Palm Review

Volume 18, No. 3 *Central Florida Palm & Cycad Society* *September, 1998*

Next meeting: Sunday, October 4, Leu Gardens Orlando at 10 a. m.

Congratulations to CFPACS's own Bernie Peterson, just elected to the IPS board. Yeah, Bernie!

Sarasota: Palms & Barbecue

Neil Yorio'saccount of the June meeting is on page 4.

The Broschat *article on fertilization (right), printed in its entirety, is taken from the January-March, 1998, issue of the horticulture newsletter (TropicLine) of the University of Florida Fort Lauderdale Research & Education Center. Much information about palms and many other ornamentals may be accessed at* ***www.ftld.ufl.edu***

Fertilization Issue

WHY AREN'T YOUR PALMS GREEN?

By Timothy K. Broschat

ineral Nutrition

Why is it that South Florida palms so often look so bad? Is it because they haven't been fertilized, or is it because they have been? Unfortunately, the answer could be either of these.

Proper fertilization is one of the most important factors in maintaining good palm health and appearance, especially on Florida's nutrient-poor soils. The palm fertilization rate recommendations used today were developed nearly twenty years ago, long before the importance to palms of elements such as potassium or magnesium was understood. The palm fertilizers of that time typically utilized nitrogen sources such as sludge or other organic materials. Although this sludge often caused problems with manganese tie-up, this and other organic fertilizers were relatively safe in terms of salt content. Improvements in palm fertilizer formulations over the years by fertilizer manufacturers have resulted in higher analysis fertilizers being marketed.

Early palm special fertilizers had N:P:K ratios of about 3:1:2. Once the importance of K to palm nutrition became known, this ratio was increased to 3:1:3. We now recommend a 2N-1P-3K-1Mg ratio. Despite this increased percentage of K in the blend and the high application rates used, K deficiency often persisted, even in regularly fertilized palms. The problem, we now know, was not so much the amount of K applied, but its efficiency.

One of the main problems with these fertilizers was that they contained controlled release N, but soluble forms of K. In a very short time, this soluble K was leached through the soil and beyond the reach of the palm roots. Meanwhile, the controlled release N stimulated plant growth and actually diluted the K already

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Feeding Cycads

By Tom Broome

When determining which fertilizer to use on any plant, it helps to understand the growth pattern of the plant in question. Different fertilizers have different release patterns, as well as different lengths of time for the product to work. Also, certain plants are prone to particular minor element deficiencies. Instead of just suggesting any particular fertilizer for your plants, I would rather explain these factors, and let you choose for yourself what fertilizer to use. In many cases the fertilizer I may use may not be available to everyone.

Palms have a continuous growth pattern. Once they start growing in the spring, one leaf is produced after another. Some palms tend to get magnesium and manganese deficienicies. When looking for any fertilizer, it is good to get one with as many minor elements as possible. As far as palms go, look for one with at least these two, plus iron.

Cycads have an episodic growth pattern. Leaves are

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in the palm. This resulted in the fertilized palms looking worse than those that had never been fertilized. This problem can be overcome by using controlled release potassium sulfate as a K source in the fertilizer blend. Unfortunately, the percentage of controlled release K in commercially-available palm special fertilizers has never been high enough to totally overcome this dilution effect or the inability of Florida's soils to retain nutrients.

The newer generation palm special fertilizers also had never been tested at their recommended rates under landscape conditions until recently. After two years of testing one typical palm special fertilizer on over 50 species of palms at the University of Florida FLREC, we concluded that **it is impossible to grow a palm free from nutrient deficiency symptoms (usually K or Mg) or soluble salt injury on a sandy south Florida soil when using this product at its recommended rate** [author's emphasis]. This is because these fertilizers typically have 30% to 50% or less of their N and K in a controlled release form, the remainder being water soluble. This means that over half of the 5 to 8 lbs of fertilizer applied per tree is quickly solubilized. If moderate to heavy rainfall or irrigation occurs, this majority of the applied fertilizer is quickly (within one week) leached through the soil and beyond the rootzone of the palms. This fertilizer is wasted from the plant's perspective, but does contribute to the pollution of our ground water. On the other hand, with minimal irrigation or rainfall, this solubilized fertilizer will remain in the root zone at concentrations high enough to cause soluble salt injury to many species of palms, other ornamentals, and adjacent turfgrass. Meanwhile, the minority controlled release portion of these fertilizers releases its nutrients much more slowly and is not affected by heavy leaching. Thus it should be no surprise that our palms do not look good if we burn their roots initially, but then starve them for the next couple of months before fertilizer is reapplied and this cycle is repeated.

What this all means is that the soluble portion (most of the 5 to 8 lbs per tree you applied) is doing very little good. Under moderate to heavy leaching conditions it is quickly lost to the ground water and is not available to the palm roots. Under minimal leaching, it releases toxic concentrations of salts that can injure the roots of many plants. Thus with water-soluble fertilizers, it is usually either too much or not enough nutrients for the palm. In either case the result is unattractive, deficient or tip-burned foliage.

So, if the large water-soluble portion of your palm special fertilizer is doing little good and may be doing considerable harm to your plants, why are you applying it? Numerous studies have shown that 100% controlled release fertilizers are much more efficient than water-soluble fertilizers. That is, a greater percentage of the applied nutrients are taken up by the palm where they are needed, and less ends up in the groundwater where it is not. We have always urged fertilizer manufacturers to produce palm fertilizers that were 100% controlled release, as opposed to the 30 to 50% or less controlled release content of most, if not all, palm special fertilizers. Their reply is invariably "the cost of such a product would be too high to be competitive." Here, as in most things in life, you get what you pay for. What good is a cheap fertilizer if your palms don't look good? It's a waste of money, and may even injure your plants or the environment.

When you mention a 100% coated fertilizer, most people think of resin-coated products such as Osmocote or Nutricote (Florikan). These products do make excellent palm fertilizers for Florida soils, but are very expensive for landscape use. Alternately, effective fertilizers containing sulfur-coated urea and sulfur-coated potassium sulfate, in addition to the P, Mg and micronutrients currently used in palm special fertilizers, can easily be blended by any fertilizer company. Sulfur-coated fertilizers have a useful life of about 3 months under south Florida conditions. The sulfur coating also renders these fertilizers acidic in pH, a useful feature on our alkaline soils. Most of the fertilizer companies producing palm fertilizers for Florida have already formulated products that meet these criteria.

All this still leaves one important palm fertilization problem unanswered. Like K, Mg is readily leached through our sandy soils and Mg deficiencies are common throughout the state of Florida on a wide range of plants, including palms. Controlled release Mg is the obvious solution to this problem, but due to the physical properties of soluble Mg salts, coating them had usually been unsuccessful. In acid soils, MgO and dolomite work very well as slow release Mg sources, but these never release significant amounts of Mg in the neutral to alkaline soils found in much of south Florida. Several fertilizer manufacturers have been working on this problem during the past few years and new products are being produced. We are testing all of these products as they become available and at least some of them appear to be effective controlled release Mg sources. One such product is prilled kieserite that releases Mg over a 6-week period, but could also be lightly coated due to its spherical shape for even slower release.

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Why Aren't Your Palms Green?

