



St. Augustine Orchid Society

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Bud Blast and Flower Blighting

by Sue Bottom, sbottom15@hotmail.com

Who does not enjoy seeing at a jewel orchid with its interesting leaf coloration and veination or a *Phalaenopsis schilleriana* with its beautiful variegated leaves. The orchid aficionado always enjoys a well-grown plant with unblemished leaves and a good growth habit. While there are some orchids grown for their foliage, the big payoff for our time and trouble is the long anticipated flowers. When the floral display is ruined because the buds blast before opening or become blighted after opening, we wonder what we could have done differently.



1. Jewel orchids like this *Ludisia discolor* var. *alba* are appreciated for their foliage which is attractive year-round. The late winter flowers are icing on the cake.

Newly Acquired Plants. Bud blast on plants that have just been brought into your growing area is probably the norm rather than the exception. Think about how your new orchid was uprooted from the cozy greenhouse where its every need was met, jammed into a box or flat, loaded into a truck or airplane, and sat on the shelf at the retail outlet before arriving at your growing area. Every environmental cue an orchid uses to adjust to its environment was confused by its journey. It should not be surprising that these jet-lagged plants drop some or all of their buds.

The Problem of Too. When developing buds become yellow, shrivel, dry up and ultimately fall off instead of blooming, there is a problem with the environment, pests or plant health. If the plant has been growing well in your care for several months when you



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notice the buds drop, there may be a problem that usually involves “too”, i.e., too hot, too cold, too wet or too dry. It could be too hot if grown in a too sunny window, if too close to a heating vent, or if left in a too hot car. It could be too cold if grown too close to a window during cold weather, if too close to an air conditioner vent, or if taken to your Society meeting on a cold night. It could be too wet if it is watered too frequently or if the potting mix is too old such that the roots die due to lack of air, so the plant does not have the strength to flower. It could be too dry if grown in a too low humidity environment, such as an air-conditioned or heated home, or is provided with too little water forcing the plant to reabsorb moisture from the buds as a survival mechanism. While you cannot bring the blasted buds back to life, you can help prevent future buds from blasting if you can diagnose which “too” is causing the cultural problem.



2. Sometimes you can diagnose why bud blasts occurs and sometimes it just happens and you never can figure out what caused it.



3. Chemicals and fertilizers can burn the tender flowers given them a burned appearance. To the extent possible, avoid wetting the flowers when watering or spraying.

Chemical Damage. Chemicals sprayed onto flowers can damage them causing burnt appearance, with browning around the edges or dry spots on the buds. As the water in the chemical solution evaporates from the flower, the previously dissolved chemical is concentrated on the tender flower. Overly strong fertilizer solutions can cause chemical burn on the flowers as can many pesticides and fungicides, particularly copper bearing chemicals. Be careful to accurately calculate and measure chemical application rates to prevent overdosing your plants. To the extent possible, try not to wet the flowers with fertilizers or chemicals unless you know they will not damage your flowers. During summer’s heat, you may consider spraying in the late afternoon when it is cooler.

Premature Aging. If present at a certain level, ethylene gas can cause young phalaenopsis and dendrobium buds to drop and/or age prematurely. Ethylene gas causes sepals of just opened cattleya flowers to lose their substance and become dry and brown; the petals can behave similarly at higher concentrations. At even higher levels, you might notice leaf yellowing and a decline in plant health. Ethylene is a byproduct of incomplete combustion, so it can be find its way into your growing area from an unvented fuel fired



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heater, a leaky vent line from the heater, a nearby internal combustion engine, a leaking gas line or automotive exhaust fumes. In industrialized or smoggy areas, there may be certain times of year when inversion layers trap any pollutants under the clouds, so ethylene concentrations can build up to damaging levels. Ethylene gas is also naturally produced by rotting or ripening fruit. In fact, ethylene is released by your newly impregnated orchids but at very low concentrations. You may have noticed that the flower fades as the ovary swells. This is from the presence of ethylene emitted by the plant, some think as a signal to pollinators to move onto the next flower. If you notice premature aging on your flowers, make sure your heaters are operating and venting properly and internal combustion engines are downwind from your growing area. If circumstances and cold weather force you to use an emergency unvented propane heater, realize you have traded some of your flowers to save your orchids.

