2004 BELTWIDE COTTON CONFERENCES, SAN ANTONIO, TX – JANUARY 5-9

CONTROL OPTIONS FOR THRIPS IN SOUTHEAST ARKANSAS – 2003

Jeremy Greene and Charles Capps
University of Arkansas
Monticello, AR
Gus Lorenz, Patrick Smith, and Don Johnson
University of Arkansas
Little Rock, AR
Glenn Studebaker
University of Arkansas
Keiser, AR

Abstract

Trials were conducted to determine the effectiveness of in-furrow, seed-treatment, and foliar-applied insecticides in providing control of thrips populations in cotton. Seed treatments such as thiamethoxam (Cruiser) and imidacloprid (Gaucho) provided control equal to or better than aldicarb (Temik). Yields in plots treated with Cruiser were highest. Foliar sprays, compared without seed treatments or in-furrow products, were effective in controlling thrips and produced more cotton when compared with the untreated control.

Introduction

Thrips continue to be a perennial early-season pest in Southeast Arkansas. Thrips begin to move into cotton from wild hosts and wheat as they senesce and can reach high enough populations to cause economic damage to cotton if left untreated (Herbert 1995, Roberts and Rechel 1996). Heavy infestations of thrips typically cause abortion of the terminal resulting in branching and excessive vegetative growth, which can lead to delayed maturity and reduced yields (Micinski et al. 1990). Seed treatments along with in-furrow treatments continue to be valuable options for early-season thrips control (Johnson et al. 2003). Foliar sprays alone can also provide effective but sometimes variable control of thrips.

Materials and Methods

In Test I and II, cotton (Stoneville 4892 B/R) was planted on 30 April 2003 at the Southeast Branch Experiment Station near Rohwer, AR. 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). For Test I and II, thrips were collected on 13, 16, 20, 23, 27, and 30 May and on 2 June by randomly pulling 10 plants from rows 2 and 7 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. In Test III, cotton (Suregrow 215 BG/RR) was planted on 13 May 2003 at the Southeast Branch Experiment Station near Rohwer, AR. Plot size, agronomic practices, and sampling procedures were identical to those used in the first trial. Sampling dates were 30 May and 2, 5, 9, 16, and 19 June 2003. 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

Test I

All treatments provided significant control of thrips up to 27 days after planting (27 DAP) (Table 1) duplicating results seen in other trials (Lentz et al. 2003, Greene et al. 2003). At 30 DAP, numbers of thrips in Gaucho and Cruiser seed treatments did not significantly differ from the untreated control but did at 33 DAP. All treatments yielded significantly higher than the untreated control with Cruiser yielding the most numerically with similar results seen in previous trials (Greene et al. 2003).

Test II

All treatments, except foliar-applied Dimethoate (pre-treatment), provided significant control of thrips populations across all sample dates when compared with the untreated control (Table 2). Dimethoate plots had the lowest numbers of thrips numerically across most dates due to three foliar treatments applied throughout the sampling. Only the Cruiser treatment yielded significantly more than the untreated control.

Test III

All treatments provided significant control of thrips across the first three post-treatment sample dates when compared with the untreated check (Table 3). At four days after the third treatment (4DAT3), Dimethoate (0.25 lb ai/a) and Bidrin (0.20 lb

ai/a) did not significantly differ from the untreated control, and Bidrin (0.20 lb ai/a) was not significantly different from the untreated control at 7DAT3. However, Bidrin (0.20 lb ai/a) was the only treatment to yield significantly more than the untreated control.

Acknowledgments

We thank the staff at the Southeast Branch Experiment Station, Rohwer Branch, for their assistance. We would also like to thank our workers Joe Belvedresi, Michael Dotson, Brian Lawhon, Heather Jaggers, Greg O'Neal, Keith Sowell, Michael Shepard, Cory Bryant, Randy Dixon, and Jeremy Spurlock for their assistance in helping conduct our research.

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.

References

Chapman, S. L. 2000. Soil Test Recommendations Guide. University of Arkansas Division of Agriculture publication: 39.

Greene, J., C. Capps, and J. Reed. 2003. Control options for thrips in Southeast Arkansas. Proceedings of the Beltwide Cotton Conference. National Cotton Council, Memphis, TN.

Herbert, D.A. 1995. Insect pest management in Virginia peanuts, soybeans, and cotton. pp. 97-110. Virginia Tech. Tidewater Agricultural Research and Extension Center Info Ser. No. 372.

Johnson, D.R., G. Lorenz, G. Studebaker, and D. Walsh. 2003. Thrips management in Arkansas cotton. Proceedings of the Beltwide Cotton Conference. National Cotton Council, Memphis, TN.

