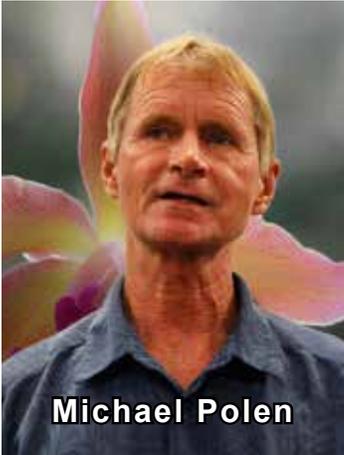




CLUB NEWS



Michael Polen

August 4 Monthly SAOS Meeting

by Janis Croft, secretary@
staugorchidsociety.org

Welcome and Thanks.

President Bob Schimmel opened the meeting at 7:15 pm with approximately 48 attendees. Bob welcomed our five guests as well as our renewing member, Marcia Farrell. He also thanked Dorianna Borrero for bringing in her delicious

flan and Jeanette Smith for the refreshments. Bob reminded all to enjoy the coffee and treats while dropping a dollar in the jar.

Linda Stewart announced that if you are a member and bring a guest, you and your guest will now both get a raffle ticket. She also recognized our one birthday person with a free raffle ticket and Bob reminded all to vote for their favorite orchid on the show table.

Club Business. Linda Stewart announced that we are developing a contact list for all of the neighborhoods and Homeowner Associations that have websites or newsletters. This will allow us to get our meeting and publicity information to the right people who do the posting of notices in these areas. Help us by sending your area's contact person's name to Linda Stewart at veep-membership@staugorchidsociety.org

Mary Colee solicited from the audience for volunteers to work on the Gainesville show on Friday setup and Sunday breakdown. The show is October 17-18. We will also need plants. She asked for people who are committed to contact her asap so a decision whether to participate or not can be made.



T-Shirts, Name Badges and Orchid supplies were available for sale. T-Shirts for \$20, Name Badges for \$8, Potting mix for \$5 and slow release fertilizer for \$3. Purely Organic Fertilizer arrived and was available in 4 lb. lots for \$5. Thanks

to Wes Dean who has volunteered to help with side table sales and back up Bill Gourley when he's away.

Mary Colee announced that the next Keiki Club on August 16 will be about "Staking Your Orchids" and will be held in the cool a/c garage at Mark and Kathy Young's home, 160 W Genung St, Saint Augustine, 32086. There will be no repotting.

SAOS Librarian Penny Halyburton brought in five recommended beginner books for newbies to borrow. Remember to email SAOS Librarian Penny Halyburton if you want to borrow a book (see our website) and she will bring your requested book(s) to the next meeting.

Orchid Events. You may be interested in attending the Annual Cattleya Conference on August 8 and 9, check out odoms.com for more info. The International Phalaenopsis Alliance Symposium is on August 21 and 22, visit www.phal.org for more info.

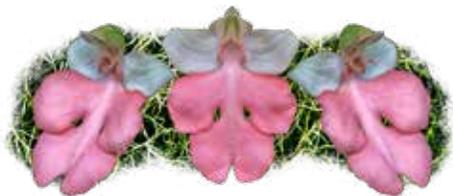
Show Table Review. Courtney Hackney started his review of the Show Table by first discussing a very happy plant that had no blooms. It was a Neofinetia with lots of aerial roots and plenty of pods full of seeds. He reminded us that there's more than just flowers to appreciate with our plants. Next he pointed out an Aerides variety with its pale and fragrant flowers. Aerides like to grow in hot and steamy conditions which is just what we've been having. Next he discussed the Phal. Purple Martin which was bred in the mid 90's in South Carolina and is a beautiful indigo color.



Continued on page 3



CLUB NEWS



Upcoming Orchid Events

August

- 7-8 Fifth Annual Cattleya Symposium
Sponsored by Odom's Orchids
Indian River Research & Education Ctr
Fort Pierce
- 11 JOS Meeting, 7 pm
Panel Discussion
- 16 Keiki Club for Orchid Beginners, 1 pm
Staking Your Orchids
Mark and Kathy Young's Home
160 West Genung St, St. Aug 32086
- 21-22 The 22nd Phalaenopsis Symposium
International Phalaenopsis Alliance
Sheraton Orlando North Hotel, Maitland

September

- 1 SAOS Meeting, 7 pm
Orchids by the Yard, Gorilla Growing
Ernie Gemeinhart, Enlightened Orchids
- 5 SAOS at Ace Hardware, 9 am til 1 pm
3050 US 1 S in St. Augustine
Repotting and Plant Clinic
- 8 JOS Meeting, Topic TBA, 7 pm
Speaker TBA
- 19-20 Ridge Orchid Society Show
Lake Mirror Center, Lakeland
- 20 Keiki Club for Orchid Beginners, 1 pm
Fall Preparations
Carolyn and Eric Smith's Home
239 S Matanzas Blvd, St. Aug 32080

October

- 3 SAOS at Ace Hardware, 9 am til 1 pm
3050 US 1 S in St. Augustine
Repotting and Plant Clinic
- 6 SAOS Meeting, 7 pm
Green with Envy: Green Cattleyas
Ron Midgett, New Earth Orchids
- 10-11 Fort Pierce Orchid Society Show
Fort Pierce Shrine Club
- 13 JOS Meeting, Topic TBA, 7 pm
Speaker TBA

