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Authors: Williamson, J. R., Arancibia, R. A., Zimmerman, T. W., and Hodges, G. S.

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FIRST REPORT OF *PHILEPHEDRA TUBERCULOSA* (HEMIPTERA: COCCIDAE) IN THE UNITED STATES VIRGIN ISLANDS

J. R. WILLIAMSON[1,3], R. A. ARANCIBIA[1], T. W. ZIMMERMAN[1] AND G. S. HODGES[2]
[1]Agriculture Experiment Station, University of the Virgin Islands, RR1 Box 10,000, Kingshill, USVI 00850

[2]Division of Plant Industry, Florida Department of Agriculture and Consumer Services, 1911 SW 34th Street, Gainesville, FL 32608

[3]Corresponding author; e-mail: jrwmojo@uga.edu

We report for the first time the presence of *Philephedra tuberculosa* Nakahara and Gill (Hemiptera: Coccidae) on St. Croix island in the United States Virgin Islands.

Philephedra tuberculosa occurs in Central and northern South America (Nakahara & Gill 1985), and was first reported in south Florida in 1981 (Peña et al. 1987). Infestations of this scale have been observed on more than 50 plant species, which include papaya, *Citrus* spp., and *Annona* spp. (Nakahara & Gill 1985). On occasion, *P. tuberculosa* infestations have resulted in serious losses to nurserymen in south Florida (Peña et al. 1984). The biology and natural enemies of *P. tuberculosa* have been reported by Peña et al. (1987).

Our first observation of *P. tuberculosa* was a small isolated infestation on 8 papaya, *Carica papaya* L. (Brassicales: Caricaceae), less than 50 cm in height in late Jul 2006 in a field planting of 230 papaya at the Agricultural Experiment Station compound at the University of the Virgin Islands, St. Croix campus (Fig. 1). The infestation initially attacked the apical meristem region of newly transplanted papaya, but was later observed in aggregated clusters on most of the younger leaves, on or near leaf veins, with more than twice as many specimens on underside as upperside of leaves. A few specimens were also observed on fruits. The infestation was effectively controlled with Malathion (PBI/Gordon Corporation, Kan-



Fig. 1. Infestation of *Philephedra tuberculosa* on papaya.

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sas City, MO) insecticide, although 3 plants were so heavily infested that they died.

Our second observation was a moderate to heavy infestation on moringa trees, *Moringa oleifera* Lam. (Brassicales: Moringaceae), and ginger lilies, *Alpinia purpurata* (Veill.) K. Schum (Zingiberales: Zingiberaceae), on Jun 20, 2007 at the USDA-ARS St. Croix Islands farm. Moringa trees were established as hedge rows and ginger lilies were growing in the alleys for cut-flower production in a sustainable agro-forestry production system (Palada 1996; Arancibia et al. 2006). All life stages of this scale were observed randomly scattered on newer stems, petioles, and leaves in the moringa trees, and to a lesser extent in leaves and inflorescences of the ginger lilies. Damage to moringa trees was not evaluated, although reduced plant vigor over time may be expected. Discovery of *P. tuberculosa* was made after observing sooty mold on ginger lilies, caused by the scales' honeydew secretions, which rendered the flowers unmarketable.

A third observation of *P. tuberculosa* was on a neighboring plot of papaya, also located on the USDA-ARS St. Croix Islands farm, adjacent and downwind of the moringa/ginger lily plot, on Jul 5, 2007. All life stages were observed on leaves, petioles, and fruits, with similar distribution to the earlier papaya infestation. This also became a serious infestation that required Malathion insecticide for control. *Philephedra tuberculosa* is now being monitored for control in this papaya research plot.

Predators and parasitoids of *P. tuberculosa* were not observed with any of these infestations. There was no attempt to differentiate between male and female specimens. We recommend the removal of moringa trees to keep *P. tuberculosa* from becoming a repetitive pest. If problems persist, then further investigations into *P. tuberculosa* biology and control may be required.

Summary

Philephedra tuberculosa Nakahara and Gill is recorded on St. Croix island in the United States Virgin Islands for the first time, on papaya (*Carica papaya* L.), moringa (*Moringa oleifera* Lam.), and ginger lily (*Alpinia purpurata* (Veill.) K. Schum. *Philephedra tuberculosa* thrives in moringa trees and may result in a serious problem in agro-forestry associations that include this species.

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