

GREATER LAS VEGAS ORCHID SOCIETY

MAY 5, 2002 2 P.M.

Our meeting will be in the usual place, the Nevada Garden Club Meeting, Washington and Twin Lakes, at the west corner of Lorenzi Park at 2 p.m. SHARP.

Carol Siegel, Newsletter Editor

CAROL SIEGEL- PRESIDENT
MARIA PEREZ- VICE-PRESIDENT
EILEEN MCKYTON- SECRETARY
DIANA SMITH- TREASURER

AND...

El Requa and Theresa Gerstner- Membership Chairmen
Lillian Patterson- Photographer and Historian
Leslie Doyle and Tony Billitere- Raffle Chairmen
Phyllis Bond, Shelly North and Eileen McKyton- Special Events Chairmen
Jeri Lee and Tony Billitere- Community Liaison
Dan Mumau- Hospitality Chairman
Alex McKyton -Building Chairmen
Tex Severance- Show and Tell Guru
Scotty Nogaim- Election Chairman
Liz Leone- Library Chairman

May 5, 2002

Doug Conkin, orchid genius, on "Two Unusual Genera for the Beginning to Intermediate Grower- *Catasetum* and *Maxillaria*"

June 27, 2002

Norito Hasegawa, owner of Papnaraotics "Paprnspecies"
How They Influence HybridsTM

July 7, 2002

Diana Smith, our very own orchid expert, on
"Forty Orchids to Grow in Your Greenhouse"

August 4, 2002

Annual Barbecue Mt. Charleston home of Eldine Stevens

September 8, 2002

Mike Glikbarg returns to speak with LOTS of blooming
Orchids (topic under discussion).

October 6, 2002

Wildflowers of Las Vegas With Dr. Pat Leary

November 3, 2002

Lecture by Bill Bergstrom of Bergstrom

Orchids " Orchids of Peru"(hosted by the McKytos)
 December 1, 2002 Holiday Party.
 VERY tentative schedule: 2003
 January 5, 2003 Bob Gordon on Phal Culture
 February 2, 2003 Karen Muir on Brachy Paphs
 March 2, 2003 Second Annual Virtual Greenhouse Tour

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Harry Phlips on Mounted Orchids
 October 5, 2003 Charles Weckerle-Thrun on Potting Differences
 Genera
 Trying to get Paul Grippe of Santa Barbara Orchids

Well, March 2002 was certainly an exciting and eventful month for
 First, the club appeared in the Las Vegas Review Journal. Next, we
 Annual Virtual Greenhouse Tour. Then, we had a most successful sale
 that netted \$600, and then we took part in a terrific orchid show at
 California Hotel with the Torrance Cymbidium Society. Way to go G

It was our first ever AOS judging at a show as a club, and it was great!
 Everett Stockstill, the gracious president of the Torrance Cymbidium
 received 77 points and an HCC/AOS for his Cymbidium Dorothy Stockstill
 'Forgotten Fruit' and Charles Weckerle-Thrun aka Butch, judging chose
 the award for best display at the show. We, however, made a really
 showing. Several club members entered lovely orchids for judging including
 Diana Smith, Karen Good, Shelly North, and me. We were especially proud
 of a fabulous Asian-themed orchid display put together by the very talented
 Phyllis Bond and Shelly North. Kenneth Snauwaert, our very own member,
 entered an artistic display of phalaenopsis that was just beautiful. We are so
 lucky to have these giving members in our club. They did us proud! I won two
 plaques in member voting for my Paph Julius and my Paph Norito. How
 many members participated! Terry Clayton and Jim Saracino made it
 so easy. Diana Smith made my life easier and more fun helping me set up the
 show. Thanks to all the people who manned the displays and were ambassadors
 for our club: Diana Smith, Jean Gordon, Roland Hill, Phyllis Bond, Terry Clay
 ton, and Karen Good. A special thank you to Tex and Gidget Severance who made

was reasonable to enter in the show and who were some of our judges. Thanks, too, to Mike Levin, Norito Hasegawa and Loran Batchman, for helping with judging and to Diana Smith, Mike and Joni Sielaff, and to me for clerking. We are grateful, too, to Alex Mckyton who saved us \$200 by expertly taking the required AOS award photos. Even paid for the film and developing !! The show was fun! When we grow a little bigger, we will have a BIG show of our own.

