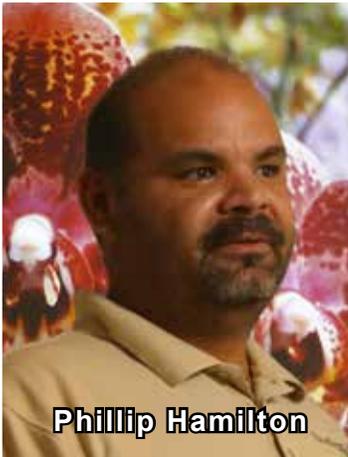




CLUB NEWS



Phillip Hamilton

April 3, 2018 Monthly SAOS Meeting
By Janis Croft

Welcome and Thanks

Bob Schimmel opened the meeting at 7:00 pm sharp with 65 attendees. Carolyn Smith introduced our visitors, returning members Ed Atkins and Sheila and Mark Heilman and new members Patricia Piccione, Carl and Una Savoia and Margie Johnson along with immediate past AOS

president, George Hatfield, joining from California. Bob thanked Dottie Sullivan, Lucy Pedersen and Jan Lesnikoski for bringing their treats and Jeanette Smith for organizing the refreshments. He then reminded all to drop a dollar in the basket while enjoying their refreshments. Bob next informed all that the Best of Show voting would occur after the Show Table discussion and the silent auction would end before the presentation. He encouraged all to vote for their favorite orchid.

Club Business. There are orchid shows in April in Savannah, Tally and Vero Beach. Check [SAOS website](#) for details

This is the last month for 2018 Membership dues. \$20 for individual and \$30 for family. We will finalize our membership and email distribution lists after tonight's meeting. If you did not pay at the meeting, you can use the PayPal link on SAOS website to sign up for membership.

Ace Repotting Clinic is the first Saturday of the month; the next one will be April 7

The potting supplies, fertilizer, and hats were available at the sales table. Email Sue Bottom (sbottom15@hotmail.com) if you need potting supplies, special quantities or different items and she will bring them to the next meeting for purchase. Items for sale are coarse mix, phal mix, and timed release and "Purely O" fertilizers.

The SAOS Picnic and Orchid Swap will

be April 22, 4 to 6 pm, at the Memorial Lutheran Church located at 3375 US 1 South, St. Aug 32086. Members can bring plants to swap or put in as a silent auction. The club will be providing hotdogs and hamburgers and members are encouraged to bring their adult beverage of choice along with some sides. If you did not see the sign-up sheet, contact Dianne Batchelder at ladydi9907@aol.com so she can make sure we have dogs and burgers for all.

Jacksonville Orchid Show was another successful event with many members attending. Our club's tabletop exhibit took second place and everyone who entered a plant won a ribbon.

Club librarian, Penny Halyburton is just an email away. Send Penny a request for a book or DVD you would like and she will bring the item(s) to the next meeting. The library collection is listed on our [SAOS website](#).

Our Sunshine Coordinator and Membership VP, Linda Stewart delivered free raffle tickets to the three people with birthdays in April.

Show Table. Courtney Hackney had another overwhelming show table to tackle this month. The quantity of plants was again staggering. Courtney started with a plant that did not look like an orchid. When he was in North Carolina, a fellow brought up the plant from Central America and said it grows wild all over and he thought it was an orchid. So they grew it and discovered it was an *Sarcoglottis sceptrodes*. Its leaves grow with different patterns and the plant is found in dry forests where half of the year is dry and the other half it rains. If you try to grow here, dry it down in the winter but not totally. He then went to another rare plant for our area, *Miltoniopsis*. It's rare because they do not like to grow above 80° so they need to be moved indoors during the summer in Florida. The next showstopper was the purple *C. skinneri* that was huge. Courtney says they grow too big too fast and this was a prime example of that.

Since our speaker's topic is *Phalaenopsis*, Courtney moved on to discuss the varieties of phals we had on the table. We had many classics with shingling arches displaying each flower beautifully. The *Phal. H. P. Norton* is named after a famous hybridizer who developed red hybrids and was a beautiful example. On the table was a sibling that tends to be smaller with shorter inflorescences. Another variety was represented by a plant with multiple branches on inflorescences providing a large number of

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CLUB NEWS



Upcoming Orchid Events

April

- 6-8 Deep South Orchid Society Show
Coastal GA Botanical, Savannah
- 7 SAOS at Ace Hardware, 9 am til 1 pm
3050 US 1 S in St. Augustine
- 10 JOS Meeting, Angraecums, 7 pm
Tom Kuligowski, Angraecum Blog
- 21-22 EPIC Celebration of Spring
Annual Flower and Garden Expo
Ag Center, St. Augustine
- 21-22 Tallahassee Orchid Society Show
Doyle Conner Agriculture Bldg
- 22 Picnic and Orchid Swap, 4 pm
Memorial Lutheran Church
3375 US 1 South, St. Aug 32086
- 28-29 Vero Beach Orchid Society Show
Riverside Park

May

- 1 SAOS Meeting, 6:30 pm
Vern Bloch, prior nursery owner
Brassavola nodosa and its Hybrids
- 4-6 Platinum Coast Orchid Society Show
Kiwanis Island Park Gymnasium
- 5 Repotting at Ace Hardware, 9 am til 1 pm
3050 US 1 S in St. Augustine
- 12-13 Volusia County Orchid Society Show
Volusia County Fairgrounds
- ?? JOS Picnic
3611 Richmond St., Jax 32205
- 18-20 Redland International Orchid Festival
Fruit and Spice Park, Homestead

June

- 2 Repotting at Ace Hardware, 9 am til 1 pm
3050 US 1 S in St. Augustine
- 2-3 Central Florida Orchid Society Show
Nat'l Guard Armory, Orlando

- 5 SAOS Meeting, 6:30 pm
George Hausermann, EFG Orchids
Mounting Orchids
- 12 JOS Meeting, Topic TBA, 7 pm
Carlos Cahiz, OFE International

