

Chamaerops



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*Cover: Almost ripe fruits of Wodyetia bifurcata, Bent Palm Nursery, Homestead, Florida.
Photo: Tobias W. Spanner*

Chamaerops is the quarterly journal of The European Palm Society. The European Palm Society (EPS) is affiliated to the International Palm Society and was founded in 1991. The EPS is a nonprofit organization dedicated to sharing information about palms and other exotic plants across the continent of Europe. The main goal of the EPS is to communicate with other enthusiasts through Chamaerops, the EPS website, or personally at Society meetings, in order to share ideas and knowledge of the successful cultivation of exotic plants. Above all, the EPS and Chamaerops are run by members, for members.

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Editor	Tobias W. Spanner (Germany)	<i>mail@palmsociety.org</i>
Membership Organizer	Tony King (UK)	<i>membership@palmsociety.org</i>
Language Editor	Lauri D. Coulombe (USA)	
French Translator	Yann Corbel (France)	
German Translator	Jörg Witticke (Germany)	
Layout, Design	ultracondensed.com (Germany)	<i>webmaster@palmsociety.org</i>
Printers	Simmons Printers Ltd. (UK)	

The European Palm Society

c/o The Palm Centre
Ham Central Nursery
Ham Street, Ham
Richmond, Surrey, TW10 7HA - United Kingdom
Phone: +44 20 8255 6191
Fax: +44 20 8255 6192
mail@palmsociety.org
www.palmsociety.org

Special thanks to all our contributors.

Please send manuscripts and pictures by mail or e-mail. Computer files are most welcome. Pictures can be sent as prints, negatives, slides, on floppy, CD-ROM or by e-mail. Please send to: The European Palm Society, Tobias W. Spanner, Tizianstr. 44, 80638 München, Germany

To join the EPS please contact

Tony King - 34, Keats Avenue - Romford, Essex RM3 7AR
United Kingdom
membership@palmsociety.org

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Editorial

I am very pleased about the responses we got on our call for articles on palm seed germination, the results of which you can find in this issue. I think it is a particularly rewarding feeling to grow palms from seeds, especially when you can look back onto a whole garden full of self-grown palms one day, when they have matured. It is always amazing to see how a big tree can spring from such a tiny seed.

I often find that many perceive palm seed germination to be a problem, perhaps due to the fact that some palm seeds have a lengthy germination period. I would claim that a seed from a palm like *Howea* is not necessarily more difficult than that of a *Livistona*, for example, just because the *Howea* seed takes many months to sprout as opposed to a few days or so for the *Livistona*. One just needs to have more patience with palms like *Howea* and be aware of their germination period. Many palm seeds that are notably slow also often are notably reliable in their success and are hardy to adverse effects such as desiccation, the number one enemy of most palm seeds.

My recent personal germination discovery was with seeds of *Trachycarpus*. I had always wondered why *Trachycarpus* seeds that have been severely desiccated did not germinate well with standard methods, even though the seeds looked healthy and did not rot in any way. I have kept seeds of some *Trachys* in the seed beds for years, on occasion, without any signs of deterioration or, unfortunately, germination. Rehydration seems to be the secret to success! Testing out *Trachy* seeds that were badly desiccated, I found that they required up to two weeks of soaking before the embryo embedded in the seed was able to fully recover, swell and fill the small cavity in the endosperm.

A set of secateurs is a great tool to determine the hydration of a palm seed. By cutting the seed in half in the right spot, the embryo can be seen as a small, cone shaped lump of tissue embedded in the endosperm. In most palm seeds the embryo is located along the seed's longitudinal axis, so cutting it lengthwise usually gives you a good result. In some seeds, like *Butia*, *Syagrus* or *Sabal*, it sits behind a germination pore that is easily visible on the endocarp or shell of the seed. Other palm seeds again hide their embryo well, such as *Arenga* and *Caryota*, and finding the embryo may require some searching. Be careful cutting hard shelled seeds this way so the secateurs' blade won't end up in your finger. Such seeds are better cracked with a hammer or a rock first before examining them.

The embryo in a palm seed is what will later develop into the plant; the rest of the seed is filled with a whitish material (endosperm) that gets digested to feed the embryo until it has grown into a seedling. The embryo usually has a white or yellowish colour and should fill the cavity it sits in to at least half. A brown or totally shrivelled embryo usually means the seed is no longer viable. Seeds where the embryo fills its cavity only partially would need to be well rehydrated; in contrast, seeds in which the embryo is fully swollen and filling its cavity are ready to sprout and need no soaking time.

T.S.



Hurricane Hell

By Bob & Marita Bobick, Bobicks Palm Growers, Orlando, Florida

It's been one hell of a hurricane season this year for us here in Orlando. We are calling our place "Falling Oaks Farm" right now and plan to replant with more palms once we are able to clean the place up. We figure on at least a year before that happens.

Chapter 1 - Charlie

Charlie was the first to hit us and did quite a bit of damage. We figure at least 30 trees went down (oaks and pines). The winds were incredible; the airport in Orlando recorded sustained winds at 90 miles per hour with gusts up to 105 miles per hour. The eye on this storm was only 20 miles wide so most of the damage was a small swathe right up the center of the state. Unfortunately for us, the center of the storm passed just 13 miles from us. We were hit in the middle of the night and kept hearing 'snaps,' thinking they were breaking branches. At first light, we soon realized that the snaps were 60 ft pines that had broken in half, some with diameters of 14-16 inches.

