Comments on Shipping Palms

David Barry, Jr.

Palms are more difficult to ship than most kinds of plants and are subject to some special regulations.

To begin, the Regulations of the United States Department of Agriculture prohibit the importation of palms into the United States. The theory to support this regulation is that palms can be grown easily from seed and that the importation of seeds instead of plants puts at a minimum the chance of pest introduction. When a palm will not come true from seed, as, for example, the variegated leaf form of *Rhapis*, a special permit to import a few plants will be granted upon application to the United States Department of Agriculture, Division of Plant Quarantine, 209 River Street, Hoboken, New Jersey. In cases when it is extremely unlikely that seeds of a certain palm can be found, permission also to import plants will probably be given.

As an example, I have in mind a beautiful *Pinanga* that grows in the hills above Penang. It resembles somewhat *Chamaedorea brachypoda* with its thin, reed-like, multiple stems and its simple bifid leaves, which are leathery. This palm would make a delightful tubbed specimen. It was fairly common, even growing conveniently in or near foot paths that ran through the forest. After much searching through many of these palms no seeds nor evidence of flowering were found. Assuming that it was a question of the right time of year to find seeds, I posted a cash reward to be given to anyone on the staff of the botanical garden who could find seeds. After about three years of observation no seeds have been found. This palm should certainly be a proper candidate for a special permit to import a few plants.

A general requirement by the United States and most other countries, the State of Hawaii, and that of California for shipments from Florida, Hawaii and Puerto Rico, is to remove (wash) completely from the roots of plants all earth including sand and soil. Securing of root systems in original, soil-free sphagnum moss or peat is permitted. California imposes a general quarantine against Puerto Rico and a qualified quarantine against plants from Hawaii and Florida. It is designed to prevent the spread of the burrowing nematode, *Radopholus* species. By "qualified" is meant that entry is permitted into California if respective State Plant Boards issue a certificate of freedom from nematodes to accompany each shipment or lot of plants.

Hawaii provides the service of a microscopic examination of the roots by a nematologist and the issuance of a certificate. This procedure requires a minimum fee of $2.00, the custody of the plants for four days, and the probability of fatal damage to palm plants by exposure of the root systems during this time to too much air and then to too much water. Florida does not provide such a service for individual shipments of plants. Its certification is based on thoroughly sampling a nursery by taking root and soil samples and examining them for nematodes in the laboratory, or when the plants have been grown from seed in sterile soil in raised benches. I know of no nursery in Florida interested enough in shipping palms to California to have at this time a certification by either of these methods.

The California members of The Palm Society, about 130 in number, are presently unable to use Florida as a source of palms.

Most advanced countries require that a phytosanitary certificate issued by the United States Department of Agriculture accompany each lot of plants shipped. These certificates are issued without charge by the federal government's plant quarantine stations at a representative number of ports of entry.

Written request for the certificates may be made by presenting the original phytosanitary certificate issued on examination of the plants by the state plant inspector. I have found in practice that England, Canada, Australia and New Zealand distinguish between the inspections made by the federal government and those made by the states, and insist on certificates issued by the former. Notwithstanding instructions by other countries that require federal certificates, those issued by state authorities usually suffice.

Canada requires the prior issuance by it of a permit to import plants sent to the shipper to accompany the shipment. Australia requires a permit issued by it before shipment by which the importer arranges for receipt of the plants before ordering them. This permit does not need to accompany the shipment. A year's quarantine period in Australia may be required before final release of the plants to the importer.

No formality is required by England in shipping plants to the Royal Botanical Gardens at Kew. They are a law unto themselves, and the only exception to the rule I can assure you.

So much for red tape, and now let us consider some of the aspects of preparing plants for shipment.

There is no special problem involved in shipping palms undisturbed in the soil and containers in which they have been growing. Much of this is done by trucking, and crating can often be avoided. Likewise, no special problem arises when palms are mossed and shipped to arrive at destination in a day or so and without involving plant inspection. Some of the legal limitations on these two methods are set forth above. The problems arise when time, distance, and inspections are involved.

Palms are particularly vulnerable to exposure of the root system to air. Such exposure is unavoidable when soil is washed away from the roots. Exposures may be repeated during plant inspections made before shipping and at destination. The first exposure kills usually all of the minute, white, feeding roots. These roots may not be redeveloped by the palm after its preparation for shipping and during the trip. Dicotyledonous plants that have fast-forming cell tissue in their cambium layers, and that can be propagated from cuttings, recover from such exposures and grow new feeding roots much more readily than do palms. Monocotyledonous palms without cambium are stubborn about redeveloping their fine, feeding roots. During shipping, especially with low temperatures, these roots are not developed and the palm will slowly pass away in spite of solicitous care by the recipient. He may regard the extensive system of brown roots as reassuring, but they are not the roots that convey food to the palm. They may keep the palm erect in its container, but the roots that convey food to the palm are minute and white.

Here are recommendations that should bring success in shipping palms:

Minimize the exposure of the root system by washing away the soil from one plant at a time. Immediately envelop the root system in the moist, fresh sphagnum moss or peat in a compact manner to avoid air pockets. Prefer-

ably, insert the palm in a plastic pot of the same size as the one in which it had been growing. Otherwise, wrap the enveloped roots in plastic sheeting, or enclose in plastic bags. The medium should be firmly and solidly packed around the roots. Now is not the time to ship the palm. Put it in a warm, sheltered place for two or three weeks, preferably on bottom heat. During this time it should redevelop new feeding roots. (If necessary, re-moisten the planting medium.) Now the palm is ready to ship. It will never know it has taken a trip. As an additional precaution, just inside the lid, place a card with this message:

Plant Inspector: Please Minimize Exposure of Roots to Air.