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The methods traditionally used to fertilize palms have also contributed to this problem. Fertilizers have usually been applied at high rates (5-8 lbs./tree) 3 to 4 times per year. This large amount of fertilizer is concentrated in broad bands around the trunk of a tree and extends out several feet. This pattern results in excessive amounts of fertilizer contacting the roots near the trunk of the palm. Roots directly under the fertilizer band may be injured by high fertilizer salts, as will turf or ornamental groundcovers growing in this region. On the other hand, the majority of the palm's root system lies outside of this relatively narrow band, but receives no fertilizer.

Palms, like other ornamental plants in a landscape, are all growing in the same soil with their root systems intermingled. Therefore they are all subject to the same nutrient deficiency symptoms associated with that soil. It is no secret that palm special fertilizers work well on other plants as well as palms. These plants, however, are often less salt tolerant than palms and cannot tolerate the concentration of fertilizers typically applied to palms. A much more logical approach to this problem is to fertilize the entire landscape, rather than individual trees. By broadcasting (use a rotary spreader) 100% coated fertilizers at a rate of 1.5 lbs. of fertilizer (not N) per 100 sq. ft. of landscape area (or at least tree canopy area) 4 times a year, you will be applying about the same amount of fertilizer per palm as before. However, you will be providing fertilizer to all of the palm's roots, not just the small fraction near the trunk. Groundcovers and other ornamentals in the landscape will also benefit from this approach. Most of all, these 100% coated fertilizers will even out the peaks of toxicity and valleys of starvation that occur with current mostly water-soluble fertilizers.

Can the current palm special fertilizers be used more effectively? Certainly. By applying them more frequently at lower rates and by broadcasting rather than banding them, their effectiveness will be enhanced. These fertilizers should be broadcast at a rate of ¾ to 1 lb./100 sq. ft. of landscape area every month. This will dramatically improve plant quality, but will also cost more in terms of additional fertilizer applied (about twice as much) and the labor to apply it (about 3 times as much).

In conclusion, our current palm fertilization recommendations just aren't working as well as they could and can cause injury under certain conditions. Palms and other landscape ornamentals can be much more effectively and efficiently fertilized by broadcasting a 2N-1P-3K-1Mg plus micronutrients fertilizer over the entire ornamental landscape area at a rate of 1.5 lbs./100 sq. ft. every three months. These fertilizers should have 100% of their N, K, and Mg in controlled release form to maximize their effectivenss to the plants and minimize their impact on the environment.

Feeding Cycads

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pushed out, extend out and harden up. Then, after a certain amount of time, another flush will be pushed out. When cycads are young, they produce only one leaf at a time. As they get older, the number of leaves produced each time increases. The more leaves at a time, the more energy is required to produce this flush. When young, a cycad may produce leaves every two to three months. When older, many cycads in the garden will only produce leaves once a year, or even once every other year for some species. On my young cycads, I use a time release fertilizer. As they get older, I use a fertilizer that has a faster release pattern, in order to increase the number of flushes per year. On cycads as well, it is good to buy a fertilizer with as many minor elements as possible. Manganese is probably the most important, especially with Cycas revoluta.

But what fertilizer should you buy? Instead of asking me, or the person selling fertilizer in the store, you need to know how to read the label on the bag or box. In many cases there is nothing on the label that tells you how long the product lasts, or how fast the product releases in the soil. Of the three large numbers that everybody is used to seeing, the first is nitrogen. The key to it all is on the back of the container in an area called "nitrogen derived from." Urea is a fast releasing nitrogen that probably will not last more than a month. Ammonium nitrate, or something close to that, will last one to maybe two months. Insoluble nitrogen does not dissolve in water rapidly, so this is a type of longer lasting nitrogen. Time release nitrogen can be sulfur coated, polymer coated, and other type products. Most of these types should have the duration of release on the label. It is good to keep in mind that a sulfur coated fertilizer can increase the acidity in your soil.

The second number is phosphate. The only time this is really important is when you may want to produce flowers and seeds on palms. By reducing the amount of nitrogen and increasing the amount of phosphate, you will produce more flowers on your palms.

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Feeding Cycads

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The third number is potash. This helps with the general health of your plants. Most fertilizers you buy should have enough of this chemical, so this not really all that important.

When growing palms you need to keep the energy as constant as possible. This constant release will maximize the continuous growth pattern. If you use a time release fertilizer, it can be applied once or twice a year, according to label instructions. Nutricote and Osmocote are examples of such a product. What if you can't find one of these products? There are many "palm special" fertilizers on the market. Look at the label and use the product as often as is needed. If you are using a fertilizer with urea as its only nitrogen source, you may have to apply it every month. A product with ammonium nitrate as its only source has to be used maybe every othe month.

When growing young cycads, use a time release fertilizer. I also use a time release fertilizer on Zamias and Macrozamias. Zamias have a tendency to split when grown too fast. Macrozamias seem to have more of a continuous growth pattern when they get larger. As your cycads get larger, it will be more important to use a faster release, high nitrogen fertilizer. When the plants get to the stage that they are producing more than three leaves at a time, they seem to slow down. This is a good time to switch to the faster release fertilizer. I have found that using this type, every three or four months, will increase the number of flushes per year. On cycads, if you want to produce cones, use a fast release, high nitrogen fertilizer two months before the expected emergence of cones. Each species has its own timing, and you will have to study the coning pattern of each species in your area to determine when this might be. Keep in mind that any time you use a fast reacting, high nitrogen fertilizer, to use it according to label instructions. Using too much can burn and sometimes kill your plants.

I hope this article will help everyone grow palms and cycads more efficiently. Instead of taking someone else's word about a fertilizer, make your own determination.

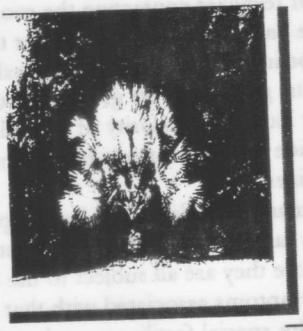
Sarasota: Palms, More Palms, Barbecue & Bishocks

By Neil Yorio

CFPACS members and guests were treated to two wonderful palm and cycad gardens for the second quarter general meeting held in Sarasota on June 13. Before the gar

garden tours, a few brave souls endured the 9 a.m. board meeting held at the residence of John and Faith Bishock. Included at the board meeting was the farthest traveled guest, Mike Maxson of Riverside, California.

The garden tours began at Selby Gardens in downtown Sarasota, located right on the bay. This is a very nice public garden noted for its collection of many types of plants, including palms, cycads, bromeliads, and ferns. As meeting participants arrived, CFPACS members and guests began gathering in the cycad area of the garden. Tom Broome led the cycad tour, offering interesting facts and answering questions about each species encountered in the garden. Of the more notable species in the cycad collection were large individuals of Ceratozamia mejiae, C. hildae (Tom's personal favorite), Encephalartos gratus, E. hildebrandtii, Microcycas calocoma, Stangeria eriopus, and several species of Cycas and Zamia. Many palms were observed by the group as well, including large Archontophoenix spp., Nannorhops ritchieana, Livistona benthamii, and a particularly nice Dictyosperma album var. rubrum planted near the edge of the bay.



This Bismarckia nobilis (left) can be visited by those attending the Oct 4th meeting at Leu. It was planted in 1990; the picture was taken in August.

Arenga engleri (right), healthy and beautiful, at Leu Gardens, pictured in August.