- 16-18 East Everglades Orchid Society Show
RF Orchids, Homestead
- 17-18 Gainesville Orchid Society Show
Kanapaha Botanical Garden
- 23-25 Orchttoberbest at EFG Orchids
4265 Marsh Road, Deland 32724
- 24 Keiki Club for Orchid Beginners, 11 am
Field Trip to EFG
Call Mary if You're Interested
- 30-1 Delray Beach Orchid Society Show
Old School Square Gymnasium
- 31 17th Annual Slipper Symposium
Sheraton Orlando North, Maitland

St. Augustine Orchid Society Organization

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CLUB NEWS

Continued from page 1

A sport (mutant plant) was taken to China for continued breeding and Courtney has been waiting for it to reappear in the U.S. He was pleased to see one finally grown and shown by our group. It is bifoliate season (meaning two leaves with a flower cluster on top of long stems) and we had some beautiful examples. Check out the Chocolate Drop Cross along with the other photos of all our show table examples at the end of this issue.

SAOS Program. From the rainy West coast of Florida, our guest speaker Michael Polen of Art Stone Orchids discussed "Orchid Culture 101". He started by reminding us that orchids grow in nature everywhere except the Arctic and Antarctica so we should all be able to find an orchid we can grow.



Understanding where and how orchids grow will help you better understand how to grow them. He first discussed the rhizomal orchids which grow horizontally in nature along tree limbs. These would be Oncidiums, Dendrobiums and Cattleyas. So when potting, look for the new growths and place in the pot so the old growth is next to the pot's edge and the new growth is towards the center with lots of room to grow and expand horizontally. He held up a bare rooted cattleya pointing to the new growths, three eyes and the pseudobulbs and then passed it around for all to see.

Michael then discussed the monopodial orchids which include the Phalaenopsis and Vandaceous species. These grow upwards adding leaves vertically, one after the other, and have many roots to collect nutrients and water. Since they don't have water collecting pseudobulbs, they grow thick, fleshy leaves. He passed around three examples of leaves from a phalaenopsis showing the Good (limey green color), the Bad (very dark green color) and the Ugly (leaf with sunburn).

It's important to understand the three important points to orchid growing: Location, Location, Location. Everything comes back to light and water which are based on the location of your plant. Some like lots of light, others not so much. If you aren't getting reoccurring flowers then light and/or water is the culprit. He suggested slowly moving plants into more light. In order to avoid sunburn, touch the leaves and feel how hot they are getting. If they feel as hot as a black car in the sun, pull the plant back to a bit shadier spot and keep trying. Your plants need to be watered, re-watered and then watered again. Water them from all angles, not just one side of the pot. Then let them dry and

breathe air. He suggested taking a No. 2 pencil and sticking it down into the pot. If it comes out clean with nothing stuck to it, then it is time to water again.

Next he showed us how to repot by gently removing the old medium from underneath while holding the plant upright. Normally he would use water to flush out the medium. He filled a well draining pot to a half inch from the top with a lower level of styrofoam pellets and a top level of medium. Then he spread the roots wide and placed them on top of medium. Once the roots were down, he then added just a little bit more medium to fill the pot to the top and used a pot clip to anchor the plant. He advised us not to repot during flowering but rather wait and let the plant strengthen after flowering. Then when you see signs of new growth, repot.

Next he demonstrated splitting up a plant. Michael keeps a minimum of four pseudobulbs and puts hydrogen peroxide on the cut he makes through the rhizome. He lets the plant lay horizontally for a few days till he sees new growth activity. Again he spreads out the roots and plants on top of the medium using a pot clip as above. He does add time release fertilizer around the perimeter of the pot for the times when his fertilizing routine gets way laid. Normally he fertilizes twice a month with Orchid Plus or Peters CalMag at half strength.

In closing he advised us when buying plants to ask the vendor lots and lots of questions. The vendor should be asking you where you are going to grow a plant and then suggest a plant that will do well in your situation.

Meeting Conclusion. Dick Roth announced that Linda Stewart received the Member's Choice Award with her Purple Martin Phalaenopsis. The raffle table was the final event of the evening with Dianne Batchelder and Mary Colee presiding. Thanks to all of those that volunteered to stay 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

August 16 Keiki Club

Staking Orchids

The Keiki Club for orchid beginners will be Sunday afternoon on August 16 from 1 to 3 pm. It's good to spend some quality time with your orchids, particularly if you take the time to stake the flower spikes for their best presentation. Staking techniques for summer blooming orchids like cattleyas, dendrobiums and oncidiums will be discussed, along with some other tricks. Call Sue at 797-4360 if you have any questions.



Where: Kathy and Mark Young's Home
160 West Genung Street, St. Aug 32086

When: Sunday, August 16, 1 to 3 pm

September 1 Monthly SAOS Meeting

Orchids by the Yard... Gorilla Growing

Ernie Gemeinhart of Enlightened Orchids in the Orlando area will be talking about growing orchids outdoors at the September 1 meeting. After years of growing orchids under lights and outside (seasonally) in the Chicago area, Ernie relocated to sunny Florida. A dream come true for almost any midwestern orchidist! The move presented several challenges and required some serious rethinking in his orchid collection. It's not as simple as hang and forget! Walk with Ernie as he gives ideas on orchids suitable for the yard and garden in USDA hardiness zone 9 to understand those that can spend the absolute longest season outside. Ernie will give tips on plant selection highlighting those with extreme temperature tolerance and outdoor cultural considerations.