The only positive thing about Charlie was that its forward movement was so fast that we only had hurricane force winds for about three hours. Also, there was very little rainfall associated with this hurricane. The damage to Southwest Florida, where it hit at 140 miles per hour, was total devastation. Nurseries like Palmco on Pine Island reported all their field grown material flattened as well as inundated with salt water. The worst part of this storm was the fact that we went without

power or water for seven long hot days. This was further complicated by the shortage of gas due to the lack of electricity. Supplies such as food, ice, generators, plywood, etc. were nowhere to be had. We had to drive to Cocoa Beach, which had escaped any damage, to get gas, ice, chainsaw blades and food. One last note on this storm: 90 mile an hour winds really do sound like a freight train passing at high speed!

Chapter 2 - Frances

Two weeks later, with things barely getting back to normal, hurricane Frances decided to pay Florida a visit. The nature of this storm was entirely different. The eye of the storm was 80-100 miles wide and its forward motion was painfully slow, sometimes down to 3 miles an hour. (The weather people joked that you could probably WALK faster that the storm was moving.) Thankfully, its maximum wind at landfall was only 105 miles an hour, but its slow forward speed kept the winds high and pounding for 12-14 hours. It took almost three days from start to finish for this storm to move through Orlando. Although the center of the storm hit in Stewart, 75 mile an hour winds with higher gusts hit the coastline from Ft. Lauderdale to Daytona Beach.

Many areas like West Palm Beach and the Daytona area were without power and supplies for weeks. The other problem with this storm was the copious amount of rain due to its slow movement. We had 20 inches of rain here in Orlando and we're sure other areas had more. Flooding was a big problem. Needless to say, standing water and the Florida heat created a bumper crop of mosquitoes, which only added to the agony. In this storm we experienced 60 mile an hour winds, since the center stayed far south of us, but the duration of the winds pushed down another 20

The Hurricane Palm, Dictyosperma album, native to the Mascarene Islands is said to withstand the strongest storms. Photo by Tobias W. Spanner



oaks and pines. In the combination of both storms, not one palm on our property fell down or was damaged severely, except those that were crushed by the falling oaks and pines.

One other problem that arose from this particular storm was the fact that they evacuated over a million and a half people from the coastal sections of the East Coast. This forced migration used up every gallon of gas in the state. This was further complicated by the three seaports of Florida (Jacksonville, Tampa, and Port Everglades) being closed and stopping gasoline supplies from reaching the state. Our own local port, Port Canaveral, is still closed due to shifting sands filling up the shipping channels. We only lost power for two and a half days this time, probably because the majority of the trees fell over power lines with the first storm. The streets in Orlando are filled with debris from people's yards. It will probably take the county a month or two just to clean the mess up.

Chapter 3 - Ivan

Orlando lucked out on this one. Ivan came up the west coast of Florida and for a while they were predicting that he would come in through Tampa and head right for Orlando. Ivan was a category five and they said he was bigger than Andrew (the hurricane that devastated Homestead years ago). Seeing a radar image of this hurricane on the television sent chills down our spines. Once again people began scrambling for food, ice, generators, gas, and plywood. It was the norm to see homes with blue tarps on the roofs and totally boarded up. A very few, including ourselves, did not choose to board up our windows and doors; we just hoped for the best and 'hunkered down' to wait it out. But Ivan kept going north and hit

the panhandle of Florida instead. Our sympathies went out to those poor people in Pensacola and Apalachicola. Their area was totally devastated by Ivan. The tidal surge was so strong that it literally moved the bridge on Interstate 10 off its foundations and killed a few people unlucky enough to be driving the highway at the time. Not only were 140 mile an hour winds devastating for those areas that experienced them, but they also had the secondary problem that most of the resources and supplies were already staged and being used in the south and central parts of the state. (Believe it or not, as we write this in November, there is still a dry wall and shingle shortage. Roofing contractors are doing their best, but it is estimated that it could take up to two years for many people to get their homes repaired.) There were sighs of relief in Orlando but the plywood over the windows stayed up all over town. No one was taking any chances. The media kept warning people about having no exits in case of fire, but few were even listening. The general plan was to wait until November and the end of the hurricane season.

Chapter 4 - Jeanne

Even as Ivan was approaching Florida by way of the Gulf, there was another storm brewing out in the Atlantic, which had been christened Jeanne and the general thought was that she would head due north and not bother anyone. Once Ivan had made landfall and done his worst, Jeanne decided to do some fancy footwork and circled around and headed toward Florida. Even the Governor of the state was astounded to hear that Jeanne had made a circle and, live on TV, you heard him say, "What???" Jeanne was then predicted to follow Frances' footsteps and come in through Stewart once again and move across the state. The citizens of this state were anxious, worried, and totally stressed out. What are the chances of three storms hitting in one year in the same area? This couldn't be happening.

Lines began forming at Home Depot for plywood, tarps, generators, gas cans, and propane.

1st row left: *Thrinax radiata*
1st row right: *Phoenix roebelenii*
2nd row left: *Pritchardia remota*
2nd row right: *Pelagodoxa henryana*
3rd row left: *Medemia argun*
3rd row right: *Gaussia maya*
Photos by Tobias W. Spanner

The power companies were warning that this time we could be without power for weeks since their crews were stretched way too thin all over the state and crews from other nearby states were already working up in North Florida. They had put out calls to Texas, Missouri and a whole host of faraway places for help. Gas lines formed quickly and people were acting crazy once again. Tempers were stretched to their limits. Then we waited. Jeanne made landfall in the exact place Frances had a few weeks before. She was faster than Frances but slower than Charlie and she came in the middle of the night.

