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Growing Cattleyas- What Can Go Wrong Part 2 – Common Pests and Diseases

by Sue Bottom, sbottom15@hotmail.com

Despite your best efforts to provide ideal environmental conditions for your orchids, pests and diseases can wreak havoc with your cattleyas. The good news with cattleya pests is that there are chemicals that can kill the invader, the bad news is that pests can cause quite a bit of damage before you are aware of their presence. With diseases, it is a little different. There are chemicals that can prevent different diseases from occurring, but very few chemicals that can cure a disease once your plant is infected.

Problems with Pests. Scale is public enemy number one, the one pest that every cattleya grower must learn to recognize and control because it can weaken your plant to the point of death. Thrips are public enemy number two. While they will not kill your plant, they can ruin the long awaited flowers. Mites are less of a problem for cattleyas, except for those thinner leaved varieties.

Scale and Mealybugs. While scale and mealybugs are different creatures, the damage they cause and their treatment are the same. There are different types of *scale*, but the kind that typically infests cattleyas is boisduval scale, that forms white masses. Scale can appear on leaves, leaf axils, pseudobulbs, rhizomes and sometimes roots. Mealybugs appear to be white cottony masses that can occur on any part of the plant from the roots to the flowers, though they tend to seek out the youngest, most tender growth.



1. If you notice yellow, chlorotic spotting on the upper surfaces of the leaves, always look at the leaf underside.



2. These are the leaf undersides. During their crawler stage, juvenile scale move around the leaf scouting out their new home.



3. Scale hide under the papery sheath encasing the pseudobulb and can quickly become an infestation causing necrosis.



4. Mealybugs tend to be attracted to buds, flowers and tender new growths. They also can grow and feed on the root system.

If there are only a few scale or mealybugs, use a Q tip dipped in isopropyl alcohol to physically remove the pests, or put the alcohol in a spray bottle and spray all visible pests and hiding places. For more severe infestations, use repeat applications of a contact pesticide or one of the home made remedies made with isopropyl alcohol, water and soap. Be sure to spray all plant surfaces and pest hiding places. Drenches, in which the insecticide is poured through the potting mix, are easier to apply than contact pesticides and potentially more effective with the added benefit of lowering your potential exposure to chemicals. You can use one of the products containing the active ingredient imidacloprid (Tree and Shrub, Merit) or dinotefuran (Safari) and the orchid will move the chemical through the roots into the leaves and kill the pests from the inside out.

If you really want to eliminate scale from your cattleyas, invest in one of the insect growth regulators, like Distance. The active ingredient Pyriproxyfen will not affect the mature scale, but will prevent the juvenile scale from maturing into adults so the young cannot grow into breeders. If you have an active scale infestation, you will have to combine



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the insect growth regulator with one of the chemicals that will kill the adult scale to get the scale under control. Then a semiannual application of the insect growth regulator should be sufficient to prevent scale from ever being a problem in your growing area.

Thrips. Thrips are very small sucking insects that feed on the most tender parts of your orchids, the flowers, flower buds and root tips. Rather than seeing the pest, you notice the damage caused to buds and flowers, which is occasionally mistaken for viral color break. Managing thrips is difficult because they are very small and easy to overlook, feeding on flower parts not easily reached by sprayed systemic insecticides. They live on a wide variety of host plants, reproduce rapidly in warm weather and may be present in multiple life stages from egg to adult, spending part of their life cycle in soil or under benches. Sanitation is very important, remove spent flower and vegetative material that can contain eggs and larval material to sealed containers. If infested, spray the buds and flowers every 3 or 4 days for several weeks with a rotation of chemicals that might include the active ingredients acephate (Orthene), abamectin (Avid), spinosad (Conserve) and pyridalyl (Overture), after which a weekly spray should be sufficient.



5. Thrips feasted on these developing cattleya buds leaving patterns like leaf miners, ruining the flowers long before they had a chance to open.



6. Flowers may be deformed, exhibiting stippling, browned edges and water soaked spots. Sometimes damage from thrips mimics viral color break.