Ernie is a Pittsburgh native, has dual degrees in Marine Biology and Aquaculture and is a laboratory manager for his day job. He is an accredited AOS judge and primarily grows paphs, phrags, phals and zygos. He offers a wide range of slipper orchids and also some moth and miniature and compact corsage orchids from young seedlings to adults in bud and bloom.



July 19 Keiki Club

Growing Different Types of Orchids

Almost two dozen familiar and new faces came to the July Keiki Club Get Together where we met in the air conditioned splendor of the Garage Mahal at Mark and Kathy Young's home. Mary Colee talked about growing different types of orchids, in particular suitable potting mixes and light requirements. Mary talked about the components that are often found in potting mixes.

Sponge rok is a lightweight expanded perlite that provides good aeration and water holding capacity and does not decompose.

Clay pebbles like hydroton, aliflor, etc. provide good aeration and don't decompose.

Bark like Orchiata provides moisture and nutrient retention though it can be difficult to wet and will decompose.

Sphagnum moss provides good aeration and water retention as long as it is not packed too tightly in the pot, though many struggle with overwatering plants in sphagnum moss. *ProMix* is a peat and perlite mix that offers some of the same benefits as sphagnum moss without being as difficult to water properly.

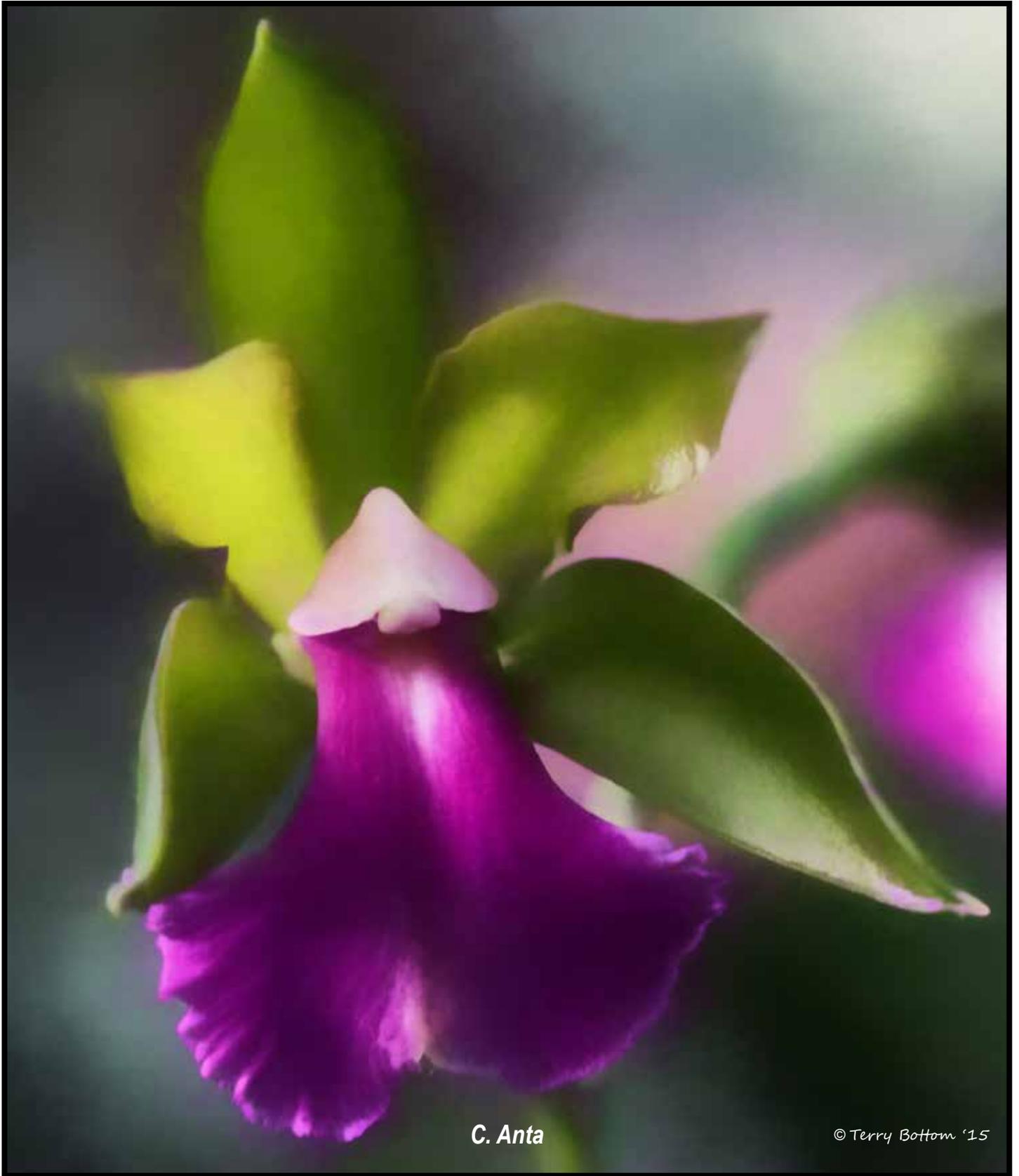
You can buy custom blends from the club or make your own blends if you have these components on hand. Sphagnum moss or ProMix blends are great with phalaenopsis and bark or tree fern blends are great for orchids with canes or pseudobulbs like dendrobiums and cattleyas.

