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Mealybugs can be a serious threat to azaleas

Mealybugs are, by far, the most serious insect problem for azaleas in our area of central New Jersey. I first began taking this problem seriously many years ago when several of my favorite azaleas perished. Samples of the infestation regularly are brought to our local Master Gardeners Garden Help Line for diagnosis. I also have seen a planting of blueberry bushes that was heavily infested, and, sometimes, lepidote rhododendron is affected.

Mealybugs are in the family of scale insects (Pseudococcidae). The best definition I have found is, "Mealybugs are soft scales with oval, soft, distinctly segmented bodies that are covered with a white, waxy secretion ... with lateral fringes and sometimes 'tails' of the same material."

There is some confusion as to which "soft scales" are mealybugs and which are not. In their book, *Insects That Feed on Trees and Shrubs*, authors Warren Johnson and Howard Lyon mention five types of scale insects — oleander scale, camellia mining scale, greedy scale, azalea bark scale and cottony azalea scale — as possible pests of azaleas, but they do not mention mealybugs. Of the azalea bark scale, the authors stated, "The azalea bark scale is closely related to, and in some ways resembles, mealybugs. It does not, however, belong to the mealybug group." However, the University of Kentucky College of Agriculture Web site refers to mealybugs on azaleas as the same insect that is sometimes known as azalea bark scale.

Most sources that discuss scale or mealybugs on azaleas give very little detail of their appearance or life cycle. To date, I have been unable to find an accurate description of the insects I have been observing, which are so common in our area and, perhaps, in your area, as well. I believe a lack of information has caused unnecessary difficulty in controlling this pest. The following is a record of observations I have made over several years with my home microscope and as a volunteer at our Master Gardeners Garden Help Line office.

Life cycle. Female mealybugs winter under the litter or loose soil covering the uppermost roots of their host plant or, sometimes, in the crotch of twigs or under a piece of loose bark close to their summer feeding location. They are amber in color, but appear gray due to the waxy quills that cover the upper parts of their bodies. As the weather warms and



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sap begins to flow, the females gather in clusters beneath the whorls of leaves at the tips of twigs. To the untrained eye, they look more like a fungus growth than an insect problem. The females excrete large amounts of honeydew, causing the plant to have a sooty appearance as black mold grows on the sweet deposit of partially digested sap.

Male mealybugs winter in white, thread-like cocoons approximately one-sixteenth of an inch long. These are attached to fallen leaves of deciduous trees or to loose bark and usually are found at the base of a host plant, often grouped together in large numbers. In our area of central New Jersey, the males begin to emerge in April, looking very handsome with long, veined, translucent wings and three, long filaments forming a kind of decorative tail.

This phase of their lives is very short and difficult to observe. I have never seen them attempt to fly, and I only once saw what appeared to be a mating pair.

The females continue feeding at the base of leaf whorls until the time azaleas are about to open their flower buds. They then begin forming elongated egg cases with strands of cottony material made with fibers from pores in their body. These usually are attached to the underside of the older azalea leaves, but if things get too crowded during a heavy infestation, egg cases sometimes are seen on walls of adjacent buildings. I have read that unfertilized females lay eggs, but all their progeny are males. As the egg case is formed, several hundred yellow eggs are laid within. The egg cases are white and are the most conspicuous sign of an infestation. They are similar to the cocoons in which the males spend the winter, but are much larger.

After egg laying is completed, the female dies, her body serving as a plug at the open end of the egg sac. The young grow inside their cottony covering for approximately three weeks, emerging at the time tender, new azalea leaves are attaining full size. At this stage, the young mealybugs are referred to as "crawlers." They are the color of lemon juice, very mobile and very small — about the size of a grain of salt. Once they find themselves a spot on the underside of a leaf,

the young mealybugs cover themselves with a thin coating of protective material resembling clear nail polish and become almost invisible to the untrained eye. If noticed at all, they appear to be a blistering of the leaf and easily could be considered as some sort of disease. When crushed, they merely leave a wet spot on the leaf, but if the coating carefully is removed, the insect will move feebly. Left undisturbed, they spend the remainder of the summer and early fall sucking on the juices of the leaf. Often, many of the flakey outer coatings can be found empty. I have been unable to determine whether this is a sign that the mealybugs have been eaten by a predator or whether they molt during the season and move to other feeding spots.

Although the insects are hard to see at this stage, the unhealthy appearance of the host plant is very obvious when the infestation is heavy. When plant samples are brought to our Garden Help Line, clients will say the plant "looks sick," and indeed it does. The color is poor, the new growth is dwarfed, there usually are dead twigs on the branch, and the bark is sooty black. On some azalea varieties, yellow spots on the leaves are an additional indication of the presence of mealybugs. Azalea varieties with very pubescent leaves are favorites of mealybugs, but they never show yellow spotting.