As the Selby tour began to dissipate, meeting participants traveled east to the second stop of the day, the garden of Faith and John Bishock. Although not new to the palm

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President's Corner

By Tom Broome

For those of you who missed our last meeting, you missed a great party. We started at Selby Gardens and had an informal tour. We then went to John and Faith Bishock's, where we had a tour of their place. Afterwards, we had a great meal with lots of food, including a barbecued pig. I would like to thank them for one of the best meetings we have had in a while.

Liz and John Stryjewski have quit their respective jobs because they needed more time for themselves. The job of editor has always been a demanding job, and I would like to thank Liz for the great job she has done with the newsletter Both of them were part of the group who helped with the reorganization of the chapter, and I know many of us will miss them.

Our new editor is Dr. John Kennedy. We are all glad to have him aboard and I hope everyone will give him the support he needs to do a great job. Dave Witt will be our new membersh bership chairman. Dave has a lot of new ideas to help increase our membership, as well as improve communication with our existing members.

Our next meeting is our annual auction at Leu Gardens. Scott Zona will be our speaker this year, and I expect this will be another great meeting. I hope to see everyone there.

Palm & Cycad Societies of Florida

In early June there was a meeting at Paul Craft's house having to do with the starting of the organization that will be known as P.A.C.S.O.F. Representatives were present from all the chapters in Florida, except for the group from Jacksonville. There was one person from the Florida Keys because there is a new chapter in the works down there.

The main goal of this organization is to get all the chapters better coordinated with each other. There will be a new newsletter, at this point with all the events that each chapter has going on, so that everyone can see what everyone else is doing. Also, the different chapters can plan events so that there is no conflict with each other. At this point, everyone who is a member of a Florida chapter would be a member of this organization. Later, down the road, if ev everybody wants, there will be a larger journal with a lot more articles. This way, for the people who subscribe to many journals, only one would be needed. Ther might be a time where this journal could be similarly done to what the Southern California chapter puts out. This, however, is in the future.

Once a year there will be a "mini biennial" sponsored by a different chapter. This will include tours of gardens, a board meeting of officers, and a banquet with a speaker for everyone to enjoy. An idea was that after the banquet an auction would take place to help pay for the speaker and whatever the costs may be to the host chapter. The first state get-together is planned to be in the Palm Beach area.

There will be two representatives from each chapter on the board of P.A.C.S.O.F. When it comes to voting, each chapter will have one vote. All this is still in the formative stages. Another organizational meeting was to take place in late August and will be reported in the next issue of our bulletin. Input from any of our members would be appreciated.

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Sarasota . . .

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and cycad scene, John and Faith started this garden recently, after moving to Sarasota after Hurricane Andrew demolished their place in Miami. Visitors mingled amongst the plants in this very nice garden as the barbecue lunch was being prepared. Many interesting plants were observed, including Gastrococos crispa, Acrocomia aculeata, a variegated Sabal palmetto, and a beautiful blue-leaved Copernicia hospita in a pot that was rooted in the ground. John plans to build a planter around this particular palm so he can leave it where it is. After lunching and lagering, participants had the opportunity to purchase some palms, cycads, and seeds of Butia x Syagrus at the plant sale.

This second quarter meeting was one of the most successful meetings we have had. Despite the late and incomplete distribution of the bulletin, an estimated 60+ people were in attendance at both functions. Both gardens visited made for a wonderful venue for the day, and the CFPACS will certainly want to come back to visit again.

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Rugged Country, Hard Trip to See Beautiful, Rare Dominican Palms

By Jerry Hooper

On June 17, 1998, thirty Palm Society members left Miami on a six-day trip to see palms of the Dominican Republic. This trip was organized hy Dale Holton and the Palm Beach Palm & Cycad Society. We flew into Puerto Plata and soon were on our way in a nice, air-conditioned bus. Our first stop was the habitat of *cacheo*, Pseudophoenix vinifera. One of the guides pointed yonder and said something about "only 500 meters." It was quite a walk till we could first see the palms on the distant hillside. We went through a few cornfields and saw many shelters that were used, I guess, for curing tobacco. Then it was uphill all the way. Very steep and kind of rocky, with many cacti and agaves present, as well as plumeria, gumbo limbo, vanilla orchid, and—probably—poisonwood. The palms were magnificent and the view was great.

The second day, we headed south and saw a palm collection developed by Father Julio Cicero in San Cristóbal. We stopped for a short while at the National Botanical Garden in Santo Domingo where, among the great plant collections, was a bronzed monumental tribute to Dr. Erik Leonard Ekman (1883-1931). On to Barahona for the night and to prepare for a BIG day tomorrow.

Day three: up with the sun, gone with the wind, most of the group in the bus, and off to Oviedo we go. Out of the bus and into minivans (pack 'em in). A good little piece and out of the minivans and onto pack animals, or start hoofing it bipedally. To get to the habitat of the Oviedo *cacheo* (Pseudophoenix eckmanii) and *guano* (Coccothrinax eckmanii) was not an easy hike. It was some of the most rugged terrain many of the group had ever come up against. Rock and cacti and hot weather made for a very long day, indeed.

Those who had opted for horse or burro were glad they had, lest they be amongst the many who were voluntarily dismounted. There were several sore rumps in the lot. P.eckmanii were scattered over the terrain. The trunks looked like they were painted white striped. There were a few large old specimens seen and these had enormous fat trunks that looked sort of like bottle palms. Evidence was also seen that the trunks had been cut into to harvest the heart, or for other reasons unknown. Coccothrinax eckmanii were also scattered in the same area and some of these were quite tall, depauperate with few leaves and very skinny trunks.

Getting to the habitat of P. eckmanii and C. eckmanii turned out to be more than we had planned on. But, for all that, we made it to see Pseudophoenix eckmanii

Above, left, Pseudophoenix eckmanii; above, right, P. eckmanii and Dave Romney for scale; right, Reinhardtia paiewonskiana. All shown in Dominican Republic habitat.

manii and Coccothrinax eckmanii in habitat. It was well worth it to finally see one of the Fat Daddy Pseudophoenix eckmanii that are hiding alone in the desert of the Parque Nacional Jaragua.

The next day, our outing was the habitat of Reinhardtia paiewonskiana. Montane forest, about 3000-foot elevation. Coffee plantations were about but not completely covering the beautiful hillsides. Here, we packed ourselves into three 4-wheel drive vehicles (packed like sardines, going up a very steep mountainside). I was in a regular Jeep with nine other folks. The views across the valley and mountainside were great, and rain could be seen some distance away. We were threatened, but never got wet (nor did we ever during our outings in the DR).

Many unusual butterflies and hummingbirds were seen. Tree ferns, lots of epiphytic ferns and orchids. Cultivated plants seen were Xanthosomas for malanga, coffee, and bananas, no coconuts at this elevation. To actually get to see Reinhardtia paiewonskiana, we had to go almost straight down the mountainside on foot. Very steep and slippery. Many of the party did not make it to the trees because of this difficulty. No seeds were collected, but the habitat and surrounding vegetation was fantastic.

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Ever wonder what differentiates a Veitchia from Carpentaria? Or Sabal palmetto from S. mexicana? Who cooked up Colpothrinax? Still refuse to believe Roystonea regia and elata are one and the same? And where do they get these names from, anyway? Just what's wrong with calling them Triangle palms or the Big-green leaf? Well, if there's one man that can answer those questions and more, it's this year's guest speaker, Dr. Scott Zona. He will be presenting a palm nomenclature "class" that all of us should enjoy. Scott has published revisions of Sabal, Roystonea, and has worked on various palms located in the South Pacific. Myself, I plan on asking him how anyone thought of Johannesteijmannia? For those of you who feel as "palm-inadequate" as I do trying to pronounce these names, this is your chance to see you're not alone. Or, maybe, it's just me.

