may have important consequences in the trade of *Chamaedorea* palm products.

Those trends are:

- Increasing importance of quality products and the need to invest more capital to achieve that quality: When discussing the purchase of palm fronds with retailers and particularly wholesalers, the quality issue was brought up as an important consideration and may also be key to any potential increase in the prices that might be paid for those products.
- The emergence of new growing and exporting countries: This probably would have little impact on the *Chamaedorea* trade unless the emerging Latin American producers were to become interested in palm production and competed with the producers in Mexico and Guatemala.
- Enhanced demand for mixed bouquets: Would have limited impact on the palm trade since palms are generally used in larger flower arrangements.
- The attention being given to higher ecological and labor standards: This refers to a growing concern about pesticide and herbicide use in production and the treatment of workers by the companies producing for the trade. This has become an issue in Europe with flower labeling programs and could provide the potential for certification of palm products. This same concern has not yet become important in the North American market.
- The increased influence of supermarkets: Supermarkets and retail chains are increasingly becoming involved in the sale of cut flowers and potted plants (K-mart, Home Depot, etc.) This trend could provide opportunities for marketing of palms as well as an outlet for certified palm production. For example, the Home Depot has decided to only sell certified wood. If supermarkets or the large retail chains could be convinced to promote sustainable

Another trend that was mentioned in several reports on World markets and the US and European markets specifically was an increasing use of the Internet to sell products, eliminating the middleman in some cases. Most researchers expect this trend to continue in the future.

## Current and Projected Market and Trade in *Chamaedorea*

### *The US Market – A growing market*

The value of floriculture and environmental horticulture crops reached US\$12.1 billion in 1998, an increase of 2% over the previous year maintaining a trend that has seen an average increase of 440 million per year since 1991. The US is a net importer of green products. Domestic grower cash receipts for cut flowers and cut greens have shown a decline from \$671 million in 1989 to \$642 million in 1996 while in 1996 cut green receipts increased 7 percent (Stevenson 2000). The decline in grower cash receipts is not a reflection of lower demand but rather the result of increasing imports of cut flowers, primarily from Latin America.

Receipts for cut flowers increased 3 percent while receipts for cut greens jumped 9 percent and receipts for potted foliage plants increased by 4 percent. Also in 1998, retail expenditures reached US\$203 per capita, which represents an increase of 37% since 1991. The floriculture and environmental industries are growing which should provide a steady and possibly increasing demand for *Chamaedorea* products. Nonetheless, it is also likely that the recent downturn in the US economy will affect the growth of the floriculture and environmental markets.

Americans consumed nearly 2.2 billion stems of cut cultivated greens in 1998. Only 17% of these were imported. Leatherleaf, a cut green raised in the United States represented nearly 62% of purchases and *Chamaedorea* nearly 14%. Greens from the Pacific Northwest are another important component of the cut greens trade although not reaching the proportions of Leatherleaf and *Chamaedorea* greens. The USDA Economics Research Service records data on the amount and value of *Chamaedorea* palm imported into the United States primarily for the cut greens trade. Figure 1 below presents time series data on the quantity of *Chamaedorea* palm fronds imported into the United States between 1971 and 1998, while Figure 2 presents the volume and value of the *Chamaedorea* palm fronds imported between 1985 and 1998, the dates for which that information was available.

The import of *Chamaedorea* shows a somewhat erratic trend over the years with an average annual import of around 350,000 stems split between Mexico and Guatemala, with the majority coming from Mexico in recent years. Figure 3 compares the percentage of total imports from Guatemala and Mexico. When questioning retailers, wholesalers and importers, we were told that there were no problems supplying the market with the amount of product required with the only exception being during holidays in Mexico and Guatemala when the frond gatherers were not working but that was expected and the suppliers planned accordingly stockpiling for those occasions. The other disruptions in supply were related to weather conditions that made it impossible to gather the fronds but again, retailers generally were getting the palm fronds when they needed them.

If the last 10-15 years are analyzed there has been a tendency for a decline in palm imports. This is consistent with some of the comments from retailers who mentioned they were using less of the palm although those comments came from less than 10% of the retailers surveyed. The picture that emerges from the survey of retailers, wholesalers and importers is one of a fairly static market over the years with few changes in supply and demand for a product that has a well

### Imports of Chamaedorea Foliage 1971-1998

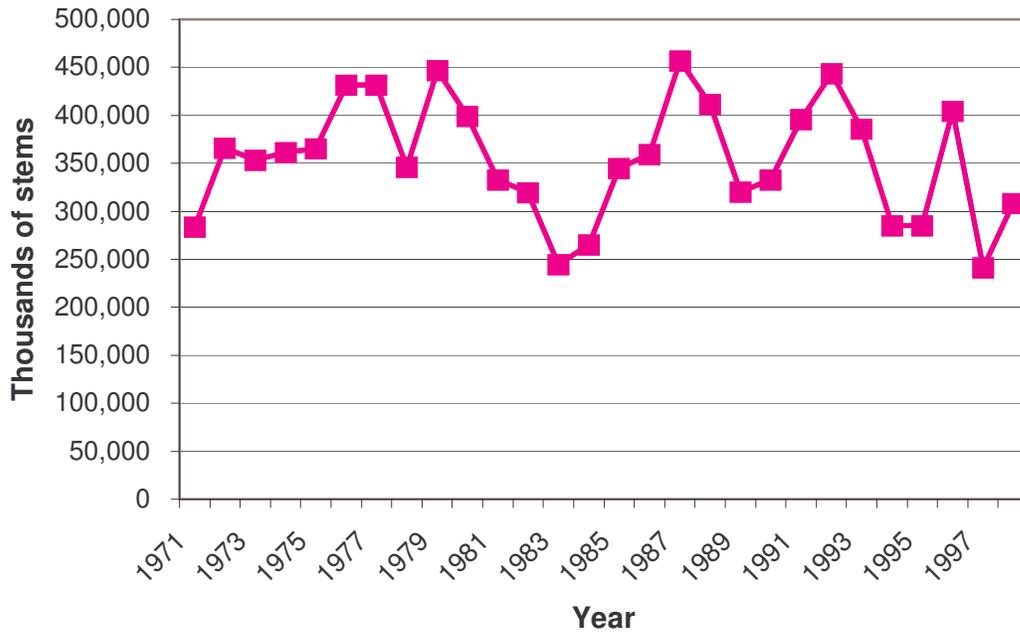


Figure 1 – Time series of amount of Chamaedorea imported in the United States

### Volume and Value of Chamaedorea Foliage

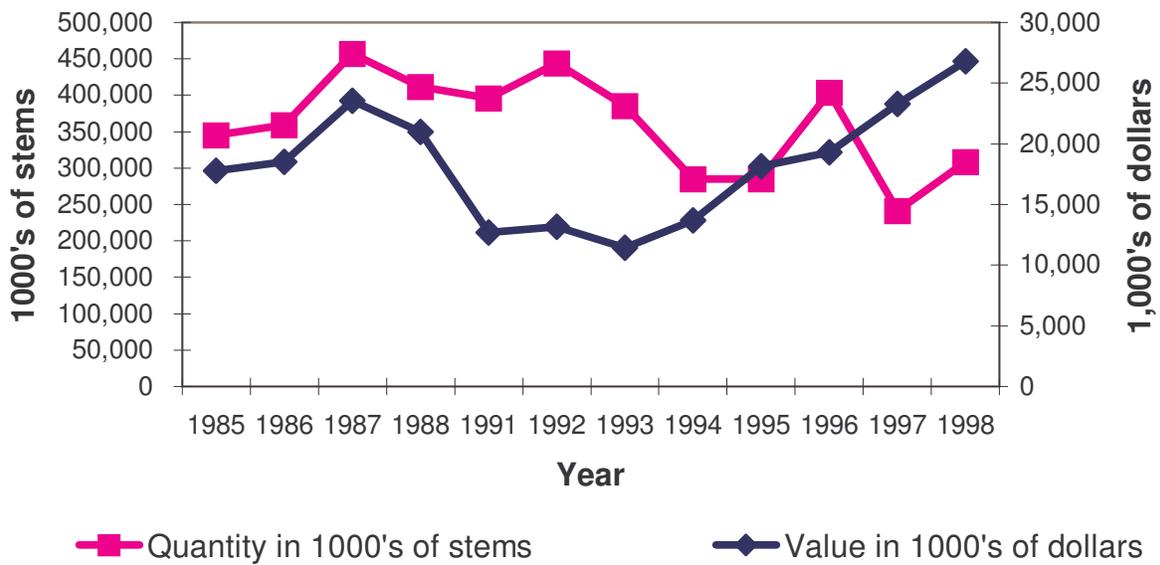
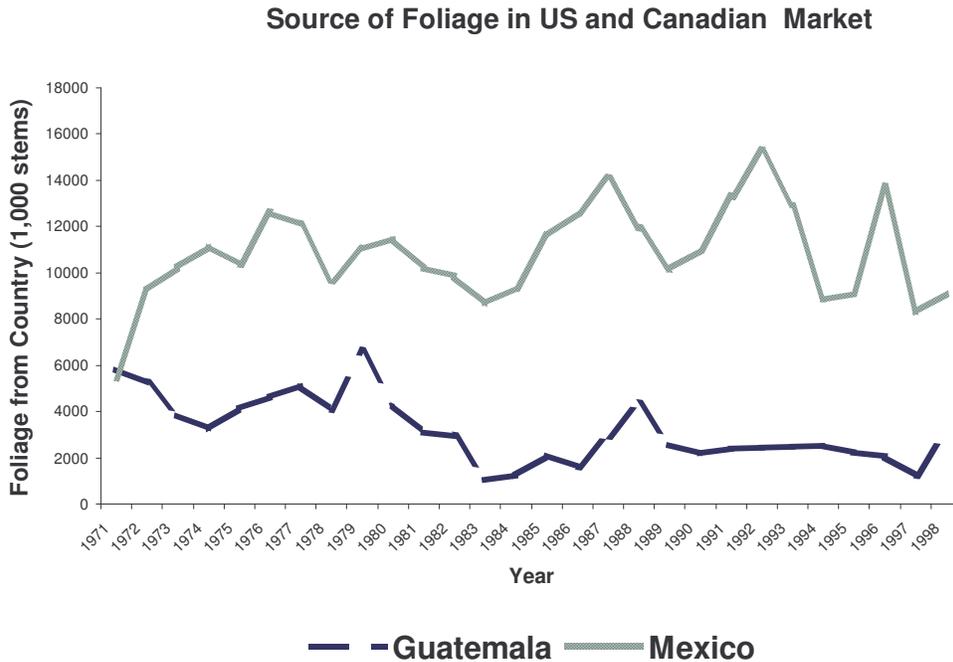


