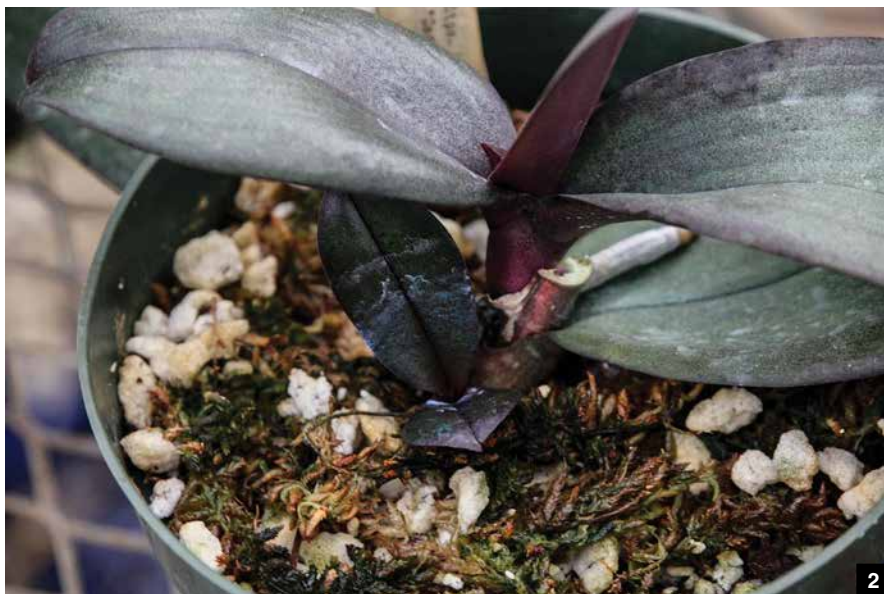


Growing *Phalaenopsis* by Sue Bottom/Pictures by Terry Bottom

What Can Go Wrong?

PHALAENOPSIS ARE EASY to care for and they bloom and bloom, some for more than three months at a time. They enjoy bright shady conditions and a somewhat water-retentive growing medium. They are sensitive to the cold so they may need a winter home indoors; an eastern window is ideal. Finding a location outdoors in the summer months where they are exposed to loads of fresh air and the day-night temperature change will pay big dividends when it comes time for them to bloom. Just be careful to have them in a location where water cannot collect in the crown of the plant causing rot. A covered porch or pergola is an ideal place to summer your phals.



CROWN ROT FROM WATER ACCUMULATING IN THE CROWN OF THE PLANT

- [1] *Phalaenopsis* grow upward from a central stem. If the growing tip rots from water standing in the crown, the plant cannot grow replacement leaves.
- [2] If the plant has sufficient energy reserves, it may be able to sprout a new plantlet from the base of the plant below the damaged tissue.



Sue Bottom

So if they're so easy to grow, what can go wrong? I've had my share of maladies, from cultural errors to pests and diseases and have also received pictures of *Phalaenopsis* problems that other

growers have shared, some of which are reproduced herein.

PROBLEMS WITH CULTURE You know you have to balance the amount of water, light, air and the other cultural factors your orchid receives, but everyone makes cultural errors from time to time. Improper watering can create a variety of problems for you, as can insufficient air movement or extremes of temperature. Cultural errors may very well cause more problems than those from orchid pests and diseases.

Crown Rot. If water is allowed to stand in the crown of your plant, naturally occurring bacteria will proliferate, which can cause the growing tip of the plant to rot. This is a major concern for outdoor growers who do not have an overhang or cover to prevent water from accumulating. Normal watering can also cause water to pool in the crown. Tilt the plant to allow water to drain from the crown or position the plant so the crown will naturally drain any accumulated water, or add a few drops of hydrogen peroxide to the crown to kill any bacteria. Your hope is that the plant will sprout a new plantlet from below the damaged crown.

