UNIVERSITY OF FLORIDA
Institute of Food and Agricultural Sciences
Mid-Florida Research & Education Center

THE PINK HIBISCUS MEALYBUG MANAGEMENT

ADDITIONAL DETAILS WILL BE ADDED AS SOON AS THEY ARE AVAILABLE

The Pink Hibiscus Mealybug or PHM is a pest that has devastated agriculture in many parts of the world. If left uncontrolled, it will kill plants and even trees. Our management options include the use of chemical and biological controls. Biological control offers the safest, most economical and long term solution to this problem. This strategy relies on producing sufficient numbers of tiny wasps (parasitoids) that attack and kill the PHM. These wasps lay their eggs inside individual mealybugs. When the eggs hatch the immature stage of the "parasitoid" feeds on the mealybug from the inside. After 2-3 weeks, an adult wasp will emerge, find a mate and then start to lay her eggs in many more mealybugs. These wasps DO NOT ATTACK plants, other animals or people. In fact, they don't even attack other mealybugs. They are so small most people will never see them. The problem with this system is that it takes time for the natural enemies to build up sufficient numbers to reduce the mealybug population to a tolerable level. USDA-APHIS and the Florida Department of Agriculture, Division of Plant Industry (DPI) have a limited supply of parasitoids to release. In order to prevent significant losses of plant material and allow for more efficient establishment of the natural enemies,

we feel that the homeowner could use a couple tactics.

Most pesticides sold in retail garden centers will kill any natural enemies that come in contact with the treated plants. This effect can last for months. The mealybugs are much less sensitive and will begin to build up damaging populations soon after application. THE HOMEOWNER MUST CHOOSE THE CORRECT PESTICIDE OR THEY WILL MAKE THEIR MEALYBUG PROBLEM WORSE.

If they choose one of the insecticidal soaps or oils available through their local garden center, they should apply it once prior to the release of natural enemies. Care should be taken to apply the soap or oil or combination of soap and oil to only one plant and observe the plant for damage. Damage will be noticeable within 2 to 3 days. Another pesticide option is available to the homeowner. One product on the market is called Bayer Advanced Tree & Shrub Insecticide. The active ingredient is used to manage mealybugs in nurseries. This material should be mixed and applied exactly as described on the label; to the soil. DO NOT TREAT ALL OF YOUR INFESTED PLANTS! At least one infested plant should be untreated so that wasps can be released on it. The wasps will establish on this plant which will then serve as a source for control agents that will search your property for other mealybugs.

Another option would be to physically remove most of the infested plant material. DISPOSAL FOR INFESTED PLANT MATERIAL SHOULD FOLLOW USDA-APHIS AND DPI GUIDELINES! Natural enemies will then be released into the remaining population and serve as a source for control agents that will search your property for other mealybugs.

YOUR UNIVERSITY OF FLORIDA COUNTY EXTENSION PERSONNEL CAN HELP! PLEASE CONTACT THEM FOR ADDITIONAL GUIDANCE

Scouting is absolutely essential in the management of mealybugs. When scouting for this pest, it is advisable to also check the root systems. There are reports that PHM will also feed on parts of the plant below the soil line. Although the toxin of PHM can result in much more damage than most mealybug pests, it does aid in finding low or incipient populations whereas other species may not be detected until very dense populations have developed. It is wise to quarantine newly acquired plants and, if careful examination shows living mealybugs are present, apply effective insecticides until the infestation is eliminated. Treatments should also be made to the area in which the infested plants were maintained. The crawler stage of mealybugs is the most fragile stage and the most susceptible to chemical control. Under the best of circumstances, chemical control is difficult because the waxy covering protects the mealybugs and eggs from chemical exposure. Sprays should be repeated at two to three week intervals. Persistence in treatment and careful observation of results will be required to bring success. Continue to check for living insects on the foliage, stems, and on the pots and bench. Adult female mealybugs will crawl off plants and can be found on bricks, under benches and ground covers where they lay eggs.

Once mealybug pests become established, it is extremely difficult to achieve acceptable control. Many growers find it more economical to cull any obviously infested plants prior to applying pesticides. However, just dumping infested plants is not enough; the entire growing area should be sanitized.

In recent years chemical control has become very difficult. We have relied on systemic insecticides because spray coverage is extremely difficult due to the clumping nature of mealybugs. However, many of these materials are no longer commercially available. Secondly, bendiocarb (Ficam, Turcam, Dycarb, Closure) one of our most effective spray materials, may not be on the market much longer either.