July

- 3 SAOS Meeting, 6:30 pm
Sue Bottom, SAOS
Navigating the SAOS Website
- 7 Repotting at Ace Hardware, 9 am til 1 pm
3050 US 1 S in St. Augustine
- 10 JOS Meeting, Topic TBA, 7 pm
Ivan Portilla, Ecuagenera

St. Augustine Orchid Society Organization

President	Bob Schimmel schimmelr55@bellsouth.net
Vice President Events	Dianne Batchelder ladydi9907@aol.com
Vice President Membership	Linda Stewart lindstew@hotmail.com
Vice President Programs	Sue Bottom sbottom15@gmail.com
Secretary	Janis Croft croftie1984@gmail.com
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Librarian	Penny Halyburton phalyburton@comcast.net
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CLUB NEWS

Continued from page 1

white flowers. The popular *Phalaenopsis schilleriana* has pretty patterning on its leaves. Courtney said that the phals with pretty leaves (patterns or multi-colors) tend to have an affinity for higher light. In Asia, different colored leaves are becoming more popular to hybridize because they are now being marketed as pot plants that people can keep in their homes on windowsills. The Phal. *Kuntrarti Rarashati* with its copper flowers has the unusual characteristic that it develops its keikis at the end of the inflorescence. If you put the keiki with roots back into the medium, you will soon develop a plant with many smaller plants and numerous flowers.

Courtney then moved on to the other orchids including a strong selection of miniatures including the *Aerangis harioitiana* and *Pleurothallis grobyi* from Linda Stewart's collection. Even though small, the number of inflorescences on the *Aerangis* rivaled the *C. skinneri*. The *Trichopilia hennesiana* had multiple inflorescences, that Linda thinks are a result of using the Purely Organic fertilizer. The *Galeopetalum Starburst 'Parkside'* is a *Zygopetalum* intergeneric hybrid and is another plant that needs to stay out of the summer heat. Courtney ended with a famous classic hybrid that for him always blooms at Easter whenever the holiday occurs. The Slc. Jewel Box 'Scheherazade' is deep red with a fragrance like roses. Check out the photos of our show table examples at the end of the newsletter and on the SAOS website.

SAOS Program. Sue Bottom introduced our guest speaker, Phillip Hamilton of Bredren Orchids in Apopka. He has been growing orchids since he was 8 years old and learned by working in his parents' orchid nursery, Hamlyn Orchids in Jamaica. He started with some history. In 1750 an orchid was formerly named *Angraecum album majus* and that is the first recording of what we know today as a *Phalaenopsis*. After seeing white flowers at night dangling from plants in trees that resembled moths, the botanist Blume named the genus after the greek words *Phaluna* (moth) and *-opsis* (resembling). The normal habitat is to grow epiphytically, in trees with the inflorescences and leaves hanging down to shed water, beneath canopies of moist and humid forests.

Phals tend to be susceptible to many pests including mealy bugs, thrips, mites and scale. He has found *Orthene* (acephate) and *Conserve* (spinosad) effective for thrips, imidacloprid and *Cygon 2E* (dimethoate) for scale and mealybugs, abamectin or *Tetrasan* (etoxazole) for mites. He cautioned that three treatments 7 days apart is necessary to kill all the various life stages of the pests. Alcohol can be used for a small scale outbreak. He then showed photos of the damaging bacteria, *Pseudomonas* and *Erwinia*. The

best prevention is control of your growing environment. Once noticed on a plant, remove it immediately from the growing area and dry it out because the bacteria spreads in splashing water. Avoid overcrowding your plants, when the leaves touch each other bacteria can grow in the dark humid area beneath the leaves. When he has *Erwinia*, he uses applications of *Physan* or copper products. He also recommended the standard Hydrogen Peroxide. For fungus issues (such as *botrytis*, *fusarium*, *rhizoctonia* and *sclerotium rolfsii*), environmental control is also key. Keep your foliage dry, allow good air movement, do not overwater or allow plant to sit in water, repot as soon as media starts to break down and use clean tools.

Phalaenopsis roots should be white, silverish with green tips. If your leaves are withering, look at the roots before you think it is dry and needs more water. If the plant's roots are severely compromised, repot in a smaller pot to keep yourself from overwatering. Phillip uses sphagnum moss but also suggests pine bark or peat moss mix. You need to use a potting media that will provide a lot of air movement to the roots. He noted that one should not compact the media when potting. He drenches the plant with *Superthrive* and sometimes uses bloom booster products for a couple of weeks after repotting as it seems to help develop the new roots. He does not use bloom booster any other times. *Phalaenopsis* like light from 600-1200 foot candles and during cooler weather, plants can take higher light. Phillip recommends keeping media moist and using a balanced fertilizer. He recommends *Better Gro Orchid Plus* (20-14-13), 1/4 - 1/2 tsp/gal every other watering.

Then he shared some photos of the various types of *Phalaenopsis* from species to hybrids. Phillip's current interests are hybridizing novelty varieties of *Phalaenopsis* and trying to achieve fragrance and second blooms on spikes. By the examples on his sales table, he is well on his way.

Meeting Conclusion. Harry McElroy announced the Member's Choice Award as Sue Bottom's *C. skinneri*. Susan Smith ran the raffle table with Bob's help. Thanks to all the helpful hands that stayed to reset the tables and chairs and clean up the room.



Thanks to Watson Realty and
Jeanette Smith for the use of their
meeting space at
3505 US 1 South



CLUB NEWS

April 22 Picnic and Orchid Swap



Our annual SAOS picnic and orchid swap will be on April 22nd. We'll be grilling hamburgers and hot dogs for all. Feel free to bring a side dish and adult liquid libations, and join the fun. The picnic will replace the keiki club get together this month. Please let Events Veep [Dianne Batchelder](#) know if you plan on attending (436-5618) to assure there is a hamburger and/or hot dog for you.

Bring any extra plants you would like to swap with other members. If you don't have plants to barter with, cash works too! We may have some silent auction plants for you to bid on.