Figure 2 - Volume and value of Chamaedorea Imports

defined end use. The palm fronds are a relatively low volume product for wholesalers but a product that they carry because of the needs and demands of their clients. When asked if there were other greens that florists would use if the palms were not available, florists mentioned several of the Northwestern greens although for some uses *Chamaedorea* was the preferred green.



**Figure 3 – Percentage of foliage from Guatemala and Mexico**

A couple of the retailers surveyed also mentioned that they felt that the use of palms were “old fashioned” or “passé”. Again those responses were well below 10% of the respondents surveyed but could be a problem for the market in the future if consumer tastes in floral arrangements change although there is no indication that such a change in the market is imminent.

The time series comparing volume and value covering a shorter period does show a decline in the imports of *Chamaedorea* and an increase in total value reported for the fronds. That type of relation would be consistent with a declining supply with a subsequent increase in prices. But here again, the survey of retailers, wholesalers and importers provided no indication of that kind of relationship. When asked if there had been any changes in price or supply, most responded that both price and supply had remained constant, although a few did mention the price has increased but not more than would be expected over time.

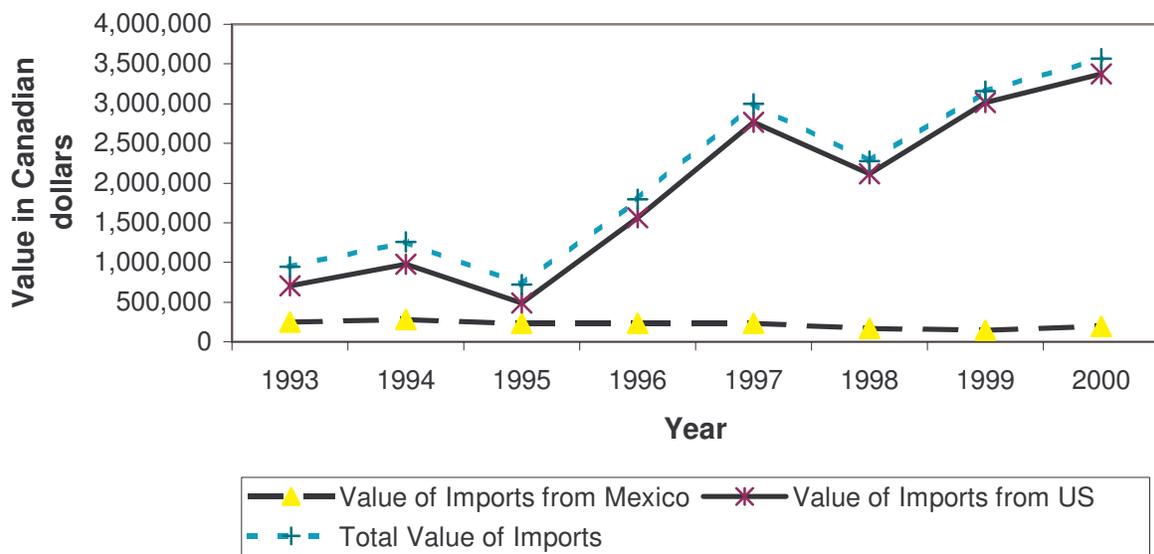
### ***The Canadian and European markets***

The Canadian and European markets are serviced by some of the same importers that import *Chamaedorea* into the United States so some of the palms which are imported into the United States are re-exported to Canada or Europe while others are directly exported from Guatemala

and Mexico to other foreign destinations primarily Germany and Holland.<sup>3</sup> The amount of Chamaedorea imported or exported to and from Canada and the European Community is hard to estimate as data is not readily available and Chamaedorea is often lumped with other cut greens when data is reported. Imports to Canada are probably channeled through the US because the US has been the traditional importer of the palms with direct communication with the gatherers in Mexico.

In Canada their imports of cut greens has been rising steadily since the early 90's. Canadian import/trade statistics report Chamaedorea in a group labeled "Grasses and palm leaves, fresh, suitable for bouquets or for ornamental purposes". Statistics were available for imports of that category of greens from both Mexico and the United States (See Figure 4 below). Because Chamaedorea cannot be separated out from the rest of the greens, it is not possible to determine the trends in the market for the palm other than to assume that it most likely would exhibit tendencies similar to the United States market. According to Canadian government reports the increase in imports is part of a general trend to use more cut greens in the floral industry.

**Canadian Imports of Cut Palm Leaves and Cut Grasses**



**Figure 4- Canadian Imports of cut greens from Mexico and the US**

The same was true of published statistics on the European market based upon the harmonized tariff schedules that are used to report trade activity. Chamaedorea is lumped with other similar products. The Dutch flower auctions do report individual products but demonstrated a relatively stable market for the palms. Several publications mentioned the export of Chamaedorea from Guatemala but gave little detail on the amounts and destinations. (Nations, 1992)

<sup>3</sup> US importers interviewed mentioned that they also ship Chamaedorea to Europe and Canada.

## **Markets for seed and potted plants**

Chamaedorea seed is used extensively throughout the world for the production of potted plants and outdoor landscape plants where the climate allows. By far the greatest volume of sales is of *C. elegans* (Neanthe Bella, Parlor Palm). This is also reflected in the value of the seed of this species that, in the commercial seed lists reviewed, was always the least expensive.

The market and supply of seed is hard to determine for a number of reasons. Seed that is imported is subject to some control at the USDA quarantine stations. Nonetheless, because of the large flow of goods through Miami, seed imports are not always registered or are registered as cut flowers and miscellaneous permit seed making it impossible to get a very accurate reading of the amount of Chamaedorea seed entering the US (Ron Sponaugle, USDA Port Operations personal communication). In Canada, the government does not keep records of seed imported for palms although they do have records of flower seed imported. Records were obtained from the USDA but the information proved to be unreliable so it was not included in the report. To be able to get a good estimate of seed imported would probably require a survey of importers of seed and, as Edmondson found earlier, most of the importers are reluctant to provide information on their commercial activities.

Another phenomena which has probably affected the amount of seed imported has been the concern with the impacts of unsustainable harvests of seed and fronds and the loss of habitat for Chamaedorea in Mexico and Guatemala. Some Chamaedorea species were proposed for inclusion in the CITES lists in the late 80's and early 90's but eventually were not included because of a lack of data on sustainable harvest levels and industry objections (Endress, 2001). Because of those concerns, production was often shifted to cultivated seed orchards.

For those palms that produce seed when grown outside of their native habitat such as *C. seifrizii*, the trend towards production from ornamental plantings and seed orchards will likely continue. For palms that do not produce seed outside of their native habitat such as *C. elegans*, there will be a continuing demand for imported seed that may increase as new markets develop. An example of this potential has been the recent sales to the Chinese market.