Once again we were lucky that the storm stayed south of us but the winds were still at least 50-60 miles per hour. Trees that had been leaning finally gave up and came crashing down. We had a huge 50 ft oak next to the house that we knew we were going to lose and prayed it would not hit the house. It finally gave and quietly drifted to the ground with only one branch touching the house. To give you an idea of the ramifications of the three storms, starting Aug. 13th, our county, Orange County, does not expect to finish all the debris pick up until December 15th of this year. To give you an idea of the damage to homes in Orlando from these three storms, we need to tell you a little story. Our neighbor was returning from a trip after Jeanne had come through. As the plane was starting to circle the airport, she looked down and thought to herself, "Wow, I never realized how many pools people have in Orlando!" As the plane lost more altitude in its circling pattern, she said to herself, "Wow, look how very blue those pools are!" As the plane approached the runway to land, she realized those weren't pools she was looking at, they were the blue tarps covering and protecting the roofs of damaged homes!

The one thing we have heard time and again from people since the storms of this summer is that when they start to replant their landscapes, they're not planting any more oaks; it's going to be lots and lots of PALMS! It is incredible how palms have managed to withstand so much and still look good and be standing upright! The genus that is truly a champion against high wind is

undoubtedly Sabal. In our garden Sabal palmetto, *S. causiaram*, *S. mauritiiformis*, *S. rosei*, *S. bermudana* were literally unfazed. The genus that fared worst was *Syagrus*. Their long petioles and fronds tended to tie together like a 'maypole' and many were pushed to severe angles. Another species that did not fare well were the *Wallichia*. With their large leaves our *W. densiflora* were at 30 degree angles. The palm that surprised us and we expected to go down was our *Bismarckia nobilis*. These were the first to go down at Fairchild Tropical Gardens during Hurricane Andrew due to their stiff leaves, but our *Bismarckia* weathered the storms magnificently. Our *Arenga* did great, *Livistona* (although a trifle beat up) are still standing tall, and Phoenix was an outstanding trooper, especially *P. sylvestris*. The other problem that occurs (and we had seen this after Andrew at Fairchild Tropical Gardens) is after the canopy trees have fallen, understory palms like *Chamaedorea*, *Laccospadix*, etc. are exposed to much more sun which causes a lot of leaf burn. Thankfully we are approaching the winter season and the low angle of the sun is sparing us from a lot of sunburn. We can only imagine what the June or July sun at its zenith will do to these shade-loving plants.

So that's where we are. We still anticipate six months more work and many thousands of dollars to restore what we once had. But as an old newscaster used to say when he completed his broadcast, no matter how bad the outcome, "Press on regardless!" And so we shall.



A Practical Guide to Germinating Palm Seeds

*By Jeff Marcus, Floribunda Palms and Exotics, P.O. Box 635, Mountain View, Hawaii 96771, USA
& Ken Banks, P.O. Box 555, Pahoia, Hawaii 96778 USA*

With most palms, propagation from seed is not difficult as long as a few basic requirements are met. Among the most important are fresh seed, good sanitation, proper medium, proper hydration, and adequate heat. Each of these points will be discussed separately, although they are inter-related.

Fresh Seed

The fresher the seeds are, the better the results will be. To check the freshness of your seeds, cut open a sample seed and inspect the endosperm and embryo. The embryo should be fresh, firm, and not discolored. If the interior of the seed is rotten or has an unpleasant odor, it is unlikely to germinate. The endosperm is of two types, homogeneous or ruminant, and may be hard, oily, or even hollow. If the inside of a homogeneous seed is off-color, such as brown or gray, or if it smells bad, the seed is old or was harvested before maturity. Such seeds are also unlikely to germinate. In a ruminant seed, the seed coat is infolded, creating dark, tangled streaks in the endosperm. Ruminant seed is more difficult to assess because of its more complex appearance.

Removing the Fruit Pulp

The fleshy or fibrous fruit pulp frequently contains growth inhibitors. Removing it before planting will improve results. Methods for doing this vary with the quantity and type of seeds, but

most begin with a preliminary 48-72-hour soak in water. Soaking causes the pulp to ferment, which weakens it for easier removal. Change the water daily during the soak. Fruit that is slightly immature should be placed in a tightly closed plastic bag and kept in a warm spot for a week or so. This promotes ripening and softens the outer flesh for cleaning. Sometimes the seeds need to be soaked further to soften the pulp, sometimes not.

There are several ways to remove the seed coat. With small quantities of seeds, simply rub them by hand against a fine-meshed screen and wash away the pulp with water. Another way that works well with small amounts of seed is to shake them by hand in a closed container with water and small, rough-edged rocks. Pour off the water and pulp occasionally, add more water and shake again, until the seeds are completely clean. Seeds can also be cleaned with a knife or other sharp tool, but this is slow and a little dangerous.

Motorized cleaning devices make the job easier and are a necessity for commercial operations. For smaller quantities, use a rock tumbler. Put rocks and water inside with the seeds. Larger seed-cleaning machines can be purchased or fabricated. Some large-scale growers and seed dealers use cement mixers to do the job. The seeds are rotated in the drum for 10-45 minutes with water and rough-edged rocks of 7-10 cm. The time will vary with the machine and the type of seed and rocks. Some seeds are brittle, and without proper care may be damaged by power cleaning. Among large-seeded palms, *Actinorhynchus* is particularly brittle and prone to damage, and many smaller seeds, such as *Pinanga*, must also be handled with care. When cleaning seeds, remember that the flesh of some types contain crystals of calcium oxalate, a skin



irritant that can cause severe pain on contact, depending on the individual's sensitivity. For this reason, *Ptychosperma*, *Arenga*, *Caryota*, and *Wallichia* should be handled with care.

