

EVALUATION OF INSECTICIDES FOR APHID CONTROL IN MISSISSIPPI 2001(TRIAL 1)

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ABSTRACT: The purpose of this trial was to evaluate insecticides for control of aphids on cotton. Tests were planted at the Plant Science Research Farm at Mississippi State University. The average number of aphids per 15 leaves before treatment with insecticide was 386 aphids per 15 leaves. Treatments and rates (lb ai/ac) included in the trial were: Calypso 4 SC, 0.03 and 0.047; Provado 4 SC, 0.047; Assail 70 WP, 0.036, 0.05 and 0.1; Bidrin 8 EC, 0.4, Centric 40 WG, 0.063; XR225 1.25 SC, 0.015; and KarateZ 2.08 SC, 0.03. All insecticide treatments except XR225 and KarateZ significantly reduced aphid numbers in plots, and Assail at the higher rates provided significantly better control of aphids than other compounds in the trial. Only Calypso and the pyrethroids, KarateZ and XR225 did not statistically reduce lady beetle numbers in the test plots below that of the water check.

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MATERIALS AND METHODS: The statistical design was randomized complete block with 4 replicates. Cotton, variety ST 4892 BR, was planted with triple treated seed at the Plant Science Research Farm at Mississippi State University on 5/24/01 at a seed rate of 3 per ft. Plots were four rows wide and 50 (15.24 m) ft long arranged with four rows of cotton between plots and a planted buffer of 10 feet at the end of each plot. Insecticides were applied 7/07/01 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. Windspeed, temperature and relative humidity at time of application was 0 to 2.3 mph, 98^oF and 37.6%, respectively. Plants in each plot were sampled on a four to five day interval early in the growing season for cotton aphids by selecting fifteen random plants in each plot. One leaf from four nodes below the terminal was sampled on each plant. The total number of aphids on the fifteen leaves were recorded. Treatments were applied when the population of aphids was increasing. Yield was not taken.

RESULTS AND DISCUSSION: The KarateZ and XR225 treatments were not effective in controlling aphids. The high Calypso treatment (0.047 lb ai/ac), Provado (0.047 lb ai/ac) and Bidrin reduced numbers of aphids below that of the water treatment on 10 July and 16 July, but did not provide adequate control from a pest control viewpoint. Over all, ASSAIL at 0.036, 0.1, and 0.047lb/ac, were the most effective treatments through 07/16/01. All insecticide treatments except XR225 and KarateZ significantly reduced aphid numbers in plots, and Assail at the higher rates provided significantly better control of aphids than other compounds in the trial. Only Calypso and the pyrethroids, KarateZ and XR225 did not statistically reduce lady beetle numbers in the test plots below that of the water check. Because of the fungal disease that caused the aphid population to approach zero, there was no second application of insecticide.

Table 1. Mean aphids per fifteen leaves, MSU location.

Treatment	Rate	Jul-05-01	Jul-10-01	Jul-16-01
Water		470.0 a	637.3 a	351.8 a
Calypso 4 SC	0.03 LB A/A	364.0 a	197.4 abc	192.9 b
Calypso 4 SC	0.047 LB A/A	307.5 a	185.2 bc	186.3 b
Provado 4 SC	0.047 LB A/A	579.8 a	117.9 cd	142.7 b
Assail 70 WP	0.036 LB A/A	399.3 a	43.7 def	44.2 c
Assail 70 WP	0.05 LB A/A	288.3 a	22.7 ef	13.5 d
Assail 70 WP	0.1 LB A/A	408.0 a	18.7 f	22.0 d
Bidrin 8 EC	0.4 LB A/A	301.8 a	109.3 cd	190.7 b
Centric 40 WG	0.063 LB A/A	405.5 a	76.6 cde	51.8 c
Xr225 1.25 SC	0.015 LB A/A	349.8 a	399.4 ab	401.7 a
KarateZ 2.08 SC	0.03 LB A/A	381.0 a	601.6 ab	500.2 a
LSD (P=.05)		222.59	0.521	0.253
Treatment Prob(F)		0.3404	0.0001	0.0001

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

Table 2. Mean insects per 25 sweeps, MSU location.

Treatment	Rate	Tarnished Plant Bugs Adult	Tarnished Plant Bugs Nymphs	Bigeyed Bugs	Lady Beetles
		Jul-16-01	Jul-16-01	Jul-16-01	Jul-16-01
Water		0.3 a	0.0 a	0.0 a	3.8 ab
Calypso 4 SC	0.03 LB A/A	0.3 a	0.0 a	0.0 a	2.9 abc
Calypso 4 SC	0.047 LB A/A	0.3 a	0.0 a	0.0 a	1.6 bcd
Provado 4 SC	0.047 LB A/A	0.5 a	0.0 a	0.3 a	0.9 de
Assail 70 WP	0.036 LB A/A	0.3 a	0.0 a	0.3 a	1.5 bcd
Assail 70 WP	0.05 LB A/A	0.3 a	0.0 a	0.0 a	0.6 de
Assail 70 WP	0.1 LB A/A	0.3 a	0.0 a	0.0 a	0.2 e
Bidrin 8 EC	0.4 LB A/A	0.3 a	0.0 a	0.3 a	1.1 cde
Centric 40 WG	0.063 LB A/A	0.5 a	0.0 a	0.3 a	0.2 e
Xr225 1.25 SC	0.015 LB A/A	0.3 a	0.0 a	0.5 a	4.6 a
KarateZ 2.08 SC	0.03 LB A/A	0.3 a	0.0 a	0.3 a	3.6 ab
LSD (P=.05)		0.79	0.00	0.67	0.302
Treatment Prob(F)		0.9989	1.0000	0.8591	0.0002

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