## **Summary**

- Time series data suggest that the market for Chamaedorea, although demonstrating considerable variability from year to year has remained relatively static.
- There has been a decrease in foliage sales in the last few years but, given the variability of the market, this may not be a trend.
- It is difficult to find data on the palm market outside of the United States. There has been a continuous market for foliage in Europe supplied by US importers and direct exports to the EU.<sup>4</sup>

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<sup>4</sup> Pathfinder publishing (<http://www.pathfastpublishing.com/>) which publishes statistics on the floral trade in Europe and World wide indicated that the use of palms in Europe is generally limited to Palm Sunday and is relatively minor compared to the use of other cut foliage such as leather leaf, tree fern (various Asparagus) bear Grass and Western Greens. They estimated that Chamaedorea accounted for less than 5% of the trade in that sector (personal communication).

## **The Chamaedorea supply chain<sup>5</sup>**

The Chamaedorea supply chain is a fairly simple chain along which little processing is required. The leaves are harvested in Guatemala and Mexico, culled, packed and shipped by air or truck to the United States as the primary destination with other recipients being members of the European Union. From the importers in the destination country, the fronds are boxed in case lots and shipped primarily by truck to wholesalers and retailers throughout the floral industry. Wholesalers, depending on their size generally deal with cases of fronds which they ship to retailers or, in some cases, cases are broken down into bunches which are shipped to retailers. The bulk of the culling (removal of undersized or poor fronds) takes place in the collection points in the country of origin although the importers do some culling.

### ***The supply chain***

#### **In country of origin<sup>6</sup>**

Fronds are gathered from natural forest areas and increasingly from areas of cultivated palms under forest cover. Continental Floral Greens one of the largest suppliers of “Latin Greens” has production areas and processing plants in both Mexico and Guatemala and received an award from the former President of Mexico for their service to Mexico by providing job opportunities. The Luciano Guerra family also has production areas in Mexico for seed production but the same plantings are also used for frond production.

Fronds are gathered by individuals and organized groups and sold to middlemen hired by the importers for that purpose. Those middlemen generally develop long-term relations with the importing companies and often will receive advances to cover emergencies and their expenses. The palm fronds are then transported to centralized collection points and then to processing plants where they are prepared for shipment by truck or plane to the United States and other destinations.

There are about a half a dozen major importers of Chamaedorea palm fronds and about the same number of seed importers working out of Texas, Florida and California. Seed is collected in much the same way that the palm fronds are collected, from a mixture of wild and cultivated palms. As was previously mentioned, there has been a predictable trend towards cultivation of the palms for both seed and foliage collection and often a combination of seed and foliage collection from the same palms.

The harvest and transport of palms in Mexico is subject to government permit and control. The Guerra family indicated that it is a system that they have learned to work with and that the

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The Guatemalan Ag. Export agency also reports Leatherleaf as a major export crop while “Xate” is mentioned as a traditional export but not a major export commodity.

<sup>5</sup> The information presented in this section is based on mail surveys and individual interviews with importers, wholesalers and retailers including visits to floral shops and wholesale operations.

<sup>6</sup> This section on the country of origin is based upon published reports and discussions with importers and is not meant to be a detailed discussion of the harvesting. A parallel report is being prepared in Mexico on that part of the harvesting and processing of the palms and seeds.

government has exercised greater control over the years primarily for purposes of tax collection. The government is now asking palm collectors to be registered by the Guerra family so they can monitor the income they receive from seed collection. Another seed importer who has not been in the business as long as the Guerra's commented that the government permit requirements were a serious constraint on his business.

After the palms are prepared for shipping they are loaded into trucks and transported to Texas or sent by air to Miami. Continental Floral Greens mentioned that their costs have not improved following the implementation of the NAFTA agreements because they have to change drivers at the border. According to the NAFTA agreements for free trade, trucks from Mexico were supposed to be able to travel freely in the US lowering transport costs for transport. Recently, the US Congress enacted legislation to allow trucks from Mexico to enter and travel in the US but requiring very strict safety standards. The palms are also subject to an inspection by the USDA Quarantine post at the border. If they have insect pests or other phytosanitary problems, the shipment may be delayed or refused. According to the importers interviewed the preparation of the shipments is the responsibility of the middlemen and if there is any problem at the border, the middleman is responsible for any loss.

When discussing the study with Randy Natalino of ForemostCo, importers of plant material from Latin America, he mentioned that problems at the border can be very expensive and in countries like Israel, the USDA actually stations an inspector who ensures that the shipments conform to the US phytosanitary standards before it leaves the country of origin. This serves more than one purpose. It provides training to shippers in the exporting country to bring them up to international standards, eliminates problems and delays at the border which lowers costs and helps ensure better phytosanitary control of imported materials.

### **Importers and wholesalers**

As already mentioned the importers of foliage and seed are located in Texas and Florida. Many of the importers have been in business since the 40's and 50's when the trade began and have very well organized collection and distribution systems in Mexico, Guatemala, and the United States. Most of them have diversified into other floral products and cut foliage from other sources. Jim of Continental Floral Greens mentioned he was still dealing with Latin Greens primarily because that was how his father got started.

The importers compete against each other in the market for Latin Greens although there are some differences in the product from Guatemala compared to the fronds from Mexico. Wholesalers, as could be expected, based their purchases on quality and supply issues. They receive shipments on a weekly basis and turn around and distribute to their client wholesalers and retailers. They make all deliveries within a day of receiving orders. Distribution is very efficient with fast turnover of the product. An advantage of the palms already mentioned is a relatively long shelf life up to two weeks although shelf life varies among species. Being part of the floral industry that efficiency is demanded.

The Florida importers concentrate more on the East Coast while the Texas importers concentrate on the Midwest and Western states. The range of wholesalers varies depending on size of operation and location. Wholesalers working out of the Minneapolis-St. Paul Metro area distribute to an area which is within a days travel from the Metro area. They may supply palms to smaller metropolitan areas who service retailers.

An importer sell flowers by the case while wholesalers sell by the case or by the bunch breaking the cases into bunches. Even wholesalers with annual sales volume of 20 million dollars distribute the palm by the bunch. If wholesalers sell by the case, they basically act more as a warehousing facility receiving the cases and then dispatching them to their customers. Others break the case down and sell the product to their customers in bunches. In most cases, wholesalers probably do both depending on the demands of their clients. The importers generally use their own trucks and guarantee the product will arrive in good condition. If a refrigeration unit breaks down or something else happens during transport causing deterioration of the palms, the importer/wholesaler is responsible for any loss. Figure below illustrates the distribution of *Chamaedorea* in the US using Minneapolis, MN as an example. The pattern illustrated in Minnesota would be repeated in major cities throughout the country but generally with the Palm originating from importers in Texas and Florida.



**Figure 5 - Illustrative example of the distribution of *Chamaedorea* Palm in the USA – Minneapolis, MN wholesaler**

Wholesalers and retailers interviewed indicated that there was little or no need to cull or discard palm fronds as long as the minimum effort was made to maintain the conditions required to maintain the palms – low moisture and refrigeration. With excess moisture or exposure to heat or higher temperatures the leaves would often turn black.

The importers are located in Texas and Florida shipping to wholesalers throughout the United States, Canada and Europe. Wholesalers are located in both large and small metropolitan centers. Wholesalers in larger metropolitan areas generally receive their palms directly from the importer. For example, the wholesalers interviewed in the Minneapolis-St. Paul Metro area received shipments from two different importers, one in Texas and the other in Florida. There were minor differences between the two importers but the wholesalers worked with both to guarantee a good supply.

### **Retailers**

Retailers are generally the last link in the supply chain before the palms reach the consumer and are served by wholesalers within a days shipping distance/time. The majority of the retailers surveyed purchased the fronds by the bunch (63%), while many of the larger retailers also purchased fronds by the case (43%). The fronds are incorporated into large, showy floral arrangements for weddings and funerals and to a lesser extent for parties with a tropical theme. During the Easter season and especially for Palm Sunday palms may be sold by the frond or by the bunch to churches.<sup>7</sup>

The demand for palms has been fairly constant over the years according to the retailers and wholesalers interviewed About 25% mentioned some decrease in sales while 20% mentioned increases in sales. Some decreases were credited to fewer funerals which is where many of the palms are used<sup>8</sup>. Others were credited to changing tastes and, in one case, they mentioned the “Martha Stewart” effect<sup>9</sup>. In many of the cases where a decline in sales was noted it was a slight decrease.

### **Prices**

Retailers were asked to indicate the prices they pay for different varieties of the *Chamaedorea* palm fronds. As could be expected the prices seemed to vary with the volume purchased and to a certain extent by the distance from the supplier. Prices for bunches (25 stems) ranged from \$1.45 per bunch to \$4.00 or more in some cases. The most frequent price for a bunch ranged between \$2.00 and \$2.50. The lower prices were reported by those retailers who used a greater volume of palms and those who purchase by the case (see Table 3 below for a summary of prices). According to wholesalers interviewed there is a difference in quality among different palms offered which is also reflected in price.