Damaging insects such as seed-boring beetles may arrive with seeds. They may reduce germination and spread to other seed batches. To minimize these risks, seeds collected from the ground, whether in the wild or from cultivated plants, and seeds collected under unknown conditions should be soaked in a contact insecticide solution once the fruit pulp has been removed. The insecticide solution should be prepared at the same concentration you would use to spray for pests. Soak small, thinner-shelled seed, such as *Pinanga*, for 15 minutes. Soak larger, harder and less permeable seeds longer, from 20 to 45 minutes. Examples of these latter seeds are *Mauritia flexuosa*, *Bismarckia nobilis*, *Parajubaea cocoides*, and *Jubaea child*. After the insecticide soak, rinse the seeds in clean water for 20 minutes.

After cleaning the seeds, hydrate them by soaking them in water for 24 hours, especially if you did not soak them to help remove the pulp. Within 24 hours most fresh, viable seeds will sink. There are exceptions such as *Manicaria saccifera* and *Metroxylon vitiense*, whose viable seed will float even after cleaning and soaking.

Whether or not to discard a batch of heavily infested, damaged seeds depends on their rarity and your ability to get more. For very rare seeds, when even a single germination could be valuable, plant it. Remember, however, with heavily infested seeds, especially in large quantities, there is the danger of introducing pests into your nursery. Balance this risk against the desirability of propagating the seeds and follow the treatment procedures described above.

1st row left: *Phoenix theophrastii*

1st row right: *Wodyetia bifurcata*

2nd row left: *Latania loddigesii*

2nd row right: *Plectocomia himalayana*

3rd row left: *Roystonea regia*

3rd row right: *Attalea funifera*

4th row left: *Brassiophoenix schumannii*

4th row right: *Caryota maxima Himalaya*

Photos by Rudolph Spanner

Fungi flourish in the heat and humidity necessary for good germination, so equipment, fixtures, seeds and growing medium must be kept clean to prevent damping-off and other disease problems. You may want to soak seed in a fungicide before planting.

Planting Medium

Germinate the easy varieties in a commercial mix of peat moss or sterile sphagnum moss mixed with an equal amount of perlite or vermiculite. You may also use commercially prepared, finely cut coconut coir to which the same fast-draining material has been added. Sand, wood chips, screened rock or volcanic cinder screened to a maximum size of 9 mm can substitute for vermiculite or perlite. Whatever you use, the medium should be very porous and drain extremely well. All containers should have plenty of holes in the bottom to ensure quick and thorough drainage.

When containers and planting medium are ready, lay out the seeds on the surface, and before covering them, dust with a commercial insecticide. Bury the seeds in the medium to a depth of half the seed diameter and then cover everything with finely screened cinder (3-6 mm particle size), thick enough so it will not wash away during watering. This top-dressing dries out quickly and discourages the moss that grows on peat. Sand or finely crushed rock would work just as well. When planting is complete, place the containers on clean benches, 60-90 cm above the ground. Be sure to label your containers with a waterproof and fade-proof marker.

Palm seeds known as remote germinators may require special treatment and a little extra patience. Remote germinators push a shoot downwards as much as 20-25 cm before sending up the first leaf (Fig. 1). The larger ones such as *Voanioala* and *Borassodendron*, should be planted in deep containers such as citrus bags or large tubs, or be transferred to such containers soon after germination. If seeds and seedlings can be

protected, the collector may want to plant large remote-germinators directly in the ground.

Hydration and Heat

At this point, the most important factor in seed germination is proper hydration, followed by constant high heat. Maintaining proper hydration is the trickiest of the two. Water your containers thoroughly, but just as important, let them dry out thoroughly before watering again. Over-hydration can drastically reduce the germination percentage. Once seeds begin to germinate, the containers will require more frequent watering. Seeds should be kept at 26-35°C. Some growers provide constant bottom heat by means of electric pads on their benches.

Difficult-to-Germinate Seeds

For difficult seeds and rare seeds, the most reliable method of germination is the Plastic Bag Method. For this method, seeds are blanketed in damp sphagnum moss and germinated in zipper-type, re-sealable plastic bags. Thoroughly saturate the sphagnum moss with water and wring it until no more can be expressed. Place the seeds and the sphagnum moss inside the plastic bags (along with a label) and keep the bags at 26-35°C. Check inside the bags periodically to ensure that the sphagnum has not dried out. Once seeds have germinated, place them in community or individual pots containing the potting mix described above and the quick-drying top-dressing. When transferring germinating seeds from the relatively sanitary conditions inside the bags to pots containing ordinary medium, treat them to a precautionary fungicide drench. Germination setups can also be improvised from plastic foam boxes with tight fitting lids, such as are used to pack fish or fruit. Fill the boxes 1/3 full of fine perlite pieces and lay the seeds on top. Use a hand mister to dampen thoroughly the seeds and perlite, replace the lid and place the box in a warm location. These germination boxes are space-savers,

because they can be stacked. The tight-fitting lids help keep out fungus and insects, but the boxes should be checked periodically for hydration and germination.

A final method (if it can be called a method) is simply to germinate the seed on the ground in an out-of-the-way part of the greenhouse or garden. Growers have had good results this way with *Pelagodoxa henryana*, *Jubaea chilensis*, and some *Acrocomia* species. Discarded seed has also been found germinating in many a surprised grower's compost pile.

Easy Germinators

- * *Dypsis decaryi*
- * *Pinanga kuhlii*
- * *Pinanga crassipes*
- * *Archontophoenix alexandrae*
- * *Chamaedorea elegans*
- * *Chambeyronia macrocarpa*
- * *Licuala grandis*
- * *Veitchia joannis*
- * *Washingtonia filifera*

Difficult Germinators

- * *Basselinia* species
- * *Parajubaea cocoides*
- * *Neoveitchia storckii*
- * *Jubaeopsis caffra*
- * *Jubaea chilensis*
- * *Lavoixia macrocarpa*
- * *Physokentia insolita*
- * *Pseudophoenix* species
- * *Rhopalostylis baueri*
- * *Howea fosteriana*
- * *Voanioala gerardii*

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Germinating Butia Seed

By Nigel Kembrey, 61 Naishcombe Hill, Wick, Bristol, BS30 5QS, U.K.

