

## Citrus Mealybug<sup>1</sup>

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### Physical Description

The citrus mealybug, *Planococcus citri*, derives its name from the white mealy wax which covers its distinctly segmented body. The soft oval body of the mealybug is ringed by lateral waxy filaments and longer tail-like filaments at the posterior end. The adult female is about 3 mm long while the male is usually smaller. The adult male is gnat-like with a single pair of wings.



**Figure 1.** Calyx of the fruit with mealybug.

Newly hatched nymphs are light yellow and free of wax. Immature males and all stages of females are similar in appearance.

Citrus mealybug eggs appear as white cottony masses scattered about on the fruit, foliage, twigs, and bark of the tree.

### Life History

Citrus mealybug eggs are laid in a white cottony mass behind the female. A single female may deposit 300 to 600 eggs and dies soon after completing oviposition. The time required for the eggs to hatch varies with temperature, requiring from six to 10 days to several weeks. Both sexes have three nymphal stages and the male has an additional pupal stage. Unlike scales, to which they are closely related, mealybugs remain motile throughout their life cycle, with the exception of the male pupa. While population development in the spring is uniform, the variation in the rate of individual development produces an overlapping of generations throughout the summer and fall. Florida has from two to three generations a year, but only the spring cycle should concern growers.

### Injury To Crops

Mealybugs cause injury by extracting sap from the tree and excreting large amounts of honeydew

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which serves as a medium for the growth of sooty mold fungus. Mealybugs like protected areas and will crawl under the button or calyx of the fruit. Feeding on the fruit results in discolored, bumpy, and scarred fruit which is either lowered in grade or completely unacceptable for the fresh fruit market. Sooty mold deposits on the fruit require extra scrubbing on the packing line for removal. Mealybug feeding on foliage and twigs lowers the vitality of the tree and can result in severe defoliation with heavy infestation. Cultivars most affected by mealybugs are navals, Valencias, grapefruit and lemons.

### Economic Threshold

As a result of very effective biological controls, the citrus mealybug is seldom more than a minor problem in Florida. However, occasional severe infestations can result in the lowering of grade and heavy fruit drop, particularly on grapefruit. These occasional infestations occur as a result of the failure of biological control, usually due to improper use of pesticides, and the fact that the chemical controls which are then required must be applied at the proper time to be effective.

## Control Recommendations

### Biological Control

Three natural organisms are important in the biological control of mealybugs. The ladybird beetle, *Cryptolaemus montrovzieri*, is most common from May through July. Commonly called the mealybug destroyer, these insects are shiny black beetles with a reddish head and prothorax and are about 3 to 3.5 mm long. For more information on this species, see the ladybug file on the Featured Creatures www site at <http://creatures.ifas.ufl.edu/>.

A fungus, *Entomophthora fumosa*, is another effective biological control. It increases after the beginning of the summer rainy season. Mealybugs killed by the fungus appear to be covered by a dark slate-grey wool. In some cases the infected mealybugs appear to be jet black. The hymenopterous Sicilian mealybug parasite, *Leptomastidae abnormis*, is the third important biological control organism of the mealybug.

### Chemical Control

The timing of sprays to control mealybugs is of considerable importance. Very little control can be expected if an insecticide is applied too early, and only partial control if the application is made after the mealybugs become established in protected feeding areas. Since mealybugs prefer protected areas between the fruit and under the leaves, as well as under the button or calyx, their contact with insecticides can be limited. Therefore, if a large number of egg masses indicates an infestation, a daily inspection should be made to determine when pesticides should be applied. A dilute or low concentration spray should be applied as the mealybugs are migrating up the tree trunk and branches in the spring before they reach the fruit clusters. Consult the latest Florida Citrus Spray Guide for recommended insecticides.