

EVALUATION OF FUNGICIDE AND INSECTICIDE TREATED COTTON SEED FOR THRIPS MANAGEMENT

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ABSTRACT: Insecticidal seed treatments, Cruiser (thiamethoxam) and Gaucho (imidacloprid) were evaluated with different fungicidal seed treatments [Allegiance FL (Metalaxyl) + Baytan 30 (triadimenol) + Thiram 42S (thiram); Allegiance FL + Ascend 30 (unknown) + Thiram 42S; Apron XL (mefenoxam) + Maxim 4 FS (fludioxonil) + Systhane 40 WSP (myclobutanol)] in comparison with Temik (aldicarb) applied in-furrow. Tests were planted at the North Mississippi Research and Extension Center, Verona, MS. Insect pressure was light during the first week and gradually increased as the season progressed. All insecticide treatments were essentially equivalent through 6/13/02 for control of immature thrips, but only Temik in-furrow with all fungicide treatments and Cruiser in combination with Allegiance-FL, Ascend 30, and Thiram 42-S had significantly better control of adult thrips than the plots with fungicide only treated seed. Damage was significantly reduced in all plots treated with insecticide as compared with plots planted with only fungicide treated seed. There were no significant differences in yield between treatments. Soil samples from this trial lacked damaging nematodes so treatment effects are attributed to thrips only.

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KEY WORDS: Thrips, cotton, insecticides, seed-treatment

MATERIALS AND METHODS: The experimental design was randomized complete block with 4 replicates. Cotton, was planted at the North Mississippi Research and Extension Center on 5/17/02 at a seed rate of 4 per ft with a John Deere 7100 planter equipped with Almaco® cone seed and granule dispensers. Plots were four rows wide and 40 ft long arranged with 10 ft buffer at the end of each plot. Row spacing was 38 in. Sampling for thrips consisted of cutting five plants from two center rows of each plot and placing them into a plastic bag for transport to the laboratory. 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. Adult thrips were identified to species based on coloration and antennal characteristics. Thrips damage ratings were made for each plot. 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: Treatments are listed in Table 1. Results from the trial are presented on Tables 2 and 3. All insecticide treatments were essentially equivalent through 6/13/02 for control of immature thrips, but only Temik in-furrow with all fungicide treatments and Cruiser in combination with Allegiance-FL, Ascend 30, and Thiram 42-S provided significantly better

control of adult thrips than the plots with fungicide only treated seed. Damage was significantly reduced in all plots treated with insecticide as compared with plots planted with only fungicide treated seed. There were no significant differences in yield or plant height measured on 6/13/02.

Table 1. Treatment designations and rates.

Treatment designation	Treatment	Rate
ABT	ALLEGIANCE-FL + BAYTAN 30 + THIRAM 42-S	15.0 G A/100 KG 10.0 G A/100 KG 31.0 G A/100 KG
AST	ALLEGIANCE-FL + ASCEND 30 + THIRAM 42-S	15.0 G A/100 KG 19.0 G A/100 KG 53.0 G A/100 KG
AMS	APRON XL 3 LS + MAXIM 4 FS + SYSTHANE 40 WSP	7.5 G A/100 KG 2.5 G A/100 KG 21 G A/100 KG
ABT + Cruiser	ALLEGIANCE-FL + BAYTAN 30 + THIRAM 42-S + CRUISER 5 FS	15.0 G A/100 KG 10.0 G A/100 KG 31.0 G A/100 KG 300 G A/100 KG
AST + Cruiser	ALLEGIANCE-FL + ASCEND 30 + THIRAM 42-S + CRUISER 5 FS	15.0 G A/100 KG 19.0 G A/100 KG 53.0 G A/100 KG 300 G A/100 KG
AMS + Cruiser	APRON XL 3 LS + MAXIM 4 FS + SYSTHANE 40 WSP + CRUISER 5 FS	7.5 G A/100 KG 2.5 G A/100 KG 21 G A/100 KG 300 G A/100 KG
ABT + Gaucho	ALLEGIANCE-FL + BAYTAN 30 + THIRAM 42-S + GAUCHO 600 FS	15.0 G A/100 KG 10.0 G A/100 KG 31.0 G A/100 KG 250 G A/100 KG
AST + Gaucho	ALLEGIANCE-FL + ASCEND 30 + THIRAM 42-S + GAUCHO 600 FS	15.0 G A/100 KG 19.0 G A/100 KG 53.0 G A/100 KG 250 G A/100 KG
AMS + Gaucho	APRON XL 3 LS + MAXIM 4 FS + SYSTHANE 40 WSP + GAUCHO 600 FS	7.5 G A/100 KG 2.5 G A/100 KG 21 G A/100 KG 250 G A/100 KG
ABT + Temik	ALLEGIANCE-FL + BAYTAN 30 + THIRAM 42-S + TEMIK 15 G	15.0 G A/100 KG 10.0 G A/100 KG 31.0 G A/100 KG 588 G A/HA
AST + Temik	ALLEGIANCE-FL + ASCEND 30 + THIRAM 42-S + TEMIK 15 G	15.0 G A/100 KG 19.0 G A/100 KG 53.0 G A/100 KG 588 G A/HA
AMS + Temik	APRON XL 3 LS + MAXIM 4 FS + SYSTHANE 40 WSP + TEMIK 15 S	7.5 G A/100 KG 2.5 G A/100 KG 21 G A/100 KG 588 G A/HA

Table 2. Mean insects per five plants, Verona location. See Table 1 for treatments and rates.