Following Scott's talk, we'll hold our annual auction. You got some big ole Cyrtostachys taking up room in the driveway? Bring it on in, some fool will donate a few bucks for it. Heck, we'll even clear space for one of those thorny blue Encephalartos cycads. I hear they grow like weeds after they've been in the ground a few decades. Whatever you have, feel free to help the cause by bringing it and some money to buy fellow members' castoffs. All proceeds go to our chapter's ever voracious treasurer—oops, I mean treasury.

Snack food (chicken wings, chips, etc.) will be provided at the garden. Time and weather permitting, we'll tour the gardens after the auction. Hope to see you there.

—Dave Witt

Dominican Palms. . .

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On our way to Bani, we had the opportunity to see the Bani *guano*, Coccothrinax spissa, in a very accessible location. An easy walk up a knob hill and there they were. The palms had fat bellies and the leaves had been removed by the peasants for reasons unknown. On the east coast, we saw a large population of Zamia pumila and also growing here were Coccothrinax gracilis; most of these were high on the rocky hills and cliffs, with a few at the foot where the seeds had presumably washed down. While we were here, a native boy climbed a coconut palm and cut us all a fresh coconut to drink.

Samana Bay is very beautiful. The coast is rugged, with cliffs and rocky mountains. We stayed at a very nice place that looked over Samana Bay. I was told that this is a wintering ground for a very large population of humpback whales. We actually went on one of the whale boats to cross the Bay to Los Haitises National Park, where we explored a few caves. When we arrived, there were a couple of smaller boats leaving that were loaded to the maximum with passengers. We were all glad that we had the whale boat, as the seas got a little rough on the return trip.

The people of the Dominican Republic were very friendly and the country is very beautiful and diverse. Throughout the island we saw many of the native Sabal domingensis and Roystonea borinquena and (of course) the ubiquitous coconut palm. We covered a very large area and saw a lot in a very short amount of time. This was my first trip to the Dominican Republic and quite an overview of what I hope is yet to come. Many thanks to Dale Holton, Oscar Canizares, Lionel Mera, and all the members of the Palm Beach Palm & Cycad Society.

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Chamaedorea elatior: from the Latin 'elatus' meaning 'tall,' in reference to long, tall stems. —Hodel, *Chamaedorea Palm*

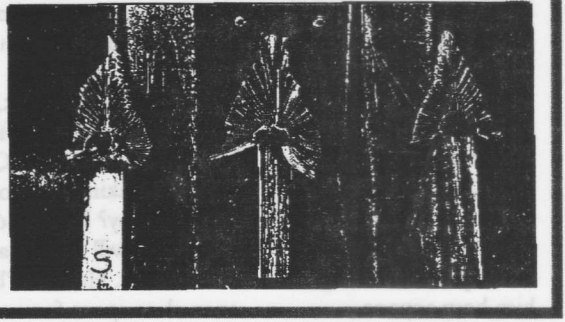
USF Sale Oct. 10 & 11

Well, it's fall again and time for the University of South Florida Fall Plant Festival. We will have our usual items and, if you want, you can ask someone to bring something special for you. A few people have asked me about being vendors. We would like to invite anybody out there who would like to sell palms and cycads. If you only have a few extra plants, we would still like to see you there. If you need a vendor number, call Dave Besst at (407) 629-6830.

The festival will be Saturday, October 10th , and Sunday, October 11th. The times will be 10 a.m. to 4 p.m on Saturday. Garden members can get in at 9:30. On Sunday, the times will be 10 a.m. to 3 p.m. Garden members will be able to get in early on Sunday, as well.

For those who are not familiar with the garden, it is close to the southwest corner of the university campus. If you are going down Fletcher, turn north into the main entrance of the college. Stop at the stop sign and turn left. The road will deadend into the garden. There will be plenty of marked areas for parking. Fletcher can be entered from I-275 and I-75. If you have any questions, call me at (941) 984-2739.

—Tom Broome



n Brevard, Another Livistona Hybrid

By Bernie Peterson

In a rather isolated area of Southern Brevard County, on the banks of the Sebastian River, is the now unoccupied home of a former Palm Society member. This past spring I had the opportunity, along with Mike Dahme and Jerry Hooper, to explore this beautiful property.

Most of the acreage is occupied by a modest sized citrus grove, but near the house and especially along the riverbank, are some fine examples of cold-hardy palms, including Arenga engleri, Trithrinax brasiliensis, Chamaerops, Rhapis, and others. The most impressive specimens, however, are the Livistonas; both L. saribus and L. chinensis are repesented by a number of mature fruiting trees.

Apparently, the forested banks of the Sebastian are to the liking of both of these species since seedlings of both can be seen in large quantity. L. saribus seems particularly well adapted: many of its seedlings are waist high. In another 20 years, if left undisturbed, there will be quite a forest of them.

There is one Livistona in particular that stands out from the others in this untended garden: it's a giant, it's leafier, taller, more robust than any of the others. When we first saw this palm, we decided that it was the finest L.saribus that we had ever seen. On reflection, however, it seemed to us that perhaps it was just too much more robust than the other Livistonas on the site. I suspected it might be a hybrid

Along with Mike Dahme, I made a second visit to the site and, sure enough, the evidence was strong that this huge palm is indeed a hybrid, and one with exceptional vigor.

Figure 1 is, unfortunately, a rather poor backlit photo of the crown of this hybrid but it still shows the very large number of leaves that it has, well over 100. The leafbases which are still adhering to the base of the trunk are armed with the stout, sinuously curving thorn

Figure 1 (left) shows crown of Livistona hybrid; Figure 2 (middle) compares hastulas: L. saribus (left), the hybrid (center), L.chinensis (right). Figure 3, Mike Dahme for scale.

thorns so characteristic of L. saribus, but the petioles far up the trunk on the existing green leaves are nearly devoid of armament; this last is characteristic L.chinensis.

We collected hastulas—the structure which connects the petiole to the leaflets on fan palm leaves—from both L. chinencis and L. saribus, as well as from the hybrid. These are seen in Figure 2. From left to right, they are L. saribus, the hybrid, and L. chinensis. The hastula of the hybrid is virtually identical to that of L. chinensis; the leaves also resemble those of L. chinensis.

Figure 3 shows the trunk of the hybrid, with oaf for scale. The trunk is quite a bit larger in diameter than

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ELECTION!

We will be holding elections a little later in the year. We have four people on our nominating committee. They are: Tom Broome (941-984-2739), Hersh Womble (352-429-4271), Doug Keene (904-736-1211), and Jerry Hooper (407-676-3458).

So far, we have people ready to take positions, except for revenue chairman; we still need someone interested in doing this job. Nominees are: Neil Yorio for president; Jim Crouse for East Coast vice president; Eric Schmidt for Central vice president; John Bishock for West Coast vice president; Edgar Hall for secretary; and Dave Besst for treasurer.

If anyone else wants to run for one of these positions, please call a member of the nominating committee as soon as possible to get your name on the ballot.

—Tom Broome

Arenga Pinnata Now Beginning to

By Eric Schmidt

Well, the inevitable has begun happening here at Leu Gardens in Orlando. Our mature specimen of Arenga pinnata has started its flowering process which will eventually lead to its death in a few years.