Butia species have something of a reputation of being an impossible seed to germinate. I must admit to trying and failing many times over the years and came to the conclusion their best use was as ammunition in my son's peashooter. However, having become somewhat bewitched by the genus, I decided that I had to find a way to defeat one of nature's enigmas once and for all. I began by building a custom-made germination unit. This is basically a box made from polystyrene sheets. These sheets are used in the building industry as insulation to go between the two skins of a wall and are available at any builder's merchant. I lined this polystyrene box with a soil warming cable and added a thermostat.

My initial tests were with fresh seed of *Butia capitata* and *eriospatha*. I made up a mix of 75% perlite and 25% vermiculite, soaked in water and allowed to drain. I then filled a plastic tub, semi buried the seed (which had been pre-soaked) on top of the mix and sealed with a lid. I had 75% germination within 6 weeks at a constant 30°C. I tend to allow the seedling to develop in the perlite until the leaf is visible, and then lift it out and pot it up. This gives the best survival ratio.

Spurred on by this I acquired the following:

Butia capitata var. *odorata* from RPS

Butia purpureascens from RPS

Butia paraguayensis (small seed, *arenicola* Brazil subspecies) from RPS

Butia paraguayensis (large seed, Argentine subspecies)

Butia yatay

Adopting the same method I achieved a very poor germination rate and after 6 months had only a handful of seedlings. I was puzzled by this, but

decided that it could not be coincidence that it was only the more southerly species that were not germinating and decided to fluctuate temperatures to simulate the day/night cycle. As the more southerly species are subject to greater variation in seasons, longer dry periods and winter cold, it seems logical that the seed will have an inbuilt switch that decides the optimum time to germinate for survival. I re-soaked the seed and changed the temperature regime: 20°C overnight, 30°C at 9am, 40°C at 1pm, and back to 20°C at 6pm. Within one month, of the remaining seed, from 50% to almost 100% with some species was in the process of germination.

I have read many times of tales of cracking *Butia* seed to achieve germination. Hopefully my method should help prevent this necessity. However, I myself have tried cracking old stubborn ungerminated seed, and found that if soaked in Nitrozyme (a natural gibberellin) then 100% germination will occur within days. However, once cracked, the seed is vulnerable to rot, and if the seed succumbs to rot before completing the initial seedling leaf the seedling stalls and dies.

The above method works well for *Syagrus* species also. *Jubaea* also responds well and fresh seed will give 100% germination within weeks, although the temperature range with *Jubaea* needs to be between 20°C and 30°C. I have just ordered a new batch of *Butia archeri* seed from RPS. This is one of the last *Butia* to elude me, and hopefully by the time you read this article I will have seedlings well on the way.



My Propagation Set-up

By Mike Kenchington, Fordingbridge, Hants, U.K.

This article describes the propagation set-up that I have now been using for about 12 years. I have been germinating palms and cycads for over 15 years. I have a floor-to-ceiling cupboard that contains the hot water tank for the house. This tank occupies approximately half the cupboard, which leaves me with a space of approximately 3' x 2.5' x 2.5' (90 x 75 x 75 cm) to use as my propagator. The hot water tank will keep the temperature between 23°C & 29°C depending on whether or not the boiler is running. To get better control of the temperature in there, I have installed a 160-watt electric tube heater that is wired to a thermostat; the whole set-up cost just over £80 (Euro 110). By using the thermostat and opening the door at night I can regulate the temperature to 30-32°C for 16 hours and 19-22°C for 8 hours. There is no lighting in the propagator. Some of the boxes I use for containing the propagating medium are old Phostrogen buckets; I also use margarine tubs, or basically anything as long as it has about 4" (10 cm) of depth. The bigger containers were bought from a local surplus store. Once seeds have germinated and are producing the beginnings of a leaf shoot, I pot them up and transfer them to my greenhouse where the temperature varies between a night-time low of 14°C and a varying daytime temperature of between 14°C to a maximum of about 35°C in the summer months.

My sowing medium is a 50/50 mix of Perlite and Vermiculite. After many years of experimenting I finally arrived at this mix. I have found that vermiculite on its own holds too much moisture and perlite on its own is too dry. I have found that the above mix works well for me and causes less problems with seed rotting in the mix. You can obviously vary the ratios slightly to say 40/60 either way, but any more and the above

problems begin to recur. I have also found that you can reuse the mix by sterilising it by pouring boiling water through it until boiling water comes out through the bottom. I use a kitchen colander for this purpose. I no longer use any peat or organic type of medium for sowing. I did try this in my earlier days, but I always had the same problems occurring. No matter how carefully I sterilised the medium (boiling water or in the microwave), I always had problems with seeds rotting. The main reason for this is that the compost holds too much moisture. I didn't cure this problem until I started using the inorganic mediums perlite and vermiculite.

When I obtain the seed, I soak them in clean, lukewarm water and place in the propagator for 24-48 hours. After soaking, I clean off any residual pulp from the seed, as this will rot very quickly in high temperatures. The palm seeds I sow under the surface, usually covering with about 1cm of sowing medium. For cycads, I half bury the seeds. The only palm seeds that I sow this way are *Parajubaea*. I never crack any seeds open as suggested by some growers; my attitude is there isn't anybody sitting under the tree in the wild with a hammer to break open the seeds so why do it under our conditions. All seeds will eventually germinate if you provide the right temperatures and conditions.