At our April meeting, Sam Tsui, owner of the Orchid Inn, presented a most interesting and informative slide lecture on "Growing Orchids Under Lights" and sold blooming paphs. There were more people at the meeting than Sam had handouts, so I have included a copy of his really good handouts at the end of the newsletter. Dan Vong delighted members with a huge and varied table of unusual blooming orchids. A good friend of the club, he donated \$25 to us. Our raffle tickets for blooming paphs donated by Norito Hasegawa, president of Paphanatics, were free this month to thank members for participation in our events. Diana and I were happy to provide food for the meeting. We missed John Nogaim, Dennis Dean, and Eileen Mckyton and wish them all a speedy recovery.

Our Show and Tell table was three tables long this month with some proud members bringing in their success stories. Roland and Norma Hui brought in an enormous *Dendrobium nobile* orchid just loaded with blooms, the result of their TLC. Mike and Joni Sielaff amazed us, too, with a blooming cymbidium plant that they have had for five years IN THEIR YARD! Tex Severance, our Show and Tell Guru, did an interesting segment on plant labels as we oohed and ahed over Shelly North's cattleyas. Bring your bloomers in, too. (That doesn't sound so good...)

We welcomed new members Raymond Tycz and Marlin Davis and his granddaughter Floy, our youngest (and prettiest) member. We are glad to have you. Diana Smith, our treasurer, gave us a financial report with the good news that we have \$2000 in savings and \$5900 in checking, even after the great programs we have paid for this year.

On Saturday, April 20 from 8-4, we are having a Day with the Experts at Plant World on Charleston to answer orchid questions and get the word out about our club. Remember that Tony Billitere has gotten us a 10% discount on anything we

ever buy from them, Tony, Daniel Vong, Terry Wilsey, and Shelly North will be there in the morning, and Ann Shanklin will join them in the afternoon. Stop by!

Our cookbook project to benefit the homeless is coming along. We have fifty recipes so far. PLEASE everyone e-mail Jeri Lee at least one recipe (or one MORE) at jeri_lee1999@yahoo.com. (Please note that after jeri there is an underline before lee. The computer INSISTS on underlining the underline so you can't see it.) This is such a fine idea. We who have so much in our lives can help others who have so little by supporting the cookbook. Profits will be donated to homeless charities. Jeri has a good heart, and her idea makes us all stand taller.

Liz Leone has volunteered to be our Library Chairman. The club has some books and tapes, and we have needed a competent librarian for YEARS. Liz is plenty smart, and she will be great. Diana and I have discussed buying a book every month and perhaps putting one in the raffle. I am writing a little article on building an orchid library for the June newsletter so we are really into BOOKS. Every time you buy an orchid, buy or borrow a book. It helps to keep them alive and blooming. Liz is going to China with her husband, John (no, it has nothing to do with becoming librarian) so we will start our library thing in JUNE. Got a book to donate? Bring it in.

On April 25, I am going to speak to the Arizona State Conference of Garden Clubs in Sedona and will donate my honorarium to the club. I spoke in April to the San Diego Orchid Society on "The Sex Life of Orchids". They have 800+ members, and the room was a sea of friendly and nice people. It was interesting to see that they have a novice class, too, before the meeting, something which we should get into as our club grows. It means they have TWO programs. I grabbed a lot of their handouts and think we should at least put together a packet for new members. I will bring it up with our Board.

Ben Machado, Vice President of the San Diego Orchid Society, was really wonderful to me. He had the Orchid Greenhouse at the San Diego Zoo opened just for me, and I had a special tour. The greenhouse is only open the third Friday of every month, and I never manage to be at the zoo at the right time, so it was a real treat. Mike Bostwick, horticulturist at the Zoo, took us around. The zoo's botanical collections have a dollar value equal to the animal collections and were accredited as a Living Museum by the American Association of Museums in

1990. The zoo has been designated by the US Department of the Interior as a Plant Rescue Station.

Of the nine plant collections at the zoo, the orchids are the most popular and diverse. There are 4500 plants with 828 species and 948 taxa (combined species and naturally-occurring hybrids) in several greenhouses, cool, intermediate and warm. Outdoors, reed-stem epidendrums in purple, pink, melon and gold, bloom under shade cloth. The orchid collection was started in 1969 by Ernie Chou, the zoo's first horticulturist, from a collection gifted to the zoo by a local grower, and the first orchid house was built by the San Diego Orchid Society. The collection has grown through purchases, contributions and confiscations. The annual rainfall in San Diego is $9 \frac{1}{4}$ inches with a minimum/maximum temperature range of 57F to 70F. with eight different microclimates from coastal to dry. They use the greenhouses for the three p's- to produce plants to be moved out into the trees, to protect plants from weather extremes, and to propagate plants from seed and tissue.

