CHAOS

Charlottesville Orchid Society

www.cvilleorchidsociety.com

May 2013

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President's Message

Depending on a speaker's schedule, May or June is usually when we have our repotting session combined with our annual society picnic for members and family. This year it will be May 5 at 3-5PM at the home of Brenda and Bill Steigman, 2618 Huntington Road. Thank you Brenda and Bill for hosting this event and all you do for our Society.

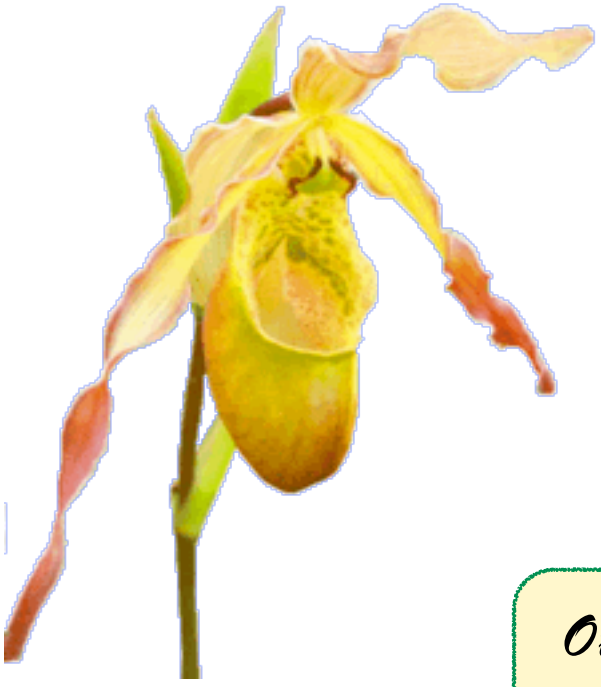
One of the benefits of CHAOS membership is that you get to repot a new and different orchid variety each year at a low price, partially subsidized by your society membership dues. We estimate this year's total cost for each plant will be $12.50. With the CHAOS subsidy, your net member cost per plant will be $6.00 this year. We have a near blooming phalaenopsis to add to your collection. Please pay for your plant as your arrive at the picnic and receive a number indicating your repotting position in the queue. In addition to the new plant, you also will receive new repotting mix and pot for this orchid.

Unfortunately I won't be able to attend this year's picnic and repotting session as Vicky and I will be traveling. Jeff Morris will be in charge of the events and there will be a display table so feel free to bring plants to show. Remember that points earned will be credited to your overall competition total with awards coming at our annual Holiday Social in December. Members are also encouraged to bring personal plants to sell to other members at this get together. It's a great opportunity to add to your own personal collection this way.

As in the past, CHAOS will provide the main entree for the picnic, generally fried and/or baked chicken. Thank you Brenda for volunteering to get the entree. Members are requested to bring side dishes or desserts for 5-8 persons, plus serving spoons to serve your dish. Iced tea and lemonade will be provided by the Steigmans who are hosting us this year.

At the recent Spring Show & Sale we had some people express interest in coming to one of our meetings as a guest to see how CHAOS operates. If you happen to see someone new at one of our meetings, please introduce yourself to our guest and show them our great display table. It certainly can be very impressive, especially when some of our top growers appear. A welcoming smile and interest in a stranger always helps to make that person feel at home and want to become a new CHAOS member.

Larry Eicher



2013 SPEAKERS

The Charlottesville Orchid Society is pleased to present the following orchid education opportunities for its members and interested visitors at the Church of Our Saviour, 1165 E. Rio Road, Charlottesville, Virginia at 2:00PM, generally on the second Sunday of each month, unless otherwise stipulated. Everyone is welcome. All events are free. Light refreshments, orchid competition, educational information on orchids and plants for sale are features of each monthly event.

