




GROWING PALMS

Horticultural and practical advice for the enthusiast

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Cryosophila: a True Survivor

The dry deciduous forests in the Pacific coastal areas around Puerto Vallarta in central Mexico are the habitat of *Cryosophila nana*. It thrives on the slopes and the canyons in both shade and full sun. In these forests are also found *Chamaedorea potchutlensis* and the cycads *Dioon tomasellii* and *Zamia paucijuga*. Entire hillsides of the massive *Attalea cohune* hug the coast.

While some of this area is now protected from clearing, large amounts of the forest have been cut for housing and farming. A few of these farms grow *Agave* for the purpose of making tequila. Most of the large tequila farms are located many miles inland in high elevation volcanic valleys. However, several small-scale tequila farms have been carved out of the coastal forest to cater to bus tours that arrive from the major tourist hotels in nearby Puerto Vallarta.



1. Within an *Agave* farm, remnants stumps of *Cryosophila nana* regenerate. They had previously been cleared to the ground by machete.

Regeneration from Stumps

At one of these coastal tequila farms, in a cleared area that was once abundant with *C. nana*, is a demonstration of how this palm is a true survivor. The palm springs to back life from its cuttings and remnant stumps (Fig. 1). I know of no other palm that can be propagated through the rooting of its stem cuttings.

It appears that any other palm species propagated by cuttings must first be air layered. The new growth will emerge from the center of the cut stem in mostly dry and fully exposed conditions. Odd palms can protrude from the stumps. Usually, a much smaller head emerges from the stump, giving the appearance of a spindle palm (Fig. 3). In unusual cases, a palm with multiple heads can also occur (Fig. 4).



2. A bed of *Cryosophila nana* stems being rooted at The Botanical Gardens of Vallarta.

Rooting of Cuttings

One of the distinguishing features of the genus *Cryosophila* are the spines which cover the stem. The sharp spines are a result of roots that grow from the stem. When a cut stem is planted, the vertically erect spines on the stem will reverse direction and root into the soil. Robert Price, the Curator of The Botanical Gardens of Vallarta located 15 km south of Puerto Vallarta, has been rooting cuttings of *C. nana*. A demonstration bed containing about 50 cuttings is maintained at the garden

(Fig. 2). The display demonstrates that cuttings can and should be rescued from land clearing operations.

Rooting of Discarded Stems

During the clearing operations, many of the *C. nana* stems cut by machete are left lying on the ground or are piled in rubbish heaps. Amazingly, this gives the palm a third opportunity to regenerate. Apparently, the cut stem does not desiccate rapidly and can remain viable for many weeks. The root-spines may eventually begin to take hold. Roots will form from the spines along the portion of the stem that is touching the ground. Although the cut stem is laid horizontally on the ground, the newly emergent growth will bend vertically. Growth will progressively right the palm.

It is surprising that *Cryosophila* palms are not more common in cultivation. They are an excellent landscape plant for many subtropical areas. The palm appears to be highly adaptable to many different soil types (from decomposed granite to clay), is reasonably cold and drought hardy. In many locations, it will grow in shade to full sun. The only drawback may be that it is somewhat slow growing even in a cultivated environment with steady moisture and fertilizer.

This plant is truly an amazing survivor unlike any other palm. – Dr. Felix Montes, Puerto Vallarta, Mexico 🌴



3. Regrowth from the remnant stem following the cutting of a mature *Cryosophila nana*.



4. An unusual five-headed *Cryosophila nana* is the result of the palm's stem being cut.

Growth Stimulants

Growth stimulants are the “black magic” of palm growing. They include hormones, vitamins, alcohols and acids. Horticultural trade publications and gardening magazines are filled with advertisements that make claims about different growth stimulants. The shelves of most horticultural supply stores also abound with these products. New growth stimulants are constantly being introduced into the market. Few of these have been tested scientifically on large quantities of palms under controlled conditions; however, many large-scale growers and hobbyists faithfully use them based on the simple observation that they appear to make palms grow more rapidly and vigorously. Three growth stimulants commonly used by palm growers are seaweed, alfalfa and SuperThrive™.

