FIELD EVALUATION OF INSECTICIDES FOR MANAGEMENT OF TARNISHED PLANT BUGS IN LEFLORE COUNTY, MISS.

Jack T. Reed[1], Bao Dung[1], C. Jackson[1], Jerry Singleton[2]

[1]Dept. of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS 39762
[2]Mississippi State University Extension Service, Greenwood MS., 38935

ABSTRACT: Twelve insecticides or insecticide combinations were evaluated for management of *Lygus lineolaris* (tarnished plant bug) on the Bledso Farm, Leflore Co., MS. Cotton, variety DPL451 BGRR, was planted and maintained by the grower. Insecticides (Asana [esfenvalerate]; Bidrin [dicrotophos]; Denim [emamectin benzoate]; F1785 [flonicamid]; Karate Z [lambda-cyhalothrin]; Novaluron [IGR]; Steward [indoxicarb]; Vydate [oxamyl]; XR225 [lambda-cyhalothrin]) were applied with a high-clearance spray tractor when tarnished plant bugs occurred in high numbers. There were no differences in numbers of damaged blooms (dirty blooms) between treatments. Vydate, Bidrin and Steward reduced nymphal numbers below that of the untreated check plots at 2 days after treatment (2 DAT) indicating quick knockdown with those compounds. At 6 DAT, all compounds except the 2 pyrethroids, Asana and Karate Z, had reduced nymphal numbers below that of the check plots. Steward at a high rate combined with concentrated crop oil reduced nymphal numbers 6 DAT below that of the Steward alone at 0.089 lb(ai)/ac. Numbers of adult tarnished plant bugs were not significantly affected by the insecticide applications, but this may be related to the high mobility of the adults and the possibility of movement from plot to plot. Results indicate that the population of tarnished plant bugs was resistant to pyrethroids.

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MATERIALS AND METHODS: Twelve insecticides or insecticide combinations were evaluated for management of *Lygus lineolaris* (tarnished plant bug) on the Bledso Farm, Leflore Co., MS. Cotton, variety DPL451 BGRR, was conventionally planted and maintained by the grower and was approximately 5 ft tall, with diminishing numbers of squares in the terminals at the time of the trial. Plots were 8 rows wide by 50 ft long and were arranged in an incomplete randomized block design (compounds requiring destruction of the crop were randomized in one 8 row strip to facilitate cutting of the plots with a bush hog) with 4 replications. There were no unsprayed rows between plots, but a 12 ft buffer was left at the end of plots. Insecticides (Asana; Bidrin; Denim; F1785; Karate Z; Novaluron; Steward; Vydate; XR225) or combinations were applied on 8/7/02 with a high-clearance spray tractor equipped with a compressed-air plot spray system with TX4 hollow cone nozzles spaced at 19 in. Volumetric application rate, spray pressure and tractor speed were 10 gal/ac, 39 psi and 2.1 mph, respectively. Wind speed was 0.0 mph for most of the application with increased breeze along the rows up to 3 mph during the

fourth replicate. Application was applied when tarnished plant bugs occurred in high numbers. Because of need to spray the remainder of the field by air, the trial was terminated at 6 DAT. Post-spray plant bug numbers were sampled by examining 100 fruit in the upper third of the plant per plot. Prespray samples of 50 fruit per plot resulted in the following means and (SE) for nymphs, adults and total bugs, respectively (n=12): 4.2 (0.32); 1.5 (0.38); 5.7 (0.17). Plots were placed near corn with an 8 row buffer between the corn and the sprayed plots.

RESULTS AND DISCUSSION: Mean numbers of plant bug nymphs and adults in plots sampled prior to spraying demonstrated a small standard error indicating a uniform infestation of plant bugs. There were no differences in numbers of damaged blooms (dirty blooms) between treatments. Vydate, Bidrin and Steward reduced nymphal numbers below that of the untreated check plots at 2 days after treatment (2 DAT) indicating quick knockdown with those compounds. At 6 DAT, all compounds except the 2 pyrethroids, Asana and Karate Z, had reduced nymphal numbers below that of the check plots. Steward at a high rate combined with concentrated crop oil reduced nymphal numbers 6 DAT below that of the Steward alone at 0.089 lb(ai)/ac, so either the increased rate or the addition of oil or both benefited control by that compound. Numbers of first instar nymphs were affected by the different compounds similarly to the older nymphs at 2 DAT, but numbers were reduced in all plots by 6 DAT. Numbers of adult tarnished plant bugs were not significantly affected by the insecticide applications, but this may be related to the high mobility of the adults and the possibility of movement from plot to plot. Results indicate that the population of tarnished plant bugs was resistant to pyrethroids, but susceptible to newer compounds as well as the carbamate, Vydate and, the organophosphate, Bidrin.