The Orchid Greenhouse serves as a plant-rescue center for the Department of the Interior. This has resulted in their acquiring hundreds of orchid plants that were confiscated while being illegally smuggled into the United States. While I was there, I saw 1200 phalaenopsis, part of a confiscated shipment of 6000 orchids, which will be set out in the trees at the zoo. All over the zoo, orchids have been tied to trees to the delight of visitors. They are frequently put in places where people have to wait in line, as in the eaves of the tour bus depot. For many, it is the first time they have ever seen a living orchid plant. The visit to the orchid greenhouse was so special!! Try to see it, too.

We thank Mike and Joni Sielaff in advance for providing food for our May 5 meeting. We are looking forward to the slide presentation by Doug Conkin on "Maxillaria and Catasetum". Doug, a brilliant speaker, has spoken to us in the past about integrated pest management, and he is the creator and star of the terrific video, "Anyone Can Grow Orchids." It should be a wonderful meeting.

Following is the second part of the article I wrote last month on "The Sex Life of Orchids" (again with the sex....) There is also a reprint of Sam Tsui's handouts and an updated member list. Keep blooming!! Love, Carol
growlove@att.net

THE SEX LIFE OF ORCHIDS

PART II

BY CAROL SIEGEL

You may ask why orchids bother with sex at all since they have both sexes in almost every flower. Over the years, nature has found that you have better survival with a variety of offspring in an uncertain world. For example, if I am an orchid with no drought resistance, all my offspring would perish if a drought came. If I cross my genes with an orchid with a little drought resistance, and produce 100 seeds, perhaps 99 of my seeds would perish in a drought, but ONE would survive because of my mating, whereas none would have survived with asexual reproduction,

So sex developed. Another strategy for orchid reproduction is employed by *Oncidium altissimum* which looks like a swarm of bees. Territorial bees mistake the *Oncidium* for an invading swarm and attack the flowers, jostling the blooms and causing fertilization. It is called "pseudoantagonism".

So we have seen several strategies- being beautiful, being weird, offering sex, pretending to invade. Another good strategy is to offer food. When a man wants us to be interested in him, he takes us to dinner. When an owl wants to impress a lady owl, he drops a dead mouse at her feet. Orchids provide food to its pollinators in the form of nectar. If pollen is the protein bar, then nectar is candy, a sugar-water solution that insects find irresistible.

Angraecum sesquipedalae, The Star of Bethlehem orchid from Madagascar that blooms in December, provides a little bit of nectar at the end of a foot-long spur in the back of the flower. When Darwin wrote about this flower in 1862, he said that somewhere there must be a moth with a foot-long tongue that sticks it in the spur. Everyone laughed at him, but 40 years later in 1903, a sphinx moth was found with just such a roll-up tongue. They called the moth *Xanthopan morgani* *predicta*, because Darwin predicted its existence. It inserts this long proboscis into the nectary, passing the sexual parts, and picking up and depositing pollinia. Not too much nectar is offered to him, because you don't want him to fill up. You want him to visit several flowers for his meal.

Brassavola nodosa, fragrant at night, attracts a moth that thrusts its tongue in the nectary that is imbedded deep in the ovary.

Sophrinitis coccinea, pollinated by a hummingbird, offers nectar that can only be obtained by picking up pollinia. Stick a pencil into this flower and you will find eight little pollinia stuck to the pencil as it is to the hummer's beak.

Hummingbirds are fabulous pollinators and fascinating creatures. Their hearts beats 1,260 a minute, and their wings beat 200 times a second. Like a teen-age boy, they must feed every ten minutes, eating half their body weight every day, and drinking twice their body weight. That would be the equivalent of a man eating 100 pounds of food every day and drinking 400 lbs. of liquid. They are always feeding and, therefore, always pollinating.