Where: Memorial Lutheran Church
[3375 US 1 South, St. Aug 32086](#)

When: April 22, 4 to 6 pm

Want to Hire Some Professional Help?

Steve Hawkins,

[The Orchid Specialist](#)

Steve Hawkins, the Orchid Specialist, is offering a fee based service for orchid repotting and consultations in your home. Steve operated a commercial nursery in Apopka for many years and recently relocated to our area and joined the St. Aug Orchid Society. For details, visit orchidspecialist.com or call Steve Hawkins at 321-279-3003 (afternoons).

American Orchid Society Corner

Upcoming Webinars:

April 10, 8:30-9:30 pm, Members Only

[Judging Bulb. echinolabium](#), Laura Newton

April 24, 8:30-9:30 pm, Everyone Invited

[Greenhouse Chat Orchid, Q&A](#) - Ron McHatton

[Photos of Latest AOS Awards](#)

Orchids Magazine: [request free issue!](#)

Genus of the Month: *Miltoniopsis*

Annual Judging Issue

2017 FCC Awards

2016 End of Year Awards

May 1

Monthly SAOS Meeting

Brassavola nodosa and Its Hybrids

Vern Bloch is returning to St. Augustine to talk to us about Brassavola nodosa and its hybrids. Everyone should grow Brassavola nodosa, not just for its elegant flowers, but for its wonderful evening fragrance, which earned it the nickname "lady of the night". They are also some of the easiest orchid for beginners, they bloom several times a year, offer a wide spectrum of colors and flowers tend to last fairly well, with lots of evening fragrance.

Vern can only carry about 20 different hybrids when he does a program, but he will bring preorders from his [extensive listing](#). Most plants are in 4 inch pots, blooming size or near blooming size with prices about \$12 each, a few under and a few rarer ones over. Feel free to preorder via email (vernbcfl@rr.com). Those who make preorders will not be required to buy the plants if they don't like the plant or the price.

Bring your flowering orchids to exhibit on the Show Table. We will have our normal raffle at the end of the meeting. Friends and guests are always welcome!



March Keiki Club

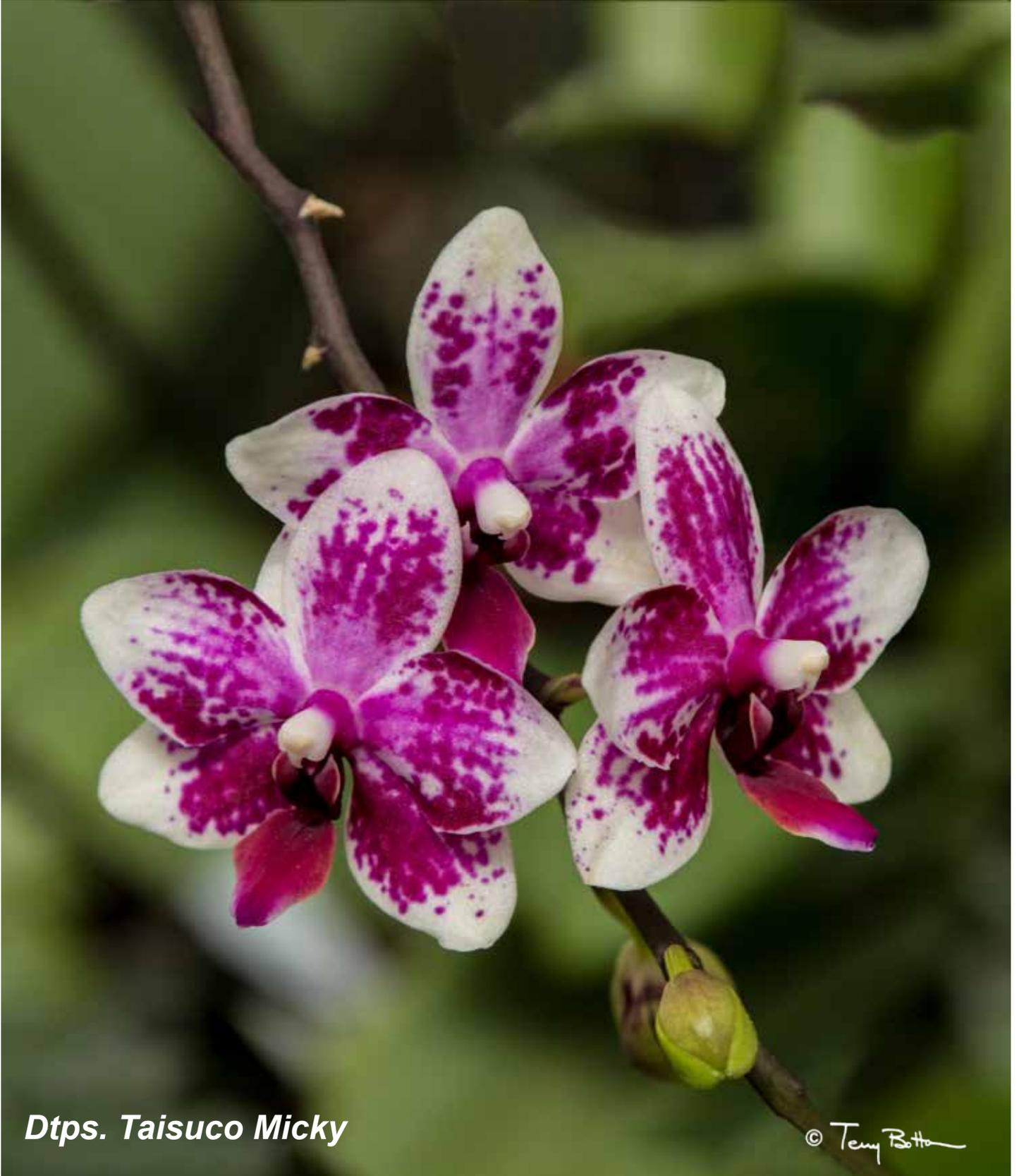
Repotting and Potting Mixes

More than two dozen new and familiar faces convened at Sue and Terry Bottom's for the annual repotting party. We talked a bit about how your growing environment can dictate the best potting medium for your orchids. If you can control when and how much water they receive, you have a lot of flexibility in choosing how airy or water retentive you want your mix to be. For those growing outside where Mother Nature decides when to water your orchids, you have to make sure your mix won't become waterlogged during the tropical storm season and make sure you water when Mother doesn't.