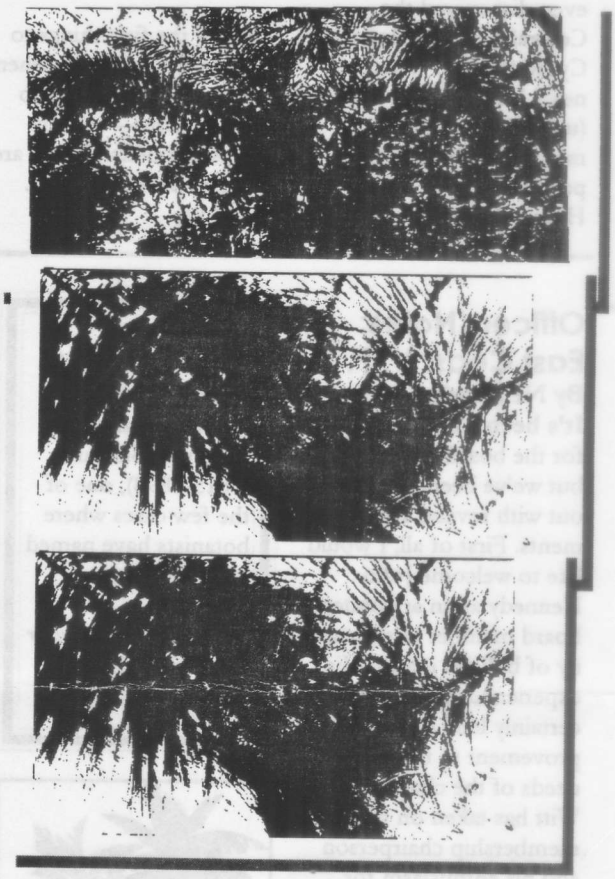
First, a brief history on this Sugar Palm. It was donated by Dave Besst and planted in its current location in 1973. It was severely injured and defoliated by the horrific freezes in December, 1983, January, 1985, and December, 1989. However, it survived each time, regrew healthy fronds, and and did not incur any trunk damage. Recently, it was defoliated in February, 1996, after the three light freezes we had here in Orlando during the winter of 1995-96. Interestingly, there were perhaps a dozen or so "hardy" Syagrus romanzoffiana growing in close proximity to the Arenga, but none survived the freezes of the 1980's. Also an Attalea (Scheelea) rostrata, planted at the same time in 1973, survived and still grows nearby.

The Sugar Palm stands approximately 30 feet tall. The first two inflorescences began emerging this past June and currently hang from the crown of fronds. No individual flowers have opened yet. Hopefully, this Sugar Palm will set viable seed. If so, some of its progeny will be planted to replace the deceased parent. If enough seed is produced, then quite possibly it could be distributed through the CFPACS seedbank (quit drooling, Mike).

Arenga pinnata is not the only Caryoteae Tribe member to flower this year at Leu Gardens. Several of the gorgeous clumps of Arenga engleri have individual stems that are flowering. If anyone has not smelled the fragrance of Arenga engleri, then they are missing a real treat. It is a very exotic scent that permeates a large radius around the palm and seems to be most noticeable in the morning hours. I have not seen much attention given to the fragrance of the flowers of Arenga engleri, but this is just another positive attribute for a palm that deserves a much wider use in Central Florida than it currently receives.

Some of the stems of the clump of Arenga caudata have begun flowering, but so far no seed is being set. Also, a couple of trunks of Caryota mitis are showing signs that they are going to begin the flowering process.

In addition to the preceding Caryoteae Tribe species growing here at Leu Gardens, we are trying many others to see how they fare in our sometimes severe Zone 9B climate. Some might be too tender to survive a 1980's type freeze, but with the success of the Arenga pinnata and the Caryota mitis' ability to regrow



Flowering Arenga pinnata at Leu Gardens: the palm from a little distance (top); closer in (center) with inflorescences hanging down; focus on the inflorescences (bottom).

grow from the roots (look at the gigantic specimens that are still at the late Dent Smith's residence), then quite possibly one of these "tender" species can also survive here to maturity.

The Caryoteae Tribe species being grown include:Arenga australasica, A. brevipes (very tender), A. caudata, A. engleri, A. hookeriana, A. obtusifolia, A. pinnata, A. porphyrocarpa, A. tremula, A. undulatifolia (very tender), A. sp. (Thailand), Caryota cumingii, C. gigas, C. maxima, C. mitis, C. no, C. obtusa, C. ochlandra, C. philippinensis, C. rumphiana, C. urens (clumping form), C. sp. 'Elvis,' C. sp., Wallichia caryotoides, W. densiflora, and W. disticha.

Come see some "tender" palms at Leu!

Beginners' Corner

OK, you've discovered PALMS. Beautiful and wonderful. And you've even discovered the Central Florida Palm & Cycad Society. What next? You're aware (uneasily) that there are many more kinds of palms than they sell at Home Depot.

One of the first things to do—in the evenings, when it's too dark to go out to look at palms—is to hit the palm books. There are a dozen or more books. An oldie, *Palms of the World* (McCurrach), is a good place to start. Then there is *Supplement to Palms of the World* (Langlois). Both books, while long out of print and now to be found in libraries, have lots of pictures and very basic information. However, quite a few of the palms have different names now and many new species have been discovered since these books were published in 1956 and 1962.

You *will* have to get used to Latin names, for there are no common names in English for many of these palms; common names for the same palm may differ from place to place.

Other useful books include *Palms Throughout the World* (David Jones); *Betrock's Guide to Landscape Palms* (Meerow); and *Field Guide to the Palms of the Americas* (Henderson). All of these will probably be in the public library or you may be able to borrow them (leaving a child as pledge for their return). What will become quickly apparent is that none of the palm books has **all** the information that you'd like to know.

Actually, the way you're likely to find out much more is by hooking up with a long-time member (or members) of the CFPACS. He/she/they are, for the most part, pretty friendly and are not noted for their reluctance to talk. They are a mine of information and your lack of knowledge does not disgrace you in their eyes. The fact that you're interested in palms is a passport to their good will, and no question is too dumb to be answered..

If you don't know a member in your vicinity, contact one of the officers listed here in the newsletter and ask the name of someone in your general area who can be called. Members usually are happy to show off their palms to and have been known to hand out seedlings to visitors.

Keep your eyes open for palms growing near you. Quite often, there i something unusual and not immediately identifi able. You may have started out with queen palms and Wahingtonia but there are many mor palms out there. Vendors brin

(Continued on page 1

Officers'Notes: East Coast V. P.

By Neil Yorio

It's been a busy 2nd quarter for the board of directors, but we've been able to come out with several accomplishments. First of all, I would like to welcome John Kennedy as an appointed board member in the capacity of bulletin editor. His experience in this field will certainly lend much improvement to the editorial needs of the chapter. Dave Witt has taken on the role of membership chairperson and his enthusiasm for building and maintaining membership is greatly welcomed by the board. We realize that there were numerous problems with the handling of this critically important part of the chapter's maintenance, but I feel that we are now in a position that memberships will be properly handled. Thank you for bearing with us. If you have a membership issue, please contact Dave, or your regional v. p.

Additionally, we already have a venue for the winter meeting. It will be held on Saturday, December 12, in eastern Brevard County. The venue will consist of tours of the gardens of Charlene and Gregory Palm, Jim and Maria Parkhurst, and Neil and Karen Yorio. This is just advance notice, but look for further details in your next bulletin. Hope to see you all there!

