



The Lychee Erinose Mite: A New Serious Pest of Lychee in Florida

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The Lychee Erinose Mite (LEM), *Aceria litchii*, is a specialist pest of lychee, *Litchi chinensis* Sonn. Vegetatively flushing mature and young lychee trees that frequently flush are more attractive to LEM infestations than dormant trees. LEM has the potential to severely weaken lychee trees and decrease fruit yield by 80%. Control of this pest is difficult because of the LEM-induced erineae (dense leaf hair proliferation on leaves, stems, flowers, and fruit) that protects the pest. The first detection of LEM in Florida was in 1955 in a lychee grove in Nokomis in Sarasota County. The second was an interception recorded on containerized plants, imported from China, in Coral Gables, in Miami-Dade County in 1993. Both times the pest was eradicated after being found on lychee trees. LEM was detected on Pine Island in Lee County in February 2018. Lychee fruit and plant parts are currently under quarantine in Lee County. Subsequently LEM infestations have been detected in 13 Florida counties. In February 2020, LEM was found in a backyard lychee tree in the northern portion of Miami-Dade County, FL. It has since been found in numerous locations in Miami-Dade County including several commercial lychee orchards. With approximately 70% of Florida's commercial lychee acreage being in Miami-Dade County, the spread of LEM within the county is troubling.

History

In February of 2018, there was a disturbing find on Pine Island, FL (Carrillo et al., 2019; Carrillo et al., 2020). A very damaging pest, the Lychee Erinose Mite (LEM), *Aceria litchii* was found on a few trees in a commercial lychee (*Litchi chinensis*), grove. This pest had been in Florida twice before: in 1955 in a lychee grove located in Nokomis in Sarasota County; and the second time was in 1993 as an interception recorded on plants, imported from China, in Coral Gables, in Miami-Dade County. The pest was localized and eradicated both times. This time eradication is still the goal, but it will be much more difficult because LEM has now spread to 13 counties within the State: Brevard, Broward, Charlotte, Collier, Hendry, Lee, Manatee, Martin, Miami-Dade, Palm Beach, Pinellas, Polk, and Sarasota. LEM has been successfully eradicated in Glades and Orange counties.

Florida is the leading producer of lychees in the country with an estimated 700 acres distributed across at least eight counties (Crane, et al., 2018). Miami-Dade County produces approximately 70% of those lychees. LEM will significantly damage the commercial lychee industry because it has the potential to seriously weaken trees and reduce fruit yield by up to 80% (Navia et al., 2013)

Description

LEM is a microscopic mite that feeds on leaves, stems, flowers, and fruit of lychee. LEM attacks new growth and cannot be

killed by aracacides due to the protective erineae it induces (dense leaf hair proliferation on leaves, stems, flowers, and fruit). LEM disperses using air currents and honeybees. It can also be spread by fruit movement or contaminated pruning tools. It cannot be seen with the naked eye and is only visible with a high-powered microscope (Fornazier et al., 2021). LEM will only attack lychee trees and is not a danger to other related trees such as the longan.

Eradication Efforts

The Florida Department of Agriculture and Consumer Services, Division of Plant Industry (FDACS-DPI) is currently engaging in an effort to eradicate LEM in Florida. Once LEM is found in a grove or home garden, FDACS-DPI enacts a protocol to remove LEM from that site. The treatment involves defoliating an infected tree. Because a large amount of canopy is lost in the pruning, the trunks of the trees are painted before the tree is pruned with a 50/50 mixture of white latex paint and water to protect the trunk from sun scalding. The removed branches are disposed of through burning, burying, or chipping. Sulfur is then applied to the tree using a foliar spray at the time of branch removal and again when there is new growth to protect. Sulfur is then sprayed every 7–15 d from bud break until leaves harden, up to 3 months and eight applications in total (Carrillo et al., 2021; Crane et al., 2019). If possible, the sprays should occur from the beginning of new growth emergence until the new growth is mature (hardened-off) (Nishida, et al., 1955). The sulfur spray does not kill the mite, rather it protects the tree from re-infestation prophylactically. The sulfur registered for use is labeled organic and is limited to a specific brand, Microthiol Dispers®[®], which has a Special Local Needs (SLN) emergency label specifically for LEM.

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Lee County, where LEM was first found in 2018, is currently under quarantine and cannot sell lychee fruit in Florida unless it is treated postharvest with a paraffinic oil dip. The paraffinic oil dip postharvest treatment was first shown to be effective by (UF/IFAS) faculty (Revynthi et al., 2021). Fruit inside the quarantine area may be sold outside of Florida without the postharvest treatment.

Extension Efforts

When the pest was confirmed in Florida in 2018, the UF/IFAS tropical fruit specialist, tropical fruit entomologist, a commercial entomologist, and tropical fruit Extension agent developed a plan to educate the public about LEM. A series of workshops were given, and multiple factsheets were written. The workshops were in conjunction with FDACS-DPI. FDACS-DPI is tasked with the job of eradicating LEM in Florida. All LEM finds should be reported to FDACS. In 2020 and 2021, six workshops were given to homeowners and commercial growers (271 attendees), along with one in-service training designed for UF faculty and Extension agents (54 attendees). Nine factsheets were written and published, along with two blogs, one article in a popular magazine, multiple scientific papers, and several webpages. The publications covered LEM identification, history, biology, control methods, FAQs, pruning methods, and what to do if the pest is found. This information was sorely needed but was not available before the UF team produced it. The Miami-Dade Extension tropical fruit agent was contacted 90 times by homeowners and commercial growers from multiple counties within Florida that believed they had the pest. Over 95% of the contacts had correctly identified LEM based on the literature produced by UF/IFAS.

Reporting LEM

It is recommended that you scout for LEM by looking at the leaves of your lychee tree for the characteristic leaf blisters or a rusty colored hairy mass. If you feel you have LEM on your trees, please contact FDACS at 1-888-397-1517 and report the find. They will need your name, address, email, phone number and the number of trees suspected to have LEM.

Once they are alerted, FDACS will contact you, confirm you have LEM, and then prune the sections of your tree that have LEM and treat your trees for the pest. At the current time, this service is free, as they are trying to eradicate the pest throughout the state of Florida.

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