Then we had our own version of March madness, choosing our new orchids and teaming up with a repotting mentor to assist in the process of slicing and dicing, choosing a suitable pot and then settling the orchid in its new home. We also repotted some orchids brought to the meeting. If you missed the potting party, we'll be at Ace on April 7th.



INSPIRATION



Dtps. Taisuco Micky

© Terry Botto



CULTIVATION



Orchid Questions & Answers

by Sue Bottom,
sbottom15@gmail.com

Q1. I'm a long time member of the Memphis Orchid Society, and I noticed this problem when the orchid was returned to me from our society exhibit at the St. Louis orchid show

just couple weeks ago.

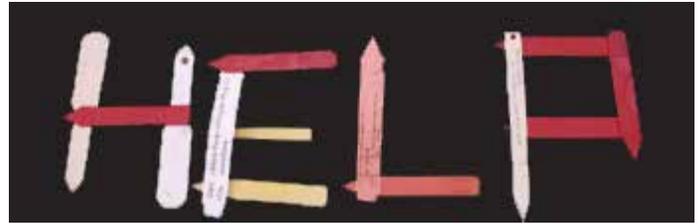
I already removed the two top leaves from the pseudobulb, that looked exactly like the ones in the attached pictures of my Den. Sherry Abe that was awarded an AM/AOS last year.

A1. My first thought is cold damage. I looked up your dendrobium in OrchidWiz, which indicates it's an intersectional between the phalaenthe and latouria sections, so it is likely very cold sensitive. Is it possible it was chilled in the trip to and from the show? Was the plant out of your care for more than a weekend? Those types of dendrobiums drop leaves easily if too cold, too dry, etc. from what it is accustomed to.



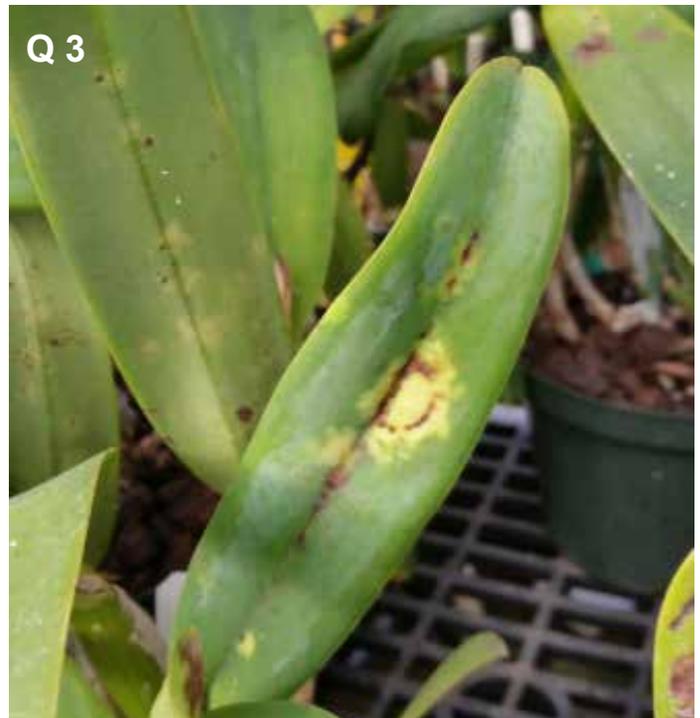
The good news is the plant is going to be fine, this is just a temporary setback and it will throw off new growths in the coming months.

Q2. Is this black mark on my phal a disease? It seems to be expanding. How should I treat it and will the spike be affected?



A2. That phal looks very happy and healthy. The black mark is probably from water pocketing at the leaf base. Pour or spray some fresh hydrogen peroxide on that area of the phal and just keep an eye on it. It is probably bacterial in nature but it doesn't look like a big problem. Peroxide should take care of it and your spikes should continue to grow just fine.

Q3. What is causing this spotting on my cattleya?



A3. That looks like the leaf spotting fungus *Cercospora* that forms irregular purplish brown blotches on the leaves. A good general purpose fungicide for the leaf spotting fungi is Cleary's 3336 which contains the active ingredient thiophanate methyl. It is sold in smaller, more available quantities as thiomyl or in combination with another chemical as Banrot. Daconil, that you can get in the local nursery, is also rated very good to excellent for *Cercospora*. To be cautious, you can remove the leaves with the pentagonal blotching and then spray. I've actually left the leaves on and really didn't notice it spreading, but if you remove the infected tissue, you will remove the spores that spread the fungus.





The ABC's of Repotting Courtney's Orchid Growing Tips

Spring is the ideal time to repot most orchids. Unfortunately, many new hobbyists are either too anxious to repot or neglect to repot when it is needed. The condition of the media is important if a plant is to get

adequate moisture and oxygen to its roots. For the novice, repotting is a major challenge. First there is the problem of what to use, where to get it and then finally exactly how is it done.

How do you know if the plant needs repotting? For Cattleyas the plant should either be growing out of the pot or have media that has become degraded. Orchids in clay pots usually grow out of the pot before the media breaks down. In plastic, however, the extra moisture retained by plastic pots usually accelerates the breakdown of bark and necessitates repotting every two years or so. Phalaenopsis in ProMix or other soilless mixture may need repotting once a year if you have over watered and damaged the roots. Paphs, unlike most orchids, can be repotted every six months, while Vandas in baskets or orchids mounted on cork or wood never need repotting. Many novices buy mounted orchids only to see them wither and die. If you cannot maintain adequate humidity for mounted orchids you should try setting the orchid, mount and all, into a clay pot large enough to hold them. Try this before taking the orchid off their mounts and potting them. The clay pot will maintain some humidity around the plant even inside or under lights.

