

EVALUATION OF INSECTICIDES FOR TARNISHED PLANT BUG MANAGEMENT ON COTTON IN QUITMAN COUNTY 2001

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ABSTRACT: The purpose of this trial was to evaluate insecticides for control of tarnished plant bugs in cotton. The average of tarnished plant bug nymphs per 100 fruit before treatment with insecticide was 28.4 (SD = 10.2) and that of adults was 6.4 adults (SD = 4.5) per 20 terminals (100 squares, blooms or bolls). Two applications of insecticide were necessary to control the insects, partly because of rainfall (1.8 in) within 48 h after the first application. All insecticides and rates (lb ai/ac) (Novaluron, 0.019; Novaluron, 0.039, 0.058 and 0.019; Orthene, 0.25 and 0.5; Provado, 0.047; Assail, 0.05; Calypso, 0.047; Centric, 0.047) were effective to some degree on nymphs. No insecticide effectively controlled the adult plant bug population. Calypso as used in this study appears to have less efficacy against tarnished plant bugs than other compounds used in the study. Novaluron is an insect growth regulator with promise for tarnished plant bug control.

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MATERIALS AND METHODS: The statistical design was randomized complete block with 4 replicates. Cotton used in this trial, variety PM 1218, located in Quitman County, had not received any insecticides throughout the growing season. Plots were eight rows wide and 50 ft (15.2 m) long and were separated at each end by a 10 foot buffer. Insecticides were applied on 8/08/01 and on 8/15/01 with a high-clearance plot spray tractor with nozzles (Spray Systems, Tx4, hollow cone) spaced for a 38-in (96.5 cm) row spacing at 19-in (48.3 cm) centers with one nozzle directly over the row and one directly between rows. The carrier was water, and the volumetric application rate was 7.5 gallons (28.4L) per acre. Boom height was 7.5 ft and the cotton was approximately 6 ft or more tall. Wind speed, temperature and relative humidity during the two application were 0 to 5 mph, 90°F and 63%, and 0 to 3.0 mph, 90°F, and 65%, respectively. Plants in each plot were sampled two and five days following each application. Twenty terminals from each plot and five fruit per terminal (100 fruit per plot) were visually sampled for tarnished plant bug nymphs and adults. A heavy rain (1.8 in) occurred late the night before the first evaluation (2DAT1). Compounds used in the trial were: Assail (acetemiprid), Centric (Thiamethoxam), Provado (imidacloprid), Novaluron (insect growth regulator), and Orthene (acephate). Assail, Centric and Provado are systemic Neonicotinoids and Orthene is a systemic organophosphate that has been used as a standard for tarnished plant bug control in Mississippi.

RESULTS AND DISCUSSION: All compounds reduced plant bug nymphal numbers below that of the untreated check at 5 days after application 1 (5 DAT 1) on 8/13/01 except the Assail and Calypso treatments and the low rate of the experimental compound, Novaluron. Only Calypso failed to reduce nymphal numbers below that of the water check 2 DAT 2. By 5 DAT 2, the Calypso treatment resulted in significantly less control of nymphs than all other treatments. No treatment was affective on the adults. This may be because the adults are very mobile and movement into the plots from cotton outside the trial may have masked control of the adult population. Orthene, an organophosphate that has been a comparative standard for plant bug control for many years was at least as efficacious as other compounds in the test indicating that the population of bugs in the plots were not resistant to organophosphate insecticides.

COOPERATOR: Bobby Carson, Carson Farms, Quitman Co. Mississippi.

Table 1. Mean¹ number of tarnished plant bugs per 20 terminals or 100 fruit (squares, blooms and bolls).

Treatment	Lb ai/ac	Nymphs	Adults	Nymphs	Adults	Nymphs	Adults	Nymphs	Adults
		8/10/01	8/10/01	8/13/01	8/13/01	8/17/01	8/17/01	8/21/01	8/21/01
Water		15.0 a	6.8 a	19.0 a	8.2 a	15.5 a	3.7 ab	21.9 a	7.2 a
Novaluron 0.83 EC	0.019	13.9 a	5.0 a	15.7 abc	8.1 a	4.7 bcd	4.7 a	4.8 bc	4.7 a
Novaluron 0.83 EC	0.039	11.7 a	5.0 a	6.8 de	4.4 a	5.6 bc	4.1 a	1.2 d	2.9 a
Novaluron 0.83 EC	0.058	14.6 a	5.0 a	5.5 e	4.7 a	3.2 cd	1.1 cd	3.1 bcd	4.0 a
Novaluron 0.83 EC	0.019	9.3 a	5.0 a	6.1 e	4.7 a	2.3 cd	2.7 abc	1.2 d	7.6 a
Orthene 97 WP	0.25								
Orthene 97 WP	0.5	7.2 a	2.8 a	4.8 e	6.2 a	1.9 d	1.9 abc	1.6 cd	3.7 a
Provado 1.6 F	0.047	10.6 a	3.5 a	9.2 b-e	5.6 a	4.9 bc	1.4 bcd	2.2 cd	3.7 a
Assail 70 WP	0.05	15.4 a	3.8 a	17.0 ab	10.0 a	4.9 bc	3.2 abc	4.5 bc	4.2 a
Calypso 4 SC	0.047	11.8 a	5.3 a	12.9 a-d	6.7 a	8.7 ab	2.4 abc	8.2 b	4.9 a
Centric 40 WP	0.047	7.7 a	3.3 a	8.3 cde	6.7 a	0.4 e	0.4 d	1.1 d	3.2 a
LSD (P=.05)		0.275t	2.9	0.267	0.203	0.305	0.306	0.392	0.374
Treatment Prob(F)		0.2714	0.2279	0.001	0.0662	0.0001	0.0091	0.0001	0.6299

Means within a column not sharing a common letter differ significantly (LSD; P=0.05).

¹Mean separation is based on analysis of log transformed data.