Table 1. Means and (SD) for dirty blooms per 50 row-feet, adult and nymphal tarnished plant bugs per 100 fruit, 2 and 6 days after treatment. Bledso Farm, Leflore Co., Mississisippi, 2002.

		2 Days After Treatment				6 Days After Treatment		
Treatment	**Lb Ai Or Rate / Ac**	**Dirty Blooms/ 50 Row-Feet**	**Nymphs / 100 Fruit**	**Adults / 100 Fruit**	**1st Instar Nymphs / 100 Fruit**	**Nymphs / 100 Fruit**	**Adults / 100 Fruit**	**1st Instar Nymphs / 100 Fruit**
Asana 0.66 EC	0.04	23.7 (8.62)a	8.0 (2.00) c-g	1.3 (0.58) a	4.0 (1.73) b-e	9.7 (2.89) cde	1.7 (0.58) a	4.0 (1.73) bc
Bidrin 8 EC	0.33	20.5 (1.91)a	4.0 (3.16) abc	3.8 (2.36) a	2.2 (1.71) abc	3.0 (1.29) a	1.2 (1.26) a	1.5 (1.00) a
Denim 0.16 EC	0.01	20.0 (1.83)a	8.2 (4.27) d-g	3.5 (0.58) a	1.7 (2.06) abc	4.7 (2.06) abc	2.2 (1.50) a	1.5 (1.73) a
F1785 50 DF	0.054	19.0 (3.83)a	6.2 (1.71) b-e	3.5 (1.29) a	3.5 (1.29) b-e	6.0 (5.23) a-d	3.0 (2.16) a	2.2 (1.71) ab
KarateZ 2.08 CS	0.028	24.5 (11.39)a	7.5 (3.42) c-f	2.7 (1.71) a	3.5 (2.08) b-e	10.2 (2.75) de	1.5 (1.29) a	2.7 (1.71) ab
Novaluron 0.83 EC	0.09	22.0 (5.23)a	10.7 (4.92) fg	5.0 (2.71) a	5.2 (3.95) def	2.7 (2.87) a	1.5 (0.58) a	2.2 (2.5) ab
Novaluron 0.83 EC	0.068	20.5 (4.51)a	8.2 (3.20) d-f	3.7 (2.50) a	5.7 (2.06) ef	3.2 (3.40) a	1.0 (1.15) a	2.5 (3.70) ab
Steward 1.25 SC	0.089	27.0 (8.76)a	2.5 (1.73) ab	3.0 (0.82) a	1.0 (0.00) ab	8.5 (3.87) bcd	1.7 (1.26) a	2.0 (1.83) ab
Steward 1.25 SC + COC	0.104 1 PT	22.5 (6.40)a	4.5 (0.58) a-d	2.7 (1.26) a	2.5 (1.29) a-d	2.7 (1.89) a	1.0 (0.82) a	0.5 (1.00) a
Vydate 1.33 SL	0.25	24.0 (5.35)a	1.5 (1.73) a	1.2 (2.50) a	0.5 (1.00) a	3.7 (3.59) ab	0.5 (0.58) a	1.5 (2.38) a
Vydate 1.33 SL + Asana 0.66 EC	0.25 0.036	26.5 (8.06)a	2.0 (1.83) a	2.2 (1.26) a	0.5 (1.00) a	1.2 (0.96) a	1.2 (1.26) a	0.5 (0.58) a
XR225 1.25 CS	0.014	29.5 (12.87)a	8.0 (3.16) c-g	4.5 (1.00) a	5.2 (1.26) def	10.0 (2.45) d	2.7 (2.63) a	2.2 (1.71) ab
Untreated	---	27.5 (11.56)a	9.0 (6.98) efg	3.5 (2.38) a	4.5 (4.8) b-e	15.2 (7.72) f	2.0 (1.41) a	2.0 (1.63) ab
Water	---	26.5 (6.66)a	11.7 (2.22) g	3.7 (3.20) a	8.0 (1.41) f	15.0 (4.55) ef	3.7 (3.50) a	5.0 (1.15) c
P(0.05) Fisher LSD		0.599	<0.0001	0.317	<0.0001	<0.0001	0.335	0.026
Means within a column not sharing a common letter differ significantly (LSD; p=0.05).								
Mean and (SE) for nymphs adults and total bugs for samples of 50 fruit, pretreatment (n=12): 4.2 (0.32); 1.5 (0.38); 5.7 (0.17).								