Studies have shown that the addition of nonionic spreaders can increase the efficacy of some materials. There are many excellent materials being sold for this purpose. Before one uses a surfactant of any kind, the label and the manufacturer should be consulted for guidance. Some labels actually state that adjuvants (i.e., spreaders) should not be added to the spray mix. Organosilicone surfactants are a new "class" of wetting agents. They are extremely active at very low concentrations. Some companies, however, are hesitant to recommend the addition of organosilicone

Two parasitoids are being released into Florida for the management of this mealybug.

TOTALS AS OF July 16, 2004

Anagyrus kamali	**414,800**
Gyranusoidea indica	**542,400**

There have been approximately 2,962 releases at 1132 sites.

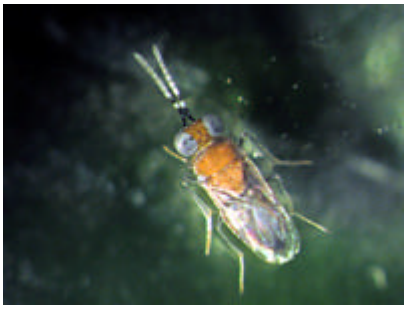
At this point in time all we can say is that the parasitoids appear to have become established in many areas where the mealybug is found. Infestations run the gamut from nothing to severe. The percent parasitization at 8 USDA study sites in South Florida ranged for 6.0 to 100% with an average of 32.5%. The percent hyperparasitism (parasitoids killing the released parasitoids), at sites that had mealybugs to be parasitized, ranged between 10.4 and 51.3%. The number of mealybugs at a number of the study sites was zero, very low at others with only one being relatively high. (Data from: *BIOLOGICAL CONTROL OF PINK HIBISCUS MEALYBUG IN SOUTH FLORIDA: A One-year Assessment.* Divina M. Amalin, Kenneth A. Bloem, Dale Meyerdirik, and Ru Nguyen. October 2003)

Anagyrus kamali

females







male

<u>In order to view a streaming video of *Anagyrus kamali* please click here!</u>

This option only works if you are using Internet Explorer.

Real media streams are viewed on your desktop using the RealOne client program. A basic version of this program is available at no charge at:

Real website

If you downsize the window by dragging a corner toward the center of the image, it will become smaller but shaper.

Unfortunately, the quality of the video is not as good as it is using other types of file formats but the University of Florida sever only supports Real Media files.

THE MEALYBUG DESTROYER

An adult mealybug destroyer, *Cryptolaemus montrouzieri* Mulsant on a hibiscus flower cleaning itself. This insect and its larvae feed on all stages of mealybugs and can be found when mealybug populations are high enough to support reproduction.

The larvae of this predatory beetle mimic mealybugs and were very common on most of the infested plants at the site. This was a natural infestation. Everyone should be able to tell the difference between these beneficial insects and the mealybugs they feed on. First, the beetle larvae are covered with significantly more white waxy material. This material forms long "tendrils" that cover the body of the predator. The PHM does not have waxy projections on its body and is very smooth in appearance.

This plastic vial contained adult *Gyranusoidea indica* that were release by USDA and DPI for the control of PHM. *Gyranusoidea indica* is a small parasitic wasp that feeds and kills mealybugs. The wasp is very tiny (smaller than the adult mealybug) and does not attack plants, animals or people.

IN ORDER TO ALLOW THESE NATURAL ENEMIES TO BECOME ESTABLISHED PLEASE DO NOT APPLY

PESTICIDES!

CONTACT YOU LOCAL COUNTY EXTENSION AGENTS FOR GUIDANCE.

TO FIND THE PHONE NUMBERS OF YOUR EXTENSION OFFICE OR YOU LOCAL PLANT INSPECTORS CLICK ON THE FOLLOWING:

UNIVERSITY OF FLORIDA EXTENSION:
http://www.ifas.ufl.edu/extension/index.htm

FLORIDA DIVISION OF PLANT INDUSTRY: 1-352-372-3505

PINK HIBISCUS HOT LINE: 1-888-397-1517

RETURN TO PINK HIBISCUS MEALYBUG PAGE

All photos are the property of Lance S. Osborne (lso@mail.ifas.ufl.edu) and the University of Florida. Please ask permission before using! I would appreciate any comments concerning the content of this page (errors, omissions....).

Lance S. Osborne: lso@mail.ifas.ufl.edu

Copyright © 2000 [University of Florida, MREC]. All rights reserved.

Revised: .