

# Identification of Natural Enemies of the Lebbeck Mealybug Using Molecular Gut Content Analysis

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Using natural enemies in a complementary program with current HLB management tactics is necessary to suppress lebbeck mealybug populations. Prior to current investigations, it was unknown if predatory insects present in Florida citrus would feed on this pest and be useful as biological controls. This project included the development of molecular tools to identify lebbeck mealybug DNA, and the use of these tools to 1) determine if lebbeck mealybug DNA could be detected in the guts of predators that fed on it, 2) determine in the

lab how long we could detect mealybug DNA in the mealybug destroyer, *Cryptolaemus montrouzieri*, and 3) identify potential biological control agents from field-collected predators which test positive for lebbeck mealybug DNA. The detection rate of lebbeck mealybug DNA in mealybug destroyers was 100% at 4 hours after feeding, 40% up to 56 hours after feeding, and was no longer detectable by 60 hours after feeding. This suggests that our method can work for field-collected potential predators. Field-collected predators were

largely comprised of spiders, lacewings, and mealybug destroyers. Wandering spiders were the most abundant with a positive detection rate for lebbeck mealybug of 17.84%. Lacewings, while least abundant, had the highest rate of positive detection of 56.25%. Mealybug destroyers were slightly more abundant than lacewings and had a positive detection rate for lebbeck mealybug of 43.48%. These data encourage the incorporation of biological control for management of the lebbeck mealybug.

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