7. Mites cause stippling on the leaves on the thinner leaved cattleya alliance plants like this *Epc. René Marqués*

Mites. Mites do not tend to feed on those cattleyas with hard, waxy leaves, but some of the thinner leaved cattleyas are susceptible to them. The most common type is the two-spotted red spider mite (*Tetranychidae*) that causes a chlorotic spot or stipple at each feeding site as chloroplasts are sucked out along with the plant sap. Leaves eventually develop a mottled or stippled appearance with webbing under the leaf in severe infestations. Mites proliferate during warm, dry conditions. Mites are not insects. They are members of the spider or arachnid family, so most insecticides will not affect mites. To treat for mites, spray upper and lower leaf surfaces with one of the home cure mixtures containing isopropyl alcohol and soap or with a miticide containing the active ingredient abamectin (Avid), pyridaben (Sanmite) or bifentazate (Floramite) following label instructions and being particularly careful to contact all the undersides of the leaves. During warm weather, new generations mature every 6 days so repeat applications will be required.



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Large Chewing Pests. There are many creatures that gnaw on roots and leave large holes in leaves and flowers, though the culprit may not always be obvious. You may find you have to scout your growing area at night with a flashlight or set baits to identify the invader. Some of the common bad actors include:



8. Roach? Snail? Rodent? The larger the hole, the larger the creature. You will have to bait or scout your plants at night to identify the culprit in your growing area.

Caterpillars - These larval stages of moths and butterflies can consume large portions of leaves in a short period of time, they often leave their black droppings behind. Formulations containing the natural microorganism *Bacillus thuringiensis* can be sprayed to control caterpillars.

Slugs and Snails – These nocturnal mollusks eat root tips, buds, flowers and leaves and may leave behind a slime trail as evidence of their presence. You can bait pots with a slice of apple or potato, a lettuce leaf or a shallow tray cup of beer and if you see slugs or snails in the morning, you will know what is causing the problem. Baits containing the relatively nontoxic iron phosphate (such as Sluggo) can be spread. The toxic bait containing metaldehyde (such as Deadline) is an alternative although the active ingredient is both attractive and deadly to dogs and cats so it must be used with great caution. Caffeine may also be used for snail and slug

control. Ray Barkalow of FirstRays.com recommends using left over coffee in a 50/50 mix with water. The tiny bush snail, *Zonitoides arboreus*, can cause extensive damage to root systems and is not particularly attracted to the snail baits, so liquid metaldehyde or caffeine can be sprayed as a contact killer.

Cockroaches and Crickets – Roaches and crickets can take up residence in the bottom of your orchid pot where they hide and eat orchid roots. A midnight tour with a flashlight may be necessary to confirm the identity of your pest, or you can dunk the pot in a bucket containing water and liquid Sevin for several minutes and see what comes out of the pot. Baits containing granular ortho-boric acid (such as Niban) are easy to use, low toxicity formulations for controlling carpenter ants, roaches, ants, crickets, mole crickets, snails, slugs, earwigs and silverfish.

Problems with Diseases. Cattleyas are susceptible to diseases caused by the water molds, bacterial organisms, bulb, root and stem fungal rots, leaf spotting fungi, flower blights and virus.

Black Rot. The fast moving Black Rot is caused by the water molds *Pythium ultimum* and *Phytophthora cactorum* (fungal-like parasites called oomycetes). The infection often starts in the roots and spreads upward to the base of the pseudobulb which turns a creamy yellow and shortly thereafter turns black or brown, softens and the bulb rots. Often the leaf



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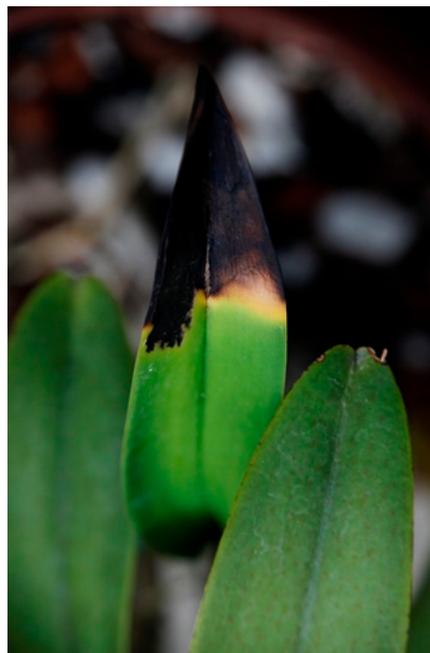
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falls from the plant with a slight jarring. The disease spreads rapidly and unless the diseased tissue is removed, the plant will not survive. If you find Black Rot, act quickly to cut away infected tissue and then treat with hydrogen peroxide or better yet one of the specialty expensive chemicals containing metalaxyl (Subdue), fosetyl aluminum (Aliette) or etridazole (Truban, Banrot). Calcium deficiency is sometimes mistaken for Black Rot, but calcium deficiency manifests itself in the newest growth and growing leaf tips as opposed to travelling upward through mature pseudobulbs.