Other Important Dates

May 5	Repotting and Picnic event
July 27	Tentative date for field trip to Lonnie Murray's native orchid habitat
October 25-26	Annual Fall Show & Sale at Snow's Garden Center

May 5, 2013	Members Annual Get Together	Repotting/Picnic
June 9, 2013	Eric Sauer eric@cypstudios.com	Maxillarias or Review of Various Orchid Genus from South America
July/August	VACATION - No Speakers	
September 8, 2013	Thomas Voytilla, The Orchid House www.theorchidhouse.org tvoytilla@gmail.com	The Culture and Mechanics of Growing Orchids in Semi-Hydroponics
October 13, 2013	Charles Garrett grayowl@tds.net	Native Orchids of Virginia
November 10, 2013	Geraldine Powell, The Orchid Gallery geraldinepell@gmail.com	Cool Growing Orchids
December 8, 2013	CHAOS Holiday Social	

April Meeting

Paph Mary Franz Smith

April Show Table Results

Hobby 1

1st - CJ Besanson, Phal Baldan's Kaleidoscope 'Golden Treasure'

Hobby 2

1st - Leon Blumreich, Masd infracta
2nd - Leon Blumreich, Dtps Sinica Cherry 'M-P0670'
3rd - Diane Bradshaw, Den aggregatum var. majus

Hobby 3

1st - Larry Eicher, Aer multiflora

Hobby 4

1st - Larry Eicher, C skinnerii

Super Hobby

1st - Brenda Steigman, Psy Mendenhall 'Hildos' FCC/AOS
2nd - Brenda Steigman, Psy Mendenhall 'Yellow Butterfly'

Professional

1st - Lee and Neale Merriman, Drac bella
2nd - Lee and Neale Merriman, Charlie Brown 'Red Star'
3rd - Lee and Neale Merriman, C skinnerii 'Casa Luna' AM/AOS
HM - Lee and Neale Merriman, Rdcm Orchidom Outstanding x Onc Orchidom Tom's Beauty

Phrag Twilight 'Rising Rocket' 4N x Phrag Besseae 'Rocket Town' 4N

Thank you to the following members who have volunteered to bring food for our meetings:

May
Drinks: Jim Nemer

September
Sweets: Diane Bradshaw
Savory: CJ Besanson
Drinks: Brenda & Bill Steigman

October
Sweets: Alba Shank

November
Sweets: Elenor Matano

BLC Fort Sumter 'Bright Eyes'

May 2013 Picnic and Repotting!

At the home of Brenda Steigman

We are looking forward to the annual member picnic and repotting! It would be good to bring a box to take home your newly potted orchid home. Weather permitting we will be potting outside. We will have a table in the shade house for plants you wish to sell to members and also a display table.

Bring a dish to serve 5-8 people that would go with the main dish of chicken provided by the society. Be sure to bring a serving utensil for your side (tape your name to the dishes and utensils). CHAOS will provide a combination of baked and fried chicken. Members can bring sides such as Salads, vegetarian and non-vegetarian casseroles, vegetable trays, and/or desserts as examples. Brenda and Bill will provide water, iced tea, and lemonade. If you wish something else, feel free to bring it along.

IMPORTANT: If you could please call and leave a message saying how many people to expect from your family at 434-973-7302, it would give the Steigmans and idea of how many people to expect. It also will dictate how much chicken your Society will need to purchase. We will have the picnic rain or shine. 3-5 P.M. on Sunday May 5. Hope to see you there!

Directions:
Turn onto Huntington like you would going to The Church of Our Savior, proceed approximately one mile down Huntington and look for the house on the right hand side of the road. The house number is 2618 Huntington Road. It will be a beige split foyer with brick on the bottom and a rectangular gazebo in the back.

Parking:
We have permission from the Church of Our Saviour to park in their church parking lot up nearest the Rio Road side if you like and then get together with other members of the society to car pool down to the Steigman house. You can also park on the grass in our front yard.

Charlottesville Orchid Society

Join us for a **CHAOS** *Meeting !!!*

CHAOS invites you to join us as our Guest because you enjoy orchids!

What's in it for you:

- Speakers who address multiple topics of interest related to orchids and growing them
- A show table that allows you to see (and smell!) blooming orchids grown by our members, AND discussion by experienced orchid growers about how those orchids grow and thrive
- Networking with friendly and welcoming people who enjoy orchids and plants, and grow orchids in their own greenhouses or in homes
- Frequent options to purchase beautiful orchids to grow yourself
- A raffle in which you may win an orchid plant for as little as $1.00
- The option of joining our organization as a member yourself

When: Usually the second Sunday of each month, September through June, at 2:00PM. Check our website (http://cvilleorchidsociety.com/) to confirm a date.