*Top left: Various stages of root development of germinating *Parajubaea coccoides*, including a twin germination. See article on page 16.*

Top right: The general arrangement in propagator, showing the heater and various types of boxes that are used for sowing. See article on opposite page.

*Bottom: *Parajubaea coccoides*, germinating in a sowing container. See article on page 16.*

Photos by Mike Kenchington



Germinating Parajubaea - Failures & Belated Success

By Mike Kenchington, Fordingbridge, Hants., U.K.

This is basically a tale of patience being finally rewarded. About 33 months ago, I purchased 50 seeds of *Parajubaea cocoides*. I bought so many because of their reputation for being difficult, nigh on impossible, to germinate. When the seeds arrived, I left half the quantity to dry, as put forward by many growers; the other half I sowed immediately. They were soaked for 24 hours in water, and then sown with the seed half buried in a 50/50 mix of perlite and vermiculite, and left at room temperature, around 18 to 21°C.

The ones left to dry were put in my greenhouse for two months. Temperatures in there fluctuate between 15°C and 35°C. These were then sown at the same temperature as used for the earlier batch, using the same sowing method after having soaked the seed for 24 hours in water. Then I waited. In the first six months, I had three germinate, one from the dried lot and 2 from those sown immediately. One of these subsequently rotted off; I think I might have planted it up too soon. Then nothing. Over the following 20 months or so, I tried every conceivable variation of temperature. Cold nights and hot days, cold all the time, and hot all the time, burning the seeds completely; I even tried a different sowing medium, all to no avail.

I have to admit I had given up any hope by now of germinating any more than the few original ones. At the beginning of last October I was rationalising seed boxes, trying to make some room, and came across the *P. cocoides* seeds. They had become very dry, so I soaked them in a liquid humate solution for 48 hours, then resowed them in my usual mix and left them at room

temperature, around 20°C. On inspection after a couple of weeks, one had germinated, but no more. I decided then that I would chuck the remainder away after Christmas.

Early in December I had another look in the box and, to my utter amazement, found that 6 seeds had germinated. I just couldn't believe my eyes. This is being written on January 20th 2005, and to date I have a total of 25 germinated, including a couple of twin germinations. Now I don't know if it was the soaking in liquid humate or the seeds had just reached the correct stage of ripeness, but one thing is for sure, I will never throw away any seeds again unless they have rotted. I wonder how many viable seeds get thrown away because of impatience?



Forum News Roundup

By Nigel Kembrey, 61 Naishcombe Hill, Wick, Bristol, BS30 5QS

The internet has become such a dynamic tool for researching information that I thought it would be a good idea to keep members up to date with the most interesting palm related tidbits from around the world.

In EUROPE...

...the palm world seems to have been seized by waggie-mania, a strange compulsion that seems to drive every palm enthusiast to own one, two, three or even more of these beauties. Palms have sold like hotcakes, vast quantities of seed have been sold and in a few years—if they all grow—I think every house in Europe will have one!

In Germany, a group of enthusiasts led by Arnold Krueger have been experimenting with plant hormones and getting amazing results, such as *Trachycarpus fortunei* that grow at great speed with impressive root systems and large crowns. Surprisingly, some of this technology has been around for a long time. A product called Superthrive, largely overlooked by amateur growers but used in the nursery trade for years, is a must-have accessory for every palm nut, and will undoubtedly produce larger, healthier, more vigorous palms.

Chris Stuehrk, a partner in the Helgoland project, announced on the Hardy Palm and Subtropical board that he has been working on mapping *Trachycarpus* DNA for the various species and hopes to publish the results next year. That sounds like a really interesting subject and if Chris is reading this I hope the EPS journal will get a good article!

In ASIA...

...since the discovery of the new *Trachycarpus* species in the Naga Hills a year ago, it's all been rather quiet. Most people growing the new *Trachycarpus* seem to report a remarkably easy culture and a relatively fast growing seedling. My resourceful Belgian friend James Verhaegen has already had seedlings in the freezer for a few hours at a time, together with *T. latisectus*, *T. martianus*, *T. fortunei* and *T. takil*, and reports that *T. latisectus* and *T. martianus* emerge dead whereas the others do not. The new *Trachycarpus* is hardy, folks!

In NORTH AMERICA...

...the news has been a bitterly cold winter of 2003/4 in the Pacific North West and three very damaging hurricanes in Florida. Who said growing palms was easy? The results from the Pacific North West were interesting, not least because they have had several extremely benign winters, which allowed less hardy palms to establish. The cold spell was as low as -12°C in places with snow and daytime temperatures below freezing. Winners were *Trachycarpus fortunei*, *T. wagnerianus* and *T. takil* emerging only with slight or no damage. *Chamaerops humilis* also fared well as, surprisingly, did *Chamaedorea microspadix* and *C. radicalis*.

Trachycarpus martianus and *latisectus* were defoliated but in most cases recovered. Most disappointing were *Jubaeas* and *Butias* that suffered severe damage and in a lot of cases 100% leaf damage; even so, many have pushed out new growth and recovered. A lonesome *Trachycarpus oreophilus* did not put up much of a fight and died quite quickly after the freeze.

IN SOUTH AMERICA...

... the hunt has been on for new palm species. Syagrus specialist Dr. Larry Noblick is rumoured to have found both a new trunking *Butia* species in southern Brazil and a clumping one. Gaston Torres Vera, an Argentinean palm enthusiast, has found 2 possible new *Butia* species in Paraguay, also both clumpers, one of which is incredibly beautiful. He describes that area as a Pandora's box for cold hardy palms, and I am sure more cold hardy species will be discovered in due course. I am told that Kew are investigating material from a new stoloniferous (clustering) *Butia*, so maybe one of these new species will soon be officially recognised.