Bismarckia nobilis is named for the German chancellor, Otto von Bismarck (1815-1898), one of the few cases where botanists have named a species after a politician.
—*Palms of Madagascar* Dransfield & Beentje)

Above, Centralfloridana coldhardica, var. wishiae.

Ann Moody looks in amazement at a multi-trunked Sabal domingensis encountered during the Palm Beach chapter's trip to the Dominican Republic

DENT SMITH'S PALMS IDENTIFIED: REDISCOVERY IN DAYTONA

By Mike Dahme

On July 13th, Bernie Peterson labelled many of the palms and cycads at Doris Smith's home in Daytona Beach, a project suggested by Frank Radosta last year. Over 40 species of palms, including known or suspected hybrids, and a dozen species of cycads were identified. (See list at right.) Palmwise, the survivors include many of the known cold-hardy species, but that the clustering species, Dypsis lutescens, D. madagascariensis, and Areca triandra were able to recover from the extreme cold fronts of the 1980's was a surprise to me. (All but one of the clumps of D. lutescens in the ground at my house 100 miles to the south were killed outright in 1989), and belatedly I realize that I should have planted the tub specimen of A. triandra that I grew from seed about 15 years ago. Other pleasant surprises were the Zombia and the Coccothrinax argentata (this species had survived '89 at my house, too). The Chamaedorea metallica seen here is a recent planting.

As for the cycads, I am told that the specimen of Dioon merolae is quite impressive, one ot the best around.

Assisting in the day's activity, during which rain threatened but did not materialize, were the wwriter and, once the supply of sweeets from Dunkin Donuts (that Doris had thoughtfully provided) was expended, Doug Keene. As may be seen, right, a number of the palms are not identified at the species level (or the species indicated is qualifed with a question mark); hopefully, these specimens will generate discussion, leading perhaps to eventual resolution of identity, among chapter members at future meetings at the site. The notes concerning his planting activities that the IPS founder maintained for over a dozen years may also yield clues.

At the Dent Smith homeplace in Daytona Beach: Areca triandra (left) Dypsis madagascariensis (center), Encephalartos natalensis—or is it E. paucidentatus?—(right). Cycad cone is light tan.

Palms and Cycads at Doris Smith's

Acoelorraphe wrightii
Areca triandra
Arenga engleri
Attalea sp. (A. butyraracea?)
A. sp. (A. cohune?)
Brahea armata
B. sp.
Butia capitata
Butia x Syagrus
Caryota mitis
Chamaedorea metallica
C. microspadix
Chamaerops humilis
Coccothrinax argentata
Dypsis lutescens
D. madagascariensis
Hyphaene sp.
Livistona chinensis
L. decipiens
L. decipiens hybrid
L. rigida (L. mariae?)
L. saribus
L. sp.
Phoenix canariensis
P. reclinata
P. sylvestris
Ptychosperma sp. (P. macarthurii?)
Rhapidophyllum hystrix
Rhapis excelsa
Rhapis subtilis
Roystonea regia
Sabal causiarum
S. domingensis
S. minor
S. sp.
S. sp. (S. bermudana?)
S. sp. (S. mexicana?)
S. yapa
Serenoa repens
Washingtonia robusta
Zombia antillarum
Ceratozamia hildae
C. robusta
Cycas revoluta
C. rumphii
Dioon edule
D. merolae
D. spinulosum
D. tomaselli
Encephalartos ferox
E. natalensis (E. paucidentatus?)
Zamia furfuracea
Z. integrifolia

Beginners' Corner

(Continued from page 10)

palms for sale at the quarterly CFPACS meetings. Most often, these are small and reasonably priced. And there are nurseries and individuals who specialize in growing palms.

Beware of palm pictures of seductive beauties from the Amazon or New Guinea. Enticingly available at major palm sales to our south, it's necessary to hold on to sanity, to remember that Central Florida is in the tropics only in the summer, that frosts and freezes can (alas) be expected in the winter. Palm funerals are very sad, on a par with when the dog died. While everyone has some palms that are too tender for Central Florida, the core of any collection has to be species that can take the ordinary winter temperatures. Coconut palms must be regarded as annuals in Gainesville and Orlando, just as zinnias are.

Don't be too upset when palms die on you for no apparent reason. Sometimes you've unwittingly done something wrong (i.e., planted a shade palm in full sun), but quite frequently, even the knowledgeable can't account for the demise.

Finally, go look at palms planted (conveniently labelled, too) in botanical gardens and public parks. Don't forget your camera, and take pencil and paper to write down the names.

—John Kennedy

Beginners' Corner will be an occasional feature of the newsletter. Contributions are solicited, no previous writing experience is required. What can you, a veteran member, tell newcomers about? If you are doubtful of your spelling, punctuation, grammar, etc., all such failings will be cheerfully corrected without changing the point(s) you're making or removing the personality of the person writing the

November 1 is the deadline for submission of stories for the next issue. Please send materials to John Kennedy either by e-mail or by snail mail. Articles on *Soils* are especially solicited. What kinds of soils do palms need? What, exactly, are serpentine soils? If you can explain soil types, try your hand explaining for those of us who are puzzled by the terms in some of the palm books. Help us to understand.

Your technologically-challenged editor wishes to thank his *compadres* at IRCC for help and comfort in dealing with computer /program problems: Dave Herbert, Gary Koser, Elaine Krom- hout, and Donna Jurenas.

From the Editor's Notebook

Many of you know who I am, the quiet person sometimes seen at palm meetings with members of the East Coast Gang (Neil Yorio, Mike Dahme, Jerry Hooper). As a resident of Vero Beach, I depend for my palminfo and palmcontacts with the *cognoscenti* of Brevard County (look it up, fellas) since there are few members in Indian River County, and these tend to be shy and retiring. I have lived in Vero Beach since 1971 and in Florida since 1967.

As an English teacher at Indian River Community College (main campus, Fort Pierce), I have read countless thrilling student essays. I'm used to reading and correcting mistakes as an ordinary task, having prepared for this in an early incarnation as a very junior editor in a major trade magazine publishing house (Chilton), where I wrote and proofread all day long for three years. My career as a teacher came later. I have a Ph.D. in English Literature from the University of Florida, though I've not always been certain how helpful or relevant this has turned out to be in my adventures subsequently.

I functioned as journalism teacher and student newspaper moderator at IRCC for 10 years. The mistakes in mechanics (spelling/punctuation/grammar) or typos that you see here are mine. If you have any argument with the "facts" of any bylined story, take this up with its author. If the layout is awkward and this issue is something of a mishmash, please be patient. This is my maiden voyage as editor of the **Palm Review**. I am still in the process of learning my way around Microsoft Publisher, the computer program used to produce the bulletin, which is a bit more complicated than I had expected. I regard myself as computer semi-literate; while I use a computer regularly, it is mostly for e-mail and word-processing, with occasional forays into the Internet.

Suggestions and articles are welcome on any palm or cycad species or topic. My home phone is (561) 567-9587 in Vero Beach; my work phone (with voice mail) is (561) 462-4469. My e-mail address (at work) is: **jkennedy@ircc.cc.fl.us** My home address for those relying on the postman is **3225 13th Street, Vero Beach, FL 32960-3825.**

—John Kennedy

Sarasota CFPACS Board Meeting, June 13

The meeting was called to order at 9:30 a.m. by Tom Broome. Present were Dave Besst, Dave Witt, Neil Yorio, John Bishock, Tom Broome, Mike Dahme, John Kennedy, Jerry Hooper, and Cindy Broome. As the Secretary, Edgar Hall, was absent, there was no report of the minutes of the prior meeting (February, 1998).