In autumn, when the leaves of deciduous trees are falling, another metamorphosis occurs. The insects break out of their veneer-like covering; the legs, which had seemed atrophied, reappear; and the insects again become mobile, heading down the branches and the trunk of the shrub. Even before they reach their destination, the males often are seen trailing the white, thread-like strands, with which they will form their cocoons. The females, once they have found a snug winter resting area, sprout the gray, quill-like, waxy projections that will be their shields for the remainder of their lives. The transition is similar to the crawler stage when they first hatched.

In both cases, there is a period of time during which the insects are unprotected by their usual covering and are most susceptible to controls used to eliminate them. However, the window of opportunity is longer in the fall than it is in the spring. Spring crawlers hatch close to their destination, very quickly make their



Azalea bark scale often is mistaken for mealybugs because of its similar appearance.

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way there and cover themselves with their lacquer film. The fall migration is lengthier, leaving the insects exposed for a period of a week to 10 days.

Control. I believe awareness of the fall crawler stage in the life cycle of mealybugs is important. These insects are well-protected against sprays of all sorts, both by the waxy strands (quills) of the adults and by the thin veneer of the nymphs. The only times they are susceptible to sprays is during the two crawler stages.



An infestation of mealybugs

Spring spraying of the young crawlers is the control that usually is recommended. Spraying is effective in a nursery situation, where plants are grouped together and easily can be monitored and reached. The sooner the insects are destroyed, the better it is for the health of the plant. The egg cases are very visible, and it is easy to determine if there is a problem and to monitor the development of the eggs in order to spray during the brief crawler stage. However, infestations of scale in landscape plantings are more common and more difficult to eradicate.

In a landscape planting, there are many advantages to spraying in the fall. By the time the insects are ready to overwinter, most of the beneficial insects that feed on them either have laid eggs for the following season, gone into hibernation or died. Birds in the area have fledged their young and will not be disturbed. The possibility of harming tender, new growth is avoided. The window of opportunity is much longer because spring crawlers find themselves a leaf to settle under and cover themselves with protective coating within a few days of hatching, while fall crawlers take a week to 10 days to find their winter location and usually are more exposed on the twigs and trunk of their host plant.

A friend had a foundation planting of azaleas that had been heavily infested with mealybugs in the spring. It was one of those instances where there were so many egg cases that the walls of her house behind the planting were covered with them, as well as the plants them-

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selves. I suggested she have the azaleas sprayed with oil spray when the leaves of her deciduous trees began to fall. The next spring, there was no sign of infestation. Our property is more difficult because our plantings are scattered over several acres. We have an oil spray applied in the fall to our few hemlocks and to our azaleas. Some plants always are missed, and some are not even within reach. I don't expect we will ever be completely free of mealybugs, but they are now under enough control that there hardly is any visible damage to the plants.

Many sprays are considered effective in controlling mealybugs during the crawler

stage, but oil spray appears to be the most environmentally friendly solution, especially when spraying a large area. It is important that the affected plants are well-drenched and that the spraying is done before the time leaves begin to fall on surrounding deciduous trees.

While my observations were concentrated on the mealybugs that have plagued our azaleas, I should note that the single, fall oil spray treatment also has controlled hemlock woolly adelgid on our hemlocks and appears to have eliminated whiteflies that were occasional pests on some types of azalea.

With more interest in IPM and a growing public distrust of chemical pest control, this treatment may prove invaluable in protecting the health and beauty of our nursery stock and landscape plantings from the injurious effects of mealybug infestations and, perhaps, some of the other sucking insects.

Eleanor Gural and her husband, William, acquired a small, ericaceous plant nursery, Anderson Garden, in 1960 with the purchase of their house and property in Springfield, NJ. They still operate the nursery, which now is called Hidden Garden. Eleanor also is a member of the Union County, NJ, Master Gardeners and is a volunteer for the group's Garden Help Line department.

References.

- Antonelli, A. 1999. *How to Identify Rhododendron and Azalea Problems*. Washington State University.
- Coyier, D.L., and M.K. Roane. 1986. *Compendium of Rhododendron and Azalea Diseases (Disease Compendium Series of the American Phytopathological Society)*. The American Phytopathological Society PRESS.
- Johnson, WT., and H.H. Lyon. 1991. *Insects That Feed on Trees and Shrubs*, Second Ed., revised. Comstock Publishing Associates.
- Leach, D.G. 1961. *Rhododendrons of the World and How to Grow Them*. Charles Scribner's Sons.
- Lee, F.P. 1965. *The Azalea Book*, Second Ed. D. Van Nostrand Co. Inc.
- Smith, M. (ed.). 1999. *The Ortho Problem Solver*, Fifth Ed. Meredith Books.
- Swain, R.B. 1948. *The Insect Guide*. Doubleday & Co. Inc.
- Van Veen, T. 1969. *Rhododendrons in America*. Sweeney, Krist & Dimm Inc.