Where: Church of Our Savior, 1165 E. Rio Road, in the main church hall. Plenty of parking is available.

Hope to see you at our next meeting !

Mealybugs on Orchids

Paul J. Johnson, Ph.D.
Insect Research Collection
Box 2207A, South Dakota State University
Brookings, SD 57007

If left untreated, mealybugs can quickly get out of control.

Mealybugs are serious pests of orchids and next to scale insects are probably the most difficult to control pests of orchids in homes and greenhouses. Most definitely, they need to be dealt with immediately upon discovery. The damage done to plants by mealybugs is considerable, causing a loss of vigor and a weakening and loss of leaves, buds, and flowers through their feeding. In addition, mealybugs create copious amounts of honeydew which make plant parts sticky, attracts ants, and provides a substrate for sooty mold. Though some mealybugs vector plant viruses apparently no orchid viruses are known to be transmitted by these insects. Mealybugs are not particular about their host and probably all species of orchids are susceptible to mealybugs, especially when cultivated.

Identification

Nearly 300 species of mealybugs are known from Canada and the United States. Fortunately, only a few species are common or serious pests of orchids. Mealybugs are classified in the family Pseudococcidae, and are closely related to the scale insects. In fact, mealybugs can be thought of as a kind of soft scale that does not form the protective cover that most scales produce for protection. The pest species are in the genera *Pseudococcus, Planococcus, Phenacoccus*, and *Dysmicoccus*. Immature to adult mealybugs may measure 0.5-8.0 mm in body length. All of the known orchid feeding species are coated with a waxy secretion that hides the body of these insects. The more common species of these odd insects that infest orchids are immediately recognized in the adult stage by the white, yellowish-white, whitish-grey, or pale pink to pale blue in color coating. The body is oval and the sides of the body have short waxy filaments and there may be 2-4 short to long filaments on the posterior end of the body. These filaments sometimes give the impression of numerous legs.

Mealybugs can be found on all plant parts, but especially roots, rhizomes, pseudobulbs, and the underside of leaves. They are adept at hiding on roots and rhizomes deep in the potting media, in crevices and under sheaths. Unlike scales, mealybugs wander in search of feeding places and will leave plants, be sure to check for them in cracks and in joints on benches, under lips of pots and trays, and other hiding places. The immatures are small, and white to yellowish or pale pink. Hatchling nymphs, or crawlers, are not easily seen without a magnifier and hide under cover, but older nymphs appear like diminutive adults. Orchids become infested with mealybugs in some combination of three methods: purchase of an infested plant, movement from infested to un-infested plants that are in

Mealybugs on Orchids (cont.)

contact with each other, and windblown colonization. Mealybugs are active and will crawl from one plant to another, pot to pot, and across benches. Mealybugs will leave plants and hide under rims of pots and trays, in bench crevices, and even drop from overhead plants. Spread of crawlers can occur both indoors and outdoors by floating on breezes or air currents produced by circulating and heater fans. The occurrence of infestation hotspots may be due to crawlers settling on plants where the air currents are the weakest. Similar effects are found with aphids, scales, and spider mites.

The identification of mealybugs is difficult and often requires the services of a taxonomic entomologist specializing on these insects. Because of this difficulty, accurate information on the identification and biology of species that may infest orchids is much poorer than one would hope. Undoubtedly, all the orchid infesting species were tropical or subtropical in origin, but the most problematic species have adapted to indoor life and may feed on hundreds of species of ornamental plants other than orchids.

According to identification records kept by the Systematic Entomology Laboratory, U.S. Dept. of Agriculture, 39 species of mealybug are reported from orchids. Fortunately, only a few species are problematic in Canada and the United States. However, it is very easy for any of these species to be transported unseen. Consequently, extreme caution and due care is urged to anyone transporting orchids between states or countries.

In most of Canada and the United States, the longtailed mealybug (*Pseudococcus longispinus*) is probably the most common and problematic species on orchids, particularly in homes and greenhouses. This is also the most easily recognized species because of a pair of very long filaments on the posterior of the body.

In California the longtailed is very common. However, five additional orchid feeding species are known: orchid mealybug (*Pseudococcus microcirculus*), imported mealybug (*Pseudococcus importatus*), obscure mealybug (*Pseudococcus obscurus*), pineapple mealybug (*Dysmicoccus brevipes*), and the solanum mealybug (*Phenacoccus solani*). Apparently, the orchid mealybug is the most problematic species in California, particularly in greenhouses.