Volumes play an important role in prices but they are also indicative of the type of market in which *Chamaedorea* is sold. Retailers reported use of *Chamaedorea* from 1 to 2 floral arrangements per year up to 4 cases per week. The average use was between 10-30 bunches per week which represents expenditures of between 20 and 100 dollars per week for an item that is

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<sup>7</sup> In Europe, Pathfinder Publishing commented that this is largely restricted to the Catholic Church while in the United States the use is more widespread including other Christian groups.

<sup>8</sup> 98% of the retailers mentioned using *Chamaedorea* for funerals and several shops indicated that funerals were their only use for the palm.

<sup>9</sup> Martha Stewart publishes magazines and guides for home decorating throughout the United States and, due to that has a significant impact on how people use plants and flowers when decorating or preparing for social events.

included in arrangements. It is a relatively small volume expenditure for most retail florists but an essential component for certain flower arrangements.

For wholesalers, the price per bunch varied from \$0.80 to \$1.70, while case prices varied between \$25.50 and \$50.00. The lowest price was paid by a wholesaler in Louisiana where transport costs would be some of the lowest. The wholesalers purchase by the case and distribute by the case and bunch. The per bunch cost provided was arrived at by dividing the case price by 30 bunches (no of bunches in a case) or by 25 bunches if that were the bunch number per case.

### ***Processing along the supply chain***

There is relatively little processing of the *Chamaedorea* palm as previously mentioned. This holds true for the seed also. In both cases, the products are culled and graded and loaded into cases. The only major handling and changes in the product take place in the retailers shops where the fronds are added to floral arrangements. This last phase is of interest because how and how much the palm gets used often depends upon the individual floral designers tastes in production the floral arrangement. Some designers prefer other species for their designs. Nonetheless, *Chamaedorea* palms fill an important niche in the floral designs due to their ability to function well as filler for large arrangements and add stiffness to the arrangement. Apart from that, their use for Palm Sunday and Easter is unique and leaves little room for substitutes.

The one area of processing where efficiency and income gathering potential could be improved is the process of gathering the palm fronds in forest areas. A number of publications have indicated that anywhere from 40 to 60% of the harvested leaves are culled out at the collection points in Guatemala (Nations, 1995) (Segura-Bonilla, 1999). Although some of these losses may be unavoidable due to transport problems and local conditions, it would be reasonable to expect that some of the loss could be avoided permitting buyers to pay more for the fronds if they would not have to discard such a larger percentage of what they purchase from collectors.

### ***Market concentration***

Market concentration does not seem to be a problem in the US market. Given the volume of *Chamaedorea* palm sold in the market the current number of importers probably represent an efficient number of suppliers. It was evident from conversations with importers that there is competition in the market. This was also evident in discussions with wholesalers who will work with more than one supplier to guarantee their supply and discriminate based on the quality of the product offered. The prices for the palms are low compared to other floral greens so there is not evidence of monopolistic price setting. If there is a problem, it may be in Mexico and Guatemala where the palms are gathered where there is often a single buyer who sets the purchase price for the palms. Although there is not good existing data that would allow an analysis of the price at which other greens might be substituted for the palms, if collection costs were to increase boosting up the price of the palm to wholesalers and retailers substitution might be a problem.

## **Opportunities for value added processing and “green” marketing**

Because of the limited amount of processing that is required for the production of fronds and seed from the *Chamaedorea* palm, there is limited scope for value-added processing. Nonetheless there exist some potential opportunities for value-added processing related to eliminating inefficient gathering practices, improving quality and shifting some stages of potted plant production from importing countries to the seed producing countries (Mexico and Guatemala). These opportunities will be different depending on the destination country due to different markets and regulatory requirements.

There are a number of potential areas to consider for green marketing depending upon the objectives of the green marketing, the target audience, and the potential for, and interest in providing financing for activities which would promote green marketing. Green marketing efforts, in the floral industry have been limited to Europe and surveys in the United States indicated that over 90% of retailers were unaware of any such efforts in the floral industry.

In a recent CEC (1999) study of the shade-grown coffee market, it was found that people were primarily interested in taste as a criteria for purchasing coffee and the fact that it was shade grown was only a secondary consideration. In the floral industry, the equivalent criterion is the quality of the product. The trend to demand greater quality has increased in recent years and is primary consideration for florists and should be a key element of any efforts to certify or see *Chamaedorea* as a “green” market product.

### ***Value added processing***

#### **Palm fronds**

Because of the limited amount of processing that probably takes place with the *Chamaedorea* palm, there may be little scope for value added processing. Nonetheless, there may be some opportunities to improve prices paid at the producer/campesino level. Information from experience suggests that there may be opportunities to improve the selection of individual fronds in the forest to improve prices. According to some sources there is a high level of culling of fronds when the gatherer sells the fronds to buyers and before they are exported. If this turns out to be the case, and gatherers are more selective which could minimize culling, they should be able to demand a better price for the fronds collected. Other options for value added processing will be explored and presented.

#### **Potted plant production**

The preparation of germinated seedlings (slips) and potted plants for the nursery and interior-decorating industry is almost undertaken outside of Mexico and Guatemala. This represents a type of value-added processing which could be undertaken in the countries of origin of the seed and fronds. Nonetheless the production of slips and potted plants is subject to phytosanitary requirements of the importing countries. The most significant restriction is the restriction against the import of plants with soil in the United States that would eliminate the possibility to export potted plants. The other limitation on the export of potted plants is the cost of transport which, in many cases, would make the export of plants unprofitable.

To be able for communities and companies to compete in potted plant production would require training, investment and an efficient exporting system. The benefits would be employment opportunities and greater social and economic benefits than those currently received for simply exporting seed. It would also require a good analysis of the potential costs and benefits. The rising fuel prices would likely make Mexico and Guatemala more competitive when compared to countries that must maintain the plants in greenhouses during the cooler months of the year. In Florida plants can be maintained outside of greenhouses year round but this would not be possible in important production centers such as the Netherlands.

### ***Green marketing and certification***

**“The ultimate goal of certification should be to facilitate better management of non-timber forest products and reward exemplary producers with reputable marketing claims, not serve as an impediment to technical assistance and market access.”[Pierce, 1999 #5]**

The present production practices and markets for *Chamaedorea* palm products have characteristics that recommend them for green marketing and certification efforts. They are an NTFP with an established and stable position in international markets and, at their present level of domestication and production, promote the preservation of natural forest areas. Furthermore, they have well established processing chains that already are subject to a certain amount of control. In Guatemala they are harvested from natural forest areas under management by community concessions, many of which are already certified for timber production. In Mexico, in contrast to Guatemala harvesting may often be from forest areas with little control, with gatherers moving from one area to the next as the populations dwindle or are harvested.

Caution should be exercised when considering options for certification. They are a low volume, low value item that gives them a competitive edge. The danger exists that the costs of certification could remove that competitive advantage. In addition, the market for palm fronds is limited while recent efforts to promote the planting of the palm often describe a market with an unsatisfied demand. If promotion programs succeed in getting large areas planted to *Chamaedorea*, there exists the real possibility of saturating the market, and driving prices down to the point where production could become unprofitable. Ultimately this could lead to the replacement of the forests that now are protected for palm production with agricultural crops. These are considerations that need to be taken into account and dealt with.

This section will present a discussion on the potential for the certification and green marketing of *Chamaedorea* palm products. Potential will be analyzed based on the objectives of certification, an evaluation of the current situation of the palm, the different objectives that might be achieved through different certification and green marketing strategies and the range of options that might be considered.

#### **Objectives of the CEC program**

Below is a statement of the principal objectives of this study and the objectives which serve as the basis for the discussion of options for certification and green marketing.

“This project is being undertaken to help identify opportunities to develop sustainable practices and criteria for trade in wildlife, by ensuring that those practices are legal and biologically sustainable, encourage *in situ* conservation, create

economic opportunities (when applicable), and benefit local communities.” (Source: Terms of reference)

### **Current situation relative to the harvesting and marketing of palm products<sup>10</sup>**

A review of published information on the state of the *Chamaedorea* resource and management efforts in Mexico and Guatemala along with the conversations with importers of palm products provide a general overview of current trends in the harvesting and sustainable production of palm products in Guatemala and Mexico. In general, the harvest of seed and fronds has motivated local communities to maintain forest areas that otherwise might have been cut down to make room for agriculture (Guerra, personal interview). Natural habitat for the *Chamaedorea* palm is being lost to agricultural production while there are numerous efforts to promote the cultivation of the palm (Edmondson, 1989, Various project documents from Mexico, Jerome \_\_\_\_\_, personal communication).