Sometimes, you know what a pollinator wants, but you don't have it—so you pretend. It is like a lady knowing that men like chesty girls, but not having much, so she puts in falsies. The gentleman will never get what he wants, but sometimes just the promise is enough to have him coming around. Some pollinators don't have food to offer, but just pretend to have it.

Sometimes the promise is enough. *Dracula vampira* attracts fungus gnats by having a lip which looks and smells like a mushroom. The only reward for the gnat is the trick and nothing else, but he falls for it and pollinates the orchid.

Pleurothallis endotrachea, similarly, attracts fruit flies by looking and smelling like ripe fruit in the morning. They look for the fruit which they never find.

Bulbophyllum giganteum, a huge plant with 2-foot leaves, has a flower which looks and smells like rotten liver, attracting carrion flies which lay their eggs in what they think is a food bonanza. The babies rummage around looking for food they will never find, but picking up pollinia in the process.

Some orchids promise pollen that they do not have, pseudopollen. *Arethusa bulbosa*, also called bog rose and dragon's mouth, has false yellow stamens inside its throat. *Calopogon tuberosus*, also called grass pink, has its lip at the top of the flower, . It has yellow false-stamens, hairy little projections, which *promise* pollen to the bee. The bee is enticed into landing upside down on the petal which collapses into a trough carrying the sexual apparatus, which the struggling and upside-down bee unwittingly collides with, doing the sexual business of the plant.

Calypso bulbosa is even more outrageous, promising both pollen and nectar, a complete meal, but delivering absolutely nothing.

Fragrance is another lure that orchids use. Fragrance advertises, as we have seen, both sex and food. At night, it advertises the presence of the flower itself. Sometimes, it seems that the fragrance intoxicates the insects, offering pleasure to the primitive limbic brain. They just like it. 75% of all orchids are fragrant. We, however, with our poor olfactory equipment, miss many orchid fragrances. Bees can smell an orchid fragrance from 4 miles away. Orchids smell like cinnamon, lemon, coconut, strawberries, even like dirty socks, but insects are extremely attracted to orchid fragrance. *Masdevallia glandulosa* even smells like cloves. Natalie Wolford did famous studies with *Notylia* orchids and bees. She found that for five days after she handled the *Notylia* orchids, bees were attracted to her hands, even though she could not smell anything on her hands at all.

One of the most complicated and fascinating mechanisms for pollination is used by the bucket flower, *Coryanthes speciosa*, and others of its kind. The lip is modified into a little helmet impregnated with waxes. Male bees only visit the flower and collect the waxes to use in an aphrodisiac of its own. Males who use these waxes, a super-duper after-shave, attract more females than males who do not. The lip is slippery and the bee falls into the bucket, which has a gland filling it with a slippery liquid. The bee spends 45 minutes attempting to get out of this death trap. Some do not. They call this the "fatal flower" for good reason. The successful ones climb a ladder of hairs in the back of the orchid, squeezing out through the tiny opening at the top, which just happen to go by way of the sticky pollinia. Voila. Another successful pollen transfer.

Coryanthes grow in ant colonies which provide good soil. The flower makes a little nectar for the ants, too, which stand guard over the flower so that other insects don't eat it. So this plant has aphrodisiacs, a faucet, a bucket, and bodyguards. Amazing.

Bees are the prime pollinator of plants. Bees are a flying Swiss army knife. They come with a whole array of tools to help them make a living. They have a flap on their tongues to collect nectar. Their front legs have little brushes to sop up waxes and liquids. They have combs on their legs to clean pollen off their

bodies. They have baskets on their back legs, depressions covered with hair, in which to store pollen to carry back.

And yes, there are other strategies, too. *Catasetum* orchids have a male and female on separate flowers, and the male actually flings its pollen at the insect. The flower has a trigger that shoots a pollen dart at the visiting insect. Stick a pencil against this orchid, and you will have pollinia stuck to your shirt. The wild orchid of California, *Listera convallarioides*, has a hair trigger on its rostellum which flings pollen masses on insects. *Listera cordata* has three pressure-sensitive hairs which drops out a little glue and then releases pollinia on the glue spot on the insect. Many orchids shoot a dart like this.