There are many different medias used in orchid culture. Commercial orchid nurseries are largely guided by cost and availability. The hobbyist, however, can use the one best suited for their growing conditions. But what is the best? If you are just beginning to grow orchids this is a difficult question to answer. The best approach is to ask a couple of more experienced growers that grow under conditions similar to your own, what they use. They may not all give you the same answer, but it will limit your choices. Also look at your plants and if some are doing very well in a specific media try that type first. Remember that the pot should be included in your deliberations as this is part of the media. Some orchids will adhere to the pots more than the media. More experienced growers can provide guidance as to where to find media.

Always remember that most orchids grow attached to trees in nature and the job of the orchid grower is to make the plant believe that it is attached to the outside of the tree by supplying air to the roots alternating with enough moisture to allow the plant to grow.

Once you pick a media and decide your orchid needs repotting you are ready to repot. Water the plant thoroughly before repotting. This softens roots and makes removal from the old pot easier. It also gives the orchid a supply of water that will have to last until you water it again. Most "how to books" recommend that you wet the media before using it. **Do Not Follow This Recommendation.**

Begin by placing extra drainage in the bottom of the new pot. Some growers use Styrofoam peanuts, lava rock, or broken crockery. Then place the plant in the pot. If the plant is a Cattleya, Dendrobium, or Oncidium place the oldest bulbs against the side of the pot and new growths toward the center. This will allow maximum time for plant growth before you need to repot again. Carefully fill the pot with the new media and press down hard with your fingers. Do not bury the rhizome. It should be above the media. Pound, yes pound, the media down and keep adding media until the roots are tight in the media. There should be a half to an inch between the top of the media and the top of the pot. You must convince the roots that they are attached to a tree or they will not grow without being damaged each time the rhizome moves when you water.

Phals, Vandas, and Paphs should go in the center of the pot. Gently shake the media around the roots being careful not to bury the base of the leaves in the media. Do not pack this media. Gentle tapping usually packs media tight enough for these orchids. Vandas may need to be tied in place as they are usually potted in very coarse media or placed in baskets and pots with no media at all.

The admonition to use dry media is to prevent bacterial infection through damaged roots. Dry media allows the root to seal all of the damaged areas. The only exception is sphagnum moss. Sphagnum moss should be moistened, but not dripping. Bacteria infections are rare in this media because of the extreme acidity of the moss.

Repotting is not only important for the health of the orchid, but for the education of the hobbyist as well. As you examine the degraded media and the old plant roots, you will begin to gain an understanding of what your watering regimen has done to the plant and the media and appreciate differences between media. Orchids are fairly tough plants and usually survive repotting even by amateurs. After a few years you will be able to use your experience to aid the next group of amateurs.

Note: Dr. Courtney Hackney wrote a monthly column of his orchid growing tips for about 20 years; we are reprinting some you might have missed, this one from April 2001.



CULTIVATION

Summer Phalaenopsis Species

by Thomas Miranda, photos by James Osen
courtesy of the American Orchid Society



Phal. lueddemanniana, with its pendent, heavily laden spikes

Like small jewels nestled in mossy tree limbs in the jungles of Southeast Asia, luxuriating in the humid shade of tropical wet forests, many precious handsome *Phalaenopsis* species await the discovery of most orchid growers. Generally no more difficult to grow than most of the standard hybrids, these species boast terrific exotic shapes, patterns and colors not often seen in the complex standard phalaenopsis. Even though my recent trip to Taiwan has enlightened me to the pleasures and glories of phalaenopsis hybrids, there will always be something about the species that remain extraordinary and wonderful beyond breeding achievements.

It would be hard for any hybrid to put on a more glorious show than does *Phal. lueddemanniana*, with its fantastically yellow and amethyst patterned, lightly fragrant flowers produced in great profusion in the summer, or its close relative *Phal. hieroglyphica*, with its gorgeous purple and lavender ancient "script" decorating its pale cream-colored segments. Although the flowers, are smallish, the dark, rich and waxy purple petals and sepals of *Phal. pulchra* display a color and texture rarely seen, even in the orchid world. All of these species are proud denizens of the Philippines. The inflorescences of these *Phal.* species must never be cut as generally always produce keikis (plantlets) after they bloom and will flower again in season on those same spikes. While they can certainly be grown in pots, the cascading effect of large plants grown in a basket or on a mount is a glorious sight.

Among the prettiest flowers to be found among the summer-flowering species are the colorful spotted blooms of *Phal. bastianii*. Splendidly displayed on an erect branching inflorescence, often with a cream or yellow background, these flowers are often overlaid with brilliant spots in various shades of rusty brown, red, cerise and magenta, making for some extraordinarily beautiful displays. This rather variable species is often labeled as *Phal. mariae* in collections, but it is probably fair to say that most of us have never laid eyes on the real *Phal. mariae*, which differs in having a pendent inflorescence with more cup-shaped (though beautifully hued) flowers and less of a propensity to keiki.

Several lovely yellow species are also likely to flower this month, including *Phal. fasciata*, a true beauty long admired for its color and form. It's another Philippine native that has been used extensively in breeding to produce yellow hybrids. *Phal. amboinensis*, found in Amboina and Sulawesi, has long been another mainstay of breeding yellow hybrids due to its background color and bloom longevity. Hailing from India, the waxy long-lasting flowers of *Phal. mannii* cluster just above the plant.

Mostly warm-growing plants, many of these summer-flower phalaenopsis do not benefit from the cool winter temperature dip that triggers blooming in standard phalaenopsis. Instead, they need warmer temperatures and really thrive when kept just above 80 F (26 C) during the day and in the mid 60s F (18 C) at night. *Phalaenopsis* species have an inherent subtlety



Phal. fasciata

and charm that is lacking in most hybrids, no matter how spectacular those may be. The species described here are all fantastic subjects for anyone's collection.