The harvesting and sale of *Chamaedorea* fronds and seeds is a strong incentive for maintaining forest area. Nations (1995) estimated that over a years period, *Chamaedorea* palm gatherers in Guatemala averaged about US\$8/day gathering fronds compared to agricultural wages of US\$ 2-3 per day. According to Nations, at least half the farmers in communities studied by Anthropologist Norman Schwartz in the Central Peten of Guatemala earned additional income from harvesting fronds and more than a quarter of household heads were supporting themselves exclusively by collecting fronds. Because the fronds and seeds are collected from the wild, the existence of the forest represents an important resource and source of income for local communities. As long as the palm products are harvested in the wild and the market prices are attractive, the trade in those products will help protect forests from conversion to other uses.

Several sources mention the loss of the natural habitat of the *Chamaedorea* palms to agricultural encroachment and alternate uses. Others mention the over harvesting of fronds causing a decline in the local populations forcing the gatherers deeper into the forest to obtain the fronds. Contrasting to that, and possibly a result of the declining populations, has been a trend towards cultivating or planting the palm under tree or forest shade. There will most likely be more detailed information on this in the CEC study being carried out in Mexico. A quick review of Internet sites and secondary information found references of several projects in Mexico. The Mexican Ministry of Agriculture has also published a guide to the cultivation of *Chamaedorea elegans*, the species with the greatest demand for both seed and fronds.

The promotion of the establishment of *Chamaedorea* plantings should be handled with care, as was noted earlier, and optimally should be based on market demand. There is a fairly long history of development projects that promote the cultivation of agricultural and forestry products without a good understanding of the market. Often, when the production is ready for the market, the excess production saturates the market leading to a drop in prices. The danger with *Chamaedorea* is not only the possibility that producers will not be able to sell their production for a reasonable price but that lower market prices may make frond and seed gathering unprofitable or less attractive forcing traditional gatherers out of the market and thus removing an important

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<sup>10</sup> This section represents general impressions based upon a review of literature available. A parallel study of *Chamaedorea* in Mexico will provide more detailed information of the current situation of the palm in Mexico. The recommendations here will be based on conditions of the resource and the market and will present options for different conditions and objectives.

incentive for maintaining the forest. Ultimately, removing this important incentive could contribute to the destruction of the forest in favor of alternate land uses.

### **Factors influencing the potential for certification**

In recent years, there have been several efforts to promote the certification of non-timber forest products (NTFP). Those efforts, successful or not, have provided practical field experience with certification and lessons have been learned about how to certify NTFP. There has been a coordinated effort among different certifying groups and organizations involved in certification efforts to extract lessons from experience to help guide present and future certification work. Shanley, et.al.[Shanley, 2001 #4]. In that manual several factors are identified which influence the potential for certification and also the potential impacts, both positive and negative. In this section several of those factors and considerations are presented and analyzed for the case of Chamaedorea.

The factors that have the greatest relevance for the Chamaedorea case include:

- **Market:** issues related to the existence of a market and the demand for certified products.
- **Tenure:** issues related to ownership of the forest areas from which Chamaedorea palms are harvested and the ability to control that harvest as part of a certification process.
- **Technical knowledge:** existence of good scientific and local empirical knowledge that would form the basis for sustainable management guidelines.
- **Coordination with timber certification:** opportunities to combine timber certification and palm management certification to lower costs and include the effects of timber management on the palms.
- **Chain of custody:** issues related to the ability of certifiers to effectively monitor the chain of custody from forest to retailer.
- **Social factors:** issues related to wages earned by gatherers who are basically paid for the number or weight of fronds and seeds harvested by middlemen.

Based on a preliminary assessment based on secondary sources of information, there seem to be significant differences between Mexico and Guatemala related to the opportunities for certification and the above-mentioned factors. This assessment is only preliminary and should be interpreted as such. Further investigation would be needed to determine the extent to which the conclusions reached here actually hold-up in the field.

### **Markets for Chamaedorea palm products**

“Initially, NTFP certification may be most useful for a limited number of products with international markets. Markets for environmental and fair trade certified products are primarily found in Europe and to a lesser extent in North America” [Shanley, 2001 #4]

This statement from a forthcoming book on the certification of NTFP provides insight into the opportunities for the certification of Chamaedorea palm products. The palm products have a well-established international market that recommends them for certification but a market in a

sector with current certification activities in Europe but little or no history of certification in North America. This was very evident in the survey of retail florists and wholesale suppliers in the US and also reflected in the review of secondary information sources. This would suggest that the greatest opportunities for certification initially would exist in the European markets with the exception of some possible niche markets in North America that will be discussed later.

The other important market factor in certification is the need to guarantee the quality of the product as has been discussed previously. Wholesalers and retailers mentioned this as an important factor in selecting their sources of palms. Any efforts to certify would have to guarantee that the quality of the certified product be at least equal to alternate, non-certified sources and, if a premium is expected, efforts need to be made to improve quality to the point that certified products are of higher quality than non-certified products.

### **Tenure – ownership and control of palm gathering areas**

To be able to certify any product, it is necessary to control the areas where the product is harvested to ensure a sustainable harvest. This implies both the ability to control the harvest by the certified group (community, cooperative, association, individual, company, etc.) and also to exclude other individuals and groups from the harvest areas who may be harvesting in a non-sustainable manner. This could raise problems for the certification of *Chamaedorea* palm products in two ways. First, according to published accounts of palm frond gathering in Mexico, much of the palm is harvested opportunistically from natural forest areas where the harvesters move in to harvest what is available and then move on to new areas. There is not necessarily a continuous sustainable harvest from well-defined areas. Under those circumstances, it would probably be impossible to certify the production due to the uncertain tenure and lack of control of the resource.

The second problem is related to the potential impact of certification. If certification is implemented and a well-defined tenure and control is required, it may tend to drive gatherers out of the natural forest where those criteria are not satisfied to production under planted shade and a more domesticated production. If this were to happen, it would remove the incentive to maintain natural forest areas that the gathering from natural forests now provides. Thus an indirect impact of certification could conceivably be the movement of *Chamaedorea* production out of natural forest areas and the loss of the protection function the harvesting now provides for natural forests as sources of income from palm frond gathering.

The tenure issue may provide opportunities for individual property owners and communities with ejidal lands in Mexico and the community concessions in Guatemala that are already certified for forest management activities. If those communities can effectively control harvest from their forest areas they would be good candidates for certification and could directly cater to niche markets for certified palm products. In some areas of Mexico, individual farmers are cultivating *Chamaedorea* palms for seed and fronds under natural shade. Here again, if they have the capacity to control harvesting and exclude opportunistic gatherers, they might also be good candidates for certification. In either case, community or individual production, tenure and control of harvesting will be important and limiting considerations.

### **Technical knowledge - sustainable harvest guidelines**

In order to come up with guidelines for certifying sustainable harvest practices, we must understand the biology of the palm species in question. We must understand how many fronds

per plant can be harvested under a given frequency of collection without degrading the resource. We must also understand how changes in the habitat in which the palms grow and reproduce might impact their long-term viability. In cases where other timber and non-timber forest products are harvested from the same area, we may need to understand how the interaction between the harvest of one or several species impacts the viability of the others. In the case of many NTFP's, this information is not available.

Because *Chamaedorea* has a relatively long history of exploitation for international markets, there have been efforts to research and define sustainable levels of harvest by researchers in Mexico, Guatemala and in United States Universities and international institutes such as CATIE in Costa Rica. In Mexico there have been efforts to promote the cultivation of *Chamaedorea* palms that include a published manual for their production. In addition to the fore mentioned information there is undoubtedly a significant amount of local knowledge that could also provide guidance. The existing information could serve as the basis for the development of guidelines but first would require a thorough review to see if it is sufficient and to identify additional information needs. Nonetheless, with the existing information, it should be possible to develop preliminary guidelines that could be used while more complete information is developed.

### **Coordination with timber certification**

Where forest areas where palm production is practiced are also subject to certification for timber production, it may be possible to reduce costs by combining the efforts and using single appraisal and monitoring visits that cover both activities. This obviously would not always be an option, but where it is, it could significantly lower the cost of certification. Presently there are several community concessions in Guatemala that have received forest certification. They would provide opportunities to carry out trial certification of palm frond harvesting combined with forest certification if the certification organization would be willing to consider that arrangement.

### **Chain of custody**

One of the major difficulties with certification is being able to guarantee that the product that is certified in the field is the same one that arrives at the retail outlet without non-certified products being included in the final sale – the chain of custody issue. With logs and lumber coming out of certified forest management operations, this has been possible. With palm fronds and seeds, this may be difficult although probably not impossible.

At present, the palm fronds and seed are gathered by individuals or groups at the request of a middleman, sold to that middleman who then sells them to the companies that import them into North America and Europe who then distribute them to wholesalers and retailers. It is not a long chain of custody but non-certified palms could enter at any time if an adequate control were not provided. The importer/wholesalers generally control the product once they receive it from the middleman, though a warehousing and transport phase (in Mexico and Guatemala) until it reaches their warehouses in the US. They generally control the transport of the boxed fronds to wholesalers and some retailers throughout the United States. Then it is bundled as cases or bunches with orders from retailers.

