

CHAOS

Charlottesville Orchid Society

www.cvilleorchidsociety.com

January 2014

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President's Message

I wish to again thank Leon Blumreich and Jay Gammon for allowing us to use their home for our Holiday Social Sunday, December 15. I also want to pass along to those of you who did not attend some news that affects all CHAOS members in 2014.

In a move to help reduce costs so we can continue to pay for speakers' honorariums and increasing travel costs, the CHAOS Board has instituted a number of changes that take effect starting in January 2014.

Effective at January's meeting, our meeting place will change in 2014 from the Church of Our Saviour to Our Lady of Peace Retirement Community, located at 751 Hillsdale Drive, Charlottesville, VA 22901. We thank Brenda Steigman for her hard work in arranging this new venue in 2014.

At Our Lady of Peace we will need to adapt to a new meeting schedule, meaning we need to start setting up our meeting location at 12 noon with the actual meeting starting at 1PM. We will have to clean up and be out of that room by no later than 3:30PM so folks at Our Lady of Peace can then hold their Sunday Mass starting at 4PM.

Because the room is carpeted, no food will be permitted at this venue. We will still solicit volunteers to bring drinks only for refreshment and easier cleanup.

The CHAOS Board also has agreed not to have our Spring Show & Sale at Fashion Square Mall in 2014. Because of high rental costs and insurance fees, we find that we are lucky to break even after 2 days of hard work selling orchids to the public. Easter is normally a good time to sell orchids for our Society but if we don't make any money, the effort is fruitless. **We are currently considering other venues and solicit your comments/suggestions as to other alternatives.** In order to continue to have a reasonable bank balance available for our education efforts in 2014, the Board also approved a modest increase in annual dues for CHAOS membership.

Both our Website and CHAOS newsletter will need to be updated to reflect this change of meeting information. Remember that everyone needs to pay their 2014 members dues as soon as possible. A renewal form was sent to all members along with our December newsletter. Send your dues to Dudley Miller or bring the form and your check to our January 12 meeting. Remember January is our Members' Only Round Table Meeting for Your Questions and Answers. Private plant sales also are encouraged. Award certificates from 2013 will be also be presented by Jeff Morris.

We wish everyone a Very Happy New Year and look forward to seeing everybody at our 2014 meetings.

Larry Eicher

Important Notice from CHAOS Board

Change of Meeting Venue for 2014



Effective January 12, 2014, our meeting place will change from the Church of Our Saviour **to Our Lady of Peace Retirement Community, located at 751 Hillsdale Drive, Charlottesville, VA 22901.** This is a very short distance from our previous meeting location. Our Lady of Peace is not charging us any rental fee so we're saving \$75 a month by this action. We thank Brenda Steigman for her hard work in arranging this new venue.

We will however need to adapt to a new meeting schedule, meaning **we need to start setting up our meeting location at 12 noon with the actual meeting starting no later than 1PM. We will have to clean up and be out of that room by no later than 3:30PM** so folks at Our Lady of Peace can then hold their Sunday Mass starting at 4PM. Hopefully those of you attending Sunday services can attend our CHAOS meetings by coming directly from your place of Worship to our meeting before 1PM.

Because the room is carpeted, **no food will be permitted at this venue. Drinks for refreshments will be permitted** so we will still need to solicit volunteers to bring drinks only for refreshments. This change will make for an easier and faster cleanup.

Directions to Our Lady of Peace:

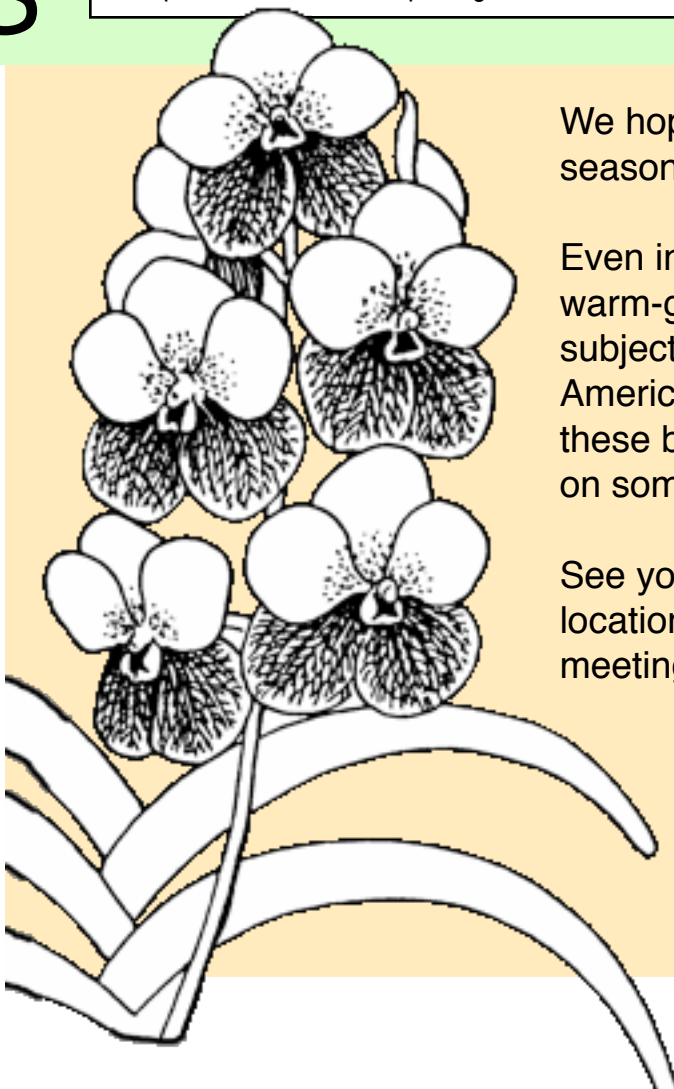
Coming from Rt. 29, turn onto E. Rio Road, going past Albemarle Square on the left and Fashion Square Mall on the right, continue east on E Rio Road until you come to Hillsdale Drive (red light), turn right on Hillsdale Drive and look for Our Lady of Peace on the Left side of the road, 751 Hillsdale Drive. Upon entering the compound, turn Right and go to the end of the parking lot where it is clearly marked for Visitors. If you are unloading orchid displays for the show table etc., you can offload under the awning at the front door entrance, and then park in the Visitor area. Enter the lobby and go to elevators and go Down one floor, turn Left and the meeting room will be directly in front of you on the left hand side of the hallway.

SPEAKERS

2014



January 12, 2014 2:00 pm	Roundtable Discussion of Member's Orchid Problems, etc. Members can bring plants for sale.
February 9, 2014 2:00 pm	Jeff Morris TBA
March 9, 2014 2:00 pm	Hal Horwitz Orchids of Israel
April 13, 2014 2:00 pm	Tom Mirenda, Smithsonian Institute TBA
May 4, 2014 2:00 pm	Molly Brennan, Brennan Orchids Phalaenopsis Bright Spring Color
June 8, 2014 2:00 pm	Picnic at Member's House Repotting session - Members can bring plants for sale.



We hope everyone had a wonderful holiday season!

Even in these mid-winter temperatures, our warm-growing orchids can always be subjected to pests. Please enjoy the following American Orchid Society articles to help win these battles in the coming year and brush up on some common enemies.

See you all in our new location at the January meeting!





American Orchid Society
Education, Conservation, Research

Home Remedies

By Susan Jones

Hand Picking

The first line of defense, if a plant is not heavily affected by pests, is to pick bugs, slugs and snails from the plant and squash them. Pests have yet to develop a resistance to this type of control.

Water

Pests like mites are usually most severe on plants in heated homes during the winter, when the air is dry and there are no natural enemies to keep them under control. Raising the ambient humidity through humidity trays, saucers of damp pebbles placed under each plant, or even a room humidifier can help.

For mites, aphids, mealybugs and other insects, a gentle brush or jet of water can kill and dislodge them from plants. Regularly washing the foliage thoroughly with soapy water, wiping every leaf and rinsing with a sink sprayer is one way to bring populations down.

Soaking is a third way water can be used to combat insects. Completely immerse the pot and potting medium of the affected plant in a bucket of water overnight to evict ants, roaches, sow bugs and pill bugs from the medium.

Rubbing Alcohol

Soak a cotton swab in 70 percent isopropyl (rubbing) alcohol and dab scale, mealybugs, mites and aphids off orchids. The alcohol dissolves the insect's waxy covering, and is a good tool to reach the pests hidden down in the sheaths and leaf crevices. Pay particular attention to the midrib, other veins and leaf edges. Repeat the treatment at seven to 10 day intervals to remove successive generations.