The Treasurer, Dave Besst, provided copies of the P & L statement for the prior year and for the current year through the end of May. He stated that income from plant sales so far this year has not been as good as in the correspondiong period last year, but that this community service is necessary. He further said that the IRS has not sent approval of the chapter's request for "tax-exempt" status but that the government agency had cashed the application check. [The IRS approved the tax-exempt status in early Sept.—Ed.] He said that the chapter had received some membership applications with checks for $7 (instead of $10), and it was agreed to accept them because the change in rates had not been refelected on the Internet until recently. He suggested that recipients of the "Lifetime Member" honor (see bulletin 18:1) should be notified formally by letter (one of the recipients had sent a check for membership). Ed and Nancy Hall were added to the "Lifetime Member" group, in recognition of their many years of service to the chapter.

Tom Broome formally advised of the resignations of Liz and John Stryjewski from their appointive positions respectively of editor and membership chairman. John Kennedy was nominated to succeed as editor and approved unanimously. Dave Witt agreed to add the duties of membership chairman to those of central area VP, and was duly nominated and approved unanimously.

Under "old business," the Board agreed to stamp each page of the recently-completed Chapter By-laws with the Chapter's seal, which would be maintained by the Treasurer.

Under "new business," Tom Broome advised of receipt of a letter from Dr. Dennis Johnson requesting donation of palm artifacts by chapter members for a museum in the Canary Islands.

Dave Witt mentioned that a grandson of Dr. Henry Nehrling, turn-of-the-century Florida plant experimenter, was lobbying to raise money for the purchase of Dr. Nehrling'sOrlando-area former property of six acres, and that the chapter had been requested to publicize the need for funds. Dave will submit an item to the editor of the chapter bulletin for future inclusion.

The suggestion by Paul Craft (bulletin item in 18:2) concerning an all-Florida Palm Chapter were discussed.. Many of the suggestions were thought beneficial (such as joint meetings), but most Board members felt that eliminating the chapter's newsletter, as well as those of other chapters, in favor of a "California-style" publication was not a good idea. CFPACS members who were planning to attend the all-chapter conference on June 27 in Palm Beach were: Tom Broome, Dave Besst, Neil Yorio, and Bernie Peterson.

The importance of the role of the membership committee to the well-being of the chapter was discussed, all agreeing that an active program of recruitment of new members was essential. Neil Yorio and others felt it important to define the duties of the membership chairman, but time constraints didn't permit discussion on details.

The editor, John Kennedy, spoke about his plans to utilize his worksite's print capabilities for future bulletin prototype copies, from which the needed number of copies would be produced either from the chapter's printer or via a commercial printshop.

The Board approved a motion to reimburse the Montgomery Botanical Center for $18 in postage costs incurred in the mailing of cycad seed to the chapter for distribution. The Board also approved reimbursement to Mike Dahme for postage costs incurred in the mailing of recent bulletin copies and for seed distributions.

The meeting was adjourned at 10:30 a.m.

—submitted by **Cindy Broome** and **Mike Dahme**

Hyphaene: Don't Fence Me In!

If palms could talk. . . actually this one, a two-trunked staminate Hyphaene doesn't have to, for Doris Smith did. On the day that the neighbor installed a fence between the two boles and along the back seawall, she convinced him to spare the southernmost trunk (on account of the rarity of the species), resulting in the "customized" cut-out in the seawall barricade. The water is the Halifax River lagoon (intracoastal) in Daytona Beach.

—Mike Dahme

TISSUE CULTURE: EXPENSIVE PROPAGATION POSSIBILITY FOR PALMS

By Neil Yorio

The tissue culturing of plants has recently become a technique of propagation that can potentially yield thousands of offspring from a single plant. Essentially, the *art* of tissue culture is the ability to culture cells of plant tissues, and then cause those cells to regenerate into new plants. This technique is also known as cloning, and refers to the fact that all plants generated in this fashion are genetically identical to the "parent" tissue donor. Having been involved in tissue culture of vegetable crops, I am frequently asked by Palm Society members what tissue culture is all about, and it is the goal of this article to give a brief overview about plant tissue culture and, specifically, how it relates to palms.

First, there are several reasons to tissue culture a plant. In almost all cases, there has to be some type of economic importance in doing so in order to justify the time and expense of the procedures. In the case of palms, nearly all tissue culture research has been on the economically important species, such as *Phoenix dactylifera* (Date Palm), *Elaeis guineensis* (African Oil Palm), and *Cocos nucifera* (Coconut Palm). The reasons for wanting to tissue culture these species is to conserve a particular desirable trait (e.g., disease resistance, high-yield, fruit quality, etc.) that would likely be lost in the genetic recombination of characteristics that occurs during sexual reproduction (i.e., pollination and seed production). This is the same case as occurs in many fruit crops that are familiar to many of us in central Florida. For example, superior fruit quality is maintained in an orange variety by grafting branches off a particular tree on to a separate rootstock, thereby resulting in a "clone" of the original tree. Many clones can be made from a single citrus tree, and propagation is relatively easy and not cost prohibitive. Because palms are monocots, they are more restricted in the amount of vegetative propagation than is typically enjoyed by dicots (e.g., citrus). In the case of the date palm, there are vegetative offsets (suckers) that can be removed from a desirable tree and, hence, a clone is made. However, only a finite number of suckers are produced per tree, and—as a result—date groweres pay huge costs for these desirable plants. In the case of non-suckering species, there are no other means of vegetative propagation of a desirable plant, so tissue culture has to be employed.

Palm tissue culture can be classified into two categories with distinct objectives being (1) clonal propagation, and (2) embroyo culture (Tisserat, 1988). Clonal popagation is the most intensively studied technique, because it results in the production of geneticially uniform trees with particular desirable characteristic. Embryo culture refers to the removal of the embryo from a seed and subsequent germination of that embryo. This technique can be used to germinate rare species, species with typically poor germination rates, or incompatible hybrids (e.g., intergeneric hybrids) that may not survive development in the seed.

With clonal propagation, young, rapidly growing tissue must first be removed from the palm. Young tissue is best because it contains many cells that have not completed their final differentiation into certain tissues. In other words, the cells are still "embryonic" and easily conform to the conditions of tissue culture. The best sources for this tissue are the growing points of the palm, in particular the young, developing leaves in the bud. Harvesting this tissue usually results in the death of the palm, or at least the death of that stem in a clustering species. Some limited success has been had with the use of root tips, another rapidly growing tissue, but they are difficult to harvest and subsequently make sterile for tissue culture process. Regardless of what tissue is being used, it must be made aseptic (sterile=no microorganism contamination). After that, it is placed on a sterile media typically composed of dilute nutrients (fertilizer) and a solidifying agent (agar or gelatin). In addition, the media must contain some sort of plant growth regulator (plant hormone) that causes the cells in the tissue to continue to multiply.