9. Black Rot. You can see the Black Rot moved up the pseudobulbs into the leaves, the diseased tissue must be excised quickly, before it spreads to the healthy pseudobulbs and kills the plant.



10. Calcium Deficiency. This plant was not supplied enough calcium to form healthy new tissue resistant to rot. The fast growing *Guarianthes* seem more prone to suffer from calcium deficiency.

The organisms causing Black Rot require water to proliferate so disease occurrence is more prevalent in the South during the hot humid summer months. You can apply precautionary drenches to your plants after repotting and monthly during the summer to protect them from the disease. Try to avoid repotting during this dangerous time period so as not to create open wounds that are entry points for the pathogen. Unfortunately, these danger months are the same months your bifoliate send out new roots, and if they require repotting you should do it right before the new roots form. If you must repot during the danger months, drench with a protective fungicide after repotting and keep the newly repotted plants dry for a week or two to let the wounds dry out while the roots grow into the mix seeking water.

Bacterial Brown Spot. Bacterial brown spot is a relatively slow moving bacterial infection caused by *Acidovorax* (syn. *Pseudomonas*). The infection enters through the stomata or wounds on older plants and usually affects older leaves. It appears as sunken black spots



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that are clearly delimited. It advances slowly and is rarely fatal. More extensive damage can occur on younger plants. If the damage is severe enough, remove infected tissue using a sterile instrument, spray bactericides containing copper compounds on infected and adjacent plants following label instructions, or apply the home remedy of hydrogen peroxide.



11. Bacterial Brown Spot. On older cattleyas, bacterial brown spot may be unsightly but it is a slowly moving bacterial infection that is rarely fatal to the plant.



12. Bacterial Brown Spot. On young tender growth, the bacterial infection spreads more quickly and the diseased tissue should be removed to prevent its spread.

Bulb, Stem and Root Rots. *Rhizoctonia solani* and *Fusarium spp.* (*moniliforme* and *oxysporum*) infections arise from fungal pathogens that can build up in the potting media causing Rhizoctonia Root Rot or Fusarium Wilt, though they also may be present in the aerial parts of the plants. These fungal infections progress much more slowly than a bacterial infection would, but both will slowly kill your plant if the pathogens are unchecked. *Rhizoctonia* populations can increase in a degraded organic potting mix to the point that signs of the infection are obvious on the aerial portion of the plant. The oldest pseudobulbs start turning brown and wrinkled and the roots rot. The fungus moves slowly in the rhizome toward the front of the plant and as each pseudobulb is affected, the associated roots die, and the bulb browns becoming dried and husky. The best prevention for *Rhizoctonia* is to repot your cattleya before the mix degrades.



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13. *Rhizoctonia* Root Rot. The oldest pseudobulbs wrinkle and die first as the fungus slowly through the rhizome to the younger bulbs, no roots on the old bulbs.



14. *Fusarium* Wilt. The fungal pathogen plugs the water transmitting tissue in the plant so it dehydrates, becomes leathery and wilted with a grayish cast and ultimately dies.



15. *Fusarium* Wilt. The diagnostic purple band in the outer layer of the rhizome is apparent when you cut through a *Fusarium* infected plant.

With *Fusarium* Wilt, the cattleya starts to look wrinkled and dehydrated because the fungus plugs the xylem so water cannot move from the roots upward through the plant. Slowly the plant weakens, becomes leathery, graying in color and ultimately it dies. If you cut through the rhizome of a *Fusarium* infected cattleya, you will see a diagnostic purple band on the outer ring of the rhizome. Using a sterile tool with each cut, remove the older infected tissue until you reach a clean section of the rhizome. Diligent attention to good sanitary practices can help prevent *Fusarium* from spreading through your collection. Always use sterile cutting tools when repotting and removing flowers.

You can help protect your plants from these fungal rots by a preventative drench program, although you will have to use some of the very pricey specialty fungicides. Any infected tissue must be removed and the plant treated with one of the progressively more expensive chemical drenches with the active ingredients pyraclostrobin (Pageant, Empress), azosystrobinor (Heritage) and fludioxonil (Medallion), among others.