And a MYSTERY:

What does Martin Gibbons have growing at the Palm Centre in the display garden? This picture of an apparently caespitose *Trachycarpus* recently popped up on the EPS forum. Is it the long lost *Trachycarpus caespitosa*? Is it a freak? Has somebody dropped a bucketful of seed? Your guess is as good as mine.

*(I asked Martin about those plants, and this is his reply: "This is how rumours start!! Peter Jenkins gave me a rubbish tray of mass planted *Trachy fortunei* to separate out or chuck. This is - or rather these are - the remains. I wanted to dump them, but one of our (over-)enthusiastic staff insisted on planting them".*

*I guess that solves that Mystery. I have yet to see a truly suckering *Trachycarpus*. All suspected cases I have seen (quite a few), have turned out to be nothing more than several individuals planted closely together. T.S.)*



The Bounty of Vai

By Tom Simpson, Suffolk, U.K.

As part of a summer holiday to Crete in 1995, we embarked on an expedition to see *Phoenix theophrastii* in its native home. Travelling in Crete is always something of an adventure, even if you are going from one main town to another. The vehicles, which were available for hire then, did not inspire confidence - car hire firms are often named after Greek gods like Zeus as a precaution. The country is full of precipitous mountainsides and steep gorges where each hairpin bend has its little shrine denoting a previous car accident. The shrine resembles a small church on stilts and contains flowers and pictures of the departed. Rain in the winter is of biblical proportions, and sweeps straight off the mountains by any means, turning streets into rivers and leaving boulders in the roadway. Cretan taxi drivers shrug their shoulders, say "no problem" and perform amazing handbrake turns in their silver Mercedes. Some shrines are like miniature cathedrals and possibly denote larger accidents or coach crashes. It was therefore not uncommon in Crete, on negotiating a sharp bend, to be faced with [a] boulders in the road, [b] a road surface that has vanished altogether, [c] oncoming vehicles on the wrong side, or [d] part of the road washed down the cliff face.

Being based in Rethymnon, in the West of Crete, we hired a small jeep and aimed to stop over on the northeast coast. Travelling on Crete could take a long time in the early nineties, due to the poor road surfaces. We made slow progress along roads lined with huge oleander bushes and agaves. Night clubbers will know the resort of

*Fruits of *Adonidia merrillii*.
Photo by Tobias W. Spanner*



Aghios Nikolaos in this area, but we based ourselves in a picturesque spot called Elounda, a typical Greek fishing village wedged between mountains and sea, with whitewashed houses and noted for the restaurant Vritomartes, which seems to float out in the harbour. "Who pays the ferryman" was filmed here donkeys years ago. Plants such as Bougainvillea, Hibiscus and Carpobrotus grow like weeds, which is always annoying.

Setting out the next day, we aimed for the extreme eastern coast at Vai and Fig Tree Bay where Phoenix theophrastii is common along riverbeds that link to the beach. Like the edible date palm, it likes its head in the sun and its feet in water. Vai is rumoured to be the beach where the early Bounty adverts were filmed, and certainly it is a palm-fringed beach in the traditional style. The palms are first encountered along the streams and riverbeds as you approach the coast and then they fan out along the beach. Phoenix theophrastii deserves to be much better known than it is. It is native to Crete and possibly arrived with ancient trade in dates and olives. Where it outshines its more famous relatives, I feel, is its ability to clump and sucker freely, giving it a more attractive aspect than a lone solitary palm. This is particularly useful on the beach, where palms curve outwards from clumps to provide natural hammocks and seats, similar to the habit of coco palms in the tropics. What could be better than lying on the beach in the shade of a palm tree and all for the price of a cheap package holiday!

George Sfikas, in his book Wild Flowers of Crete gives the details of Phoenix theophrastii: "Tree with trunk not surpassing as a rule 10m in height, producing other lateral trunks as well from the same root. Leaves glaucous green, with the middle leaflets 30-40cm, stiff, while those near the base are spiny and yellowish. Fruit is about 1.5cm, a brownish yellow, and, when ripe, blackish, fibrous and inedible. It is a rare tree endemic to Crete. Habitat sandy damp valleys near the sea."

Although fairly difficult to get to, Vai is still a popular spot, and in spite of the tourists you can

still sit on a palm fringed beach without leaving Europe, which has got to be worth something. Phoenix theophrastii is available from some seed dealers and a few specialist nurseries, and I have grown it in the Midlands under glass. It may be worth trying in warmer areas of Britain to see if it is hardier or more garden worthy than P. canariensis or P. dactylifera. Phoenix theophrastii seems to be a poor relation to the other European palms, in terms of popularity, which is a great shame.

