# Developing a management plan for lebbeck mealybug

By Lauren Diepenbrock

Managing lebbeck mealybug has become an ongoing challenge in many citrus-growing areas of Florida. This pest expanded into 14 counties from 2019 to fall of 2021 and impacts both commercial and residential citrus.

Damage includes distorted fruit and leaves, stem dieback and fruit drop. Loss of young trees can occur under extreme infestation scenarios. In addition to citrus, lebbeck mealybug has also been documented on 27 other hosts in Florida including other fruit crops, ornamental plantings and weed species in groves. The wide host range makes this pest likely to be a persistent challenge in the region.

Management strategies can be developed to minimize the impact of lebbeck mealybug. The first step is understanding the seasonal biology of the pest. Unlike Asian citrus psyllid and citrus leafminer, lebbeck mealybug does not appear to be intimately linked with flush production.

## SEASONALITY AND SPRAYING

In an ongoing seasonality study by University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) doctoral student David Olabiyi, mealybug population development is being seen in commercial groves beginning in mid-February, building through bloom and fruit set, and then continuing to increase as fruit develop (Figure 1, page 10). While the mealybugs can and do persist through the summer, there is a decrease in population development from mid-July through mid-September, which is suspected to be related to the increased temperatures during this time. While data for this fall has not been completed, there is a notable increase in field populations in late October, which aligns with observations in previous years.

Because much of the concerning damage (fruit drop and malformations) occurs as fruit are developing, it is anticipated that protecting fruit at this key point in the infestation should prevent damaging populations from developing throughout the production season. To this end, management around bloom will be key to keeping the initial population of lebbeck mealybug down to delay population development. Anything used during bloom must have appropriate labeling for use while pollinators are active.

Based on the current understanding of lebbeck

**Table 1. Spray suggestions based on the seasonal biology of lebbeck mealybug***

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bloom, bee safe material | | Systemic material | | If needed, a material that works on other pests that also impacts lebbeck mealybugs | | Topical, knock down developing populations | | Unlikely to need management actions | |
| | | Suggested**: Movento | | Suggested**: Sivanto, Agri-Flex, Senstar or Movento | | Suggested**: Minecto Pro, Movento, Senstar, Agri-Flex, Delegate, Transform or Portal | | Suggested**: Minecto Pro, Movento, Senstar, Agri-Flex, Transform or Portal | | Suggested**: BotaniGard ES, BoteGHA ES, BotaniGard MAXX, Delegate or Portal | |

*Based on documented biology as of Oct. 25, 2021
**All materials were tested in the laboratory and suggested based both on efficacy and likelihood to allow predatory insects and spiders to persist locally.

mealybug population biology, growers should apply systemic materials early in bloom and again as fruit are setting. This should prevent heavy population buildup on the developing fruit. Several of the systemic materials have minimal impacts on predators while killing the feeding and reproductively active stages of lebbeck mealybug.

Protecting predators will be a critical component of a robust management program for this pest. Predators can access areas of trees that are inaccessible to many sprays. In addition, predators can consume the eggs and crawler life stage, which are often missed by insecticides alone.

Through a combination of field collection, observation and gut content analysis, a wide variety of predators have been identified. This includes several species of flies, one lady beetle species (mealybug destroyer), two species of lacewings (known as trashbugs), earwigs and several species of spiders.

A potential spray program that takes advantage of the pest's biology would look like what is presented in Table 1. Materials included in the suggested list were tested either in the laboratory or both the laboratory and the field. This table will need to be updated as more is learned about the pest and how chemistries perform in groves.

## MINIMIZING PEST MOVEMENT

It is important to think about reducing movement of lebbeck mealybug between fields and managing the pest within a field. It is believed that the crawler stage of this pest can be moved with heavy winds, much like scale crawlers. Lebbeck mealybug has been seen being moved on equipment and people.

To minimize chances of moving lebbeck mealybug between fields, take vehicles through a car wash if possible. The soap helps break down waxy ovisacs and the pressure of the water will physically remove the pest. Pressure-washing farm equipment before taking it to other fields can reduce the likelihood of moving mealybugs on equipment.

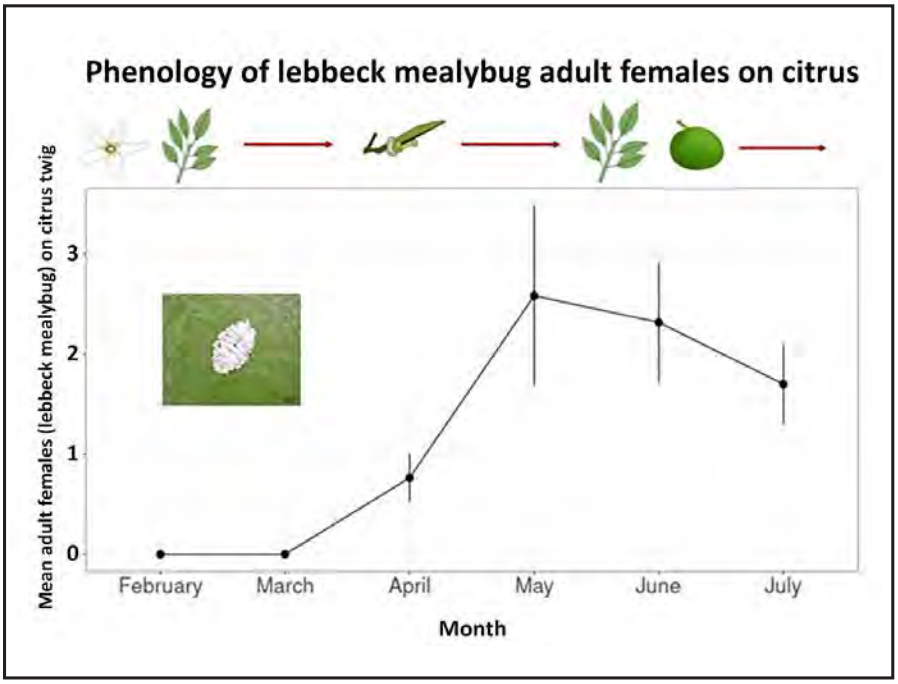


**Figure 1. Seasonal biology of adult female lebbeck mealybug in Florida citrus**

For individual protective covers, steam treatment can be used to kill most, if not all, lebbeck mealybug life stages before reusing the bags. Recommendations for time and duration are forthcoming.

To reduce the likelihood of moving mealybugs on clothes, small tools and hands, carry a spray bottle with rubbing alcohol. All concentrations of rubbing alcohol available for purchase at local retailers will kill 60% to 90% of juvenile life stages after two sprays.

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