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THRIPS MANAGEMENT IN ARKANSAS COTTON

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Abstract

Two tests were conducted in 2002 to evaluate the efficacy of select insecticides on thrips. Each test was at a different location, Keiser and Marianna, AR. Temik and Cruiser provided significant control at both locations. Orthene did not provide significant control over the untreated check at either location. Only Orthene failed to provide a significantly higher yield than the untreated check at the Keiser location. There were no statistical differences in lint yield among the treatments at the Marianna location.

Introduction

Thrips are an annual problem in cotton production; however, the thrips population varies in severity from year to year. The problem with controlling thrips is that you never know when they are going to be severe. As a result, most growers apply insecticides in-furrow or as seed treatments. Thrips build up in the spring on early wild host plants and most likely wheat. These hosts of thrips start to dry up from early May until mid June. As these hosts begin to dry, thrips start to migrate to more favorable food sources. Unfortunately, this about the same time that cotton is starting to grow. The large host acreage for thrips and their reproductive capability create a situation, in most years, where young cotton sustains some level of damage from large thrips populations. In the mid-south production area, the tobacco thrips, *Frankliniella fusca* is the predominate species that occurs on cotton. However, the western flower thrips, *Frankliniella occidentalis*, was quite common last year and caused a great deal of concern among Arkansas producers. Other species that have been reported in cotton include the flower thrips, *Frankliniella tritici*, and the soybean thrips, *Neohydatothrips variables,* (Burris et al 2000) and the onion thrips, *Thrips tabaci* (Eddy and Livingstone 1931).

Thrips injure cotton by feeding in the terminal area of the plant. This terminal feeding disrupts normal growth of the plant leaf structure. The result is usually severely deformed leaves, aborted terminals and greatly reduced leaf area. This general injury of the plant structure greatly reduces the photosynthetic capacity of the plant. As a result, the general vigor of the plant is low causing stunting, increased susceptibility to plant diseases, and, in the end, lower yields. If not controlled, thrips injury can reduce stands severely. In addition, yields can be reduced by up to 50 or 60 percent in a year when thrips are numerous and not controlled by insecticides either in-furrow, as seed treatments, or as foliar treatments.

Methods

Two tests were conducted in 2002 to evaluate the efficacy of select insecticides on thrips. The tests were located at the University of Arkansas Northeast Research and Extension Center near Keiser, AR and at the University of Arkansas Cotton Branch Station near Marianna. Both tests were arranged in a randomized complete block design with 4 replications. Plots were eight 38-inch rows wide by 50 feet long at Keiser and four 38-inch rows wide by 50 feet long at Marianna. The cotton variety planted at both locations was Deltapine 451 BR. Thrips samples were taken on June 7, 14, 21 and 26 at the Keiser location. Samples were taken on June 3, 11, 17 and 25 at the Marianna location. Five plants were randomly sampled per plot to determine the level of thrips infestation. Plants were processed using the wash procedure described by Burris (1990). Samples were taken from the outside 2 rows of each plot to avoid influence on yield. Each plant was cut and immediately placed into a mason jar containing 70% ethyl alcohol. In the laboratory, plants were rinsed with alcohol to wash off thrips. To separate the thrips from alcohol, the solution was poured through coffee filters lining the inside of a buchner funnel. A vacuum pump was used to quickly evacuate the alcohol through the coffee filter. The thrips on the coffee filter were rinsed into a petri dish. Thrips were visually counted on the petri dish using a dissecting microscope. Plots were maintained using according to University of Arkansas Extension recommendations. Yields were determined by harvesting the middle 2 rows of each plot.

Results and Discussion

The thrips pressure was high in 2002, and tobacco thrips was the predominant species. Thrips pressure was similar at both locations. Damage was compounded by cold weather in early May.

All treatments, except Orthene, maintained control through 14 days after treatment (DAT) at both locations (Tables 1 and 2). At Keiser, all treatments, except Orthene, had significantly lower thrips counts than the untreated check through 21 DAT (Table 1). At 28 DAT, Temik (0.5 lb ai/A), L0263 plus L0110, and Cruiser had significantly lower thrips populations than Orthene; all other treatments were not significantly different.

At the Marianna location, treatments began to differ by 21 DAT (Table 2). Temik (0.75 lb ai/A), L0263 plus L0110, and Orthene were statistically similar to the untreated check at 21 DAT, and all other treatments had significantly lower thrips populations than the untreated check. All treatments were similar by 28 DAT.

All treatments, except Orthene, gave significantly higher yields than the untreated check at the Keiser location (Table 1). Orthene had a statistically similar yield to the untreated check and was significantly lower than all other treatments. There was a numerical trend of increased yield with increased rate of Temik at the Keiser location (Table 1). There were no significant differences in yield among the treatments at the Marianna location (Table 2).

References

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Table 1. Thrips population counts and cotton yield at Keiser, AR.

		Number of thrips per 5 plants				Lint yield
Treatment	**Rate**	**14 DAT**	**21 DAT**	**28 DAT**	**33 DAT**	**lb/acre**
Untreated		90.75 a	95.00 a	44.25 ab	27.00 a	414.74 b
Temik	0.5 lb ai/A	6.00 b	18.00 b	22.25 b	10.75 a	703.42 a
Temik	0.6 lb ai/A	19.50 b	21.75 b	57.00 ab	13.50 a	730.53 a
Temik	0.75 lb ai/A	2.75 b	19.50 b	35.50 ab	9.50 a	824.44 a
Gaucho	8 oz/cwt	5.50 b	44.75 b	39.50 ab	9.50 a	736.83 a
L0263 +	3.84 oz/cwt	10.00 b	33.50 b	24.50 b	17.25 a	765.19 a
L0110	4.8 oz/cwt					
Cruiser	7.65 oz/cwt	4.75 b	21.25 b	23.50 b	16.00 a	842.09 a
Orthene	0.35 lb ai/A	131.50 a	84.50 a	78.75 a	39.25 a	306.96 b

Means followed by the same letter do not significantly differ (P = 0.05).

Table 2. Thrips population counts and cotton yield at Marianna, AR.

Treatment	Rate	Number of thrips per 5 plants				Lint yield
		14 DAT	21 DAT	28 DAT	33 DAT	lb/acre
Untreated		73.75 a	90.00 a	35.00 a	35.00 a	875.29 a
Temik	0.5 lb ai/A	3.25 b	17.50 b	20.25 a	18.25 a	947.02 a
Temik	0.6 lb ai/A	2.25 b	15.25 b	42.50 a	38.75 a	904.47 a
Temik	0.75 lb ai/A	5.75 b	32.50 ab	34.75 a	22.50 a	959.18 a
Gaucho	8 oz/cwt	2.75 b	18.25 b	15.75 a	22.00 a	988.35 a
L0263 +	3.84 oz/cwt	4.25 b	37.00 ab	26.00 a	27.75 a	925.14 a
L0110	4.8 oz/cwt					
Cruiser	7.65 oz/cwt	0.75 b	10.75 b	21.25 a	36.25 a	968.90 a
Orthene	0.35 lb ai/A	66.50 a	82.25 ab	25.50 a	20.25 a	937.29 a

Means followed by the same letter do not significantly differ (P = 0.05).