

CONTROL OPTIONS FOR THRIPS IN SOUTHEAST ARKANSAS

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Abstract

Thrips continued to be an early-season pest in Southeast Arkansas cotton during 2002. Cold, wet conditions during a critical 2-week period following planting, coupled with heavy thrips populations, resulted in pronounced stress on seedling cotton. Evaluation of newer seed treatments along with an existing standard in-furrow treatment on several different varieties demonstrated that thiamethoxam (Cruiser seed treatment) provided the best control of thrips and the highest yields. In a second trial, only Temik at 4 lb per acre provided significantly better control than the untreated control across sample dates.

Introduction

Heavy infestations of thrips can damage terminal growth of cotton plants, causing plant death in extreme cases or more typically abortion of the terminal. An abandoned terminal results in branching and excessive vegetative growth, which can lead to delayed maturity and reduced yields (Micinski et al. 1990). Cotton plants can outgrow and compensate for thrips injury, but infestations can reach high enough levels to reduce yields if left untreated (Herbert 1995, Roberts and Rechel 1996). New insecticides continue to be developed to help control thrips and consist of both foliar materials and seed treatments. Aldicarb (Temik) continues to be a standard for thrips control in cotton, not only for its effectiveness against thrips but also because of its effectiveness in the suppression of nematodes. New seed treatments such as thiamethoxam (Cruiser) and other seed treatments such as imidacloprid (Gaucho) and acephate (Orthene) continue to be a valuable option for thrips control.

Materials and Methods

In Test I, cotton (Deltapine 458 B/RR, 989 BG/RR, and Stoneville 4892 B/R) was planted on 23 April 2002 at the Southeast Branch Experiment Station near Rohwer, AR, with four treatments (untreated, Temik 15G, Cruiser 5 FS, and Gaucho 600 FS) applied to all three varieties. Plots measured 8 rows by 40 feet, spaced 38 inches apart, with four replications of each treatment arranged in a randomized complete block design. Standard fertilization and herbicide practices were followed according to current University of Arkansas Extension recommendations (Chapman 2000). Thrips were collected on 8, 15, 22 and 28 May and on 4 June by randomly pulling 10 plants from rows 1 and 4 of each plot and washing them in 1-quart jars of 70% isopropyl alcohol. Nymphs and adults were counted following filtration procedures in the laboratory, and samples of adult thrips were identified to species. In Test II, Deltapine 451 B/R was planted on 21 May 2002 at the Southeast Branch Experiment Station near Rohwer, AR. The trial contained six treatments (untreated, Temik 15G at 3.5, 4.0 and 5.0 lb, Cruiser 5 FS, and Gaucho 600 FS). Plot size, agronomic practices, and sampling procedures were identical to those used in the first trial. Data were processed using Agriculture Research Manager (ARM) (Gylling Data Management, Inc., Brookings, SD), and means were separated using Least Significant Difference (LSD) procedures following significant F tests using Analysis of Variance (ANOVA).

Results and Discussion

Tobacco thrips, *Frankliniella fusca*, was the predominant species (94-97%) in 2002 (Table 1). Western flower thrips, *F. occidentalis*, made up 4-5% of the populations sampled, and flower thrips and other species comprised less than 1% of species encountered in cotton at Rohwer, AR, during 2002.

Test I

On 8 May 2002, DP 458 B/RR untreated (UTC) plots contained significantly higher thrips numbers than all treated plots (Table 2). On the second sample date, all Cruiser treatments and ST 4892 + Gaucho were significantly lower than untreated plots in DP 458 B/RR. On the third sample date, all Cruiser treatments contained significantly lower numbers of thrips than the three untreated controls. There were no significant differences in thrips populations among treatments on the fourth sample date, but Cruiser treatments did have numerically lower numbers across varieties. On the fifth sample date (42 days after planting) there were no differences among treatments. Cruiser treatments resulted in numerically higher yields across varieties, followed by Gaucho and Temik, while 4892 B/R and 989 BG/RR resulted in numerically higher yields across insecticide treatments (Table 2).

Test II

On the second and third sample dates, all treatments were significantly better than the untreated control (Table 3). Temik at 4 and 5 pounds were the only treatments with significantly lower thrips numbers than the untreated control on the fourth sample date. On the last sample date, Temik at 4 pounds was the only treatment significantly lower than the untreated control.

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Disclaimer

The mention of trade names in this report is for informational purposes only and does not imply an endorsement by the University of Arkansas Cooperative Extension Service.

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Table 1. Thrips species composition for Rohwer, Arkansas (2002).

Trial	Total Thrips	<i>F. fusca</i>	<i>F. occidentalis</i>	<i>F. tritici</i>
Test I	6450	6296	99	55
% of total		97.61%	4.53%	0.86%
Test II	235	221	12	2
% of total		94.04%	5.11%	0.85%

Table 2. Average number of adult and immature thrips per 10 plants (Test I).

Treatment	5/8/02	5/15/02	5/22/02	5/28/02	6/4/02	Yield (37% lint)
1) DP458B/RR (UTC)	10.5 a	24.5 a	155.8 a	93.0 a-d	176.0 a	753.9 e
2)989BG/RR (UTC)	5.3 ab	18.0 abc	142.5 a	158.0 a	407.0 a	1199.2 abc
3) ST4892B/R (UTC)	0.5 b	14.0 abc	148.0 a	124.5 a-d	265.0 a	1116.5 bcd
4) 458+Cruiser	0.5 b	5.3 bc	46.5 c	88.0 a-d	321.0 a	1186.5 abc
5) 989+Cruiser	0.8 b	3.5 c	51.8 bc	54.8 d	242.8 a	1347.2 ab
6) 4892+Cruiser	0.8 b	5.3 bc	40.8 c	66.3 cd	214.0 a	1469.6 a
7) 458+Gaucho	3.0 b	19.5 ab	92.0 abc	133.5 abc	302.8 a	1013.2 cde
8) 989+Gaucho	2.8 b	16.0 abc	139.3 a	128.8 a-d	348.5 a	1146.8 bc
9) 4892+Gaucho	0.3 b	7.0 bc	88.3 abc	152.8 a	394.0 a	1356.7 ab
10) 458+Temik	2.0 b	17.3 abc	128.5 ab	143.5 ab	409.5 a	804.8 de
11) 989+Temik	1.0 b	13.8 abc	118.5 abc	76.8 bcd	283.0 a	1191.3 abc
12) 4892+Temik	0.3 b	11.8 abc	103.5 abc	90.8 a-d	329.8 a	1219.9 abc

Means followed by same letter do not significantly differ ($P=0.05$, LSD).

Table 3. Average number of adult and immature thrips per 10 plants (Test II).

Treatment	5/31/02	6/4/02	6/7/02	6/11/02	6/14/02
1) UTC	0.5 a	39.3 a	32.3 a	24.0 a	12.8 ab
2) Temik 3.5lbs	0.0 a	17.5 b	1.6 b	10.3 ab	13.8 a
3) Temik 4.0lbs	0.3 a	2.8 c	1.8 b	4.3 b	5.0 c
4) Temik 5.0lbs	0.0 a	3.0 c	1.0 b	6.8 b	12.0 ab
5) Cruiser ST	0.0 a	5.3 c	5.7 b	14.3 ab	8.0 bc
6) Gaucho ST	0.0 a	7.8 bc	2.9 b	14.0 ab	15.0 a

Means followed by same letter do not significantly differ ($P=0.05$, LSD).