Mary then talked about light requirements. Most orchids must be protected from the midday direct sun from say 11 to 2 pm. The vandas enjoy the brightest light, followed by dendrobiums and cymbidiums, cattleyas and epidendrums. Oncidiums and paphiopedilums like the low end of cattleya light. Phalaenopsis tend to be shade lovers. The club has a light meter you can borrow from the library to check your light levels.

We then had an open discussion on different orchid topics. We had a nice time talking about orchids with other members, guests and visitors.



INSPIRATION



C. Anta

© Terry Bottom '15



CULTIVATION

Your Orchids in August

based on Robert Scully, Ned Nash & James Rosechecklists, courtesy of the AOS



General Growing Tips. August is the hottest month so be prepared to work diligently to ensure sufficient air circulation. Spray water on the floor, benches and outer surface of clay pots one or more times every day during the hottest times. Continue watering and using a dilute fertilizer. The warm temperatures also cause fungal and bacterial problems as well as an increase in insect populations. Observe your plants carefully and spray for both insects and disease when first noticed. It may be necessary to move unsheltered plants into an area protected from torrential rains.

Cattleyas. The extreme heat seems to discourage active growth and flowering, but many plants are either developing buds for their autumn flowering or are ripening growths that will power the winter and spring blooming season. The bifoliate and *nodosa* hybrids seem best able to bloom during the summer temperature extremes. The high temperatures and humidity typical of our summer coupled with tropical storm weather create the potential for black rot. Consider allowing plants to dry harder between waterings. Tie up new growths carefully to promote upright development of the pseudobulbs.



Cymbidiums. Use high potassium fertilizer in late August. The potassium level should be at 250 to 300 ppm potassium (K) and zero to very low N. Do this only two times at a two week interval. Wait a month then resume your normal fertilizer schedule.

Dendrobiums. The *nobile* type dendrobiums are popular though some growers find them difficult to flower. In order to promote the gradual shift from active growth to the flowering cycle, start withholding nitrogen now. Some growers report using a bloom booster this time of year on winter dormant plants helps prepare them for their dormancy.



Phalaenopsis. Current high temperatures are particularly stressful for phalaenopsis. Excess heat and humidity promote bacterial *Pseudomonas* infections on the fleshy leaves. Keep light levels subdued, promote sufficient air circulation and do not splash water from one plant onto another. Keep using a dilute (1/4 to 1/8 tsp/gal) fertilizer with every watering to develop the strongest roots and largest leaves prior to the winter flowering season.



Vandas. Summer growing conditions are ideal for *Aerides*, *Ascocentrum*, *Rhynchostylis* and *Vanda* hybrids. Feed aggressively and provide high humidity. Try placing a rubber-topped plastic flower tube containing stale beer on a rigid, emerging new root (in the evening and remove in the morning so it doesn't burn). Rather quickly, the root will consume the beer and utilize its carbohydrate content, producing some remarkable growth responses.



CULTIVATION



Orchid Questions & Answers

by Sue Bottom,
sbottom15@hotmail.com

Q1. I have had this orchid for a few months now. It's really healthy and hasn't lost any flowers. It recently started to bud again and all the new flowers are a darker yellow when they open than the original flowers. Why?

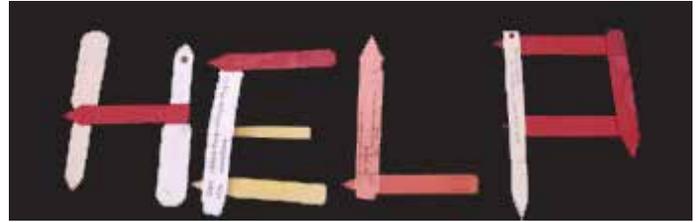
A1. The early yellow phal hybrids were notorious for opening one color yellow and then fading over a week or three to a much paler color. Perhaps that is what is happening although it seems to be a pretty extreme difference in flower color. The other side of the coin is that it usually takes a flower 3 days or so to develop its full flower color.



Q2. I am attaching pictures of some of my phalaenopsis that shows new leaves that are badly damaged. I have several phals that showed the same markings as soon as the new leaves appeared. What's strange is that the leaves of the 4 different plants affected are the newest one and all about the same size. I am growing the orchids on my covered patio and don't have kids or pets. I repotted the plants about a month ago so could it be that I damaged the roots during that process? Is that the result of spider mites? I didn't see any mites or webbing. I have tried spraying insecticidal soap and alcohol without results. May I also show you pictures of my dendrobiums that were doing fine and just last week the leaves started to yellow in places and the back of some have indentations that appear whitish.



A2. I don't think it has anything to do with the repotting, root damage or spider mites. The new tender leaves were damaged somehow while they were forming and the scars



simply enlarged as the leaves got larger. We've ruled out mechanical damage. I suspect the problem was you had rainwater or condensation pooling in the crown of the phalaenopsis and the emerging leaves from the dendrobium cane, and bacteria invaded the water and caused the rot.



You can do a number of things, peel the sheath down, blow the water out with a can of compressed air, keep hydrogen peroxide handy and spray or drip a few drops in, etc. Walgreen's sells a real handy sprayer with hydrogen peroxide that you can refill.