Edema. Edema is caused when your plant absorbs more water than can be shed

from the leaves, so the plant cells swell and produce a blister-like lesion. It typically occurs when watering late in the day on a day when the night turns cool. During the cooler months, it is important to follow the much-repeated advice to water early in the day.

Root Rot. The roots on your *Phalaenopsis* can rot either because they

are being watered too frequently or because the potting mix is breaking down, which is a nicer way of saying your potting mix is rotting. If the mix begins to rot, your roots will likewise begin to rot. You may also find a white filamentous snow mold growing in the decaying mix. The snow mold is water-repellent, so once it covers the roots they cannot absorb water. If your



EDEMA – BLISTER LIKE LESIONS FROM WATERING LATE WHEN NIGHTS TURN COOL

- [3] You can see water filled blisters in the early stage of edema (the blue spotting is residual from spraying a copper fungicide).
- [4] The damaged tissue can become tan to brownish and corky over time and trick you into thinking it is some sort of scale infestation.



TEMPERATURE EFFECTS – SUNBURN AND COLD DAMAGE

- [5] Sunburn is really a thermal effect that begins as a whitish or yellowish scar fading to tan or black depending on the severity of the burn.
- [6] Cold damage can occur from cold temperatures, watering with cold water or using ice cubes.



ROOT ROT – OVERWATERING OR DECAYING POTTING MIX

- [7] Your *Phalaenopsis* leaves should be plump and turgid. These leaves became thin and droopy because the roots rotted and couldn't absorb water.
- [8] Repot your plant in fresh potting mix and water lightly until it reestablishes. This is the same plant three months later.
- [9] Snow mold also grows in decaying potting mix and can suffocate the roots. Wash off the old potting mix and repot in fresh mix.

plant starts to look dehydrated, it probably is dehydrated. Knock it out of the pot and find out why.

Sunburn. The sudden appearance of black spots can be caused by sunburn, a result of leaves becoming overheated from too much light, such as from a sudden increase in light during a change in seasons

or moving plants outdoors in the spring. The burn occurs on the highest point of the leaf where it is exposed to the most sun. The burn fades to thin tan-colored leaf scar over time and can be invaded by secondary infections. If the damage is not too severe, it is unsightly but the leaf will still photosynthesize. You may want to

remove severely damaged leaves.

Cold Damage. Cold damage can occur from exposure to low temperatures or watering with cold water. Cold damage causes the collapse of cell tissue, resulting in surface lesions, pitting, sunken areas and discoloration. The tissue can become water-soaked, wilted and browned and

can be susceptible to secondary infection. Know the temperature requirements of your orchids and watch the projected nighttime lows during winter. Use room-temperature water for your orchids and save your ice cubes for your evening toddies. Remove severely damaged leaves.

PROBLEMS WITH PESTS Mealybugs, scale and mites are the most common enemies of your *Phalaenopsis*.

Mealybugs and Scale. While they have different appearances, the damage they cause and their treatment are the same. 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 hide in plant crevices. There are different types of scale, but the kinds that typically infest phalaenopsis are soft brown scale, which forms light yellowish to dark brown oval to circular shells, and armored scale, which ultimately forms a brown conical structure protecting the juvenile scale underneath it. Scale can appear on leaves, flowers, flower spikes and sometimes roots. Soft scale produces honeydew but hard scale does not.

If there are only a few scale or mealybugs, use a cotton swab 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 use the homemade remedy of one part isopropyl alcohol, one part Formula 409 all-purpose cleaner or Murphy's Oil Soap and two parts water. 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 probably more effective with the added benefit of lowering your potential exposure to chemicals. If available where you live, you can apply one of the commercially available products containing the active ingredient imidacloprid; the orchid will move the chemical through the roots into the leaves and kill the pests from the inside out. Always follow the manufacturer's instructions with regard to dilution rates.