Treatment	Tobacco	Eastern	Western	Immature	Tobacco	Eastern	Western	Immature	Tobacco	Eastern	Western	Immature
	Thrips	Flower	Flower		Thrips	Flower	Flower		Thrips	Thrips	Flower	
	5/31/02	5/31/02	5/31/02	5/31/02	6/6/02	6/6/02	6/6/02	6/6/02	6/13/02	6/13/02	6/13/02	6/13/02
ABT	5.0 a	0.0 a	0.0 a	0.0 a	4.5 b	0.0 a	0.0 a	52.8 ab	5.0 a	0.3 b	0.0 a	27.3 b
AST	3.3 ab	0.0 a	0.0 a	0.0 a	3.0 bc	0.0 a	0.0 a	40.5 b	3.5 ab	0.3 b	0.3 a	29.3 ab
AMS	3.0 b	0.0 a	0.0 a	0.0 a	7.8 a	0.0 a	0.0 a	69.8 a	4.0 ab	1.3 a	0.0 a	48.3 a
ABT + Cruiser	0.3 c	0.0 a	0.0 a	0.0 a	0.8 cd	0.0 a	0.0 a	1.8 c	2.5 a-d	0.0 b	0.0 a	5.3 c
AST + Cruiser	0.5 c	0.0 a	0.0 a	0.0 a	0.8 cd	0.0 a	0.0 a	2.8 c	0.5 cd	0.0 b	0.0 a	0.3 c
AMS + Cruiser	0.5 c	0.0 a	0.0 a	0.0 a	0.3 d	0.0 a	0.0 a	1.0 c	2.0 bcd	0.0 b	0.0 a	1.0 c
ABT + Gaucho	0.5 c	0.0 a	0.0 a	0.0 a	0.3 d	0.0 a	0.0 a	1.0 c	4.3 ab	0.0 b	0.3 a	4.3 c
AST + Gaucho	0.3 c	0.0 a	0.0 a	0.0 a	1.0 cd	0.0 a	0.0 a	5.3 c	2.5 a-d	0.0 b	0.3 a	2.3 c
AMS + Gaucho	0.3 c	0.0 a	0.0 a	0.0 a	0.3 d	0.0 a	0.0 a	1.0 c	3.0 abc	0.0 b	0.3 a	2.0 c
ABT + Temik	0.5 c	0.0 a	0.0 a	0.0 a	0.5 d	0.0 a	0.0 a	0.8 c	0.8 cd	1.0 ab	0.0 a	2.3 c
AST + Temik	0.3 c	0.0 a	0.0 a	0.0 a	0.0 d	0.0 a	0.0 a	0.3 c	0.0 d	0.0 b	0.0 a	0.7 c
AMS + Temik	0.0 c	0.0 a	0.0 a	0.0 a	0.3 d	0.0 a	0.0 a	0.5 c	0.5 cd	0.3 b	0.5 a	1.5 c
LSD (P=.05)	1.75	0.00	0.00	0.00	2.41	0.00	0.00	25.16	2.73	1.07	0.55	20.14
Prob(F)	0.0001	1.0000	1.0000	1.0000	0.0001	1.0000	1.0000	0.0001	0.0067	0.2027	0.5842	0.0002

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

Table 3. Mean damage rating, plant height (in), stand count, node to first square and yield. See Table 1 for treatments and rates.

Treatment	Damage	Plant	Stand	Node To	Lb Seed
	Rate (0-4)	Height	Count	First	
	6/6/02	6/13/02	3 Ft	Square	Cotton/Ac
				5 Plants	
				6/27/02	10/3/02
ABT	4.0 a	7.17 a	10.0 de	5.9 cd	2808.4 a
AST	3.0 b	7.17 a	10.3 de	6.7 ab	3113.3 a
AMS	3.8 ab	6.96 a	9.8 e	5.8 d	3199.2 a
ABT + Cruiser	0.8 cd	6.75 a	13.0 a-d	5.9 bcd	3121.9 a
AST + Cruiser	0.0 d	7.04 a	14.5 ab	6.6 abc	3005.9 a
AMS + Cruiser	0.8 cd	6.33 a	10.8 cde	5.9 bcd	3087.5 a
ABT + Gaucho	0.3 cd	7.04 a	13.0 a-d	7.1 a	2963.0 a
AST + Gaucho	0.3 cd	7.29 a	13.9 abc	6.5 a-d	3066.0 a
AMS + Gaucho	0.8 cd	6.47 a	10.0 de	6.0 bcd	3096.1 a
ABT + Temik	0.8 cd	7.04 a	11.5 b-e	6.5 a-d	3113.3 a
AST + Temik	1.0 c	7.50 a	14.9 a	5.9 cd	2967.3 a
AMS + Temik	0.5 cd	6.79 a	9.8 e	6.3 a-d	2958.7 a
LSD (P=.05)	0.82	1.681	3.22	0.80	320.7
Treatment Prob(F)	0.0001	0.9741	0.0058	0.0315	0.9802

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