QUANTIFYING IMIDACLOPRID SUSCEPTIBILITY IN ALABAMA POPULATIONS OF *APHIS GOSSYPII*

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Abstract

The cotton aphid (*Aphis gossypii* Glover) is an economically important pest reported to be resistant to multiple classes of insecticides (Furk and Vedjhi 1990, O'Brien et al. 1992, Ahmad and Arif 2008, Shi et al. 2011, Gore et al. 2013, Koo et al. 2014, Kim et al. 2015). In Alabama, few insecticides are available for the management of *A. gossypii*, and the neonicotinoid imidacloprid has been widely used since commercialization. *Aphis gossypii* populations may also be exposed to neonicotinoids multiple times during the cotton growing season due to insecticide applications targeting other pest insects, and within the past few years stakeholders have reported a reduction in efficacy. The objective of this project was to conduct concentration-mortality bioassays to quantify the susceptibility of Alabama *A. gossypii* populations to imidacloprid. Bioassays were performed on field collected populations following the methods listed by the Insecticide Resistance Action Committee (IRAC No. 019). Results showed that 38 out of the 43 field collected populations were significantly more resistant than the susceptible population. This study showed varying levels of resistance among *A. gossypii* populations that ranged from 4.26 to 607.16-fold more resistant than the susceptible population. To reduce selection pressure and preserve insecticide efficacy, management of *A. gossypii* using insecticides should be minimized.

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