Lentz, G.L., N. Van Tol, and D. Pekarchick. 2003. Performance of early-season insecticides under adverse conditions in West Tennessee. Proceedings of the Beltwide Cotton Conference. National Cotton Council, Memphis, TN.

Micinski, S.D., P.D. Colyer, K. T. Nguyen, and K. L. Koonce. 1990. Effects of planting date and early-season pest control on yield in cotton. J. Prod. Agric. 3:597-602.

Roberts, B.A. and E.A. Rechel. 1996. Effects of early season thrips feeding on root development, leaf area, and yield. pp. 939-941. *In*: P. Dugger and D.A. Richter (eds.) Proceedings of the Beltwide Cotton Conference. National Cotton Council, Memphis, TN.

Table 1. Average number of adult and immature thrips per 10 plants (Test I).

Treatment/ Rate	13 May 13 DAP	16 May 16 DAP	20 May 20 DAP	23 May 23 DAP	27 May 27 DAP	30 May 30 DAP	2 June 33 DAP	Yield @ 35 % T.O.
UTC	27.5 a	78.5 a	72.5 a	223.3 a	264.3 a	159.0 a	242.0 a	1098.3 b
Temik 3.5lb	4.0 b	12.3 c	25.8 b	26.0 b	53.3 b	63.3 c	82.8 c	1300.6 a
Temik 4.0lb	5.5 b	8.0 c	24.5 b	30.5 b	54.3 b	51.3 c	75.0 c	1393.9 a
Temik 5.0lb	2.8 b	7.3 c	18.8 b	19.0 b	40.0 b	74.3 bc	73.8 c	1385.6 a
Cruiser ST	1.5 b	9.8 c	16.8 b	21.5 b	37.3 b	117.5 ab	99.8 bc	1397.7 a
Gaucho ST	5.5 b	23.8 b	26.0 b	34.3 b	56.0 b	128.8 a	132.5 b	1334.5 a

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

Table 2. Average number of adult and immature thrips per 10 plants (Trial II).

Treatment/ Rate	13 May 13 DAP	16 May 16 DAP	20 May 20 DAP	23 May 23 DAP	27 May 27 DAP	30 May 30 DAP	2 June 33 DAP	Yield @ 35 % T.O.
UTC	28.0 a	59.8 a	92.0 a	281.8 a	303.0 a	277.5 a	265.5 a	1294.6 bc
Temik 3.5lb	2.3 b	14.5 b	33.3 b	33.8 b	45.0 bc	99.0 bc	112.5 b	1381.6 ab
Temik 3.5lb	2.5 b	9.8 bc	29.3 bc	32.3 b	48.5 bc	107.3 bc	112.5 b	1287.1 bc
Temik 5.0lb	3.8 b	9.0 bc	26.5 bc	26.3 b	47.0 bc	84.8 bc	109.0 b	1166.0 d
Temik 5.0lb	1.3 b	2.3 c	22.8 bc	24.5 b	29.0 bc	64.5 bc	105.5 bc	1361.6 ab
Temik 5.0lb Gaucho ST	2.3 b	4.8 bc	11.0 bc	14.0 b	25.3 bc	55.3 bc	46.3 cd	1385.6 b
Gaucho ST	7.3 b	15.5 b	19.5 bc	51.0 b	82.8 b	152.8 b	136.0 b	1208.8 cd
Cruiser ST	2.3 b	10.8 bc	14.0 bc	30.0 b	55.5 bc	135.3 b	109.8 b	1472.1 a
Dimethoate 0.25 lb ai/a	26.0 a	2.0 c	15.8 bc	12.3 b	6.0 c	3.5 d	14.0 d	1370.6 ab

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 III).

Treatment/ Rate lb ai/a	30 May Pretreat	2 June 3DAT1	5 June 6DAT1	9 June 4DAT2	16 June 4DAT3	19 June 7DAT3
UTC	35.8 a	65.0 a	78.0 a	40.0 a	26.0 ab	27.3 a
Dimethoate 0.25	27.3 a	23.8 b	18.8 b	8.3 b	16.5 ab	4.3 b
Orthene 0.25	23.3 a	13.5 b	22.8 b	4.5 b	10.8 b	2.3 b
Bidrin 0.25	26.3 a	27.0 b	12.3 b	9.0 b	8.8 b	1.0 b
Monitor 0.25	31.5 a	16.5 b	23.3 b	8.0 b	10.5 b	3.0 b
Bidrin 0.20	26.5 a	19.0 b	25.3 b	12.3 b	38.0 a	18.8 a

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