STANDARDIZED INSECTICIDE TRIAL FOR CONTROL OF TARNISHED PLANT BUGS ACROSS

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<u>Abstract</u>

A study was conducted in 2017 at seven locations in the Mid-South. The objective of this research was to standardize the efficacy of insecticides for the control of tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois), across this geography. Foliar applications of insecticides were made to flowering cotton. All insecticides significantly reduced tarnished plant bug populations at the first rating (2-5 days after application, DAA). At this initial rating, Transform, Orthene 97, Bidrin, Vydate, and Centric controlled plant bug infestations better than Admire Pro and Brigade. At 5-8 DAA, Transform, Diamond, Orthene 97, and Bidrin reduced plant bug numbers more than Admire Pro and Brigade. Two locations made a second application and another rating was taken 3-4 days afterward. Following this sequential application, all other insecticides controlled plant bugs better than Centric, Admire Pro, and Brigade.

Introduction

Tarnished plant bug is consistently the most destructive pest of cotton in the Mid-South. Due to the damaging nature of this pest, its high mobility as an adult, and the relatively short period of effective residual activity for most insecticides, multiple applications are needed in virtually all cotton fields in this region. This represents a substantial input cost to growers. Tarnished plant bug has an established history of developing resistance to insecticides, and ongoing evaluations are needed to verify the continued effectiveness of labeled materials. Therefore, a regional study was established in 2017 to evaluate the efficacy of common insecticides used to control tarnished plant bug in cotton.

Methods and Materials

Tests were done at seven locations throughout the Mid-South including Arkansas (3), Louisiana (1), Mississippi (2), and Tennessee (1) to evaluate the efficacy of various insecticides for control of tarnished plant bug in cotton. Bt cotton

varieties suitable for each location were planted with a row spacing of 38 or 40 inches and managed according to local university recommendations. Individual plots were 4 rows wide by a minimum of 35 feet in length. Treatments were replicated in a randomized complete block design.

Foliar applications were made to flowering cotton. Plots were sampled with a standard 2.5 x 2.5 ft black shake sheet. Two shake sheet samples were taken on the center two rows (10 row feet) of all plots. Ratings after the initial insecticide application were done twice (2 - 5 DAA and 5 - 8 DAA; [6 locations each]). Two locations (AR-Lorenz, TN) made a second application, and plots were sampled 3 - 4 days afterward. Seed cotton yield data were collected at one location in Arkansas (Seiter) and in Tennessee by harvesting the center two rows with a spindle picker.

Results and Discussion

Tarnished plant bug infestation levels varied by location (Table 1). All insecticides reduced tarnished plant bug populations at the first evaluation timing (2 - 5 DAA) compared with the non-treated check (Fig. 1). Additionally, Transform, Orthene 97, Bidrin, Vydate, and Centric controlled plant bug infestations better than Admire Pro and Brigade at this timing. At 5 - 8 DAA, Transform, Diamond, Orthene 97, and Bidrin reduced plant bug numbers more than Admire Pro and Brigade (Fig. 1). Following the second application (2 locations), all other insecticides controlled plant bugs better than Centric, Admire Pro, and Brigade (Fig. 2). Two locations harvested seed cotton. All treatments except Centric significantly increased yield compared with plots not treated for plant bugs. Plots treated with Orthene 97 yielded significantly more than those treated with Admire Pro, Brigade or Centric (Fig. 3).

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Location	1 st Rating (2-5 DAA)	2 nd Rating (5-8 DAA)	After Second App. (3-4 DAB)
AR-Lorenz	29.00	-	48.50
AR-Seiter	17.50	18.00	-
AR-Studebaker	-	12.50	-
MS-Catchot	27.25	21.00	-
MS-Gore	24.75	25.00	-
LA-Brown	3.00	7.00	-
TN-Stewart	39.25	52.75	47.00

Table 1. Mean number of tarnished plant bugs per 10 row feet at each location in plots not treated with insecticide.



Figure 1. Total plant bugs per 10 row feet in flowering cotton at two evaluation timings across multiple locations in the Mid-South, 2017. Insecticide rates (oz/acre) are shown in parentheses on the x-axis.



Figure. 2. Total plant bugs per 10 row feet in flowering cotton following a second foliar application at two locations (AR and TN) in the Mid-South, 2017. Insecticide rates (oz/acre) are shown in parentheses on the x-axis.



Figure 3. Seed cotton yield (lbs/acre) at two locations (AR and TN) in the Mid-South, 2017. Insecticide rates (oz/acre) are shown in parentheses on the x-axis.