The tissue is incubated usually at warm temperatures under a dim light, sometimes in darkness, fo a period of time. Once th mass of cells reaches a certain size, it can be divided and some of it placed back on fresh cell division media (and thereby continuing this particular clonal line), and some may be placed on different media containin other plant growth regula tors to cause it to differen tiate into other tissues. From this mass of cells, many types of tissues can be formed, including embryos, shoots, and even whole plants. These tissue can then be placed

(Continued on page 1

Seedbank Report

By Mike Dahme

Since the last report distributions of seed and seedlings, for the most part donations by chapter members such as Lou Thomas, Joe Michael, Richard Lundstedt, and John Kennedy has resulted in contributions of just over $1200. Lou, who splits his time between Sarasota and Belize, generously donated seed of two palm species, Bactris major and Schippia concolor, which have so far [seed of the Schippia is still available] netted almost $90. Richard three times donated cleaned Butia cross seed [Pindo x Queen] that he'd produced by hand-pollinating as many infructescences, and his offerings netted almost $120. Joe Michael's donations of Borassus [sp. aff. B. aethiopium], Hyphaene [sp. aff. H. coriacea], and Attalea sp. [someone please make a guess!] led the list for the quarter [as they always do when he shares his Bo seed], netting $282. The amount would have been considerably higher had not the 500 Bismarckia seed collected, which were fully formed, not been inviable: evidently the three staminates in the 'hood hadn't been "functional" when the pistillate inflorescence was at anthesis. [There was a happy ending of sorts, however, for the IPS's sole Alaskan member, Gene Doren, the scrimshawer whose work was featured in the October '97 *Principes*, happily accepted them as a gift in addition to the donation that he made for 120 of the Attalea seed.]

Adding to the list of "special mentions," John Kennedy's annual sharing of his Allagoptera arenaria crop brought $147.50. John not only cleaned each of the 590 seed [okay to drop the Borassus seed off next time, John?] that were sent, but he also did the mailing [and the collecting] for the domestic recipients—way to go, John

Again this quarter, the newly-renamed Montgomery Botanical Center made cycad seed available, this time Encephalartos ferox and the much sought-after Microcycas calocoma. The two donations resulted in $180.

From plants at the "Bidlingmayer site" [Copernicia macroglossa and Sabal rosei] and the large Acrocomia aculeata outside the fence at McKee Botanical Gardens, both in Vero Beach, donations so far [seed of the Sabal and the Acrocomia are still available] have totaled over $260. The chapter has made a pretty "good living" from the fruits of

Sabal rosei (left) at the "Bidlingmayer site" in Vero Beach, picture taken in 1995. Note slender trunk, small crown. The seed, much larger than S. palmetto, has been offered by the CFPACS seedbank.

of the two Petticoat Palms since '94 [when in March the chapter had a meeting there] but the Sabal should also get recognition because it's likely that many members do not realize how visually distinct this species is: with its slender trunk, diminutive crown, and deeply-split leaflets, it could never be confused with other Sabals [exception: S. pumos] and, having survived at Vero for 30 plus years, this indigene of western Mexico appears to be as hardy as any of its congeners of the Caribbean littoral.

Other donations of some nine species, such as Syagrus schizophylla by Neil Yorio, Phoenix sylvestris from India by Shri Dhar, filling a "special request"], and Livistona decipiens by Dave Hopkins of Australia combined for another $125 in donation revenue. In all, 21 species were distributed.

A curiosity. . . *volunteer Washingtonias (above) growing in the concrete surround of a light pole in a Cocoa Beach parking lot.*

—Mark Grabowski

Thanks to...

Liz Stryjewski, editor for six issues, who brought to our bulletin a new, elegant, and professional look.Her successor hopes to live up to the standards that she set.

Tissue Culture

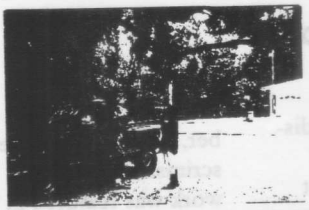
(Continued from page 14)

on yet another media (usually lacking growth regulators) and incubated under higher light, resulting in continued growth into young palm seedlings. The young palm seedlings may then be removed from the sterile conditions and acclimated to normal growing conditions.

With embryo culture, seeds of the palm of interest are first obtained. Because the culture is obtained from seed, individual cultures are not genetically identical (clones) of the parent plant. However, as mentioned before, this technique may be used to germinate palms that usually germinate poorly, or not at all in the case of some hybrids. Once seed is obtained, it must be sterilized in order to minimise contamination during the embryo extraction procedure. The seeds are then opened and the embryo is carefully removed from the endosperm. Sometimes, the embryo must again be sterilized prior to "planting" on culture media. Contrary to the clonal technique of propagation, the media usually does not contain plant growth regulators. These excised embryos then continue to grow into seedlings in the sterile conditions, and can be removed once a good size is obtained and and acclimated the same as are seedlings produced clonally.

It is interesting that tissue culture techniques have not been widely employed in the propagation of ornamental palms. This is probably because the techniques are so much more costly than just growing from seed. For ornamental palms to be investigated for such propagation, they must share an economic value that the agronomically important palms have. Because palms grown from seed vary slightly from each other, an example of economic value would be to produce ornamentals that are uniform in appearance for the landscape trade. The more immediate need may be producing "new" palms in the form of unusual hybrids that are sterile (e.g., Butia x Syagrus hybrids), but are in high demand by collectors and landscapers. In this case, both clonally propagated and embryo culture could be used , and there would be a huge desire to do both. A superior hybrid plant could be selected and clone, thereby producing several plants of a new cultivar. Embryo cultures of crosses between species could be performed to increase the germination percentage and, hence, more "new" varieties.

Palm tissue culture is a useful technique that results in the production of many more plants than can be done by growing from seed. In addition, the plants produced will be genetically identical to a parental tissue donor, and this it critical for growers of agronomically important palm species. These same techniques can be used in production of ornamental palms, but because of the costs and time involved, it seems likely that tissue culture will only be incorporated in the germination of very rare palms, highly desirable palms with notoriously poor germination rates, or hybrid palms that are sterile. From a collector's point of view, ornamental palms grown from seed is probably the best source, because there is nothing more enjoyable than appreciating the variety amongst a species.



Doris Smith talks (left) with Bernie Peterson during his July identification visit to her home in Daytona Beach.

Mike Dahme (right) watches the removal of another Phoenix from his property: another step towards his goal of a "Phoenix-free" Florida. Free Phoenix, "you-dig." Details from him.

Livistona hybrid

(Continued from page 8)

either L. saribus or L. chinensis and is more cylindrical, flaring only slightly at the base.

This hybrid was planted at this spot by the former owners; it is not known whether they realized that it is a hybrid or not. It is also not known for certain which species is the female parent and which is the male parent. This palm does produce inflorescences and when we were there it had tiny green fruits high among the leaves, but we could not find any trace of mature seed either old or new, only abortive, malformed ones. Probably this hybrid is unable to reproduce, which is sad because it is a very beautiful and vigorous palm.

COME, JOIN US, JOIN THE FUN!

The Central Florida Palm & Cycad Society invites you to become a member—if you're looking at someone else's (a *member's*) copy of the CFPACS newsletter. What do you get for your $10 annual membership?

* the newsletter (four times a year)
* notices of meetings (also quarterly but sometimes more often locally)
* access to people who don't think you're strange for being interested in palms (and cycads)
* learning sources for unusual palms and seeds
* the opportunity of visiting palm collections, small and private, as well as larger, institutional (often behind the scenes)
* to join, fill in the necessary info below and mail check to address given

*Name*_____

*Street Address*_____

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