Another method is to spray alcohol, mixed with a few drops of mild liquid soap, from a misting bottle or small pump sprayer. Avoid strong or excessive amounts of detergent, as this may damage your plants, particularly buds and flowers.

Alcohol can be combined with insecticidal soaps, but not with oil, and should never be used near fire. One of the advantages to using alcohol is that insects do not develop resistance to the treatments.

Because mealybugs' waxy coating repels water-based insecticides, it is necessary to mix a wetting agent in with the insecticide when spraying.

Oils, Soaps and Sterilants Horticultural, neem and mineral oils, and insecticidal soaps are generally considered safer for humans, pets and plants than insecticides, and do not generate a resistance in pests. None provide absolute pest control, but frequent applications reduce insect populations to below self-sustainable levels in small orchid collections. They are more effective as early treatment — before a few pests have become an infestation. Environmentally gentle, these solutions are only effective while they are still wet, and must contact pests.



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Education, Conservation, Research

Home Remedies, continued

Horticultural oil solutions (such as SunSpray and neem) smother insects' breathing pores and eggs, so complete coverage of all sprayed plants is essential. These oils are mixed with water and a plant-safe detergent for enhancing spreading and sticking, and can be used to control mites, scale, aphids, mealybugs, sow bugs and pill bugs.

Insecticidal soaps (Safer) smother pests and dissolve their cuticle (outer covering).

For a heavy infestation, the affected plant(s) must be completely covered. They are most effective against soft-bodied pests such as aphids and mealybugs. While considered safe, these soaps may still damage some plants, particularly tender new tissues, especially when mixed with hard water. They can also cause allergies and respiratory problems for users.

Growth regulators and chitin inhibitors offer other options. Growth regulators, such as Enstar, kill eggs and prevent insect maturation in scale, mealybugs, aphids and whitefly. It needs a spreader-sticker (silicon works best) to be effective.

Yet another choice is Orange Guard, a 100-percent biodegradable and water-soluble insecticide made from orange peel extract that is considered safe for use around humans, pets and food. Orange Guard kills and repels ants and roaches.



Because mealybugs' waxy coating repels water-based insecticides, it is necessary to mix a wetting agent in with the insecticide when spraying.

Baits

Organic mollusk baits such as Sluggo, EscarGo and Worry Free are biodegradable and safe to use around pets and people. Once the baits are eaten, snails and slugs stop feeding and die within a few days.

Pill bugs and sow bugs may be trapped using a half of a cantaloupe or a hollowed-out potato placed upside down as close as possible to where the bugs have been spotted.

When dealing with ants, remember they are attracted to the sugary honeydew excretion of other pest insects, commercially prepared sugar-based ant baits, or a homemade syrup of boric acid powder, sugar and water placed throughout the growing area will draw ants. They will eat the poison and take it back to the queen. This should remove the ant colony within a few days. This option is not safe for use in an area accessible to children or pets.



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Home Remedies, continued

Repotting

Replacing the potting medium can eliminate pests' eggs and crawlers. Mollusks, ants, sow and pill bugs and even roaches hide in pots, and media that is breaking down not only attracts pests like sow and pill bugs, but is a danger to the overall health of the plant's root system as well.

When repotting, a close inspection, and if necessary, a very gentle cleaning and spraying of the roots is essential to remove pests such as scale and mealy bugs that can hide on and among roots. To control a severe infestation, it may be necessary to decant the plant, clean the pests from all roots, treat with an appropriate insecticide and repot using a clean pot and mix.

Fiberglass window screening placed over drainage holes inside orchid pots will not only help keep pill bugs, sow bugs and roaches out, but also keeps potting material in the pot. Roots can grow through it without difficulty, it's nontoxic and it does not affect drainage.

Spider mites are so small they may go unnoticed until their numbers have reached infestation level. Regular inspection of your orchids can catch such problems when they are still easily controlled.

Insecticides

If you decide you must use an insecticide, always check to see that the product has been approved for use on orchids, and strictly adhere to label directions for dosage and safe use. Orchids are tough, but sensitive to many chemicals — advance testing is advised.