Q3. For my half century birthday recently I received an incredible orchid with 38 flowers either in bud or bloom! Sitting in my air conditioned office in full sun in a small pot it seems most happy. However, it has a growing patch of leaf that is shriveling and looks very life threatening. I would prefer a home type treatment rather than powerful chemicals if at all possible.



A3. I think you have a few things going on. That one leaf looks like the beginning of sunburn, shield the plant from direct midday sun. They are shade loving understory plants and can't take midday sun, even insides. Be careful not to water until the sphagnum moss approaches dryness. Don't water on a set schedule, water when the potting mix is drying out. When the plant is done blooming, find someone to help you repot it, either at a local orchid society or nursery. That mix looks like it's served its purpose and is ready to be refreshed.



CULTIVATION

Notes for Beginners – Episode 2

by Jim Brydie, [Ku-Ring-Ai Orchid Society](#)

In all the advice I give, please remember that there are nearly as many opinions about growing orchids as there are orchid growers. It is almost certain someone somewhere will disagree with something I say, or even have contradictory opinions. Each person tells you what they know works for them. It may sometimes seem contradictory but most of the time it really isn't. Each may be right in their own context. Always keep an open mind. With that all said, let's start with Tough versus Touchy.

Some are Tough. Most orchids are hardy little so-and-so's, and will grow and flower in far less suitable conditions than they would really like or need, even if they don't quite do so to their full potential. Other orchids are far less accommodating, and will die at the drop of a hat if conditions are wrong. When you start out with orchids you probably only have a few plants and you are feeling your way as you learn. If one of your orchids dies, you will be sure it is something you did wrong, or didn't do right. In reality though, most early failures are due to trying to grow something that's just too hard, without the environment or knowledge to meet its special needs.

Failing with an orchid when you are starting out is a big turn off, so you can maximise your chances by growing the tough ones. You will naturally expand into a wider range of types as you grow in confidence and experience, but hopefully by then, you won't worry so much about a few failures here and there. And be assured they will occur. Every grower kills a few orchids from time to time, and if it doesn't happen, you aren't being adventurous enough.

I will never forget a talk I heard by a now retired orchid grower/nurseryman from Newcastle about two years after I joined our society. It was called "Orchids I Have Killed" and it was an eye opener for me. The speaker, a top class grower, would show us a picture of a fantastic orchid, tell us about how he imported it at great expense from Thailand or somewhere, how he grew it well and got prizes at shows etc, and then end with "it is dead now" and flick to the next one.

At the time, although I was new to orchids, I was a qualified horticulturalist, and I was killing about 20% of the orchids I tried to grow. I didn't tell anyone about it because I was rather ashamed at my lack of success. I didn't think orchid growers ever killed orchids, so 'Hughie from Newcastle's' admissions were amazing and I soon found that having an orchid die on you was common. Especially when you tried to grow the more exotic types. I could see I wasn't alone after all and it made it much easier to ask for help and get advice from the more experienced growers.

Getting back to the topic however, my advice is to not get into the exotic orchids too quickly. Start with the tougher

ones, like those I recommend in these beginner articles, or others advised to you by experienced growers. And this sort of leads me on to our next topic.

"Oils Ain't Oils Sol". I always loved that expression in the old Castrol oils TV advert. You know the one, where the Mafia gangster boss criticises his motor mechanic for using a cheap oil in the boss's car. Well my point, obtuse as the connection may be, is that you can't treat all Dendrobiums in the same way, or all Coelogynes, or all oh well, you get the idea.

If you like Dendrobiums for instance, and that was my first favourite genus, and you would like to try and grow a new species or hybrid that you may have seen, you first need to find out a bit about it. The obvious questions to ask the seller are "will it grow cold" and "how do I grow it". There is nothing wrong with asking the seller these questions but the next two paragraphs expand a little on the context.

When asking the seller "how do I grow it", I don't mean that you should ask for a full set of annual instructions. I am assuming for example, that you already know how to grow a few and are looking for comparative advice against a culture regime that you already understand. For example, you might already grow 'softcanes' quite well and want to know if the new prospect also grows like that, i.e. with a drier winter rest. Therefore, the question might actually be better put as: "Do I grow it with my softcanes," or alternately "do I grow it in the shadehouse with my kingianums."



The question "will it grow cold" is a more complex issue than people think. I must get asked this question hundreds of times a year and I often wonder how much information I can give without the face in front of me going blank. I know they all just want me to say either yes or no, but it can be such a no win question. I think I will take this opportunity to make my next subject 'cold or not'.

Will it Grow Cold? What is generally meant by this, is whether an orchid can be grown in an open to the weather shadehouse habitat in a backyard in Sydney, or whether it needs a heated glasshouse. However, there are several contentious aspects to this seemingly simple question. Clearly, something considered a 'cold' grower by someone in Brisbane might not be considered so by a grower in the colder climate of Melbourne.