This Genus of the Month article appeared in the American Orchid Society's monthly publication Orchids in August 2008 (Vol. 77:8, pp 584-585).



Phal. mannii

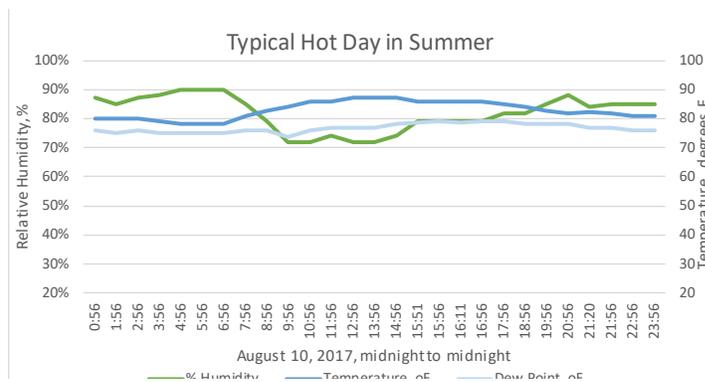


CULTIVATION

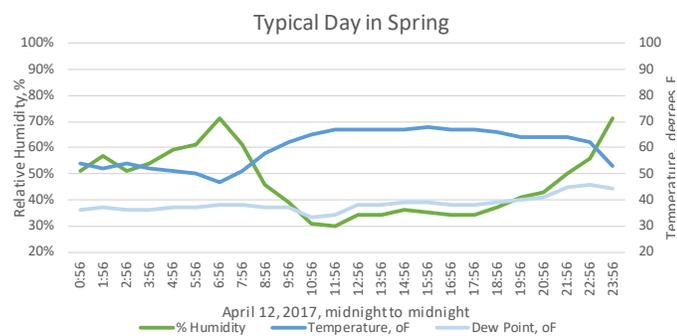
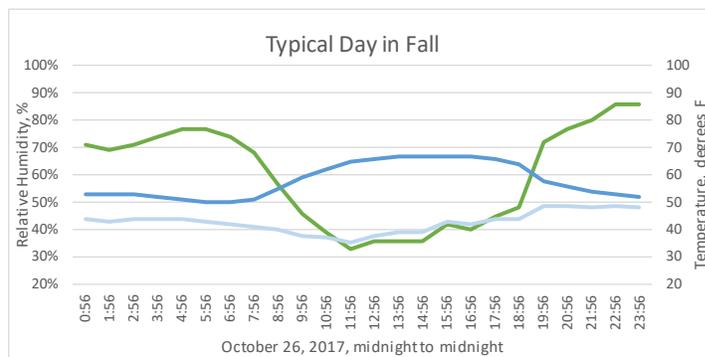
Humidity and Vapor Pressure Deficit

by Sue Bottom, sbottom15@gmail.com

Relative humidity is a familiar term describing the amount of water vapor in the air compared to how much it can hold. Warmer air has a greater water holding capacity than colder air. Our orchids are comfortable in the same humidity range we enjoy, somewhere in the 40 to 70% range. Low humidity air dries out our skin and our plants leaves. Moderate humidity levels are desirable, but too high humidity can cause problems. On a hot summer day, we sweat to cool our bodies through evaporation, although this works less well in the humid southeast than in the arid southwest, because water evaporates more quickly when humidity is lower. Plants also 'sweat' as water vapor evaporates from the leaf surface, cooling it. The evaporation rate slows as humidity levels increase because water cannot vaporize as quickly from the saturated leaf into a high humidity environment. High humidity also is conducive to the conditions that favor the growth of rots, molds and fungal infections.



2. In summer, both temperatures and relative humidity can be excessive, often not dropping below 80F at night when the humidity levels can climb about the 85% danger level. This environment encourages fungal pathogens because the water lost through the stomata is only slowly evaporated so it remains on the leaves longer. Pots do not dry rapidly, so you may water less frequently than you do in the spring. During periods of high disease pressure, applications of precautionary fungicide sprays and drenches may be warranted.



1. On a typical spring day, the temperatures and humidity levels are both moderate. The diurnal pattern on a random day in April shows the nighttime humidity is in the 50 to 70% range, dropping below 50% during the day. You notice your pots dry out much more rapidly at these low humidity levels, so you have to increase your watering frequency as a result. Nighttime humidity levels are usually not excessive unless we have a period of gray gloomy weather that is more reminiscent of winter.

Diurnal Changes. Typically, the humidity is highest around sunrise and lowest around midafternoon. As the air is warmed by the sun, it can hold more moisture. With each 20F increase in temperature, the amount of moisture the air can hold roughly doubles. Dew point, the temperature at which the air is saturated with water vapor, is a common meteorological term from which the relative humidity can be inferred. When the dew point and ambient temperatures are the same, dew forms because the air is saturated with water vapor, having 100% relative humidity. When there is a big difference between air and dew point temperatures, the humidity is low. As the

3. When the temperature and humidity mediate in the fall, you notice a growth spurt in your orchids. The daytime humidity levels are low so pots dry out more rapidly and you find yourself watering more frequently than you did during the summer. Nighttime humidity levels are usually not too excessive, until the tropical storm season. The leaf wetness and lack of drying that accompanies these extended periods of gray, rainy weather are invitations to disease. If your plants cannot be sheltered from the weather, before and after fungicide and bacterial sprays are warranted.

temperatures drop in the evening, higher nighttime humidity levels typically occur because the cooler air can hold less moisture.

