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# **CARIBBEAN FOOD CROPS SOCIETY**

**50**

**Fiftieth  
Annual Meeting 2014**

**St. Thomas, United States Virgin Islands  
Volume L**

PROCEEDINGS  
OF THE  
50<sup>TH</sup> ANNUAL MEETING

Caribbean Food Crops Society  
50<sup>TH</sup> Annual Meeting  
July 7 – July 11, 2014

Sugar Bay Resort and Spa Hotel  
St. Thomas, United States Virgin Islands

Edited by  
Thomas W. Zimmermann, Stafford M.A. Crossman,  
Errol Chichester and Wilfredo Colón

Published by the Caribbean Food Crops Society

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ISSN 95-07-0410

Copies of this publication may be obtained from:

CFCS Treasurer  
Agricultural Experiment Station  
Jardín Botánico Sur  
1193 Calle Guayacán  
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**INITIATING IPM FOR MANGO WEEVIL, *Sternochetus mangiferae* (FABRICIUS) (COLEOPTERA: CURCULIONIDAE), IN THE U.S. VIRGIN ISLANDS**

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**Abstract:** The mango weevil is now established in the U.S. Virgin Islands. In 2012, I started sampling for a mango grower in St. Croix who had been struggling with mango weevil infestations for more than 10 years, but had not implemented any controls. Throughout the 2012 harvest season, we gathered 348/505 fruits (68.9%) with weevil infestation in the seed, and 13/305 fruits (4.3%) with weevil infestation in the pulp. In 2013, we initiated an IPM program with trunk sprays (malathion + oil), canopy sprays (carbaryl), and sanitation (rapid removal and destruction of dropped fruits). We gathered 110/606 fruits (18.2%) with weevil infestation in the seed, and 3/606 fruits (0.5%) with weevil infestation in the pulp. However, the majority of infested fruits (105/410, 25.6%) was collected during June and September, and was likely a result of late initiation and early elimination of controls. We found only 5/196 fruits (2.6%) with weevil infestation in the seed, and no infestations in pulp, during sampling of fruits harvested in July and August. In 2014, we plan to continue with trunk sprays and sanitation, but replace canopy sprays with a soil application of a systemic neonicotinoid. We hope our efforts will eventually yield effective conventional and organic integrated pest management (IPM) programs that will work for large and small mango orchards and residential plots.

**INTRODUCTION**

Mango cultivation in the U.S. Virgin Islands is a relatively organic process- pesticide inputs are rare. However, an increasing number of fruits infested with the recently established mango weevil is prompting many growers to consider controls for this pest. This paper shows my results from the first two years of integrated pest management (IPM) for mango weevil.

**MATERIALS AND METHODS**

A mango orchard of 60 large trees (most over 20 years old), with a 10+ year history of mango weevil infestation, was sampled for the 2012 and 2013 harvest seasons. A minimum of 10 ready-to-harvest fruits were picked from each sampled tree randomly throughout each season, sliced in half, and inspected for weevil infestation in both the pulp and seed pit. Sanitation (prompt removal of fallen fruits) occurred both years. Pesticides (malathion for trunk sprays and carbaryl for canopy sprays) were utilized in 2013, following assessment of infestation data from 2012. The same sampling and control program was utilized for 2014, except canopy sprays of carbaryl was replaced with a single soil drench of thiamethoxam shortly after flowering.

**RESULTS AND DISCUSSION**

See Table 1 for results. Our infestation levels dropped dramatically after implementing IPM. We were slow to implement sprays in 2013, likely resulting in higher infestations in the early and

late part of that season (25.6% in seed and 0.5% in pulp) than in the mid-season (2.6% in seed and 0.0% in pulp). Despite our successes, this program was reliant on large amounts of neurotoxic pesticides which are no longer registered for mango in the United States. For the 2014 season, we continued using malathion for early season trunk sprays, but replaced carbaryl with thiamethoxam (a soil drench application of a systemic neonicotinoid at the post-flowering/early fruiting stage). We believe our revised IPM program will further reduce mango weevil infestations while also minimizing the impact of insecticides on farm workers, pollinators, and other beneficial insects.

Table 1. Mango weevil damage in pulp and seed pit from 2012, 2013, and 2014 (projection).

Season	2012		2013		2014	
Fruit location	Seed	Pulp	Seed	Pulp	Seed	Pulp
Infested fruits	348	13	110	3	25	2
Total sample	505	305	606	606	500	500
Infestation (%)	68.9	4.3	18.2	0.5	5.0	0.4

## CONCLUSION

At present, mango weevil is well-established in the Caribbean, but not in Puerto Rico or south Florida, where the majority of mangoes are grown in the United States. Establishment is likely in time (mango weevil is the most intercepted pest by customs officials in Puerto Rico). An effective IPM program will benefit growers and the surrounding environment in our territory, Puerto Rico, south Florida, and elsewhere where mango weevil is a problem.

## ACKNOWLEDGEMENTS

I wish to thank Dr. Ralph DeChabert (M.D.) for unlimited use of his mango orchard and funding for all necessary IPM practices; Jose Garcia for assistance with sampling and IPM.

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