Seaweed

Many palm growers are advocates of seaweed as a growth stimulant. Seaweed can be rich in minerals, amino acids, trace elements and hormones that should promote vigorous growth. In addition, seaweed is claimed to contain over 60 recognized elements, essential vitamins, enzymes, alginates, natural antibiotics and carbohydrate compounds. Advocates will attest to observing improved root growth (as much as 30 percent more roots) and fuller, greener foliage.

There are several different types of seaweed products available. The products are derived from seaweeds that come from different coastlines mostly in Norway (*Ascophyllum nodosum*) and New Zealand (*Pterocladia lucida*). Because of different growing environments, the seaweed will vary in composition. In the absence of extensive testing, however, no one type of seaweed-based product appears to produce superior results over another.

Three of the seaweed-based products used by palm growers are: Maxicrop Seaweed (www.maxicrop.com) is available in liquid or powder form in regular and high concentrations, GrowMore Seaweed Extract (www.growmore.com) is sold in liquid form by most retail horticultural suppliers and Response Natural Seaweed Extract (www.agresponse.com) which can be ordered on-line. These products can be used either as a soil drench or a foliar feed. The dilution rate is usually one tablespoon per gallon (15 ml per 3.8 l).

Alfalfa

Alfalfa contains the alcohol ester compound triacontanol which is a known growth stimulant. It makes the uptake of nutrients more efficient. It may even improve cold tolerance. Using alfalfa, many growers report a noticeable increase in both growth and vigor of palms.

Many gardeners use alfalfa meal as an organic fertilizer and to attract earthworms. Used in this way, it contains approximately 3% nitrogen, 1% phosphorus and 2% potassium. The most economical way to purchase it is in 50 lb. (22.7 kg) bags at a cost of about US\$12 from a livestock feed store. Some growers use alfalfa pellets instead of meal. The steaming process used to compress the alfalfa into pellet form (used commercially to feed rabbits) may remove some of its beneficial ingredients.

An alfalfa tea can be made by soaking alfalfa meal in water. There are many different formulations. A weak mixture can be made by soaking one cup (237 ml) of alfalfa meal in five gallons (19 l) of water. Place the meal in a sock. Allow it steep for two to three days in a covered container. The finished tea will have a highly offensive smell. It is applied as a drench using about one-half gallon (2 l) on smaller palms and a full gallon (3.8 l) on medium-sized palms.

Since alfalfa tea is a growth stimulant, it should be applied starting at the beginning of the growth cycle. The palm should be kept constantly moist following application. Apply every 6–8 weeks. If the concentration is too high or it is used too frequently, it can burn roots and kill tender juvenile palms. Be careful not to overuse since it could cause adverse effects.

SuperThrive

A growth stimulant that is commonly used by many hobbyist growers and some commercial growers is SuperThrive™ (www.superthrive.com). Most growers are familiar with its very strange label that makes incredible claims about its horticultural benefits. While many use it, few are convinced that it is effective. At least, there are no known controlled scientific studies that compare the results achieved on palms when SuperThrive is added to a regimen of standard culture and nutritional practices. The label does cite large-scale studies that confirm its benefits. In our findings none of these results has appeared in peer-reviewed journals.

After over 50 years on the market, the ingredients in SuperThrive are still unknown. The label reads "50 instant biosolubles™ normal pure complexes from carbon-hydrogen-oxygen natural organic crystals." A statement on the label indicates it contains 0.09% Vitamin B-1 and 0.048% 1-naphthyl acetic acid. B-1 is generally regarded as ineffective as a growth stimulant. Naphthyl acetic acid is used for rooting stem cuttings, but the concentration in SuperThrive is too low to be of value. SuperThrive was to have been developed in the 1940s under a grant from the U.S. Army to increase corn production during the war. Some horticulturalists believe that its base chemical may be extracted from alfalfa through a process of fermentation. This process might yield the alcohol triacontanol (see discussion above).