The orchid community has used just three terms to designate temperature requirements for an orchid, i.e.,

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cool, intermediate and warm. Temperature tolerance is a genetic factor in plants, the same as it is in animals. In nature, the vast majority of our orchids come from the tropics, and that immediately conjures up an image of hot steaming jungles. You may be surprised to hear however, that a large proportion of the tropical orchids don't come from the steaming lowland jungles. Some do of course, but most come from the jungles higher up on the sides of mountains where there is stronger airflow and frequent afternoon rain from the moist coastal air cooling as it rises against the mountains. The higher above sea level a plant is found, the cooler temperatures it must tolerate, and assumptions can be drawn between the altitude at which a species is found in nature and its tolerance to a range of minimum temperatures.

Altitude information is readily available for species because it is part of the scientific data accumulated when they are studied in the wild, so the information is obviously more directly applicable to species. However as all hybrids are basically just a mix or two or more species, one can use the same table for them, once you know their make-up, and that isn't hard to do with computers these days.

To find out the altitudes at which your species occurs, try Jay Pfahl's Internet Orchid Species Photo Encyclopedia at <http://www.orchidspecies.com/>. It provides photographs and textual info on many thousands of species orchids and for most, they also give the altitude band in which it occurs in nature.

There are no hard and fast rule, but I have drawn the relationships fairly conservatively to provide a safe initial try out point. In many cases the orchid will grow colder, but there will also be cases where you might need to go warmer. Please note that the suggested minimum temperature for tropical orchids (those originating between the Tropics of Cancer and Capricorn) are that which the orchid should tolerate without harm. It is not the ideal minimum temperature it would prefer:

Sea Level to 2600 ft (800 m): warm growing, suggested

minimum temperature at least 50F, 60F is better.

2800 to 4900 ft (900-1500 m): warm to intermediate growing, suggested minimum temperature of 40 to 50F.

5000 to 7500 ft (1600-2300 m): intermediate to cool growing, safe minimum temperature of 40F but often take much lower.

5000 to 7500 ft (2400 m and above): cold growing, usually easily tolerates 32F

Please note that while orchids from higher altitudes tolerate cold well, they may also resent very high summer temperatures. Also orchids from more temperature zones south or north of the Tropics of Cancer and Capricorn are non tropical and will grow cooler.

Air. You would hardly think that air is a topic worth discussing in regard to plant culture, but most epiphytic orchids have evolved to fill niches in nature where there is lots of the stuff. Although growing in trees was driven by light and not necessarily air, most seem to strongly resent stagnant areas in our growing houses, or even being crammed together so that they all create their own little stagnant patches. When you put your orchids into their allotted growing area, try as best you can to give them space, and if they are in a closed house, they will do much better with a fan going 24 hours a day. Not blowing hard directly at them, but preferably, moving the air above them.



In my experience, orchids also do far better on wire mesh benches than on solid surface benches or even wooden slatted benches. Some even insist on being hung above all the others. This may be related to a need for air flow around them or perhaps more indirectly, the extra air helps dry off excess water more quickly when they are wet.

Fertiliser. Gardeners all know that you need to regularly apply fertilisers to grow good healthy plants. The same applies to orchids, but with a significant difference in the detail. Ground plants like shrubs, and trees etc, have access to the natural minerals in the soil, that come from the breakdown of rock and stone, and from the rotting humus of leaves and animal droppings etc that lays on top of it. This is without any additional fertiliser added by us.

The orchids we grow aren't as lucky. The medium in which

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we grow them has virtually no nutrient value at all and nor does the water from our taps, unless we add it ourselves. In their natural habitats they do a little better. The water that drips on them, from the tree leaves above, contains a weak nutrient soup. The mineral laden ground water is sucked up by the tree roots and transported right up to the canopy where it is exuded by the leaves. The water that washes down in rains also includes the dissolved droppings of any bird/insect/animal that lives in the canopy. A weak soup I know, but constantly available.

For orchids growing in our artificial environments, we need to supply all the nutrients. When I tell a new grower that this should be half strength soluble fertiliser at least once a fortnight, I often see a look of total disbelief, but I assure you that all the good growers apply fertiliser regularly.

Orchids won't die if you only fertilise them a few times a year, but you won't grow them anywhere near their best either. Have you ever noticed how lush and healthy orchid nursery plants look? Would it surprise you if I told you that many nurseries apply very weak fertiliser with every watering? I am not quite that assiduous with my collection but I do try my best to fertilise every second watering. When I retired a few years back, and was finally able to improve my fertiliser routine, better growth was nearly immediate.

Finally, and there is no clear consensus on this, I strongly prefer soluble fertilisers to the slow release, coated pellet kinds. Because orchid medium is so coarse, I don't trust the release rates of the pellets and you never know exactly when they are emptied and useless.

Light Levels. The recommendation for providing a good average light level for orchids, is to use 50% shade cloth, but that assumes a shadehouse position in full sun, unaffected by nearby trees or buildings etc. It is a measure that ensures the orchid won't get too much light to burn the leaves, but will get enough to grow and flower well. It is a reasonable median for all orchids. In case you were wondering, Wikipedia tells us that full unobstructed sunlight is about 10,000 foot-candles, and an overcast day will produce about 1000 foot-candles, so you can see why we talk in generalities most of the time. 10,000 foot-candles will burn leaves for sure, but 50% shade cloth would leave you with 5,000 foot-candles maximum at noon. 50% shade cloth by the way, is named that way because it lets through 50% of the light that falls on it from directly above. Even 5,000 fc is still a little too high theoretically, but as the sun moves across the sky the angle changes, clouds appear and disappear etc, so the average will be substantially lower and perhaps closer to 3000 fc. No wonder it is about right for most. Cymbidiums might do better with 30% however, and Phalaenopsis say 70%, but within your greenhouse there are also brighter and darker spots so it is easy enough to find the right niche.

