

Faster, safer field diagnostic kit for detecting the Lebeck mealybug

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The infestation of Lebeck mealybug on oleander in an ornamental landscape in Florida. Credit: Muhammad "Zee" Ahmed

The United States Department of Agriculture's (USDA) Agricultural Research Service (ARS) scientists and research partners have found a faster, safer, and less expensive way for growers to detect the invasive Lebeck mealybug, according to a recent study published in the *Journal of Applied Entomology*.

The Lebeck mealybug (*Nipaecoccus viridis*) feeds on and damages various citrus fruits and [ornamental plants](#), resulting in thousands of dollars in damages. The invasive species is currently in Florida and may eventually spread to other states.

To control Lebeck mealybug populations and prevent their spread, [growers](#) can use field diagnostic kits for early detection to ensure that the tiny pest is indeed a Lebeck mealybug versus another mealybug species in Florida. A previous study suggested that a 10% potassium hydroxide solution should be used in the diagnostic kits, because the solution turns the hemolymph—the circulating fluid that is similar to blood—of the Lebeck mealybug green, whereas other mealybug species did not turn green, providing a rapid species confirmation test for all life stages of the Lebeck mealybug in the field.

However, due to the potential safety hazards associated with potassium hydroxide's corrosiveness, researchers sought to find a safer alternative for growers.

"It is critical to ensure that any [diagnostic tool](#) developed for use in the field is safe for growers, scouts, and other individuals who may come into contact with such tools," said Muhammad "Zee" Ahmed, ARS

research entomologist at the U.S. Horticultural Research Laboratory.

"The identification of the pest in its early stages can help growers develop a plan to control the [invasive species](#) and thereby reduce the need for pesticides and minimize the impact of pesticide usage on non-target species, especially [biological control agents](#) and pollinators as well as the environment."

In the study, the researchers found that a 5% sodium hydroxide solution successfully turned live specimens of the Lebeck mealybug green. The results were identical to specimens tested with the 10% potassium hydroxide solution.

According to Ahmed, there are [potential benefits](#) to using the 5% sodium hydroxide solution over the 10% potassium hydroxide solution.

"Sodium hydroxide is less corrosive, more water soluble, and less expensive than potassium hydroxide," said Ahmed. "In addition, [sodium hydroxide](#) is commonly used in household cleaning and is publicly acceptable as safe with caution."

Ahmed and his colleagues Christina Dorado and Cindy McKenzie at the U.S. Horticultural Research Laboratory are working closely with research partners in updating field guides for the [diagnostic kits](#) for the Lebeck mealybug. The kits, which are specific to Florida, will be provided to growers and scouts through diagnostic workshops and the University of Florida Extension offices in the near future.

"The diagnostic workshops and Extension activities will help to build awareness and knowledge among stakeholders, enhancing their ability to detect and manage this invasive pest effectively," Ahmed said.

More information: Muhammad Z. Ahmed et al, Development of a

species-level field diagnostic kit for *Nipaecoccus viridis* (Newstead) (Hemiptera: Pseudococcidae), an invasive and regulatory pest in the United States, *Journal of Applied Entomology* (2023). DOI: [10.1111/jen.13177](https://doi.org/10.1111/jen.13177)

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