The label also indicates that SuperThrive comes in a highly concentrated solution. If used regularly with each watering, the recommended dilution is one drop per gallon of water (3.8 l). A one pint (480 ml) bottle will make 8,000 gallons (30,283 l). It is used by palm growers most frequently when potting bare root juvenile palms and in transplanting. In those cases, the suggested dilution is one ounce in 20 gallons (29.6 ml in 75.8 l).

According to Irvin McDaniel of Fallbrook, CA USA, an expert in soil amendments and a palm/cycad grower, "A product like this will not provide for the total health of the plants. It's like living on supplements and not eating a well balanced diet with proper exercise and rest. Nothing will ever replace having soil that is healthy and biologically active with proper structure to maximize growth and vigor." Richard Streeper of El Cajon, CA USA, a widely-respected consulting horticulturalist and rosarian, states, "Countless 'miracle' products on the market owe their existence to good marketing rather than good product results. Often noticeably absent from these products is a statement of contents or any data from controlled tests. I have concentrated on feeding the soil for several decades and avoid or limit products that harm the animal life in the soil." – *Horace Hobbs, Houston, Texas USA* 🌿

Packing and Shipping Small Palms

Small palms are vulnerable to many hazards while they are being transported. The risks are especially acute when parcel delivery services are used and shipping costs must be economical. Changes in temperature and humidity, rough handling and box damage are some of the dangers.

Since 1987, Floribunda Palms (www.floribundapalms.com) has shipped thousands of small palms worldwide from its nursery location in Hawaii. Small palms are those sized from seedlings to one-gallon (3.79 l) containers. (Note: Larger palms require different shipping methods.) Described below are the eight steps used to prepare a shipment of small palms:

Step 1. Barerooting the Palm

The palm is first barerooted from its current container (Fig. 1). Palms beyond the seedling stage can be shipped with some growing medium on the roots. The medium must be certified as sterile and cleared for export. Laws regarding shipment with growing medium vary by destination. Any loose medium is shaken off the rootball. However, the roots are not washed clean. Palm seedlings have very little root system to hold the medium, so they are completely barerooted.

Step 2. Wrapping the Roots in Sphagnum Moss



1. A seedling palm is unpotted.

Sphagnum moss harvested in Chile and New Zealand is purchased in compressed bales. The moss is hydrated by soaking for several hours in water mixed with SuperThrive™ growth stimulant. SuperThrive can be used at a stronger dosage than indicated in the label directions. Once the moss is loose and moist, it is wrung out like a washcloth. The moss is damp and ready for use. The rootball is blanketed with a layer of the damp sphagnum moss.

Step 3. Blanketing the Rootball with Foil

A thick layer of sphagnum moss is placed across a piece of foil wrap (Fig. 2). Heavy, commercial grade aluminum foil wrap (not the type found in kitchens) is used so that it will not tear. The rootball is placed on the blanket of foil and moss. It is then rolled around the rootball in a tubular fashion. Masking tape is used to secure the edge. The result is an aluminum pot for transporting the palm (Fig. 3). In cases

where the palm is a seedling too small to wrap in this fashion, a zip-lock plastic bag is used instead of foil wrap.

Step 4. Spraying the Leaves with Antitranspirant

After the palm has been “potted” for shipping, the leaves are sprayed with an antitranspirant. It is important to spray the leaves only and not the roots. There are many commercial products sold for this purpose. Wilt-Pruf® Plant Protector (www.wiltpruf.com), Anti-

Stress 2000 (www.polymerag.com), Cloud Cover and Vapor Guard (no web sites) are some of the products used by palm growers. The antitranspirant spray is milky white and makes the palm sticky. The coating does not appear to negatively affect photosynthesis. It improves the ability of the palm to tolerate changes in humidity and temperature during the shipment

process. The use of antitranspirants has significantly improved the success rate of shipping small palms.