Flower Sheaths. In younger plants, you may occasionally get a blind sheath, one in which the bud fails to develop into a flower. In some cases this is normal because the plant is not mature yet. If mature, your plant may not have stored up enough energy for it to flower. The most likely cause in an otherwise healthy plant is insufficient light. A second possibility is nighttime temperatures that are too warm. Warm nights force your orchid to consume energy rather than storing it for future growth and flowering.



4. Some cattleyas bloom as soon as the new sheath and pseudobulb mature.



5. Some cattleyas rest after forming the sheath and bloom from a dried brown sheath.



6. Moisture trapped inside the browning sheath condensed and caused the buds to rot.

Sometimes a cattleya will rest after it finishes growing the pseudobulb before initiating flower buds so the sheath is empty for several months. Rogerson's classic articles (2004, 2016) on *Cattleya* species culture describe how cattleyas can be categorized into two groups based on whether they send out roots before or after they flower. The Chadwicks (2006) expanded this concept for the large flowered unifoliate noting that the *Cattleya* species that root before they flower are the same species that rest before buds appear in the sheath. The resting period can be as short as one month for a *C. labiata* to as many as 5 or 6 months for a *C. mossiae*. This relationship between rooting and flowering does not hold true for bifoliate cattleyas. Both *C. tigrina* (syn. *C. leopoldii*) and *C. guttata* root after the growths mature, but *C. tigrina* blooms from a green sheath while *C. guttata* rests and blooms from a dried and brown sheath. Before you conclude that your cattleya is not going



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to flower from that sheath, check its parentage to see whether you just have to wait patiently for nature to take its course.

Keep an eye on the color of the developing flower sheaths to make sure they are healthy. As long as the sheath is green, a healthy yellow or dried brown color, the sheath is fine and will continue to protect any emerging bud. There is no reason to remove a dried sheath unless it starts to rot. Sometimes, when there are big temperature and humidity swings in your growing area, moisture will condense in the sheaths and ultimately cause bud primordium to rot. If the sheath turns an unhealthy yellow or wet looking brown color, gently pull the sheath apart to allow air movement and drain any condensation away from developing buds.

Pests. Small sucking insects like aphids and thrips can damage developing buds and flowers. For any of these flower targeting pests, you will have to spray the flowers being attacked, so choose your chemicals carefully and be careful to make sure your application rates are proper. You can knock aphids off the flowers with a gentle water or soapy water spray or dab at them with isopropyl alcohol.

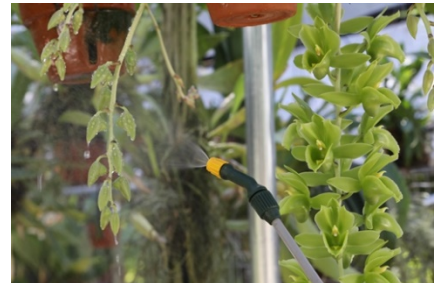
Thrips can cause buds to abort and flowers to look burned or virused. These small, flying insects have rasping mouth parts that do considerable damage to the tender floral tissue. If you have a penchant for blooming plants and trees in your yard or you live in an agricultural area, you may find there is a considerable population of thrips in the area that may decide to stop in and snack on your orchids. To the extent you can spray citrus trees, gardenias, and other plants that attract thrips, you may be able to keep populations low and out of your growing area. However, if you know there are thrips in your area, the best way to protect your blooms is a preventative weekly “poofing” with Orthene (acephate), Avid (abamectin) or Conserve (spinosad). You do not need to do a broadcast spray onto every leaf surface, just a targeted spray onto all the flower buds and open flowers. You should spray any emerging or exposed floral parts, and make it part of your regularly weekly routine.