In Hawaii the longtailed and pineapple mealybugs are common on orchids. In addition there is the dendrobium mealybug (*Pseudococcus dendrobiorum*), Jack Beardsley's mealybug (*Pseudococcus jackbeardsleyi*), and the grape mealybug (*Pseudococcus maritimus*).

Life Cycle

Mealybugs have a three-stage life history: egg, larva (nymph or crawler), and adult. Eggs are laid within a waxy coated egg sac produced by the female. The eggs hatch after about a 10 days into the mobile nymphs, the crawlers, that appear as diminutive adults. The crawlers are the most active stage that can move between plants and will develop through several growth periods before becoming adults. Adults of most species are also active. Thus, unlike scales where the crawler finds a suitable site for feeding and remains fixed, mealybugs will move about to find feeding sites. However, the most common pest species is the longtailed mealybug and it is parthenogenetic; no males are known of this species.

Male mealybugs do little feeding and only in their youngest crawler stages. Mature males are small (1.5-2.5 mm) winged creatures whose primary function is to mate, and then die. Females and immatures do not fly, but they will crawl off of the plant and migrate thoughout a growing area.

Mealybugs on Orchids (cont.)

In temperate regions, mealybugs usually have only one or two generations per season. In a warm greenhouse or indoors there may be upwards of 8 overlapping generations per year. Out-of-doors in cold climates, cold-tolerant species of mealybugs hide in protected places, such as under tree bark, among roots, and in compost.

Management

Outdoor mealybugs are vulnerable to a variety of parasitic and predatory insects, including wasps, brown and green lacewings, and lady beetles. Weather, especially heavy rains, also help to keep mealybug populations low. Indoors, mealybug management is difficult because of their propensity to move into the potting medium and feed on roots, or for the crawlers to work their way into tight places. Repeated application of any treatment is required to kill the immatures, and treatments are at their greatest effectiveness against the small crawlers. Hand removal is effective only for the obvious adults and larger nymphs. All control efforts must begin immediately following discovery. Even light infestations restricted to one or a few plants can explode rapidly and necessitate chemical methods. When possible, immediately isolate infested plants from others to prevent the mealybugs from moving amongst them. Also, check the lips and cracks of pots, trays, and benches because females will wander and leave the plant to find hiding places. If plants other than orchids are grown, check those also as they may be a source of infestation.

Because the life cycle of mealybugs can be so short combined with the overlapping of generations, you will need to do a treatment every 10-14 days in order to bring a serious problem under control. Because mealybugs are such a problem there are few effective "home remedies" available. To deal with an established infestation, the use of an insecticide will likely be necessary. Be aware that non-insecticidal treatments are often not very effective for elimination of mealybugs without diligent application and follow-up treatments.

Rubbing Alcohol

Probably the most popular home remedy against mealybugs is to swab and daub plants with a cotton-tipped swab or ball of cotton dipped in isopropyl (rubbing) alcohol. Do not use other alcohols, such as ethanol or methanol, that can penetrate the plant tissues and cause considerable damage! The common 70% isopropyl available in stores is satisfactory. On hard-leaved plants, gentle rubbing with the fingers, a cotton ball, cotton-tipped swab, or a soft infants toothbrush is effective. Remove all mealybugs, large and small. Afterwards, you will still need to repeat the alcohol treatment to remove the tiny yellowish spots which are the recently hatched crawlers. Pay particular attention to the folds, crotches, branch bases, midrib areas, and roots. Spraying the alcohol with a misting bottle or small pump sprayer is effective, but dribbling alcohol into tight areas is necessary. To avoid get a spray solution on window-sills, table tops, furniture, non-target plants, etc., move the plant(s) to a large sink, bathtub, or shower stall, then move them back to the growing area when they dry.

Many home growers will mix with alcohol a small amount of mild liquid dish detergent, and sometimes mineral oil, neem oil, or horticultural oil. Vegetable oils will work, too, but in sunlight they can turn rancid quickly, and become smelly and lose effectiveness. One recipe for a 1.5 liter spray bottle is to mix a

Mealybugs on Orchids (cont.)