There are also many trap-door orchids. If you stick a pencil in *Porroglossum schrami*, your pencil will get stuck inside for 30 minutes. When an insect visits, the lip shuts, trapping the insect inside. The frantic insect, not sure if he is lunch, rummages around the inside of the flower. When the orchid thinks the insect has picked up or deposited pollinia, it opens releasing the insect.

Cypripedium acaule traps insects, too. The insect enters through a one-way slit in the front of the pouch and can only get out by climbing up hairs to the depressed staminode. Crawling under it to escape, any pollinia he has is scraped off. Then, he exits pushing past the pollinia blocking the tiny exits and the reproductive cycle begins.

Paphiopedilum have staminodes that look like they have aphid excretions, honeydew, on them. Flies like to lay their eggs in this supposedly-nutritious food, and alight on the slippery staminode, falling into pouch, climbing the hair ladder, and, again, doing the orchid's bidding.


Truly, the orchid is the king of the plant sexual world, a liar, a cheat, a seductress, the smartest, most clever and alluring plant of all.



Orchid Inn

Growing Paphiopedilum Under Artificial Light

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Types of Lighting Systems

- Lighting Systems
 - Fluorescent
 - Metal Halide
 - High Pressure Sodium
 - Super Systems
- Light Mountings
 - Stationary
 - Track
 - Rotating
- Other Considerations






Table Of Contents

- Why Should You Grow Orchids Under Lights?
- Types of Lighting Systems
- Growing Paphiopedilum Under Light
- Our Growing Environment
- Questions?.....




Types of Lighting Systems

- Fluorescent
 - Pros:
 - Very Inexpensive
 - Even Light Level
 - Relatively Large Luminous Surface
 - Low Bulb Temperature
 - Lower Ceiling Requirement
 - Cons:
 - Low Lumen Output
 - Not Suitable for Plants with Tall Flower Stems




Why Should You Grow Orchids Under Lights?

- The Sun's Quality is Inconsistent
- The Sun's Quantity is Inconsistent
- Physical Limitations
- Better Controlled Environment
- Cost \$\$



Types of Lighting Systems

- Metal Halide
 - Pros:
 - Good Spectrum Distribution (Blue)
 - Ideal for Seedlings
 - High Lumen Output
 - Compact in Size
 - Longer Bulb Life
 - Cons:
 - Higher Bulb/Ballast Temperature
 - Higher Electricity Cost



Types of Lighting Systems

■ High Pressure Sodium

- Pros:
 - Good Spectrum Distribution (Red)
 - Ideal for Mature Blooming Plants
 - High Lumen Output
 - Compact in Size
 - Longer Bulb Life
- Cons:
 - Higher Bulb/Ballast Temperature
 - Higher Electricity Cost

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Types of Lighting Systems

■ Other Considerations

- Use Cool White Fluorescent Rather Than Expensive Wide Spectrum
- Use Remote Ballast to Reduce Heat
- Use Build-in Timer
- Select the Right Type of Lighting and Outputs for your needs
- Increase the Length of Light Cycle Rather Than the Lumen Output

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Types of Lighting Systems

■ Super Systems (Combination of High-Pressure Sodium and Metal Halide)

- Pros:
 - Very Good Spectrum Distribution (Blue/Red)
 - Ideal for Both Seedlings and Mature Plants
 - High Lumen Output
 - Compact in Size
 - Longer Bulb Life
- Cons:
 - Higher Bulb/Ballast Temperature
 - Higher Electricity Cost

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General Comparison of Lamps

	Initial Cost	Efficiency	Life Span	Light Spectrum	Heat	Ballast	Notes
Metal-halide							
High-pressure Sodium							
Fluorescent							
Super Systems							

Types of Lighting Systems

■ Stationary Mounting

- Economic - Human Radiation

Lighting System	Economic	Human Radiation
Fluorescent 2 X 40w	Low	Low
Fluorescent 4 X 40w	Low	Low
HPS / MH 1000w	High	High
HPS / MH 250w	High	High
HPS / MH 400w	High	High
HPS / MH 500w	High	High
HPS / MH 1000w	High	High