7. One look at this thrips damaged bud and you know the flower will be blighted before it even opens.



8. Thrips caused the emerging buds on this flower spike to blast. They never had a chance.



9. If you know you are prone to thrips, accept this fact and “poof” buds and flowers weekly.

Large chewing pests like caterpillars, cockroaches, snails, slugs, grasshoppers, mice, etc. can eat flower parts and do considerable damage quickly. Caterpillars can be physically



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removed or the you can spray with Bt (*Bacillus thuringiensis*), a naturally occurring bacteria that kills caterpillars. Poison baits are required for the larger pests, once you decide which pest is causing your problems. You might have to do a few nighttime forays with a flashlight to discover what your next step might be. For cockroaches, spread one of the granular boric acid products like Niban. For snails and slugs, try some of the iron phosphate products like Sluggo. For rodents, set up rat traps or poison bait stations. Be sure to keep pests away as some products can be deadly. For grasshoppers, crushing them between two bricks is immensely satisfying.



10. Time to go out on evening patrol to see what is chewing on the buds. Periodically spread baits for snails, slugs and cockroaches to protect buds..



11. Keep flowers dry by providing good air movement and warm nighttime temperatures to minimize the conditions under which Botrytis thrives.

Disease. Flowers can be marred by the ever-present fungus *Botrytis cinerea*, particularly when cool and damp conditions favor its growth. Moisture on the flowers is required for *Botrytis* to grow. Water early in the day, increase air movement and provide warm (>60F or 16C) nighttime temperatures to help keep the flowers dry. If your budget does not allow you to keep your growing area this warm, try spraying the flowers with Daconil (chlorothalonil) or Medallion (fludioxonil) on a regular basis. There is no way to remove the spots once a flower is infected. Removing the blighted flowers to a sealed container will help reduce the number of spores that could act as an inoculant in your growing area.

Virus. Flower blighting caused by some of the more common orchid viruses results in floral color break or necrotic streaking, both of which are unsightly. Sometimes thrips or chemical damage is mistaken for viral color break and normal aging is mistaken for Blossom Brown Necrotic Streak. You may want to consider keeping Agdia test strips on



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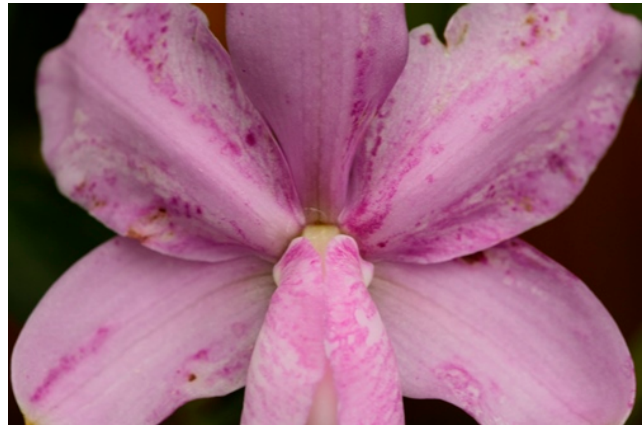
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hand as a simple way to confirm whether or not the plant has Cymbidium Mosaic Virus or Odontoglossum Ringspot Virus. There is no treatment for a virused plant and there is the risk of spreading the virus to other plants in your collection. Given the expectation that the viral flower blighting will recur year after year, it is a simple decision to throw the plant away, and not into the compost bin. Though you hate to discard any orchid, you can accentuate the positive by thinking of it as an opportunity to open up bench space for those new seedlings you are hoping to flower this year.



11. Blossom Brown Necrotic Streak shows up first in the veins parallel to the midribs of petals and sepals a week or so after opening.



12. The distinctive color break in flowers where there is irregular patches or streaks of pigmentation in the flower.

A plant generally does not initiate the development of buds unless it has enough stored energy to flower. If buds drop after forming, there has likely been some sudden change in environmental conditions. Be observant of changes in sunlight, temperatures, humidity, etc. on your growing area, so you can help prevent the problems of “too”. Keep careful watch over your plants for evidence of pest and disease problems and have a precautionary treatment plan in force to prevent them from blighting your flowers. We may lose a few flowers along the way, but as long as we keep observing, listening and learning, we will get better at growing and flowering our orchids year after year.

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