Certification efforts would have to work at three levels: 1) at the forest level in areas with well defined tenure and control of harvesting; 2) with the middleman or directly with the importer if that arrangement were set up; and 3) at the wholesale distribution and retail level in the country of destination. If importers could buy directly from the certified community or organization, it

would simplify the monitoring. Most importers of the palm fronds have been in the business for at least 10 years and some have been the pioneers in the market and have a very well defined process for importing and distributing palm products. Working through those companies and their well-established networks in Mexico, Guatemala and North America would probably be the most efficient and cost-effective way to carry out certification.

### **Social factors**

Since most of the transactions related to the trade in palm products occurs between independent gatherers and middlemen or the companies that import the palms, the primary concern related to social issues is a fair payment for the palm products. This report does not include an analysis of the prices paid for palm fronds and seeds, nor did it have that objective but there are some probably outdated publications that discuss the issue. One report from Guatemala indicated that frond gathering provided a daily wage 3 to 4 times the going wage rate for day laborers. If that continues to be the case, it would seem that prices are certainly sufficient and provide good source of cash income for gatherers. There would need to be an analysis of the present conditions as far as prices are concerned to determine if gatherers are being treated fairly, an issue that would have to be addressed for certification.

### **Options for green marketing and certification**

If the ultimate objective is to promote and maintain sustainable production of the palm while improving the well being of the communities harvesting the palm, there are three general approaches that could be taken to certification or green marketing. The first option is principally a market mechanism that is not closely linked to sustainable management of the resource. The other two options

1. Working with market to increase demand that would allow new areas to be incorporated into production and thus protection.
2. Maintain forest protection and production through certification program that would require production under forest cover as a condition for certification to discourage the intensification of production (moving production under artificial shade or planted forest). Certification at a level that might not necessarily include all of the requirements of many certification programs.
3. Certify production as sustainable under criteria similar to that which is used to certify wood production.

When discussing certification and green marketing, it is important to understand the impact that certification might have on the market and the profitability of the activity being certified and ultimately the objective of the certification and select an instrument or strategy that will be most effective in attaining the objective.

In any certification or green marketing strategy, it would be essential to produce the same quality product that is now available. If such a program was seeking higher prices for the product, improving quality relative to the present supplies would be essential. It is doubtful that consumers would be willing to accept a product of lower quality just because it was certified.

### **Working with the market to increase demand**

The objective of this first option would be to increase market demand to accommodate greater production of *Chamaedorea* assuming that the increased demand could lead to expanding the area under harvest providing an incentive for local communities to preserve larger forest areas for palm production. This option assumes that the increased supply will come from new forest areas but it may also come from increased intensity of harvest from existing areas or cultivation of palms under planted shade. The present structure of the supply and demand for seed and fronds tends to encourage harvest from the wild since the prices received do not justify more intensive production that would require investment in shade structures or plantation operations. Continental Floral Greens has started production from plantings established under natural tree shade, which could be a first step towards more intensive production.

#### **Advantages:**

- Would not require the infrastructure and the costs involved in setting up certification of the palm products.
- Market entry could be tied to sustainable production.
- Could have a significant impact on the areas protected by palm production if there is unsatisfied market demand.

#### **Disadvantages:**

- It is uncertain what the impact of increased market demand would be and if it would be beneficial or detrimental to the forest and wild populations of *Chamaedorea*.
- It is uncertain how much, if at all, the market for *Chamaedorea* products can increase. This study suggests that the market is fairly static and there may not be opportunities for expansion.
- Could potentially lead to a degradation of the forest and/or *Chamaedorea* resource.

### **Certification of products as coming from forest shade under a sustainable harvest regime**

The objective of this option would be to provide a certification which would: encourage harvest from forest areas; discourage production under artificial shade; and guarantee a sustainable harvest but still not require the expense that full certification of sustainable production often requires. This would be important if the costs of full certification were so high that they discouraged certification or were prohibitive. Collection areas that were maintained with forest cover and were under a schedule of harvesting intensity that sustained production without degrading the resource would receive certification that would provide them access to markets for certified products. Obviously, identifying and developing those markets would have to be an important part of any certification program. At present those markets do not exist.

#### **Advantages:**

- Would promote the production of palm products under natural shade and discourage production under artificial shade.
- If a simpler scheme than a full conventional certification could be worked out, it might be possible to avoid the costs of full certification that could make certification economically unviable.

- A process of certification that is simpler and less costly would improve chances of it being accepted by the present producers, importers and distributors. The importers and distributors interviewed were concerned about government intervention and controls on their businesses. Those businesses, because of their organization and control of the supply chain would be the logical vehicles for any certification program.
- Beginning with simple certification could help initiate a market for certified products giving a competitive edge to those producers who are certified. If there were a positive market response, it might be possible to develop more stringent certification guidelines in the future based on consumer demand. It is likely that

**Disadvantages:**

- This simplified certification process would not be as rigorous as other certification systems now in place and there could be objections to that.
- Any potential intervention in the trade is likely to be met with objections from those involved unless there is an associated benefit from the certification.

**Certification of sustainable production under guidelines presently used for forest certification**

This option would contemplate a certification process similar to that used for shaded coffee and timber production with comprehensive guidelines covering social, economic, biophysical and ecologic issues. This type of certification would probably be too costly to be applied to the *Chamaedorea* palms given the relatively low volume and price the palm represents in the market.

**Advantages:**

- Provides a more comprehensive protection for the forest and could also address social issues if there were problems with compensation of frond gatherers.

**Disadvantages:**

- The cost of certifying the palms under a format similar to that presently used for forest certification could be prohibitive.

**Potential markets for certified products**

**North American markets**

The surveys carried out with retail florists as well as personal interviews with importers and wholesalers in Florida and Texas demonstrated an almost complete lack of knowledge of certification of products used in the floral trade. Approximately 5% of the persons and businesses participating were aware of certification efforts. There is evidently no movement in this direction in the floral industry and those that were aware of certification had read about it. Another roughly 5% expressed an interest in certification because of the allergic reaction of floral workers to some of the chemicals used either for the production of flowers or for post harvest treatments.

One response to the question on certification indicated that the one factor that had the greatest impact on sales was quality. This same point was mentioned in the literature as an important trend in the floral industry – the increasing demand for greater quality in the market. This was

also mentioned by wholesalers as one of their principal criteria when deciding on a supplier for the Chamaedorea palm.

Based on the results of the surveys and interviews as well as the literature, it is likely that certification of Chamaedorea palm products will not be an option in the near future. Also, if it were to become an option, certified products would have to be of the same quality, if not of better quality than the uncertified products they would be competing with. Nonetheless there may be opportunities to introduce certification in portions of the palm market. One potential area for marketing certified products are religious organizations.

Palm fronds for funerals, weddings and the Easter season represents a major part of market for Chamaedorea products in North America. These are all events often closely linked to the church. Increasingly religious organizations are getting involved in environmental issues and social justice issues, both issues often linked to certification efforts in the floral industry in Europe. The Minnesota Council of Churches was contacted about their current efforts in encouraging action on the CO2 issue. They suggested that if they were aware of a certified source of palm products, they could advise churches through their newsletter of the existence of an alternate source. The decision of whether or not to purchase certified palms would be left up to individual churches. There are several organizations representing different religions and religious denominations involved in environmental and social justice issues that could potentially support certification efforts.

### **European markets**

Europe, and particularly Germany and Holland are home to several efforts to provide certification of the floral industry. Two programs, the Milieu Project Seirteelt (MPS) (Floriculture Environmental Project) in Germany and the Flower Label Program (FLP) in the Netherlands, which both started in the mid 90's, are certifying flowers grown in Africa, Latin America and Europe.

The MPS program has developed criteria for certification which include: crop protection agents, fertilizer use, energy use, waste and water use. They issue a label which growers meeting their standards receive which is accepted in the market and for which there has been a growing demand. In 1999 there were 3309 participants in the Netherlands and 326 international participants.<sup>11</sup>

The Flower Label Program, based in Germany is working primarily in Africa and Latin America with 29 companies participating in Ecuador and another 11 in Kenya and Zimbabwe. They have developed comprehensive criteria grouped into a technical-environmental section and a social and industry security section. A German company carries out the certification and the flower growers are covering the cost. There has been some criticism from the international human rights organization Food International Action Programme (FIAN) who would prefer that the certification be awarded by an independent body, not a company but the FLP is working with FIAN to improve the certification.

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<sup>11</sup> 1999 Annual Report of MPS – Dutch Floriculture Environmental Project.

[http://www.st-mps.nl/jaarverslag991\\_uk.html](http://www.st-mps.nl/jaarverslag991_uk.html)

The European market is opening up for certified flowers and contrasts sharply with the US market where there is little awareness of certification and seemingly little interest. This may suggest that European markets for palm products be targeted for certified production if the costs are reasonable.