50:50 solution of isopropyl and water, with a few drops to about a teaspoon of liquid soap to act as a spreader, and a teaspoon of one of the oils. But, it seems that every grower has their own proportions of these ingredients, none of which seem to work significantly better than another. Caution is urged, however, as excessive amounts or too strong of a detergent, or use of an ammonia-based chemical cleaner may damage your plants, particularly buds and flowers. This is true of dish-soaps and household detergents that could remove natural protective waxes from plant tissues. Also, spraying of alcohol is not always effective against eggs which are often well hidden, hence the need for thoroughness and repetition.

Repotting

Even a light to moderate infestation of mealybugs should be of concern. These insects like to move into the potting media and feed on roots, or move off of the plant to find hiding places to lay eggs. Unless the roots are checked and the media changed, removal of mealybugs from only the upper plant portions is not a guarantee of success. The potting medium can harbor eggs and crawlers, so dispose of it in a compost pile or in the garbage. When repotting, a close inspection, and if necessary a very gentle cleaning and spraying of the roots before repotting is essential.

Oils and Soaps

Horticultural oil, neem oil, mineral oil, and insecticidal soaps are effective for mealybug suppression. The oils and soaps are often regarded as "organic" or non-chemical methods, but this is a misconception or an extremely broad and nearly meaningless concept of "organic." Indeed, neem oil is extracted from the neem tree, but horticultural oils and mineral oil are petroleum distillates. Likewise, insecticidal soaps are a solution of synthetic pyrethroids mixed with a mild detergent that is made from petroleum products. However, all of these solutions are generally considered safer for humans, pets, and plants than usual insecticides. None provide absolute control over mealybugs, but frequent use during the presence of crawlers can serve to reduce their populations dramatically.

Horticultural, mineral, or neem oil solutions smother the insects, so complete coverage of all sprayed plants is essential. These oils are mixed with water and usually a plant-safe detergent for enhancing the spreading and sticking of the oil. The main caution with these oil solutions is that they should never be applied to plants on hot days (85° F) or in direct sunlight, as to prevent burning of tissues. Leave the plant in shade until the application has dried. Unpublished anecdotes suggest that the flowers of some orchids are sensitive to neem oil, such as species of *Miltonia* and *Masdevallia*.

Insecticidal soaps are usually solutions of a synthetic pyrethrin and a plant-safe detergent. As with oils the detergent acts as a surfactant and spreader for dispersing the pyrethrin evenly, and as a mild caustic against the insects. Also, to prevent sunburning apply the chemical and allow it to dry in shade. Pyrethrins are synthetic analogs of pyrethrum, the natural extract from certain Asteraceae. Caution should be urged with so-called "safe" insecticidal soaps as some plants are sensitive, particularly tender new tissues. Some non-orchid ornamentals will drop leaves and abort flowers when sprayed with insecticidal soaps, so caution is urged with prized orchids.

Mealybugs on Orchids (cont.)

Insecticides

Persistent populations of mealybugs or infestation in many plants may demand the need for use of synthetic insecticides. There are several common, inexpensive, home-and-garden use pesticides labeled for ornamental plants. Insecticide formulations not labeled for ornamental plants are often mixed with solvents that aide in the application of the active ingredient for specific purposes. These solvents, not necessarily the insecticide itself, often produce phytotoxicity and may seriously damage or kill plants. Thus, never use any insecticide that is not specifically labeled for ornamental plants. Some of the more available and effective insecticides that come in various brand names are acephate (e.g., orthene), malathion, carbaryl, and diazinon. Pyrethrins and rotenone have limited effectiveness. Of course, always follow label directions and never exceed the minimum recommended concentration given in mixing directions! Recommended solutions are based on extensive testing for selected pests and plants. Orchids are tough plants, but are sensitive to many chemicals, particularly under direct sunlight or high heat, and while certain species may not react to a given formulation others may, so testing is justifiable.

Some insecticides are occasionally discontinued for use because of some discovered hazard. For example, Cygon used to be available, but it no longer recommended and labeled for orchids because it will damage many plants, especially the buds and flowers, and is extremely hazardous to use. Although most insecticides with discontinued labels are legally allowed to be "used up", it may be best to dispose of such chemicals rather than continue their use and risk damage or loss of plants, or increase your own health hazard.