Mites. Mites are not insects, they are members of the spider or arachnid family. There are three groups of mites infesting cultivated orchids: spider mites, flat mites and broad mites. The two-spotted red spider mite (Tetranychidae) 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,



MEALYBUGS AND SCALE

- [10] Soft brown scale may appear on leaves, flowers and flower stems. You may notice a sticky saplike substance.
- [11] Armored scale have a hard, crusty coating protecting the scale underneath, but they can easily be removed with a cotton swab or soft toothbrush.
- [12] Mealybugs look like white cottony masses that may appear on your leaves, though they love to hide in plant crevices.
- [13] Mealybugs (and even scale) are also happy feasting on your roots, out of sight. You may have to pour an insecticide drench through the potting mix for really effective control.

with webbing under the leaf in severe infestations. Flat mites, or false spider mites (Tenuipalpidae), including the *Phalaenopsis* mite, often feed on the upper surfaces of leaves, creating a pock-marked

appearance from empty and collapsed leaf cells. Broad mites (Tarsonemidae) are microscopic in size and the initial symptom is chlorotic discoloration.

Mites proliferate during warm, dry



MITE DAMAGE ON PHALAEOPSIS

[14] Damage from red spider mites includes stippling and webbing on the underside of the leaf.

[15] Damage from flat mites includes pockmarking on the upper leaf surface and no webbing.



PHALAEOPSIS DISEASES – BACTERIAL AND FUNGAL PROBLEMS

[16] Bacterial Soft Rot caused by *Erwinia*

[18] Collar Rot or Southern Blight caused by *Sclerotium*

[17] Bacterial Brown Spot caused by *Pseudomonas*

[19] Flower Blighting caused by *Botrytis*

conditions and are often pests on indoor *Phalaenopsis*. To prevent or treat for mites, spray upper and lower leaf surfaces with the home-cure mixture of one part rubbing alcohol, one part Formula 409 or Murphy's Oil Soap and two parts water. Plants can also be sprayed with a miticide such as Avid, Talstar or Kelthane, following label instructions and being particularly

careful to contact all the undersides of the leaves. During warm weather, new generations mature every six days, so repeat applications will be required.

PROBLEMS WITH DISEASE There are some diseases to which *Phalaenopsis* are susceptible, including bacterial soft rot, bacterial brown spot, collar rot and botrytis.

Bacterial Infections. With bacterial soft rot, small water-soaked spots appear on the leaves and often are surrounded by yellow halos. If unchecked, the infection spreads so rapidly that plants may be completely rotted in two to three days. This wet rot may have a foul odor and has a water-soaked appearance. Bacterial brown spot is the most common disease of *Phalaenopsis*.



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VIRUSED PHALAEOPSISIS

[20] This *Phalaenopsis* suffers from “ugly plant syndrome” as a result of virus, confirmed by the Agdia test strip.

[21] The presence of so-called color-break in *Phalaenopsis* flowers is not always a good indicator of virus. This virused *Phalaenopsis* has chlorotic streaking and spotting, although there is no color break in the flower.

[22] A very faint chlorotic streaking in the leaf is an early warning that the plant may be virused.



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WHAT THE ...?

[23] This *Phalaenopsis* plant has a normal flower spike to the right and an apical spike emerging from the growing center of the plant.

[24] This flower spike got disoriented as it tried to emerge and got twisted under the leaf as it sought light.

[25] This leaf seems to have mutated – growing into a funnel shape. Plants that do this will often go on to produce other normal leaves.

The symptoms may appear anywhere on the leaf as a small, soft, water-soaked blister that may be surrounded with a yellowish or pale green halo. Initially dirty green in color, spots coalesce and enlarge, and eventually become brown or black, dried up and sunken. If the diseased area invades the crown, the plant will die.

For the fast-moving soft rot, immediately remove infected tissue an inch below the affected tissue using a sterile instrument, then pour peroxide over the wound. For bacterial brown spot, pour peroxide over the infected tissue and if it continues to enlarge, consider removing infected tissue. Bactericides such as Physan 20 or copper compounds can be sprayed on infected and adjacent plants following label instructions (copper should not be used on dendrobiums or blooming plants). Treat nearby plants as well as those that are diseased.