Orchid Myths - Urea

by Sue Bottom, sbottom15@hotmail.com

I have read and oft repeated that urea fertilizers should be avoided. Leave it to Alan Koch to debunk another orchid myth. Does the form of nitrogen make a difference? The short answer is yes. Some urea in the fertilizer is fine, use a fertilizer that has more than half of the nitrogen in the nitrate form and less than half in the ammonium form. Now for the long answer.

Forms of Nitrogen. There are many water soluble fertilizers labeled for use as orchid food, though the formulations are very different. If you read fertilizer labels, you've noticed that the percentages of nitrate nitrogen, ammoniacal nitrogen and urea nitrogen are listed.

Nitrate nitrogen has the chemical formula NO_3^- and carries a negative charge. This form of nitrogen is immediately available for uptake by your plant's roots. The absorption of nitrates into the root causes an increase in the root zone pH which over time can help neutralize the acidity caused by the decay of organic matter in your mix as well as tend to make the potting mix become more alkaline. If not absorbed by the root or stored in the substrate, nitrates are quickly flushed through the pot and lost as a nutrient.

Ammonium nitrogen has the chemical formula NH_4^+ . This form of nitrogen is also immediately available for uptake by your plant's roots. The ammonium ion carries a positive charge and can be adsorbed onto organic matter for subsequent uptake by the plant, particularly in substrates having a high cation exchange capacity like sphagnum moss. The absorption of ammonium into the root causes a drop in the root zone pH which over time can cause the potting mix to become more acidic. Another type of microorganisms, nitrifying bacteria, may be present in the root zone which can convert the ammonium nitrogen into nitrate nitrogen in a process called nitrification. This reaction also causes an increase in acidity so it will tend to drop the pH in the root zone over time.

Urea is a form of organic nitrogen that has the chemical formula $\text{CO}(\text{NH}_2)_2$. It is often said that urea cannot be absorbed by your plant's roots directly as a nitrogen source, that it must first be converted to ammonium by the enzyme urease that is produced by microorganisms living around the roots of your plant, in a process called ammonification. Whether or not urea can be taken up by roots is the subject of some debate. The ease with which urea is converted into ammoniacal nitrogen is the subject of more debate, but to the extent that urea can be converted into ammonium, ammonium and urea are often grouped together and referred to as ammoniacal nitrogen. To the extent that urea is not converted to the ammonium form, it is easily leached from the root zone and lost as a nutrient.

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Urea in Fertilizers. A quick search on Amazon.com reveals some common orchid fertilizer brands. There is the Sun Bulb Better Gro Orchid Plus with a 20-14-13 formula that touts the fact that it is urea free. The Grow More brands of orchid fertilizers have various formulations such as a 20-20-20, 20-10-20 and 30-10-10; some formulas say they are urea free and others say they contain a variety of nitrogen forms. The Jack's Classic Orchid Special has a 30-10-10 formula in which virtually all the nitrogen is in the urea form while Jack's Professional Orchid Fertilizers contain no urea. What gives?

Conversion of Urea to Ammonium Nitrogen. Whether or not your orchid is able to absorb urea directly into the roots, most debates on urea revolve around whether it is converted into usable ammonium nitrogen by the microorganisms present in the root zone or it is simply flushed out of the pot never to be seen again. You can find a full spectrum of opinions on-line about how long it takes to convert urea to ammonium, with estimates ranging from over a year to a matter of hours or days. The scientific literature suggests the conversion is fairly rapid. One study involving bark showed that 71% of the urea applied was hydrolyzed to ammonium within 24 hr and 95% within 40 hr.

You know intuitively that the population of microorganisms is probably greater in a soilless peat or bark based mix than in an inorganic mix and certainly greater than around a mount or in a basket with no media, so the conversion of urea to ammonium is likely to be greater in bark and soilless potting mixes than in mounted orchids. If most of your orchids are mounted, a high urea fertilizer may not supply the expected amount of nitrogen because low populations of microorganisms won't convert much of the urea to the usable ammonium or nitrate forms so most of the urea will probably just wash away. Perhaps your potting mix is sterile when you first repot your orchids, but orchids growing with potting media around the roots have likely developed a population of microorganisms that can convert urea to ammonium, and the more organic matter present in the mix, the greater the expected rate of conversion from urea to ammonium and ultimately nitrate nitrogen. While some of the urea may wash through the pot unused, this is probably also true of some of the nitrate nitrogen you apply.

Ammoniacal vs. Nitrate Nitrogen. More important than the presence or absence of urea is the relative proportion of nitrate nitrogen to ammoniacal nitrogen (ammonium plus urea). Ammoniacal nitrogen tends to produce lush, soft growth more susceptible to disease while nitrate nitrogen promotes sturdier growth. Nitrifying bacteria in the substrate are very effective at converting ammonium



to the nitrate form except when temperatures drop below 60F, the potting mix is too wet or the potting mix pH is too low, and this can potentially allow ammonium levels to build up which may result in ammonium toxicity. One study concluded that a minimum 1:1 ratio of nitrate to ammoniacal nitrogen and preferably a 3:1 nitrate to ammonium ratio improves vegetative growth and flowering in Phalaenopsis.