## Summary

The Chamaedorea palm family is presently very well established in international markets. The existence of this market that can be expected to remain fairly constant into the future appears to be contributing to the maintenance of the forest areas where the palm products are gathered. At the same time, the availability of the palm for harvesting from the wild and its market price have maintained production primarily in natural forest areas with some recent movement towards cultivation under tree or forest shade. Nonetheless, there have also been reports of reductions in wild populations due to over harvesting and primarily through habitat destruction.

The palm family could be a candidate for certification efforts if the cost of certification is reasonable or can be covered by any premium paid for certified products. To do that requires identifying potential markets for certified production, or perhaps more important is attention to the quality of the certified production. It is recommended that certification be linked to production in natural forest areas to maintain the protective function of the economic forest asset that the palm represents to local communities.

There may be opportunities for marketing certified palm products in the US and Europe. In the US the principal markets may be niche markets since the floral industry has not pursued certified production, while in Europe there appears to be a growing market for certified products in the floral industry.

To be able to promote a program of certified palm production would require further exploration of specific markets for certified production and the identification of palm producing areas/communities that meet the basic tenure, chain of custody requirements for certification. In addition the information on the sustainable management of Chamaedorea species needs to be synthesized and any information gaps need to be addressed.

## Annexes

### ***Annex 1 – Additional information and research needs,***

Through the preparation of this report it has been possible to identify information needs that would help clarify the potential for certification of *Chamaedorea* products and also help clarify the current role of the palm products in promoting the preservation of natural forest areas. Some of those issues and areas for future research and information gathering are listed below:

- 1. Determination of the contribution of palm frond and seed collection to individual and family income.**

Published reports differ on the degree to which prices paid harvesters can be considered adequate. In one study in Guatemala, the author found that palm gatherers were earning 2-3 times the going wage for agricultural labor. In other publications, the fairness of price paid to harvesters has been questioned when compared to prices paid once the palm products are exported. There is no doubt prices paid for the palm probably vary although there are relatively few exporters and their prices in the US market do not vary greatly so the variation would most likely be related to the prices that local middlemen pay for the product as well as the other economic factors which determine prices (transport, quality of fronds/seeds, amount of handling and processing required, opportunity costs for labor, etc.). In addition, most of the claims of low prices do not include an analysis of the costs of getting the products to market when criticizing the disparity between the price paid to the gatherer and the prices paid in export markets.

One consideration in certification is the income provided by the sale of certified products and the contribution to the well-being of the individuals, families and communities involved in the activity. It would be helpful to have information available that would provide a gauge of the importance of the income from palm product gathering and cultivation and the magnitude of that income compared to that gained from other productive activities.

- 2. Identify communities/forest areas where forest certification could be combined with the certification of the sustainable harvest of palm products.**

An important option identified by the international community engaged in efforts to certify non-timber forest products is the joint certification of timber and non-timber forest products, which has the potential to lower the costs and efficiency of certification. If a pilot project were developed to promote certification, it would be advisable to identify cases where the certification of the palm production could be combined with forest certification. This could be done with multiple objectives. One objective would be to lower costs and improve efficiency and another might be to provide a test case of the joint application of certification of timber and non-timber forest products.

- 3. Feasibility study for certification for provision of palm products to religious groups.**

Initial discussions with religious groups involved in environmental issues, although only exploratory, suggest that there may be an opportunity to work with those groups on the certification of palm fronds since churches and church-related activities are a principal market for palms in the floral industry. There may be opportunities to set up a pilot project to explore

the possibility of certification of palms for this niche market. Nonetheless, this would require identifying forest areas/communities where palm production could be controlled, coordination with importers of palm fronds, and distribution (chain of custody) in the North American and possibly European markets. A recommended first action would be a feasibility study of such a certification effort to determine if there might be a significant demand for certified palm fronds and, if so, if the certification would be possible logistically.

**4. Preparation of manuals for sustainable harvest of palm products.**

As has been mentioned, there exists information and research on the sustainable harvest of *Chamaedorea* palm species. Although the information exists, it is often isolated and may benefit from a synthesis to extract preliminary management guidelines for the sustainable harvest of palm fronds and seed. This would be required if the palm production were to be certified and would be a valuable resource for the sustainable management of the palm resource.

**5. Determination of the extent to which palm harvesting has contributed to the preservation of forest areas.**

Anecdotal information suggests that the income communities receive for the harvest of palm products may be an important factor in preserving some forest areas. This would obviously be an important reason to promote certification and support for the production of palm products from natural forest areas. Nonetheless, the information encountered is primarily anecdotal and a good objective study would be useful to determine the extent to which this is actually happening and would also provide valuable information that could be used in certification efforts.

**6. Explore the potential for improving quality by training harvesters.**

Because quality is such an important issue in the floral industry, improving quality could be a key factor in improving prices and market share of certified production. If quality becomes associated with certified products, the products will likely have greater demand and command a higher price. To guarantee quality would require control from the harvest through the entire chain of custody. Improvements in quality could be achieved through the education of harvesters with the added benefit of improving efficiency by lowering the amount of fronds that are culled out due to damage and size issues.

## ***Annex 2 – Market summaries for the US and Canada***

### **USA (source: Stevenson 2000)**

The market for floriculture and environmental horticulture (greenhouse, turf grass, and nursery-related crops) represents the fastest growing segment of U.S. agriculture, typically increasing an annual \$500 million in grower cash receipts. In 1996, with \$10.9 billion in grower receipts, floriculture and environmental horticulture crops ranked as the United States' seventh most-important commodity group behind cattle and calves, dairy products, corn, hogs, and soybeans.(1) By 1998, American grower receipts were valued at \$12.1 billion.(2) While these are impressive figures, it must be noted that they only represent a fraction of the over all American "green industry". In 1998, retail expenditures for all floriculture and environmental horticulture products, as estimated by the Economic Research Service (ERS), reached \$54.8 billion, or \$203 per capita.

The \$54.8 billion makes the U.S. the world's largest market for floriculture and environmental horticultural products. While there are still many nations, such as Japan, and much of the European Union, that show a higher per capita expenditure on floral products, the United States spends the most in total dollars. The U.S. is an extremely competitive market. As of 1998, it housed 14,308 growers, an increase of 1,591 from the previous year. That being said, a large percentage of the growers are small farmers with low gross sales. In fact, only 1,533 of the American growers experience revenues in excess of \$500,000. This figure is down from 1,829 in 1997, indicative of the mergers and amalgamations which have become commonplace within much of the business community. As mentioned, the majority of the businesses are smaller. 2,459 of the growers will only realize revenues of \$10,000 - 19,999 and 3,075 will earn 20,000 - 39,999 in gross sales.

American producers tend to specialize in their production of floriculture and environmental horticulture. Bedding/Garden plants are the dominant specialty as 3,748 growers choose to concentrate their efforts in the field. This is followed by potted flowering plants, produced by 2,543 growers, and foliage, which has 1,510 growers. Cut flowers and cut cultivated greens receive the least attention by domestic producers as this market is largely satisfied by foreign exporters.

While the U.S. represents the largest market, it is also the largest producer of floriculture and environmental horticultural products. Commercial growers can be found throughout the U.S., however, production tends to be concentrated in the southern and western states, where the climate tends to be more temperate. In fact, ten States account for more than two-thirds of the total U.S. output. They are California, producing 20% of U.S. output, Florida (11%), North Carolina and Texas (8% each) Ohio and Oregon ( 5%). Michigan, Pennsylvania, Oklahoma, and New York, each produce 2 to 4% of the U.S. total. However, regardless of locale, net farm income for growers of "greenhouse and nursery crops" is among the highest of all production specialties. Furthermore, according to a University of Georgia study, the floriculture and environmental horticulture sector ranks as the second-most-important segment in U.S. agriculture, behind beef and beef products. This study takes into account an industry's total

economic output, or the value of the industry and its closely associated business activities, such as product handling, marketing, and distribution.

Much of the growth seen in this industry can be attributed to the market for outdoor flowers and plants. The U.S. produces and spends more on this category than any other country. Furthermore, the U.S. is also the world's largest producer and consumer of nursery products, such as trees and shrubs, bedding plants, and turf-grass. When discussing the floriculture and environmental horticulture sector, also commonly referred to as the "greenhouse and nursery" sector, it is important to distinguish between the two. Floriculture includes cut flowers, cut cultivated greens, potted flowering plants, potted foliage, and bedding and garden plants. Floriculture crops are predominantly grown under protective cover such as plastic or glass greenhouses. This category typically accounts for one-third of all grower cash receipts for floriculture and environmental horticulture crops. Environmental horticulture, accounting for two-thirds of all grower cash receipts for floriculture and environmental horticulture crops, includes nursery plants such as trees, shrubs, ground covers, vines, and fruit and nut plants; bulbs, sod (turf-grass), and unfinished plants and propagative materials such as cuttings, plugs, seedlings, and "lining-out" stock used by other growers for growing-on. Environmental horticulture crops are predominantly grown outdoors and used for landscaping purposes. That being said, trees and plants used for conservation, re-forestation, seedlings for Christmas tree plantations, and nursery stock grown for transplant sales to growers of fruits and vegetables, are also included within this category. Excluded from this category are cut Christmas trees, seeds (flower, vegetable, or others), and food crops grown in greenhouses.