Collar Rot. The main symptom of southern blight or collar rot is a rapid collapse and rotting of the roots, pseudobulbs and lower parts of the leaves. The base of the stem turns creamy yellow, later dark brown, and infection spreads to the roots and leaves. The disease eventually girdles and destroys the entire basal portion of the plant. Small yellow or tan sclerotia resembling mustard seeds form on the affected tissue. You can treat the plant with

a systemic fungicide containing thiophanate methyl (such as Thiomyl, Cleary’s 3336 or Banrot) and perhaps save the plant if the disease has not progressed too far. Sterilize benches and surrounding area with bleach, Physan 20 or pool algacide.

Botrytis. Botrytis is a fungal infection that causes very small black or light brown spots on the flowers. The spots may enlarge and cover the entire flower. If conditions are moist, a gray fungal growth may appear on severely infected or decaying flowers. This fungus is common in the environment and cannot be eradicated. Remove infected flowers since these are reservoirs of infection. Infection may be reduced through careful sanitation, increased air circulation, reduced humidity and warmer night temperatures (above the mid-60s F [17–18 C]). You can spray with a protectant fungicide such as Daconil or the home remedy of baking soda at 2 teaspoons per gallon (2.6 cc/liter).

PROBLEMS WITH VIRUS Virus expresses itself in chlorotic and necrotic spots, streaks, lines and rings in the leaves. Flowers may show necrotic spots and streaks as well as color break, often resulting in an unhealthy, ugly looking plant. The 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.

PROBLEMS WITH DEFORMITIES Sometimes there are problems that can arise for no obvious reason. A bloom spike can emerge from the center of the plant from the growing tip of the plant, called an apical spike, rather than from under the leaves. This may mean the plant will no longer produce new leaves from the growing tip and you may have to wait for a basal keiki to form for the plant to continue growing. The bloom spike can also get twisted under the leaf and even start growing through a leaf in its attempt to grow toward the sunlight. I have broken many spikes trying to straighten them. If you don’t catch it early enough to gently reorient the spike, it may be better to let the spike find its own way. You may also get leaf deformities, which may indicate a genetic defect, a reaction to chemicals applied or just a random mutation that will be followed by normal plant growth.

SEASONAL CARE In the spring, once nighttime temperatures stay about 60 F (15.5 C), move your *Phalaenopsis* to its shady summer home. During the summer, your plant will gather its strength for next year’s blooms. Water with a dilute

fertilizer solution when the potting mix approaches dryness. When the temperatures first start to cool in the fall, leave the plant outdoors to receive a chill as long as temperatures don't drop below 50–55 F (10–12.8 C). This signals the plant to start the bloom cycle. After two or three weeks or when the temps drop below 50 F (10 C), bring the plant indoors for the winter. Continue watering with a dilute fertilizer solution when the potting mix approaches dryness. You should see flower spikes by Christmas and flowers by Valentine's Day. By Independence Day, you'll remove the spent flower spike and decide whether your plant needs to be repotted; this is normally needed every year or two.

Finding the right spot to grow your *Phalaenopsis* will prevent many disease and environmental problems from developing. A bright shady spot with fresh air bathing your plant will help keep it healthy. Observe your plant to make sure the leaves are plump and green, and respond to any problems quickly. Then kick back and enjoy the blooms!

Acknowledgments

Thanks to all who sent pictures of your plants to info@staugorchidsociety.org so that we could help with the diagnosis and suggestions for treatment.



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WHEN ALL GOES WELL

[26] *Phalaenopsis* Medellin Spring (Brother Love Rosa × Little Gem Stripes) blooming in profusion.

— Sue Bottom started growing orchids in Houston in the mid-1990s after her husband Terry built her first greenhouse. They settled into St. Augustine, Florida, Sue with her orchids and Terry with his camera and are active in the St. Augustine Orchid Society, maintaining the society's website and publishing its monthly newsletter. Sue is also

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