Most home orchid keepers and growers in northern states that need to apply insecticides during inclement weather need special care for applications. If you cannot spray out of doors, place your plant (s) inside a large plastic bag (remove the bag after the spray has settled!) and let the plant ventilate where the fumes will not be wafted around the house or work area. Again, you may have to consider removing the potting medium, spraying the plant, and repotting it with new media in a clean pot when the spray has dried.

Growth Regulators and Chitin Inhibitors

These classes of insecticides have great potential for use in orchid pest management. Growth regulators are relatively expensive, but the cost per application is less than botanical oils.

Kinoprene (tradename = Enstar II) is a synthetic form of juvenile hormone which is highly important in insects at critical stages of their metamorphosis. The use of kinoprene interrupts the normal development of the insects, including mealybugs, scales, aphids, and whiteflies. This insect hormone appears safe for humans and pets under usual use precautions. Experience on its use in greenhouses and home collections suggest that this may be the best new generation pesticide for controlling many orchid pests, including mealybugs.

Bifenthrin and other growth regulators are also available for use on ornamentals, but little information is available for orchids. Some of these new chemicals are very effective but are also highly regulated and may not be available in some states for non-commercial uses.

Azadirachtin (tradenames = Azatin and Neemazad) is a plant derived chemical that is a chitin inhibitor. Chitin is a primary compound used by insects when developing their integument, or exoskeleton. Azadirachtin reduces the insects' ability to properly develop its integument and causes mortality through incomplete development. There is little information available on this chemical for use on orchids, but it is available on a wide variety of ornamentals, is labeled for greenhouse applications, but may be too expensive for most home greenhouse uses.

Mealybugs on Orchids (cont.)

Biological Control

There are many parasitic wasps and various predatory insects that feed on mealybugs outdoors, but these species are rarely of value in a small greenhouse or in the home. Usually for the small collection orchid keeper the use of biological control agents in general is very limited or not effective. However, the keeper of many plants in a large greenhouse or a commercial grower may wish to consider the use of one or more parasitic or predatory insects to help keep mealybugs under control. As in all biological control efforts eradication is not possible. Also, anyone wishing to use biological control agents needs to balance their use with proper timing or avoid the use of insecticides so as not to kill the beneficial insects.

Biological control agents that are available commercially include a variety of tiny parasitic wasps, brown lacewings, green lacewings, and lady beetles. Montrouzier's lady beetle, or mealybug destroyer, *Cryptolaemus montrouzieri*, is highly effective for control of mealybugs in greenhouses.

Final Considerations

Heavy infestations of mealybugs, especially on many plants, may require severe control methods using insecticides. On the extreme side if you have a plant showing signs of decline from infestation you may have to seriously consider destroying that plant, as the low likelihood of rejuvenating that plant may not justify the expense and effort of continued treatments. Too, destruction of a sick plant can be used to justify the purchase of a new and healthier plant! If you are battling mealybugs for long periods of time (e.g., longer than 9 months) and have been using the same insecticidal control method then you probably developed a resistant population. The best resolution to this is to change methods and chemicals occasionally; that is, do not use the same chemical mix more than 3-4 times sequentially. After isolating infested plants give them a thorough application of something different from what you have been using. For example, if you used insecticide then switch to an oil, soap, or different insecticide. Resistance is not generally a problem with growth regulators, such as kinoprene. Generally, never use an insecticide not labeled for ornamental plants. Whenever using oils, soaps, and insecticides, be thorough, change formulations frequently, and do not use less than the minimum concentration of mixture, or more than normally recommended. Too little of a chemical enhances resistance, while too high of a concentration may damage the plant. Unless you are a commercial grower rotating mixtures of chemicals do not use chemicals prophylactically, that is do not routinely use chemicals as a preventative as it is a waste of chemical (and money!) and such use allows resistant mealybugs to develop. Finally, keep up the manual removal of all mealybugs, if possible.

Mealybugs are an excellent example of pests that are easily transported and create tremendous problems. Although most orchid keepers in North America obtain their plants from conscientious growers in either Canada or the U.S., many persons do purchase plants while traveling, in exchange from friends, or from questionable sources. Everyone needs to be aware of the great potential of inadvertently dispersing species to new areas, particularly from international originations. There cannot be enough stress placed on the recommendation that all plants come from a reputable and quality grower, and are clean of pests.