Fungal Leaf Spotting. Fungal leaf spotting fungi can threaten the health of young seedlings, but they are rarely fatal to mature plants. Many species of *Cercospora* and *Pseudocercospora* cause leaf spotting. Some cause blotchy spots that are circular to irregular in shape and turn a purplish black, becoming sunken with age. Others form tiny spots on leaf undersides while the upper part of the leaf turns a light yellowish green. If there is extensive damage, the leaf may drop or it can be removed.

Anthrachnose, caused by *Colletotrichum* and *Glomerella* species, starts at the tip of the leaf and slowly moves downward forming concentric rings or bands. You may see brown dots in the discolored tissue, the fungal fruiting bodies. Remove the damaged tissue to about an inch below the discoloration to remove the spores from your growing area. Some fungicides that are effective at controlling this fungal spotting include those with the active ingredient chlorothalonil (Daconil), pyraclostrobin (Pageant, Empress) and azosystrobinor (Heritage).



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16. Leaf spotting caused by some *Cercospora* species results in a characteristic circular to pentagonal purplish splotch that becomes sunken with age.



17. Leaf spotting caused by other fungal species results in small dark spotting on leaf undersides.



18. Anthracnose. Leaf tip die back starts at the leaf tip and moves down forming numerous dark bands across the leaf, with visible brown dots, the fungal spores.



19. Botrytis. Botrytis is a fungal flower blight that causes black leaf spotting on flowers. In severely affected flowers, the spots merge into gray water soaked splotches.

Botrytis. Botrytis cinerea is a fungus that causes very small, black or light brown spots on the flowers. Under moist conditions, the spots may enlarge and form a gray fungal growth that covers the entire flower. This same fungus causes gray mold on strawberries. This fungus is common in the environment and cannot be completely eradicated. Remove infected flowers since these are reservoirs of infection. Minimize the potential for infection through careful sanitation, increased air circulation, reduced humidity and warmer night temperatures (above 60F or 16C). You can spray with a protectant fungicide containing the active ingredient chlorothalonil (Daconil), pyraclostrobin (Pageant, Empress) and fludioxonil (Medallion) among others, or the home remedy of baking soda at 2 tsp/gal.

Problems with Virus. Cymbidium mosaic virus induces foliar and floral necrosis. Odontoglossum ringspot virus causes ringspots and necrotic streaking on leaves and color break on flowers. Mixed infections with both viruses can cause blossom brown necrotic streak. These viruses can also affect plant vigor and blooming. Cross contamination can



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occur during the repotting process from human hands, potting surfaces as well as unsterile equipment and pots. There are quite a few other viruses although their incidence is not as well documented in cattleyas. Virus, if present, is present in all parts of the plant. There is no treatment for a virused plant. Destroy the plant to prevent it from infecting other plants. If the plant is valuable, isolate it completely from other plants and follow strict precautions to prevent infecting other plants.



20. Sometimes leaves are asymptomatic when infected with Odontoglossum Ringspot Virus, other times they exhibit circular patterns.



21. Color break is an asymmetrical sharp change in the color pattern, indicative of infection by the Odontoglossum Ringspot Virus (ORSV).



22. Cattleyas infected with Cymbidium Mosaic Virus (CyMV) often have black splotchy necrotic patches but the virus may not be expressed in the flower.



23. Blossom Brown Necrotic Streak appears a week or so after the flower opens in cattleyas that are infected with CyMV in combination with ORSV.

When you first start growing orchids, you suspect that any problem you notice on your plant is caused by some nasty pest or disease. Your knee jerk reaction is to find a magic potion that will make the problem go away. With pests, quick diagnosis and response is important and you have to know which household cure or chemical will dispatch which pest. Disease problems are a little different, and often can be prevented by cultural controls. Sometimes you have to resort to the heavy artillery to eliminate a pathogen from your growing area. Once it is gone, always think about what you might have done differently to prevent that disease from getting established in the first place. If you can



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eliminate the cultural conditions that allowed the problem to manifest itself, you will greatly reduce the need for reactive spraying. You will learn to anticipate time periods when potential disease pressure is high, when a protective spray could pay big dividends in preventing the disease from infecting your plants. As your cultural practices improve, your plants become stronger and more capable of withstanding stresses. Your powers of observation likewise improve, so you begin to notice small problems before they can become big problems. In the end, you will have more time to admire your plants and smell the cattleyas!



24. *Blc.* Toshie Aoki 'Pizzaz' AM/AOS
(*Blc.* Faye Miyamoto x *Blc.* Waianae Flare)
Is it any wonder they are the Queen of the Orchids?

Citations and Additional Reading

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