Step 5. Sleaving the Palm in Plastic Netting

The entire palm is sleeved in plastic netting (Fig. 4). Green netting is sold in tube form. The palm is inserted by the potted end. As the leaves are netted, they are carefully bundled. The netting is then cut to length and tied at both ends. Netting the palm protects the leaves and provides better “pack out.”



3. The foil “pot” is secured with tape.

Step 6. Boxing with Shredded Paper

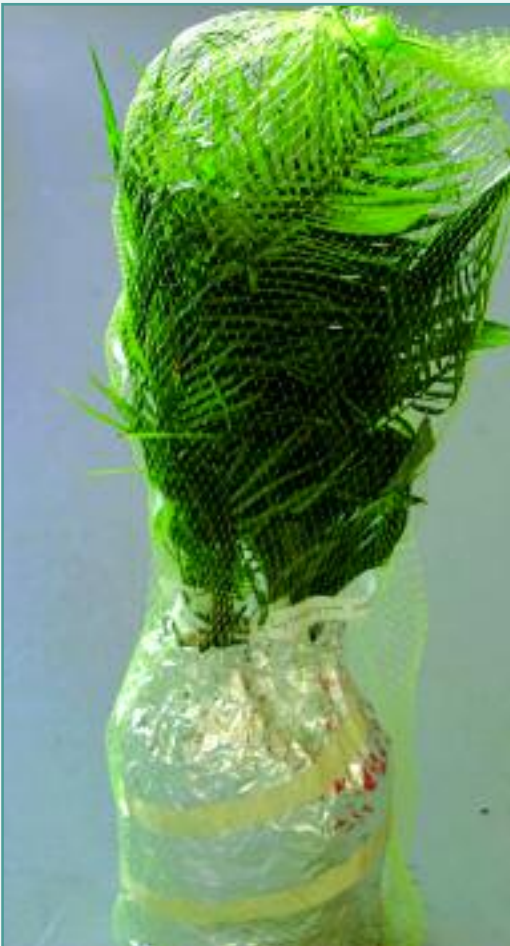
The palms are boxed with shredded paper so that the contents do not shift during transport. Depending on the time of year, a layer of insulation is also added to protect against cold temperatures. A heavy-duty cardboard box is used that can hold up to 75–80 lb. (34–36 kg) and not exceed 36 inches (91 cm) in length. The weight and size limitations may require the use of more than one box. However, in my experience, larger boxes are more likely to be crushed or otherwise damaged during shipping.

Step 7. Shipping the Palm

Boxes are shipped using an express parcel delivery company. United Parcel Service and Federal Express are two companies that provide economical, two-day delivery service within the United States. Aside from import/export permit issues, shipping palms internationally can take longer and be more complicated depending on the final destination.



2. The rootball is wrapped in moist sphagnum moss and covered with heavy-weight aluminum foil.



4. The palm is slipped into a net sleeve. The ends of the net sleeve are secured with knots.



5. Depending on size, more than one seedling can be accommodated in a single net sleeve.

Step 8. Unpacking and Rehydrating Before Potting

The palms should be rehydrated after unpacking. The root system is immersed in water for 15–30 minutes. It may be beneficial to add a seaweed concentrate to the water when rehydrating. There are many products suitable for this purpose. Roots 2® With Iron is used to promote root growth and improve metabolic processes. SuperThrive™ is also commonly used as an alternative to a seaweed solution. No rooting hormones are used.

A broad spectrum fungicide is also recommended prior to potting the barerooted palm. It controls *Phytophthora* and other damping-off and stem rot diseases. There are many products from which to choose. A suggested product is Banrot® Fungicide (available through www.yardiac.com). It should be used only as a soil drench and not as a foliar spray.

It is not necessary to wash off the antitranspirant coating on the leaves. While the leaves will remain sticky for several weeks, the coating will eventually wear off.

Successfully shipping small palms using parcel delivery services is challenging. During the process, palms face many fatal hazards. The method of packaging and shipping of small palms described above has been developed by Floribunda Palms through much trial and error. Following this process should maximize the success of transporting small palms. – Jeff and Suchin Marcus, Mountain View, Hawaii USA 🌴