

COTTON SEED TREATMENT EVALUATION TRIAL

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ABSTRACT: Insecticides used as seed treatments for control of thrips in seedling cotton were evaluated in comparison with a standard, in-furrow insecticide. Tests were planted at the Plant Science Research Farm at Mississippi State University. Thrips pressure was low at the trial initiation, but increased each week. Control of thrips was maintained by all treatments for 20 days. Immature thrips numbers in all treatments were significantly lower than untreated plots through 5/31/01. Most plants in the check plots were affected by thrips damage and plants were significantly shorter in the check plots than in the treated plots on 6/21/01. There were no differences in plant height between treatment plots on 6/21/01. There was a trend toward reduced plant height on 6/16/01 and yield with higher rates of Temik, and the yield in the Adage treatment was significantly greater than that of the Temik treatments with 5 and 6 lb of formulated material per acre. Adequate rainfall during the season probably allowed plants to compensate for thrips damaged terminals. Treatments in the trial were: Adage 5 FS, 7.7 fl oz/cwt; Temik 15 G at 3, 3.5, 4, 5, and 6 lb formulated material/ac; Gaucho 480 FS, 8 fl oz/cwt; and Gaucho 600 FS, 6.4 fl oz/cwt.

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MATERIALS AND METHODS: The statistical design was randomized complete block with 4 replicates. Cotton, variety SG 125BR, was planted at the Plant Science North Farm at Mississippi State University on 5/03/01 at a seed rate of 3 per ft. Plots were four rows wide and 50 (15.2 m) ft long arranged with 10 ft buffer at the end of each plot. Row spacing was 38 in. A John Deere 7100 planter equipped with Almaco® plot applicators for seed and granule insecticides was used for planting. Thrips samples were taken on seven to ten day intervals by cutting five plants from each plot and transferring them into a plastic bag for transport to the lab. The samples were then washed in a Clorox-detergent solution to remove thrips from the plants. Thrips and other arthropods were then transferred onto a filter paper for identification and counting by use of a dissection microscope. Plant height from the cotyledonary node to the apical meristem was measured in the laboratory as an index of stunting. Yield was estimated by mechanically harvesting the center two rows of each plot and converting the yield to pounds of seed cotton per acre.

RESULTS AND DISCUSSION: Immature thrips on untreated plants were present in low numbers through 24 May (after 20 days of planting). All insecticide treatments reduced thrips numbers below threshold through 5/24/01. Thrips numbers in the treated plots did not differ from each other. However, immature thrips numbers in all treatments were significantly lower than untreated plots through 5/31/01. Most plants in the check plots were affected by thrips damage and plants were significantly shorter in the check plots than in the treated plots on 6/21/01. There were no differences in plant height between treatment plots on 6/21/01. There was a trend toward reduced yield and plant height with higher rates of Temik, and the yield in the Adage treatment was significantly greater than that of the Temik treatments with 5 and 6 lb of formulated material per acre. Adequate rainfall during the season probably allowed plants to compensate for thrips damaged terminals. Tables 1-4 present the results of insect counts and plant parameter measurements.

Table 1. Mean insects per five plants, MSU location, May 14, 2001.

Treatment	Rate	Immature thrips	Tobacco thrips	Flower thrips	Western flower thrips	Soybean thrips
		May-14-01	May-14-01	May-14-01	May-14-01	May-14-01
Untreated		0.0 a	0.5 a	0.5 a	0.0 a	0.0 a
Adage 5 FS	7.7 fl oz/cwt	0.0 a	0.0 a	0.3 a	0.0 a	0.5 a
Gaucho 480 FS	8 fl oz/cwt	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Gaucho 600 FS	6.4 fl oz/cwt	0.0 a	0.0 a	0.0 a	0.0 a	0.8 a
Temik 15 G	3 lb/ac	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Temik 15 G	3.5 lb/ac	0.0 a	0.3 a	0.0 a	0.0 a	0.0 a
Temik 15 G	4 lb/ac	0.0 a	0.5 a	0.0 a	0.0 a	0.0 a
Temik 15 G	5 lb/ac	0.125 a	0.0 a	0.0 a	0.0 a	0.3 a
Temik 15 G	6 lb/ac	0.250 a	0.3 a	0.0 a	0.0 a	0.0 a
LSD (P=.05)		0.00	0.55	0.38	0.00	0.59
Treatment Prob(F)		1.0000	0.2774	0.1267	1.0000	0.1068

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

Table 2. Mean insects per five plants, MSU location, May 24, 2001.

