

# Camellia Bud Mites

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## Overview

One of the most disappointing camellia problems I encounter is flower bud failure. After providing a healthy environment and coaxing my plants into setting apparently viable, healthy flower buds, I become genuinely distressed when the buds turn brown and fail. While there can be many causes for bud failure, a microscopic mite seems to contribute heavily to my bloom failure problems here in North Central Florida.

Camellia bud mites (eriphyid mites) are miniscule arthropods roughly 1/5 the size of a common spider mite. These pests are so small they can even exist under the tightly wrapped protective scales of vegetative and flower buds. As bud mites cannot be seen with the naked eye or with a common loupe or hand lens, we must look for plant damage early on in their life cycle. The damage they cause is clearly visible; flower buds with heavy infestations show brown edges on the bud scales early in flower bud *and* terminal bud formation. If left untreated the buds turn brown, desiccate (dry out) and may drop before blooming.

The diagnosis of bud mites can be complicated, as some camellia cultivars will show browning of the bud scales without mites present. Cultivars such as 'Ruffian' and 'Marie Bracey' are infamous for this phenomenon. The common term for this bud browning is "dirty britches." Certainly not all bud

browning and failure is attributable to the mites, but the tiny pests are a well known, if poorly understood, problem.

Eriophyid mites can spend the winter as mature females. This stage of the mite is able to become dormant during unfavorable weather. These fertile females begin feeding and laying eggs early in the spring. While Eriophyid mites are small, they are mobile. The minuscule mites use the wind, and hitchhike on birds, insects, and camellia growers in order to move from plant to plant.

## Signs of damage

Signs of bud mite damage are observable in early summer; I first notice the browning of buds in mid-June. Numerous buds, both flower and growth, will dry out and discolor, and may or may not release from the plant easily. Most often the terminal buds are first affected. The mites then tend to travel down the stem while damaging buds towards the camellia's interior. Although the mites are susceptible to many commonly used pesticides, they are difficult to control as their population numbers can soar in just a few days of hot, dry weather.

Many pesticides, including insecticidal soap, horticultural oil, etc., will kill mites *if* contact is made. However, unusually thorough spraying is essential to obtain adequate control of these microscopic pests as their diminutive

size allows them to use any nook or cranny in the bark, curl of a leaf, or other concavity, as a safe haven. **Pesticides without systemic activity cannot reach the inner tissues of the buds where the mites are feeding.** Consequently, some experts recommend you treat infested plants with a systemic pesticide such as dimethoate 400 (formerly Cygon) or acephate (Orthene).

### Upon Further Review

There are thousands of species of eriophyid mites. These mites can damage a variety of plants and trees including, of course, camellias, plus blueberries, grapes, citrus, junipers, apples, boxwood, and podocarpus and many others. The mites are host specific meaning each mite specie is specialized in feeding only on one host plant. Eriophyid/bud mites are carrot shaped, slow moving with four stubby legs, almost colorless, and practically inappreciable (125 adult mites are required to measure one inch). Their slender bodies taper toward their back ends. They may be called **bud mites**, rust mites, or gall mites depending on the nature of the damage they inflict. The pests have tiny, needle-like mouth parts which are used to penetrate the cells of their host plants. The sucking of cell fluids causes the damage we detect.

It is theorized that these pests use substances in their saliva to act as plant growth regulators. These chemicals are injected into the plant as the mites feed. Buds or other plant parts may become discolored or the camellia's growth pattern may be changed. These alterations

benefit the mite in ways that are poorly understood by most researchers and by this author.

### Diagnosis and Manual Control

A 10X to 15X magnifying glass is helpful for the detection of spider and false spider mites. However, bud mites are so small they are impossible to see in any detail without a 400-500 power microscope and a trained eye. (I have been informed by experienced researchers at major universities that they often fail to observe bud mites even upon thorough examination.) Some researchers report they can see the mites with a 40-power hand glass; I cannot. Consequently, we must look for early damage as an indicator of the mite's presence. When damaged buds are first noted, as early as the first week of June in the deep south, experts recommend that growers begin their control program. When my plants are left untreated, I often notice bud failure by early September.

I recommend removal of any brown, dry buds, whether terminal or flower. If the damaged buds are removed early enough, a vigorous plant may generate new buds to replace them. I always place the removed buds in a zip lock type baggie for safe disposal. The goal here is to interrupt the life cycle of the mite by destroying any eggs or live mites still present. As noted above, female mites are reported to over winter in the area beneath the plants. As an extra control, I make note of any plants with bud mite damage and during late winter I remove and burn the mulch from the in-ground plants and any mulch or loose growing

mix from potted pots.

