

GAUCHO COTTON SEED TREATMENT EVALUATION TRIAL: MISSISSIPPI STATE

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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. The test was planted at the Plant Science Research Farm at Mississippi State University. Cotton was planted late in the afternoon under good conditions and rain fell a week before and after planting. Rainfall in the month of July was low, and the field was irrigated on 25 of that month. Adequate rainfall for most of season provided moisture to compensate for thrips damage. Although there was a trend for increased yield in treated plots as compared with the untreated check, there were no statistically significant differences in yield. All insecticides significantly reduced thrips numbers up to 26 days after planting, but only plots treated with Temik were below threshold. The average number of nodes per plant was significantly less in the treated plots than in the untreated check on 6/22/01, a factor contributing to stunting. There was a significant difference between treated plots and untreated plots throughout the sampling period of the study. Plants were significantly shorter in the untreated plots than in the treated plots, however there were no differences in height between treated plots. There were no differences in yield between treatments. Treatments and rates in the trial were: Gaucho 4FS, 8 fl oz/cwt (seed treatment); Adage 5FS, 7.65 fl oz/cwt (seed treatment); and Temik 15G, 3.5 lb ai/ac (applied in-furrow).

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MATERIALS AND METHODS: The statistical design was randomized complete block with 4 replicates. Cotton, variety PM 1812BR, 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 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: Results from the trial are presented on Tables 1-3. Adult Tobacco thrips numbers were reduced significantly in all treated plots as compared with the untreated plots after 26 days of planting (05/29/01). Immature thrips numbers also were lower in all treated plots through 30 days after planting. Immature thrips were below threshold (one thrips per plant) during the first week of sampling in all treatments and in Adage and Temik treated plots on 06/04/01. From 5/29/01 through 6/4/01, immature thrips on untreated plots averaged 27.9 thrips per five plants. The average number of nodes per plant was significantly less in the treated plots than in the untreated check on 6/22/01, a factor contributing to stunting. There was a significant difference between treated plots and untreated plots throughout the sampling period of the study. Plants were significantly shorter in the untreated plots than in the treated plots, however there were no differences in height between treated plots. There were no differences in yield between treatments.

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

Treatment	Rate	Immature thrips	Tobacco thrips	Flower thrips	Western flower thrips	Aphids
		May-14-01	May-14-01	May-14-01	May-14-01	May-14-01
Check		0.5 a	3.8 a	0.5 a	0.0 a	25.8 a
Gaucho 4FS	8 fl oz/cwt	0.0 b	0.5 b	0.5 a	0.0 a	3.0 b
Adage 5FS	7.65 fl oz/cwt	0.0 b	0.0 b	0.0 a	0.0 a	0.8 b
Temik 15G	3.5 lb/ac	0.0 b	0.0 b	0.0 a	0.0 a	4.3 b
LSD (P=.05)		0.40	1.98	0.74	0.00	6.50
Treatment Prob(F)		0.0625	0.0060	0.3294	1.0000	0.0001

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 29, 2001.

Treatment	Rate	Immature thrips	Tobacco thrips	Flower thrips	Western flower thrips	Aphids
		May-29-01	May-29-01	May-29-01	May-29-01	May-29-01
Check		28.5 a	4.5 a	0.0 a	0.0 a	1.3 a
Gaucho 4FS	8 fl oz/cwt	1.0 b	1.3 b	0.8 a	0.0 a	0.5 a
Adage 5FS	7.65 fl oz/cwt	2.8 b	0.8 b	0.0 a	0.0 a	0.5 a
Temik 15G	3.5 lb/ac	0.5 b	0.5 b	0.3 a	0.0 a	0.5 a
LSD (P=.05)		8.64	2.51	0.83	0.34	1.48
Treatment Prob(F)		0.0001	0.0207	0.2754	0.4449	0.7642

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

Table 3. Mean insects per five plants, MSU location, June 4, 2001.

Treatment	Rate	Immature thrips	Tobacco Thrips	Flower thrips	Western flower thrips	Aphids
		Jun-04-01	Jun-04-01	Jun-04-01	Jun-04-01	Jun-04-01
Check		27.3 a	6.3 ab	0.8 a	0.0 b	0.8 a
Gaucho 4FS	8 fl oz/cwt	7.0 b	8.3 a	1.3 a	0.3 ab	0.0 a
Adage 5FS	7.65 fl oz/cwt	4.3 b	6.7 ab	0.3 a	0.7 a	0.0 a
Temik 15G	3.5 lb/ac	2.5 b	1.5 b	0.0 a	0.0 b	0.8 a
LSD (P=.05)		17.86	5.50	1.55	0.50	2.17
Treatment Prob(F)		0.0620	0.0900	0.3119	0.0500	0.2083

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	Node count	Plant height (in)	Square count	Yield lb seed cotton/ac
		Jun-22-01	Jun-22-01	Jun-22-01	Sep-28-01
Check		6.1 a	9.2 b	4.3 b	2990.0 a
Gaucho 4FS	8 fl oz/cwt	5.3 b	12.5 a	6.1 a	3048.5 a
Adage 5FS	7.65 fl oz/cwt	5.4 b	11.9 ab	5.7 ab	3107.0 a
Temik 15G	3.5 lb/ac	5.4 b	13.5 a	4.7 b	3251.5 a
LSD (P=.05)		0.44	2.9678	1.43	332.32
Treatment Prob(F)		0.0124	0.0741	0.0313	0.4031

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