JACKFRUIT, ARTOCARPUS HETEROPHYLUS, IS NOT A HOST OF DIAPHORINA CITRI (HOMOPTERA: PSYLLIDAE) IN FLORIDA

Authors: Peña, J. E., Mannion, C. M., Ulmer, B. J., and Halbert, S. E.

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JACKFRUIT, ARTOCARPUS HETEROPHYLUS, IS NOT A HOST OF DIAPHORINA CITRI (HOMOPTERA: PSYLLIDAE) IN FLORIDA

J. E. Peña1, C. M. Mannion2, B. J. Ulmer1 and S. E. Halbert2

1University of Florida, IFAS, Tropical Research and Education Center, 18905 SW 280th Street, Homestead, FL 33031
2Florida Department of Agriculture and Consumer Services, Division of Plant Industry, P.O. Box 147100, Gainesville, FL 32611-7100

The Asian citrus psyllid, Diaphorina citri Kuwayama 1907 (Rhynehcea: Psyllidae), was discovered in south Florida in 1998 and is now established in the state (Halbert & Manjunath 2005). It is considered one of the most serious pests of citrus when the pathogens that cause citrus greening, which can vector, are also present (Halbert & Manjunath 2005). Diaphorina citri is an oligophagous species with a host range within genera in the family Rutaceae, e.g., Aegle, Aeglopis, Afraegle, Atalantia, Balsamocitrus, Citropsis, Citrus, Clausena, Murraya, Fortunella, Linonia, Merrillia, Microcitrus, Pamburus, Poncirus, Severinia, and Swinglea (Viraktamath & Bhunavanavar 2002; Tirtawidjaja 1981; Koizumi et al.1996; Chavan & Summanwar 1993; Aubert 1990a,b; Lim et al. 1990; Garnier & Bové 1993; Halbert & Manjunath 2005). Because there have been no other reports of D. citri infesting A. heterophylus in Florida, nor anywhere D. citri has been observed, we investigated A. heterophylus as a host plant of D. citri.

Field surveys were initiated in the fall of 2005. On Sep 30, 2005 samples of A. heterophylus and orange jasmine, Murraya paniculata, a known host of D. citri, were collected in Miami-Dade County. Ten 10-cm shoots were collected from each of two jackfruit trees located approximately 28 m from a hedge of orange jasmine. Twenty 10-cm shoots also were collected from the orange jasmine hedge. Shoots were placed in individual bags and examined under a microscope to determine the numbers of eggs, nymphs, and adults per sample.

The mean numbers of D. citri collected from Murraya shoots were 8.85 ± 2.24 (n = 20). An average 3.45 ± 2 Toxoptera aurantii (Boyer de Fonscolome) (Homoptera: Aphididae) were also recorded from Murraya shoots. No D. citri were found on the shoots collected from jackfruit; however, 10 nymphs of T. aurantii were found on the jackfruit terminals. Means for other arthropods recorded from jackfruit were 0.5 ± 0.22 Anascirtothrips arorai Bhatti (Thysanoptera: Thripidae), 0.05 ± 0.05 T. aurantii, 51.35 ± 0.22 Ditrymacus integrifoliae Mohanasundaran (Acari: Eriophyidae), and 0.15 ± 0.15 unidentified leafhoppers (Homoptera: Cicadellidae).

On Dec 12, 2005, five 10-cm shoots (n = 55) were collected from 11 randomly selected jackfruit trees from the National Germplasm Repository Collection at the USDA, ARS, SHRS in Miami, FL. No other common hosts of D. citri were located within a 100-m radius from the site; therefore, no samples were collected from known hosts on that date. Samples were inspected as mentioned above. No D. citri were recorded from 55 shoots of jackfruit; the mean numbers of other arthropods per shoot were 0.4 ± 0.17 A. arorai, 2.46 ± 1.90 D. integrifoliae, 0.04 ± 0.04 T. aurantii, and 0.02 ± 0.02 unidentified Diaspididae.

On Feb 22, 2006, 15 shoots of jackfruit were randomly collected from the Fruit and Spice Park, Homestead, FL. Citrus species were located ca. 30 m from the jackfruit trees but no samples were collected from the citrus spp. No D. citri were collected from jackfruit; but 0.13 ± 0.09 A. arorai and 29.86 ± 15.85 D. integrifoliae were collected from the terminals.

In addition to the field surveys, no-choice trials were conducted in the greenhouse. Four 0.8-m potted jackfruit trees with suitable new growth were introduced each into individual nylon mesh screen cages (91 × 91 × 122 cm), each supported on a PVC frame. Depending on the date, ten to 20 adults of D. citri were introduced into each cage on Oct 5, 13, 19, Nov 1, 29 and Dec 22, 2005. D. citri densities were recorded 7 d after the introduction of each psyllid cohort. The jackfruit trees were inspected for D. citri eggs, nymphs and adults with aid of a 10x hands lens 7 d after the introduction of each cohort. No psyllid eggs, nymphs or adults were collected on Oct 11 (7-10 shoots/plant), Oct 18 (6-20 shoots/plant), Oct 26 (6-20 shoots/plant), Nov 9 (7-14 shoots/plant), Dec 5 (9-17 shoots/plant), or Dec 30 (6-11 shoots/plant).

On Feb 13, 2006, 4 potted jackfruit trees were placed in close contact with a D. citri infested hedge of M. paniculata. The shoots of each jackfruit plant were inspected with a 10x hand lens on Feb 16, 20, 22, 2006. One adult psyllid was observing resting, but not feeding on, a shoot on Feb 16. No eggs or nymphs of D. citri were observed.
from 6-13 inspected shoots per plant. On Feb 20, 1 second to third instar D. citri nymph was observed crawling on one shoot, from a range of 9-14 shoots inspected per plant. No adults or eggs were recorded. On Feb 22, 2006, no adults, nymphs, or eggs of D. citri were observed from these plants.

Based on the field collections of several varieties of jackfruit, our no-choice greenhouse experiment, and our field two-choice experiment, it does not appear that A. heterophylus is an acceptable host plant for D. citri. The present study refutes the report by Shivankar et al. (2000) listing jackfruit as a host of D. citri.

SUMMARY

The status of jackfruit, A. heterophylus as a host plant of D. citri was investigated. Field surveys, a no-choice greenhouse test, and a field study showed that jackfruit is not an acceptable host for D. citri.

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