Lighting Setup Chart

- Must Move Plants Around
- Track Mounted
 - More Expensive
 - Even Radiation
 - More Costly to Operate
 - Covers a Larger Growing Area
- Rotating Light
 - More Expensive
 - Even Radiation
 - More Costly to Operate
 - Cover a larger Growing Area
 - Permits Even HPS / MH light blending

Orchid Inn

Growing Paphiopedilum Under Light

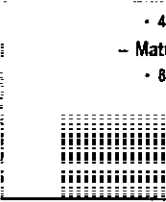
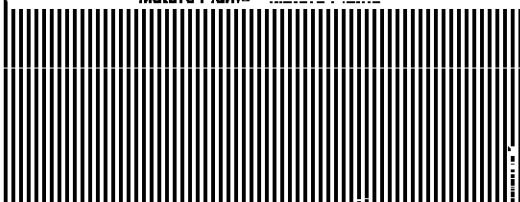
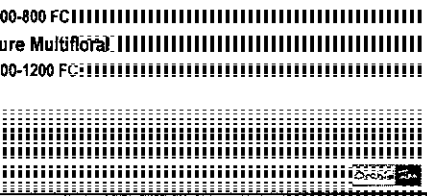
- Type of Light Systems
 - Small Seedlings or Compots
 - Fluorescent
 - MH
 - Mature Plants
 - Fluorescent
 - HPS
 - MH/HPS
 - Multifloral Parvis
 - HPS
 - MH/HPS

Troubleshooting Tips

Problem	Fluorescent	HPS
Leaf stands upright		
Leaf turns yellow		
Leaf tip turns brown and dies back		
Leaf is too green and soft		
Leaf is too yellow and soft		
Lower leaf turns brown and mushy		

Growing Paphiopedilum Under Light

- Light Levels
 - Small Seedlings or Compots
 - 300 - 500 FC
 - Mature Plants



Growing Paphiopedilum Under Light

- Length of Light Cycles
 - Small Seedlings or Compots
 - 3-14 Hours
 - Mature Plants
 - 4-16 Hours
 - Multifloral Parvis
 - 4-18 Hours

Growing Paphiopedilum Under Light

- Length of Light Cycles
 - Small Seedlings or Compots
 - 3-14 Hours
 - Mature Plants
 - 4-16 Hours
 - Multifloral Parvis
 - 4-18 Hours

General Comparison of Lamps

Type of lamp	Lumen output	Efficiency	Life Expectancy	Degree of Light Control	Seedlings	Mature Plants	Cost
Fluorescent	High	Good	Fair	Good	Excellent	Fair	Medium
High Pressure Sodium	High	High	Good	Good	Good	Good	Medium
Low Pressure Sodium	Low	Good	Excellent	Low	Good	Fair	Low
Mercury Vapor	High	High	Good	Excellent	Excellent	Excellent	High

Lighting Setup Chart

Wattage	Primary Area(ft.)	Secondary Area(ft.)	Mounting Height(in.)	Estimated Output (Foot Candles)
	1 X 4	1.5 X 5	4 to 10"	Primary - 400
	2 X 4	2 X 5	4 to 10"	Secondary - 200
	2 X 2	3 X 3	15 to 20"	Primary - 600
	3 X 3	4 X 4	20 to 30"	Secondary - 400
	4 X 4	5 X 5	30 to 40"	Primary - 800
	5 X 5	6 X 6	40 to 50"	Secondary - 500
	8 X 8	10 X 10	50 to 60"	Primary - 800
				Secondary - 500

Troubleshooting Tips

Observation	Problem	Solutions
	Not enough light	A. Lower the light fixture, or B. Use Metal Halide for seedlings, or C. Extend the light cycle.
	Too much light	A. Rise the light fixture, or B. Increase fertilizer Concentration or frequency, or C. Reduce the light cycle, or D. Apply lime directly on the plants, or E. Water with Epsom salt at 1/2 tp per gallon of water once every three months
	Too much salt accumulated	A. Leach the mix with water, or B. Cut back on the fertilizer, or C. Repot!
	Not enough light or fertilize too heavy	A. Lower the light fixture, or B. Cut back on the fertilizer
	Stress due to overheating	A. Lower the temperature, or B. Rise the light fixture, or C. Increase air circulation
	Too wet	A. Reduce water frequency, or B. Increase air circulation, or C. Repot!