Second, for the receiver of the plants:

On arrival of the palms examine the root systems. If there are no fine, white feeding roots do not plant the palms in soil. To do so is the kiss of death. The typical soil in which the palms would thrive if in thrifty condition will suffocate the plants. Drown them would be another way of saying this. The palms should be handled as unrooted cuttings. Put in coarse sand, sponge rock, or a very loose, open, porous mixture. Oxygenation through aeration in the root system is necessary to produce the development of the essential feeding roots. Again, do not be misled by the presence of an extensive root system of brown roots. They will not provide sustenance for the palm. Use bottom heat if at hand as one would for cuttings. Put the palms in as warm a place as can be found. Cover the palms with a plastic bag to produce maximum humidity to the leafage while the root system remains impotent. When, and not until, the white feeding roots have been developed, the palms may be planted in the soil in which you intend to grow them. It would help to keep the plastic covers on the palms for a few days after transplanting.

If the palms should have arrived in a dry and weak condition, soak the entire plants for two hours in a solution of sugar in water. The leafage will be able to absorb some of the sugar as a stimulating food, and this preliminary treatment will sometimes make the difference between success and failure.

Incidentally, the above treatments can be effectively used with other kinds of plants.

In general, when shipping plants during hot weather, cut holes in the cartons about the size of a fifty cent piece; during freezing weather completely envelop the carton in newspaper "blankets" made by stapling together not less than eight thicknesses of newspaper.

The United States Department of Agriculture prohibits importation of plants that are in the medium in which they have been growing. The purpose of this regulation is to make it comparatively easy to examine the root systems. With limited staffs it would not be possible to make proper examination of the fine root systems of large quantities of such plants as, say, azaleas, even though planted in a permitted medium such as peat. The fine network of roots would have formed a cage of massed roots difficult to spread apart for examination. I consider that the establishment of feeding roots on the root system of a palm for a period of two or three weeks in a permitted medium prior to shipping is not tantamount to growing a plant in a medium and is not contrary to the intent of the regulation. Besides, the newly applied medium would readily fall away from the not-extensive root system in which the feeding roots may have commenced development, making easy any examination.

One of our Society members, Mr.

Peter B. Dow, of New Zealand, a professional seedsman, has sent to me sprouted seeds in lieu of the seeds that I had ordered, a very pleasant surprise. They were of *Rhopalostylis* species and were in fresh, moist peat, enclosed in a plastic bag. It was like receiving orchid seedlings from community pots. The "seedlings" arrived in perfect condition. They were sustained en route at least in part by the endosperm. No leaf had emerged. The roots were well-branched. From the point of the sheathing structure from which the leaf would finally emerge to the bottom of the root system was about an inch and a half. I would guess that the endosperm was about half consumed. These sprouted seeds were ready to be potted.

It is clearly evident that sending sprouted seeds has great advantages. Viability of the seeds is no longer a consideration. Only one problem presents itself and that is with a few genera in which elongated cotyledons emerge from the seeds and carry the embryos some distance from the seeds before they sprout. These cotyledons are very fragile. They also elongate rapidly once they have started to emerge. Examples of such palms are *Borassus*, *Copernicia* and *Hyphaene*. In most kinds of palms the elongation of the cotyledon is slight.

Several years ago I collected some *Borassus* seeds on Kandahar Island in the Zambezi River about eight miles above Victoria Falls. Elephants are very fond of these seed. In some way they get over to the island for them. The only seed left by the elephants had been dropped and stepped on by them so that they were level with the surface of the moist soil. The elephants could not pick them up. I had some difficulty in digging them out with a pocket knife. When I put them in a plastic bag germination began immediately and within two days the fast growing cotyledons had emerged so far that the seeds were worthless for shipping.

There should be more activity in the exchange of palm plants between members of the Society. The distribution of seeds through the Seed Bank of the Society is a most valuable facility. It could be supplemented if members would declare themselves willing to engage in the exchange of palms. Two to four years of time could be saved for each palm over having grown it from seed.

Our Changing Weather

Reprinted by kind permission of All Florida Magazine, *with* "All Florida Staff" *as the by-line. The article is reproduced here because the weather is of vital interest to all gardeners, but of course* Principes *cannot vouch for, or sponsor in any way, all the statements in this challenging summary.*

The weather: Cold . . . frost warning . . . freezing . . . more of the same.

That forecast could be somewhat premature for Florida. But the experts say cold warnings will be more frequent for the Sunshine State.

The state spends huge sums to advertise sunshine, glittering beaches, a benevolent sky that guarantees a coppery skin, and the unspoiled beauty of wildlife sanctuaries of semi-tropical birds and animals, all of which can be enjoyed during the season when much of the rest of the nation shakes and shivers and huddles next to the floor furnace. But even the most optimistic interpretation of what is happening to our climate stirs a vague worry when the facts are known.

To begin with, the facts themselves seem contradictory. A century ago the world emerged from the Little Ice Age,