Treatment	Rate	Immature Thrips	Tobacco Thrips	Eastern Flower Thrips	Western Flower Thrips	Banded Thrips
		May-24-01	May-24-01	May-24-01	May-24-01	May-24-01
Adage 5 FS	7.7 fl oz/cwt	8.5 a	1.3 a	0.3 a	0.0 a	0.0 a
Gaucho 480 FS	8 fl oz/cwt	0.0 b	0.0 a	0.5 a	0.0 a	0.0 a
Gaucho 600 FS	6.4 fl oz/cwt	0.0 b	0.8 a	1.3 a	0.0 a	0.0 a
Temik 15 G	3 lb/ac	0.0 b	0.3 a	1.3 a	0.0 a	0.0 a
Temik 15 G	3.5 lb/ac	0.0 b	0.3 a	0.3 a	0.0 a	0.0 a
Temik 15 G	4 lb/ac	0.0 b	0.0 a	0.0 a	0.0 a	0.3 a
Temik 15 G	5 lb/ac	0.0 b	0.5 a	0.0 a	0.0 a	0.0 a
Temik 15 G	6 lb/ac	0.0 b	0.8 a	0.0 a	0.0 a	0.0 a
Adage 5 FS	7.7 fl oz/cwt	0.3 b	0.0 a	0.0 a	0.0 a	0.0 a
LSD (P=.05)		4.16	0.90	1.20	0.00	0.24
Treatment Prob(F)		0.0043	0.0943	0.1792	1.0000	0.4613

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

Table 3. Mean insects per five plants, MSU location, May 31, 2001.

Treatment	Rate	Immature thrips	Tobacco thrips	Flower thrips	Western flower thrips	Soybean thrips
		May-31-01	May-31-01	May-31-01	May-31-01	May-31-01
Untreated		10.5 a	0.8 a	0.5 a	0.0 a	0.0 a
Adage 5 FS	7.7 fl oz/cwt	0.0 b	0.3 a	0.0 a	0.0 a	0.0 a
Gaucho 480 FS	8 fl oz/cwt	0.8 b	0.0 a	0.5 a	0.0 a	0.0 a
Gaucho 600 FS	6.4 fl oz/cwt	0.8 b	0.3 a	0.0 a	0.0 a	0.0 a
Temik 15 G	3 lb/ac	0.3 b	0.0 a	0.3 a	0.0 a	0.0 a
Temik 15 G	3.5 lb/ac	0.3 b	0.0 a	0.3 a	0.0 a	0.0 a
Temik 15 G	4 lb/ac	0.3 b	0.5 a	0.0 a	0.0 a	0.0 a
Temik 15 G	5 lb/ac	0.3 b	0.3 a	0.0 a	0.0 a	0.0 a
Temik 15 G	6 lb/ac	0.3 b	0.0 a	0.0 a	0.0 a	0.0 a
LSD (P=.05)		2.99	0.54	0.63	0.00	0.00
Treatment Prob(F)		0.0001	0.0905	0.4613	1.0000	1.0000

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

Table 4. Mean treatment effects on plant parameters affected by thrips and yield, MSU location.

Treatment	Rate	Plant height	Node count	Square count	Plant height	Yield lb seed cotton/ac
		Jun-16-01	Jun-21-01	Jun-21-01	Jun-21-01	Sep-28-01
Untreated		13.54 a	5.5 a	3.4 a	30.2 a	2687 a-d
Adage 5 FS	7.7 fl oz/cwt	16.10 a	5.8 a	4.5 a	37.5 a	2862 a
Gaucho 480 FS	8 fl oz/cwt	15.94 a	5.8 a	3.4 a	32.7 a	2436 a-d
Gaucho 600 FS	6.4 fl oz/cwt	16.17 a	5.7 a	3.3 a	35.1 a	2762 abc
Temik 15 G	3 lb/ac	16.47 a	5.8 a	3.6 a	31.6 a	2570 ab
Temik 15 G	3.5 lb/ac	16.69 a	5.7 a	4.0 a	34.6 a	2804 a-d
Temik 15 G	4 lb/ac	16.23 a	5.8 a	3.5 a	32.0 a	2315 cd
Temik 15 G	5 lb/ac	13.42 a	5.8 a	3.8 a	34.1 a	2246 d
Temik 15 G	6 lb/ac	13.73 a	5.9 a	2.8 a	33.4 a	2319 bcd
LSD (P=.05)		3.572	0.66	0.99	5.5397	487.57016
Treatment Prob(F)		0.3131	0.9738	0.0959	0.2776	0.0451

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