Mite damage is much worse on water-deprived plants. Mite populations often skyrocket during dry periods. Adequate irrigation to supplement rainfall will bolster your plants against damage. Mites are also susceptible to water sprays. Streams of water to wash off plant leaves will dislodge both spider and bud mites.

### **Suggested Chemical Controls**

Chemical control of bud mites is difficult and complex. Only a few products labeled for camellias are also labeled for use against bud mites. Several commercial-grade products are available only in quantities and at prices unacceptable to most collectors and small-scale growers. Products other than oils must be rotated in the spray schedule to avoid building resistance in the mite population. Some products may also kill the predatory insects and arachnids that help us control the bud mites. I have found all season, paraffinic oil to be the most effective. Oil allows back-to-back applications as needed since it kills by suffocation, and the mites do not build a resistance. I have also had success with bifenthrin. While not a systemic product, one to three weeks of residual control is claimed. Whichever product(s) you choose for your program, I urge you to spray sparingly and to rotate products. Experts recommend the all season oils as the primary defense.

### **Relatively Inexpensive**

All season oil sprays (paraffinic oil)-**non-systemic**

Ortho Rose and Flower Insect Killer (bifenthrin)-**non-systemic**

Orthenex Garden Insect & Disease Control (acephate + fenbutalin-oxide)-**systemic**

Bayer Advanced Rose and Flower Insect Killer (imidacloprid + cyfluthrin)-**systemic**

Dimethoate 400 (previously sold as Cygon) foliar spray-**systemic**

### **Relatively Expensive**

Avid-labeled for bud mites

Pylon-labeled for bud mites

Spraying must be very thorough to contact the microscopic mites. It may be necessary to add a systemic product to an oil spray for augmented control of these difficult pests.\*\* Repeat applications at 7-14 day intervals may also be necessary. Thorough treatment of both sides of all leaves, twigs, and stems with particular attention to the buds is suggested. Carefully follow all safety suggestions from the products' manufacturers. Usage of an approved respirator and protective gloves is recommended. Additional safety protocols and protective equipment may be required or prudent.

**\*\*NOTE:** *Only mix chemicals if labeling allows it.*

### **The Downside of Chemical Control**

It is important to understand that indiscriminate application of pesticides is wasteful and counter-productive to mite control. When pesticides are applied, the natural insect and arachnid enemies of the tiny mites may also be

killed. Studies by university scientists have shown bud mite populations can rebound to higher levels after spraying than before treatment. Predatory spiders and mites are extremely important to a bud mite control program. Consequently, it is important to spray only those plants afflicted with mites and to set up a spray schedule to match the mite's life cycle. This is why re-spray at 7-14 day intervals may be efficacious.

Timing the application of your spraying is of great importance. Spraying too late, once the mites have penetrated deeply into the buds, makes control almost impossible, and the damage is done. Spraying when few mites are present simply kills mite predators and wastes expensive chemicals. Sadly, there are no hard and fast rules to timing your spray program. The mite's life

cycle is controlled in large part by the weather, which varies too much to allow firm schedules. Of course, too frequent spraying yields over application of chemical controls and develops pesticide resistant populations of mites.

As an adjunct or alternative to chemical control, it is possible to purchase predatory insects and mites to release in your yard or nursery to establish a more natural, biological control program. Of course it is also possible to reject chemical control as part of your growing program. Bud mites are not going to kill your camellias. While the pests may reduce your bloom count, keep in mind that spraying broad spectrum pesticides can generate more mite problems in the long run that it cures in the short run. If you decide to spray, please spray wisely.

*Product names and treatment protocols are provided for information and reference only and their mention should not be considered as an endorsement by the author or the American Camellia Society (ACS). Consult your State Agricultural and Pesticide agencies for recommended chemicals registered in your state. Always follow label instructions. We recommend the use of latex or vinyl gloves, safety glasses, and respiratory protection as a minimum while using chemicals. Recommendations are developed from actual experience and from sources believed to be reliable. Neither the author nor the ACS implies or expresses any warranty or assumes liability for the recommendations' use or misuse. Furthermore, trademarked names are used in an informational and editorial context with no intent of infringement.*