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MANAGEMENT OF PLANT BUGS IN ARKANSAS

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Abstract

Two tests were conducted in Mississippi County, Arkansas to evaluate the efficacy of several insecticides on the tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois), in 2001. All treatments provided control of the tarnished plant bug. No resistance was found against any class of insecticide. Tank mixes and spray adjuvants did not enhance the performance of any insecticide alone.

Introduction

The tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois), is a polyphagous insect that has over 300 host species in the United States (Young 1986), of which 169 species are located in the mid-south delta region (Snodgrass 1984). The tarnished plant bug migrates into cotton fields as wild host species begin to fruit and senesce. They damage terminals, small squares, small bolls, and other tender plant parts by inserting their needle-like mouthpart into the plant (Univ. of AR Coop. Ext. Serv.). Excessive feeding by the tarnished plant bug may result in delayed crop maturity, decreasing yields (Layton 1995). *Lygus spp*. ranked fourth behind the cotton fleahopper, boll weevil, and bollworm/budworm in yield loss in the mid-south causing a loss of 21,366 bales of cotton in 1999 (Williams 2000).The tarnished plant bug has shown resistance to insecticides, including the pyrethroid insecticides (Snodgrass 2000) and the organophosphate and cyclodiene insecticides (Snodgrass 1994). This proven insecticide resistance reinforces the need to continue testing the efficacy of existing and new insecticides on the tarnished plant bug.

Materials and Methods

Two trials were conducted in Mississippi County, Arkansas in 2001 to test the efficacy of several insecticides on the tarnished plant bug. In both trials, cotton variety DP 451 was planted on April 26 at a rate of ten pounds of seed per acre on 38-inch row spacing. Plots were four 38-inch-rows wide by 50 feet long. Treatments were arranged in a randomized complete block design with four replications. All treatments were applied on July 26 at spray volume of 12 gallons per acre with a CO_2-pressurized backpack sprayer. The boom contained TXVS-6 nozzles on 19-inch spacing. Each plot was evaluated on July 30 using beat sheets to determine the tarnished plant bug populations in 6 row-feet.

Results and Discussion

There was no varying degree of control found in the first test (Table 1). All treatments were statistically similar and gave significant control over the untreated checks. The 0.0634 lb-rate of Leverage (imidacloprid plus cyfluthrin) plus Dyne-Amic, a spray adjuvant, gave the least control, averaging 2.3 tarnished plant bugs per six row-feet or 83% control. The greatest control was achieved with Assail (acetamiprid), Steward (indoxacarb), and Leverage (0.0792 lb) plus Dyne-Amic, each averaging 0.3 tarnished plant bugs per six row-feet or 98%. There was no difference found by tank-mixing low rates of Centric (thiamethoxam) (0.0232 lb) and Karate Z (lambda-cyhalotrhin) (0.0196 lb) compared to labeled rates of each product alone. Adding Dyne-Amic to Leverage did not improve control over Leverage alone. Orthene (acephate) and Capture (bifenthrin) provided 94% and 89% control, respectively.

Similar results were found in the second test (Table 2). All treatments were statistically similar and gave significant control over the untreated check. The tank mix of a 0.25-lb rate of Bidrin (dicrotophos) plus a 0.235-lb rate of Dibrom (naled) gave the least control of 83% or 3.5 tarnished plant bugs per six row-feet. The greatest control was achieved with Centric and Vydate (oxamyl), each having 99% control or 0.3 tarnished plant bugs per six row-feet. The 0.33-lb rate of Bidrin had similar

control (91%) compared to the 0.5-lb rate of Bidrin (88%). No benefit was found by adding Dibrom to either Orthene or Bidrin. Provado (imidacloprid) plus Dyne-Amic achieved 90% control or two tarnished plant bugs per six row-feet.

Leverage, a tank mix of Provado and Baythroid (cyfluthrin), gave 83% control (Table 1). Leverage did not improve the efficacy of Provado alone, which had 90% control (Table 2).All treatments provided excellent control of the tarnished plant bug in both tests. Trends for Orthene and Centric were continuous across tests. Tank mixes and spray adjuvants did not improve the efficacy of the products alone. A control decision would be based on an economic base rather than a control base using these products.

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Table 1. Efficacy of various insecticides on the tarnished plant bug at 4 days after treatment (DAT), test 1

Treatment	Rate (lb ai/A)	Tarnished plant bug per 6 row-foot 4 DAT
Untreated check		13.5 a
Centric 25 WG	0.0473	1.0 b
Centric 25 WG	0.0625	1.8 b
Karate Z 2.08 CS	0.0348	2.0 b
Orthene 97 SP	0.8	0.8 b
Assail 70 WP	0.075	0.3 b
Steward 1.25 SC	0.089	0.3 b
Leverage 2.7 SC	0.0784	0.5 b
Centric 25 WG +	0.0232	0.8 b
Karate Z 2.08 CS	0.0196	
Leverage 2.7 SC +	0.0634	2.3 b
Dyne-Amic	0.25%	
Leverage 2.7 SC +	0.0792	0.3 b
Dyne-Amic	0.25%	
Capture 2 EC	0.05	1.5 b

Means followed by the same letter do not significantly differ (P = 0.05).

Table 2. Efficacy of various insecticides on the tarnished plant bug at 4 days after treatment (DAT), test 2.

Treatment	Rate (lb ai/A)	Tarnished plant bug per 6 row-foot 4 DAT
Untreated check		20.0 a
Bidrin 8 E	0.33	1.8 b
Bidrin 8 E	0.5	2.5 b
Orthene 97 SP +	0.25	1.5 b
Dibrom 8 EC	0.235	
Bidrin 8 E +	0.25	3.5 b
Dibrom 8 EC	0.235	
Orthene 97 SP	0.5	0.5 b
Centric 25 WG	0.0313	0.3 b
Provado 1.6 SC +	0.047	2.0 b
Dyne-Amic	0.38%	
Vydate C-LV 3.77 SL	0.25	0.3 b

Means followed by the same letter do not significantly differ (P = 0.05).