

## 20. Managing Mealybugs with Biocontrols (HortReport, January 2003)

Mealybugs have the ability to feed on a wide range of host plants. Foliage plants in greenhouses and interior plantscapes are very susceptible to mealybugs and vegetables such as tomato, cucumber and eggplant can serve as host plants as well.

Mealybugs are part of a family known as scale insects. Mealybugs are not covered with a hard shell like most scales insects, but instead are covered with a white, waxy powder with thread-like projections around the perimeter. This waxy powder can serve as a barrier to effective control with chemicals. Clusters of mealybugs look like a cottony mass. The key to controlling this pest is to detect infestations before they become too dense. Biological controls should be introduced when mealybugs are first spotted at low population levels for the most effective control.

### Life Cycle

There are two main mealybug pest species attacking greenhouse crops, the citrus mealybug (*Planococcus citri*) and the longtailed mealybug (*Pseudococcus longispinus*).

Mealybugs have sucking mouthparts and their feeding weakens and stunts plants causing leaves to turn yellow and appear distorted. Mealybugs, like aphids, secrete sticky honeydew that serves a substrate for black sooty mold development, ruining the cosmetic value of the plant.

Citrus mealybug produces eggs that are in cottony structures called ovisacs. Eggs hatch in about 10 days into small nymphs called crawlers. The crawlers move about the plant to find a suitable feeding site and then begin to feed on plant sap. There are 3 nymphal stages in the life cycle that takes approximately 30 days at 86°F.

Long tailed mealybugs produce fewer eggs than citrus mealybugs. Females produce live young or lay eggs that hatch into the crawler stage. There is no cottony ovisac as there is with the citrus mealybug.

### Biological Control

#### ***Cryptolaemus montrouzieri* – the mealybug destroyer**

*Cryptolaemus* is a predatory ladybird beetle. Originating from Australia, this predator is one of the most effective biocontrols for citrus mealybug or mealybug species producing cottony egg masses. Adults and young larvae eat every stage of the mealybug. The adult beetle can reach a length of 4 mm. and its head, thorax and abdomen are orange-brown. A female beetle lives approximately two months and lays 10 eggs a day in a mealybug colony or in a group of mealybug eggs. Eggs hatch into larvae that can reach a length of 13 mm. and can be recognized by the white wax like filaments. Because of this white secretion, the larva and prey look very similar and the larva is sometimes mistaken for the pest. Young larvae hatch out as voracious predators of smaller stages of mealybugs, whereas the larger larvae will eat mealybugs of any size. *Cryptolaemus* is most active when the weather is sunny, with optimal temperature of 68°F for a few hours each day and relative humidity of 70-80%.

#### ***Leptomastix dactylopii* – tiny wasp parasitoid.**

This tiny parasitic wasp is very efficient in controlling mealybugs, however it is only effective against citrus mealybug. When infestations are heavy, this parasite works well with *Cryptolaemus*. The adult female wasp searches the leaves for the larger stages of the mealybug. Upon finding a suitable host, the wasp will lay an egg in the body of the mealybug and a new parasite will emerge from the parasitized body of the mealybug. One wasp can parasitize 50-100 mealybugs. The lifecycle takes approximately three weeks at 75°F.

These biocontrols are commercially available from most biocontrol suppliers. For a list of suppliers, visit this website:

<http://www.cdpr.ca.gov/docs/ipminov/bensuppl.htm>

#### **Tips for using biocontrols effectively**

- Discontinue the use of residual pesticides, 4-6 weeks prior to introducing biocontrols - check residues with suppliers.

- Identify the species of mealybug attacking the crop.
- Start introducing biocontrols when pest populations are low.
- Follow supplier recommendations for release rates.
- Disperse biocontrols on the day of receipt.



Figure 17. *Cryptolaemus montrouzieri*, the mealybug destroyer, on scale insects.