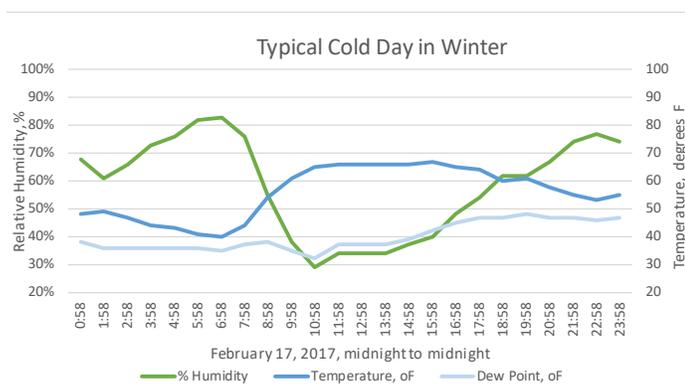
Seasonal Changes. There are seasonal humidity patterns in St. Augustine that you can use to adjust your watering habits to match the evapotranspiration rate as well as understand when your plant is under disease pressure. Vapor Pressure Deficit. Though humidity is a useful and familiar measure, there is a more precise way to express the driving force of water loss from the leaf, vapor pressure deficit. Vapor pressure deficit (VPD) is a measure of the evaporative forces

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CULTIVATION

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4. Our winters typical include 10 to 14 days of cold to freezing weather when both the temperatures and humidity are very low. More enjoyable are the periods when it warms up during the day. The cooler nighttime temperatures and high humidity encourage condensation on plant leaves and that is a recipe for both mesophyll cell collapse from cold water damage as well as rots and bacterial problems. The dreaded flower blighting from *Botrytis* is common during the high humidity evening hours, requiring either more air movement to dry leaves and flowers or higher temperatures to drop humidity.

at the leaf surface, given in pressure units like millibars (mb) or kilopascals (kPa). It is defined as the difference between the pressure exerted by water vapor in saturated air and water vapor actually present in the air. At a VPD of zero, the air is at its dew point so there is no moisture gradient between the plant leaves and the air that are both saturated with moisture. A low VPD indicates the air is near saturation so the transpiration rate is negligible. A high VPD, means the air is drier, and the moisture gradient between the leaf and the atmosphere encourages a higher transpiration rate.

We could find no recommended VPD levels for orchids, but some guidance is offered in an article by Wollaeger and Runkle (2015):

Growers should aim to have fairly low VPD, for example 0.3 kPa, when rooting cuttings in greenhouses. This will reduce the drying of young plants, thereby reducing the frequency of misting and watering required to keep plants hydrated. However, Michigan State University Extension recommends maintaining a greater VPD (greater than 0.5 kPa) in greenhouses while finishing plants, especially when there is a dense plant canopy. Plants will be able to transpire, cool themselves and be less stressed while the environment is less conducive to disease.

Greenhouse vegetable growers harvesting fruits should be aware that one study, "Vapor Pressure Deficit (VPD) Effects on the Physiology and Yield of Greenhouse Tomato," reported that a VPD of 0.8 kPa during the day and night increased photosynthetic rates and tomato fruit yields compared to plants grown with a VPD of 0.5 kPa. Too dry of an environment can also cause problems. For example, another study, "High Vapor Pressure Deficit Influences Growth, Transpiration and Quality of Tomato Fruits," showed that a very high VPD of 2.2 kPa could cause plant stress and fruit cracking in tomato.

Plant metabolic processes require the plant to absorb carbon dioxide through the stomata in the leaves to produce food, and water to be absorbed largely through the roots and drawn into the plant in the transpiration stream exiting the stomata as water vapor. A moderate to high transpiration stream rate encourages the uptake of mineral nutrients through the roots.

- Where the vapor pressure deficit is in the optimum range, the plant has a moderate transpiration rate so water and mineral nutrients can be absorbed from the roots, water loss through the open stomata is not excessive and carbon dioxide can be absorbed through the open stomata to produce food. We guesstimate the optimum range to be around 0.5 to 1.2 kPa.
- In an overly dry atmosphere, where the vapor pressure deficit is high (perhaps over 1.2 kPa), moisture is evaporated rapidly through the open stomata, sometimes so much so that the plant will shut its stomata in an attempt to limit water loss. With closed stomata, leaves cannot cool themselves and carbon dioxide cannot be absorbed from the atmosphere. Spider mites also thrive in a dry environment.
- In an overly wet atmosphere, where the vapor pressure deficit is low (perhaps below 0.5 kPa), the stomata can remain open for carbon dioxide uptake. Moisture is slowly evaporated from the foliage though the transpiration rate is slowed. A weak transpiration flow can result in nutrient deficiencies, particularly of calcium. Edema, the physiological response to a plant's inability to shed water, can cause leaf blistering. Disease pressure is high because of the potential for excessive leaf wetness.

Plants respond to the VPD by increasing or decreasing the stomatal opening, and this in turn affects the ability of the plant to absorb carbon dioxide, water and mineral nutrition as well as cool itself during hot weather. There

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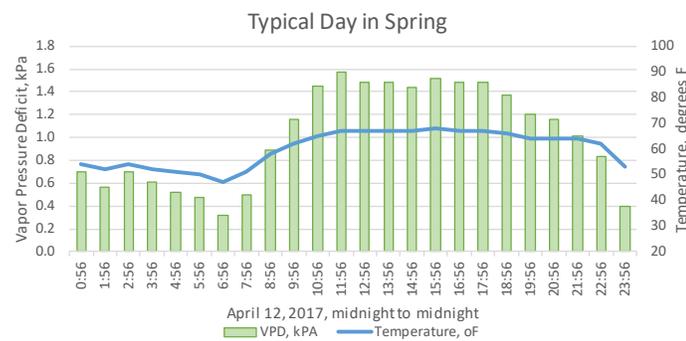