Move the plants outdoors for pesticide application whenever possible. Growers who must apply insecticides during inclement weather need special care for applications. If outdoor spraying is not an option, spray plant(s) inside a large plastic bag, remove the bag after the spray has settled, and let the plant(s) ventilate where fumes will not travel around the home or work area.

To prepare a homemade insecticide, mix one pint of 409 household cleaner and a pint of rubbing alcohol with water to make 1 gallon of spray. It is especially effective as a preventative or to control light infestations of mites, mealybugs and aphids.

Pyrethrum, an ingredient in many commercial insect sprays, is a natural insecticide derived from plant sources that attacks insects' nervous systems. Although it is labeled for use against many orchid pests, it is especially effective against ants when used in conjunction with baits.



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Home Remedies, continued

When faced with serious infestations, commercial insecticides may be necessary. Among those recommended are malathion or Sevin. Be sure to read the label carefully and follow the manufacturer's instructions. If the plants are growing in the home, move them to an area where they can be sprayed without harming pets or family members.



Spider mites are so small they may go unnoticed until their numbers have reached infestation level. Regular inspection of your orchids can catch such problems when they are still easily controlled.

Pest Control

Prevention is better than cure; good cultural practices and purchasing healthy plants reduce the chance of disease. The most common way of acquiring pests is purchasing an infested plant. Quarantining any new plant or cutting to enter the growing area for a minimum of two weeks can help curtail the introduction of new pests and diseases.

Meeting the plants' cultural needs is the best line of defense. Healthy plants are more resistant to pest and disease than their weaker cousins. Maintain a healthy collection by attending to the basic cultural needs of your orchids — water, temperature, light, fertilizer and humidity; keep

the bark media fresh or use an inorganic potting mix, and get to know the specific cultural requirements of the orchids in your collection.

A clean greenhouse or growing area will help minimize any potential insect pest problem. Remove all damaged, molding or dropped buds, faded flowers, dead leaves and leaf sheaths from plants, and plant debris, old orchid medium, weeds and any debris that could provide shelter for pests from their surrounding area.

Orchidists tend to be acquisitive in nature, but overcrowded plants allow pests and disease to spread through a collection much more quickly than those given adequate growing space.

Check each plant (for smaller collections) or spot-check plants or groups of plants (in larger collections) and the growing area at least once a week for signs of pests and disease. This way, an invading insect can be detected and treated before it becomes an infestation. Inspect around growing leads, check leaf edges, undersides and crevices, and examine visible roots and root tips. If pests are found, immediately isolate the affected plant or plants to prevent spread.



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Home Remedies, continued

To minimize risks of developing a treatment-resistant pest population, change methods and chemicals occasionally; do not use the same chemical mix more than three to four times sequentially. For example, if an insecticide was used for previous treatments, switch to an oil, soap or different insecticide. Regardless of the method or chemical used, remain vigilant and expect to make three to four applications at seven- to 10-day intervals to kill successive generations.

When using any new pest control product, try it on a small area of the plant first, to make sure that there will be no harmful side effects, and test any treatment on a small population of plants before widespread use.

To prevent burning of tissues, never apply any liquid pest-treatment in direct sunlight or high heat (over 85 F [29 C]), and always shade plants until the solution dries.

Noninsecticidal treatments may not be highly effective for eliminating pests, and should be used as controls, not eradicators. Also, many common home chemicals are extremely toxic to humans, pets, and plants even in diluted forms, some more so than insecticides.

For a plant showing signs of serious decline from pest or disease, consider whether the low likelihood of rejuvenating the plant justifies the expense and effort of continued treatments. Destruction of a sick plant can be used to justify the purchase of a new and healthier one.

All reuse must contain the following:

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Susan Jones was the editor of Awards Quarterly and assistant editor of Orchids. American Orchid Society, 16700 AOS Lane, Delray Beach, Florida 33446



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Education, Conservation, Research

Mealybugs on Orchids

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Brookings, SD 57007

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.



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

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 contact with each other, and windblown



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Mealybugs on Orchids, continued



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.



Long-tailed mealybugs
on *Phalaenopsis*

Photo by P. Johnson 2008



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Mealybugs on Orchids, continued

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 throughout a growing area.

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.



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Mealybugs on Orchids, continued

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 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.



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Mealybugs on Orchids, continued

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.

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



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Mealybugs on Orchids, continued

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.



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Mealybugs on Orchids, continued

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.

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 !