Choose Your Fertilizer Based on Your Water Quality.

Your water quality is one of the factors you should consider when selecting your fertilizer. If you have a naturally soft water with low alkalinity and total dissolved solids, your fertilizer of choice is probably one that is primarily nitrate nitrogen because the high nitrate content will result in a slightly basic reaction around your roots. So if you use rainwater or reverse osmosis water, your public water supply is from reservoirs in clean recharge areas or your well is drilled in granite, your water probably has a very low pH, low total dissolved solids content and low buffering capacity so you should seek out high nitrate fertilizers. For these pure water sources, avoid fertilizers with an acidic reaction like those containing more than 25% of the nitrogen in the ammoniacal form because it can cause precipitous drops in the pH around your roots. A good Cal Mag fertilizer is probably a good choice for waters with an alkalinity below 150 ppm. Some potentially suitable fertilizers for pure water are listed in Table 1.

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Table 1- Fertilizers Suitable for Naturally Soft Water

Formula N-P-K-Ca-Mg	Fertilizer Name and Potential Source	Forms of Nitrogen
12-3-15-7-2 w/ micros	Jacks Professional Orchid RO Water - available in 25 lb bags from nursery supply and online sources	0.4% ammoniacal (0% urea) 11.6% nitrate
15-5-15-5-2 w/ micros	Peters Excel Cal Mag Special - available in 25 lb bags from nursery supply and online sources	3.2% ammoniacal (2.1% urea) 11.8% nitrate
13-3-15-8-2 w/ micros	MSU Orchid Fertilizer for RO/ Rain Water - available in small quantities from FirstRays.com and rePotMe.com	0.4% ammoniacal (0% urea) 11.6% nitrate

Note: This table lists some fertilizers suitable for water which is naturally soft, less than 150 ppm alkalinity. Do not water your orchids with tap water that has been softened because the sodium from your water softener is toxic to your orchids.

Table 2- Fertilizers Suitable for Hard Water

Formula N-P-K-Ca-Mg	Fertilizer Name and Potential Source	Forms of Nitrogen
16-4-20-3-1 w/ micros	Jacks Professional Orchid Well Water - available in 25 lb bags from nursery supply and online sources	3.8% ammoniacal (0% urea) 12.2% nitrate
21-5-20-0-0 w/ micros	Peters Excel Multi Purpose - available in 25 lb bags from nursery supply and online sources	8.3% ammoniacal (1.1% urea) 12.7% nitrate
20-14-13-0-1 w/ micros	Better Gro Orchid Plus – may be available in local nurseries and big box stores	9.4% ammoniacal (0% urea) 10.6% nitrate
19-4-23-2-0 w/ micros	MSU Orchid Fertilizer for Well Water - available in small quantities from FirstRays.com and rePotMe.com	5.7% ammoniacal (0% urea) 13.6% nitrate

Note: This table lists some fertilizers suitable for water which has an alkalinity greater than 150 ppm. High salt content in the root zone is the enemy of your orchids and hard water has lots of dissolved salts present even before you add fertilizer, so flush salts from the pots regularly.



**NO
SOFTENED
WATER**

On the other hand, if you have hard water with high alkalinity and high total dissolved solids, you should probably use a fertilizer that will cause an acidic reaction around the roots so the naturally occurring calcium and other supplied nutrients will be more available to your plant. You'll look for a fertilizer with up to half the nitrogen in the ammoniacal form. Some potentially suitable fertilizers are listed in Table 2.

If you don't know what the quality of your water is or what fertilizer to choose, ask your local Orchid Society for advice or send a sample of your water to [J.R. Peters](#). For around \$40 you can obtain a water analysis and then ask them to recommend a suitable fertilizer based on your actual water testing results.

I'll continue to use low urea formulations in my root zone feeding program using a predominantly nitrate formulation when watering out of the rain fed pond in the summer and an acid generating fertilizer containing about 40% ammoniacal nitrogen when using high alkalinity well water in the winter. Whatever form of nitrogen works best for your water and your growing conditions, make sure your plants are also receiving enough calcium, magnesium and micronutrients.



SHOW TABLE



Terry Bottom

Grower Dick Roth
Den. bullenianum



Terry Bottom

Grower Courtney Hackney
Epi. Plastic Doll



Terry Bottom

Grower Yvonne & Bob Schimmel
Eplc. (Ctt.) Don Herman



Terry Bottom

Grower Sue Bottom
Slc. (Gsl.) Tutankamen



Terry Bottom

Grower Harry & Celia McElroy
Cym. Valerie Absolonova



Terry Bottom

Grower Yvonne & Bob Schimmel
Aerides houletianum



Terry Bottom

Grower Sue Bottom
Cyc. Swan Cascade



SHOW TABLE



Grower Sue Bottom
Blc. (Rlc.) Memoria Jessie Davis



Grower Linda Stewart
Dtps. (Phal.) Purple Martin



Grower Suzanne Susko
Brassoepidendrum (Bepi.) Sylvia White



Grower Linda Powell
Pot. (Rth.) Choco Berry Fondue



Grower Courtney Hackney
Blc. (Rlc.) Serengeti Sands 'Velveteen'



Grower Marcia Farrell
Blc. (Rlc.) Wainae Leopard x Ctna. (Grt.) Why Not