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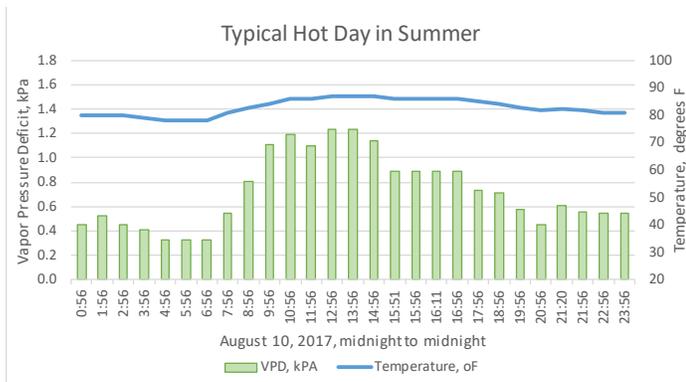
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are orchids that normally have their stomata open during daylight (C3 plants, often thin-leaved orchids like oncidiums). These plants absorb carbon dioxide and photosynthesize during daylight hours, and can cool their leaves through evaporation. Others orchids have adapted to an epiphytic lifestyle by opening their stomata in late afternoon and through the night (CAM plants, often thick-leaved orchids like cattleyas) when humidity is lower as a water conservation measure. These orchids absorb carbon dioxide at night when the humidity is lower and store it until the daylight hours when photosynthesis occurs.

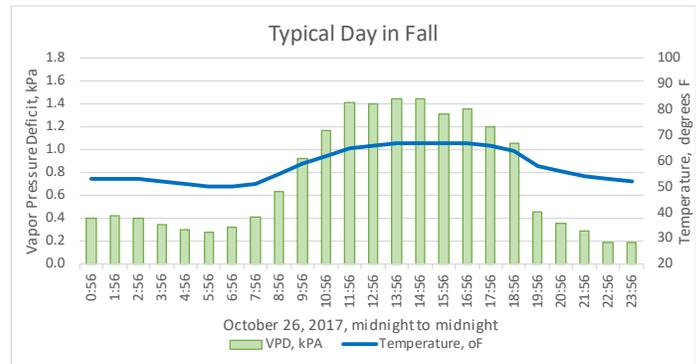
Indoor growers and growers in the arid southwest have to take additional steps to prevent plant stress from



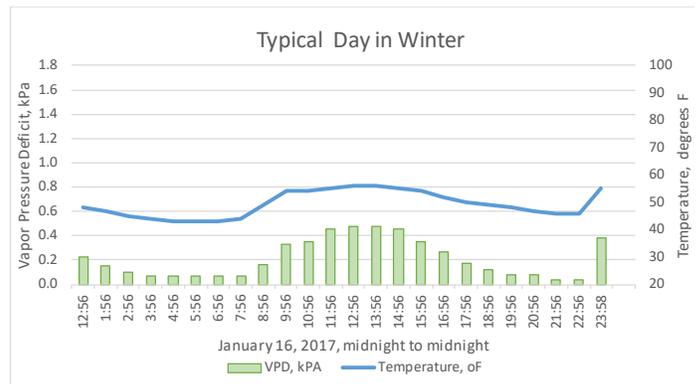
5. The VPD in spring tends to be moderate to high during the daylight hours with most values over 1.2 kPa. C3 plants will lose water rapidly through evapotranspiration so watering frequency should be increased. Nighttime VPD values are moderate so CAM plants should grow well with warming temperatures, increased sunlight and ideal VPD in spring.



6. The summertime VPD tends to stay in the moderate range during daylight hours but drops to low levels at night. C3 plants can cool themselves during the heat of the day while additional shading or under bench wetting may be necessary for CAM plants that cannot cool themselves through evapotranspiration by day. Nighttime VPD levels are low so nutrient uptake particularly of calcium is low and disease pressure is high.



7. The fall diurnal patterns are similar to spring, with the difference being that temperatures are decreasing as are the hours of daylight. You will water a little more during the fall growth spurt particularly for those plants that enjoy the cool weather, others are preparing themselves for the winter rest.



8. We enjoy moderate temperatures on many winter days, and the vapor pressure deficit is often in the low range day and night. This means our C3 and CAM orchids can absorb plenty of carbon dioxide without excessive water loss but transpiration rates are low so the need for frequent watering and mineral nutrition is less.

excessive vapor pressure deficits. Our orchids grow well outdoors during much of the year, except during the cold winter periods and wet tropical storms in late summer and fall. Understanding the vapor pressure deficit that occurs during each season will help guide you in your watering and fertilizing frequency. It also explains why additional shading may be required in summer for cooling, and when disease pressure may be high.



ORCHID ADVENTURES



Jacksonville Orchid Society Show Garden Club of Jacksonville

Hope everyone got to the JOS show on St. Patrick's Day weekend to visit our favorite orchid vendors, enjoy the fabulous displays and most importantly, to bring home new orchids! The AOS judges were busy giving out flower quality and cultural awards, as well as ribbon judging all the plants in the displays. The Gainesville OS got a Silver Certificate for their fabulous display, and our little table top exhibit had many ribbons. SAOS Member Steve Hawkins, the Orchid Specialist, got a trophy for the best bifoliate cattleya in the show. One of the benefits of putting in the display on Friday is you get to tour the sales booths a day before the show opens!



SHOW TABLE



Grower Linda Stewart
Aerangis hariotiana 'Gold Country'



Grower Harry & Celia McElroy
Cym. Dorothy Stockstill
'Forgotten Fruits' AM/AOS



Grower Steve Hawkins
Galeopetalum Starburst 'Parkside'
AM/AOS



Grower Courtney Hackney
Lc. Blue Velvet 'Surprise'



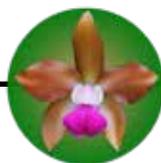
Grower Annalee McPhilomy
Burrageara Romance



Grower Suzanne Susko
Phal. amabilis



Grower Linda Stewart
Pleurothallis grobyi



SHOW TABLE



Grower Linda Stewart
Trichopilia hennesiana



Grower Sue Bottom
C. skinneri



Grower Annalee McPhilomy
Miltoniopsis Hajime Ono



Grower Suzanne Susko
Dtps. Shu Long Purple Queen



Grower Janis Croft
Slc. Jewel Box 'Scheherazade' AM/AOS



Grower Courtney Hackney
Lc. Jerry Rehfield

