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Evidence of Host Plant Specialization Among the U.S. Sugarcane Aphid (Hemiptera: Aphididae) Genotypes

Sulochana Paudyal¹, J. Scott Armstrong², Karen Harris-Shultz³, Hongliang Wang⁴, Kristopher Giles¹, Philippe Rott⁵ and Mark Payton¹, ¹Oklahoma State University, Stillwater, OK, ²USDA - ARS, Stillwater, OK, ³USDA - ARS, Tifton, GA, ⁴USDA-ARS, Manhattan, KS, ⁵University of Florida, Belle Glade, FL

The sugarcane aphid (*Melanaphis sacchari* (Zehnter) (Hemiptera: Aphididae)) has become a serious pest of sorghum (*Sorghum bicolor* (L.) Moench) in the U.S. since it was detected in Texas in 2013. The sugarcane aphid was considered only a pest on sugarcane in Florida and Louisiana for over three decades before the 2013 outbreak. Recent studies suggest that the 2013 outbreak in sorghum was due to the introduction of new genotype. Our scope for this study was to quantify the phenotypic behaviors (host suitability as measured through life table statistics) and genetic diversity among sugarcane aphid clones collected from different hosts. We collected a diverse group of sugarcane aphid clones from sorghum (SoSCA), sugarcane (SuSCA), and Columbus grass (CoSCA) and determined host suitability when introduced to five different plants including sugarcane, Columbus grass, Johnsongrass, and a resistant and susceptible grain sorghum. Sugarcane aphid clones from different hosts and geographical regions varied in performance among plant hosts. The survivorship and reproduction of sugarcane collected aphid clone (SuSCA) was significantly higher when offered sugarcane (>85%) as compared to other hosts and in contrast, there was negligible survival and reproduction when SoSCA and CoSCA were offered sugarcane as host. Genotyping of the aphid clones collected from various hosts with microsatellite markers indicated that SuSCA was a different genotype and belonged to multilocus lineage, MLL-D as compared to SoSCA and CoSCA which belonged to MLL-F. Our results suggest that there exist two different biotypes of *M. sacchari* within the U.S., and that they cannot be distinguished by taxonomic or morphometric characteristics.