#### **Canada (source: Agrifood 2000)**

In 1998, the floriculture, nursery and Christmas tree sectors recorded the highest production value in the Canadian horticultural industry with nearly \$1.2 billion . This represented 35% of the total horticultural sector and 4.2% of total agriculture farm cash receipts (FCR). In fact, this sector has the highest FCR crop after wheat and canola. The sector's total FCR increased by 1% over 1997 and 44% over 1993 maintaining strong export sales. For the past 10 years, the sector has increased its production value by 8.7% a year.

According to the industry, the sector employs 150,000 people. Nursery farms increased by 26% from 1991 to 1996 and while greenhouse flower farms decreased in number, while the area of production increased by 52% from 1991 to 1996. For the floriculture and nursery sectors, Ontario and British Columbia are the largest regions of production. For the Christmas tree sector, Quebec and Nova Scotia are the largest producing regions. These three sectors have national associations and have developed Web sites for contacts and information

Floriculture: In 1998, Ontario (52%), British Columbia (23%) and Quebec (12%) accounted for 87% of the Canadian floriculture production. Floriculture sales reached \$903 million in 1998, up 8% from 1997 and up 44% from 1993, mainly due to the increase in export sales. Sales to wholesalers and those directed to the public continue to be the preferred channel for marketing flowers and plants, representing 25% and 21% respectively of total flower and plant sales. Through research, the sector continues to produce a wide variety of floral products for consumers. Through AAFC's Matching Investment Initiative (MII), new research helps to improve the quality and develop new varieties of floral products.

In 1998, the main varieties of cut flowers produced in Canada continue to be roses, tulips and chrysanthemums. The main potted plants produced were geraniums, chrysanthemums, poinsettias and tropical plants (including foliage and green). The production of cuttings and other propagating material included chrysanthemums with 12.7 million cuttings and geraniums with 18.4 million. Bedding plants for ornamentals totaled 584 million plants in 1998, down 1.6% from 1997 and 348 million vegetable plants, up 37% from 1997. The floriculture industry shares the same issues as those identified for the nursery industry. Canada has to compete with the world in this industry since 25% of the total supply comes from outside Canada mostly the US, Europe and South America.

The influx of cut flowers from South America is a concern for Canadian growers facing higher wages and higher heating and lighting expenses. This is resulting in a shift to different specialty crops and research into ways of improving crop yields and quality in general. Canada lags behind other major flower producing countries in rapid access to newer, cheaper and more effective pest control products.

In 1998, imports of floriculture and nursery products accounted for \$289.8 million, up 16% from 1997 and up 48% from 1993. The main products imported were cut flowers (32%) and live plants including cuttings (47%). Many imported nursery products go to nurseries that use cuttings and tissue culture to propagate saleable plants. The United States accounted for 54% of all imports, 20% from South America (cut flowers and flower buds) and 19% from Europe (bulbs). The competition is worldwide, as imports originate from more than 100 countries. The largest suppliers are the United States, the Netherlands, Columbia, Ecuador and Mexico.

### ***Annex 3 - Internet sites with Information on the Chamaedorea Palm or the Floral or Horticultural industries***

<http://www.ars-grin.gov/ars/Beltsville/na/research/index.htm>  
<http://www.cec.org/home/index.cfm?varlan=english>  
<http://www.fas.usda.gov/htp/circular/2000/00-12/toc.htm>  
<http://www.marketag.com/links/>  
[http://www.iiied.org/smg/pubs\\_stsc.html](http://www.iiied.org/smg/pubs_stsc.html)  
<http://www.fao.org/docrep/X0451e/X0451e08.htm>  
[http://www.undp.org/sgp/cty/LATIN\\_AMERICA\\_CARIBBEAN/GUATEMALA/pfs791.htm](http://www.undp.org/sgp/cty/LATIN_AMERICA_CARIBBEAN/GUATEMALA/pfs791.htm)  
<http://www.mesoamerica.org.mx/Simposio/marmillod.htm>  
<http://www.fao.org/forestry/FOP/FOPW/NWFP/nwfp-e.stm>  
<http://www.flowerweb.com/>  
<http://host8693.hostamerica.com/index.htm>  
<http://www.rfaflorist.org/>  
[http://www.ftdassociation.org/ftda/home.nsf/public/contact\\_FTDA.htm](http://www.ftdassociation.org/ftda/home.nsf/public/contact_FTDA.htm)  
<http://www.safnow.org/>  
<http://www.flowersource.net/>  
<http://www.endowment.org/>  
<http://www.tapin.co.uk/services.htm>  
<http://www.ifas.ufl.edu/~apkweb/folnotes/chamaed.htm>  
<http://mrec.ifas.ufl.edu/cutfol/cutinfo.htm>  
<http://www.rainforestcollection.com/html/welcome.html>  
<http://nav.webring.yahoo.com/hub?ring=palmring&list>  
[http://mobot.mobot.org/cgi-bin/search\\_vast](http://mobot.mobot.org/cgi-bin/search_vast)  
<http://www.lakesidenursery.com/info.html>  
<http://www.usda.gov/nass/>  
<http://www.forestdirectory.com/>  
[http://sfcw.org/background\\_articles.htm](http://sfcw.org/background_articles.htm)  
<http://www.wfrinc.com/>  
<http://www.nass.usda.gov/census/census97/horticulture/horticulture.htm>  
<http://www.stern.nyu.edu/~akambil/teaching/cases/auction/flowers.html>  
<http://www.gemi.org/>  
<http://www.plant-care.com/PlantCareTips/082500.asp>  
<http://www.attra.org/attra-pub/cutflower.html>  
<http://www.fintrac.com/gain/>

<http://www.usnews.com/usnews/issue/980420/20fore.htm>  
<http://www.select-seeds.com/Seeds.htm>  
<http://www.hortworld.com/scripts/hortworld/plantsearch.asp>  
[http://www.plantapalm.com/vpe/misc/vpe\\_commonnames.htm](http://www.plantapalm.com/vpe/misc/vpe_commonnames.htm)  
[http://www.palmcollector.com/palms/chamaedorea\\_turkheimii.htm](http://www.palmcollector.com/palms/chamaedorea_turkheimii.htm)  
[http://www.palmcollector.com/palms/chamaedorea\\_hooperiana.htm](http://www.palmcollector.com/palms/chamaedorea_hooperiana.htm)  
<http://www.volcano.si.edu/botany/projects/centres/lacandon.htm>  
<http://nmnhwww.si.edu/botany/projects/centres/gfar-elc.htm>  
<http://www.marketsearch-dir.com/html/d8102.htm>  
<http://www.pathfastpublishing.com/qr27/qreport.htm>  
[http://dataweb.usitc.gov/scripts/user\\_set.asp](http://dataweb.usitc.gov/scripts/user_set.asp)  
<http://www.ita.doc.gov/td/industry/otea/ref-room.html>  
<http://europa.eu.int/comm/eurostat/Public/datashop/print-catalogue/EN?catalogue=Eurostat>  
<http://www.ita.doc.gov/td/industry/otea/>  
[http://www.iconx.com/html/riffle\\_botanical\\_glossary.html](http://www.iconx.com/html/riffle_botanical_glossary.html)  
<http://www.ilo.org/public/english/dialogue/sector/papers/ctflower/index.htm>  
<http://tradeforum.pressflex.com/news/fullstory.php/aid/224>  
<http://www.enterweb.org/market.htm>  
<http://www.un.org.mx/cepal/link/enlaces.htm>  
<http://www.agribiz.com/agInfo/usdalist.html>  
<http://usda.mannlib.cornell.edu/reports/nassr/other/zfc-bb/>  
<http://www.ams.usda.gov/fv/mncs/fvcomp.htm>  
<http://www.cbi.nl/marketinfo.htm>  
<http://www.oneworld.de/eco-label/umweltsiegel.htm>  
<http://www.semarnap.gob.mx/proders/gestion/oax98.htm>  
[http://mobot.mobot.org/cgi-bin/search\\_vast](http://mobot.mobot.org/cgi-bin/search_vast)  
<http://www.voyager.net/mfa/cut.html>  
<http://www.itto.or.jp/newsletter/v10n1/4.html>  
<http://www.fao.org/docrep/t2354s/t2354s0f.htm>  
[http://www.statcan.ca/trade/scripts/trade\\_search.cgi](http://www.statcan.ca/trade/scripts/trade_search.cgi)  
<http://www.fintrac.com/gain/traderegs/>