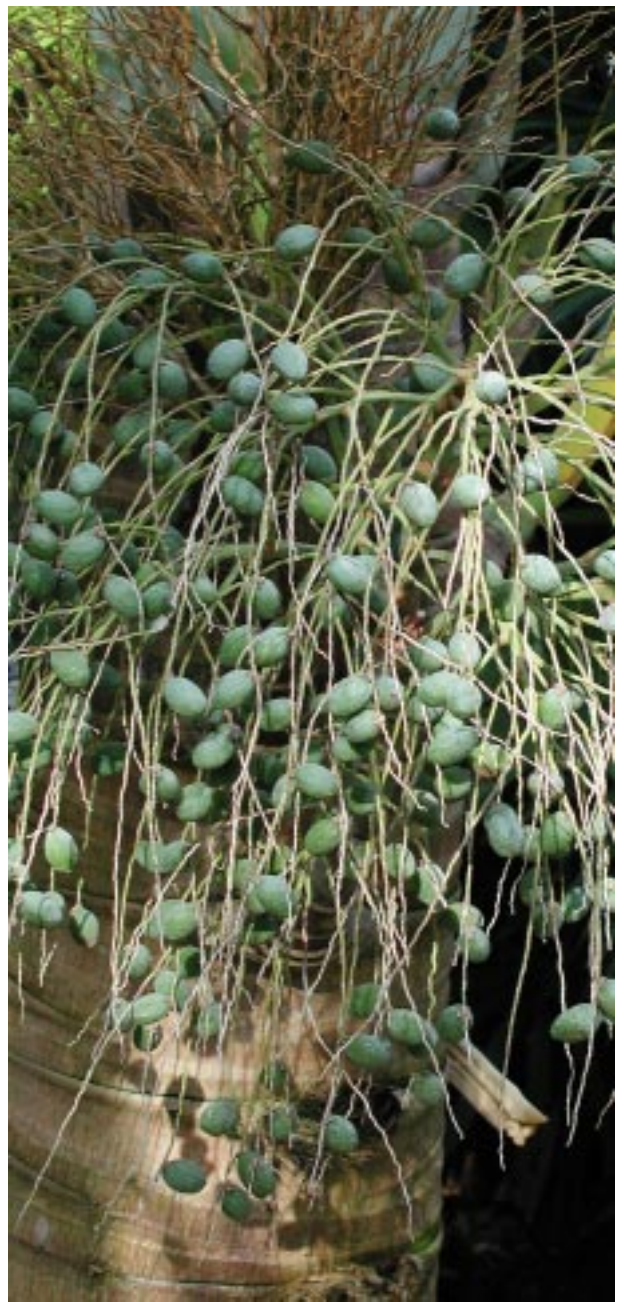


*Top left: A colony of Butia paraguayensis in a pasture east of Caaguazu, Paraguay, abt. 350 m a.s.l.
See article „Germinating Butia Seed“ on page 13 Photo by Martin Gibbons & Tobias W. Spanner*

*Top right: Unripe fruit on a cultivated Hyophorbe lagenicaulis, Homestead, Florida, USA.
Photo by Tobias W. Spanner*

*Bottom left: A "clustering" Trachy at the Palm Centre in London.
See article on page 17.
Photo by Nigel Kembrey*

*Bottom right: Spanish Phoenix dactylifera with yellow leafbases.
See letter „Blue Leaved Phoenix“ on page 22.
Photo by Wim Takken*



Letters

Blue Leaved Phoenix

The last three years my wife and I went to Spain on holidays. In 2002 we went to Blanes, in 2003 to Salou and in 2004 we were in Fuengirola and we also visited Malaga and Marbella. In Blanes we visited both the botanic gardens. Nice gardens indeed, many palm and Cycad species. In Salou and Fuengirola there are--as far as I know--no botanic gardens, but in public and private gardens there are many wonderful plants to be seen. Now you may wonder why I am writing all this. Well, on the boulevards in Blanes, Lloret de Mar, Salou and also on a small part on the beach in Marbella, I saw a very special variety of *Phoenix dactylifera*. The trees not only have blue leaves, but the leafstalks are bright golden yellow, very striking! This golden yellow colour is similar to that of some *Cocos nucifera* varieties.

At home I have a blue leaved *Phoenix dactylifera*, but, having seen these extraordinary coloured palms, I do want one too. So this year, I went to some garden centres in the mountains outside Fuengirola, but I could not find this variety and when I asked for it no one seemed to be aware of it. So this is where my fellow members of the EPS come to help me: Has anyone, especially in Spain, Italy or Southern France, ever noticed this variety? I would be obliged very much with a young plant. So fellow members, please help!

Wim Takken, e-mail: wim.takken@planet.nl

I have seen Phoenix dactylifera with yellow leafbases, but not as intensively coloured as you describe. I could imagine the colour comes out particularly well in this species when in an exposed situation such as a beach. The same plant might not be coloured at all when growing in a humid climate with less light. T.S.

Hit by Hurricane

On 11 September, Grand Cayman was hit by Hurricane Ivan, a category 5 hurricane (the most powerful type) and the fifth most powerful hurricane to hit the Caribbean in recorded history. 95% of all buildings in Grand Cayman were damaged and over 20% of all buildings were either damaged beyond repair or simply do not exist anymore. Over 8,000 people lost their homes and over 10,000 vehicles were destroyed. Surprisingly, only two people died. Most of the island was without electricity for 1 1/2 months and some parts are still powerless. I only got power at my damaged house last week and the Botanic Park still does not have electricity. The Botanic Park buildings received almost no damage but the gardens, nature preserve and plant collections were heavily damaged. Most of the tree canopy was destroyed and many large palms either blew down or snapped off. Not one single native Royal Palm, *Roystonea regia*, fell down — all lost most of their leaves and a few were snapped off at the crown but in all they fared well. The endemic *Coccothrinax proctori* also did well. We were able to save most of the palm and cycad seedlings growing in our nursery. One bright spot: two of three *Coco-de-mer* seeds planted a year ago are sending up their first leaf while the root of the third seed still looks healthy and we hope it will start to shoot soon. We were worried as our lake flooded during the hurricane and the *Coco-de-mer* seeds were under three feet of water for over three weeks. For more information on the general aspects of the garden, please visit our website at www.botanic-park.ky
Sincerely, Andrew Guthrie, General Manager, Queen Elizabeth II Botanic Park, Grand Cayman, Cayman Islands.

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