

**SPIDER MITE CONTROL
IN SOUTHEAST ARKANSAS
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Abstract

Pirate 3SC at rates from 0.05 to 0.15 lbs ai/ac provided consistent mite control with little indication of population rebound in these tests. Curacron 8E gave relatively good initial control, but showed some indications of quick population rebound. Lorsban 4 E gave indications of poor initial control and population rebound.

Introduction

The Two-spotted spider mite, *Tetranychus urticae* Koch, is an important cause of lost revenue to cotton producers in Arkansas and across the U.S. Cotton Belt. Losses for Arkansas were estimated at 1,692 bales in 1997 with a value of some \$528,000 (Williams, 1998). Treatment costs for spider mite control in Arkansas were estimated at \$817,000. The resulting cost to producers from spider mites, lost yield and control costs, was about \$1.3 million in Arkansas in 1997. In spite of these impacts on cotton profitability, few studies on spider mite control in cotton have been published from the Mid-South region.

Materials and Methods

This paper summarizes data from three tests, conducted in 1996, 1997, and 1998 against the two-spotted spider mite, *T. urticae*.

The 1996 test was conducted on the Southeast Branch Experiment Station at Rohwer, AR. The test was conducted on Suregrow 125 cotton planted on 5-2-96 and grown using standard production practices. This test was treated on 7-17-96 using a John Deere high clearance sprayer applying 10 gallons of finished spray per acre. Plots were 140 feet long by 8 rows wide and were unreplicated. Five subplots were established per treatment.

The 1997 test was conducted on the Randy Eagle Farm near Grady, AR. The test was conducted on Deltapine Nucoton 33B cotton planted on 5-6-98 and grown using standard production practices. The test was treated using a CO₂ charged backpack sprayer in 13.6 gallons of finished spray per acre. In this test, plots were 25 feet long by 2 rows wide

and the test was conducted using a Randomized Block Design with four replications of each treatment.

The 1998 test was conducted on the Mike Norris Farm near Pickens, AR. The test was conducted on a field of Stoneville 474 cotton planted on 5-5-98 and grown using standard production practices. The test was treated using a CO₂ charged backpack sprayer in 10.0 gallons of finished spray per acre. Plots were 25 feet long by 2 rows wide and the test was conducted using a Randomized Block Design with four replications.

Data were collected on each posttreatment sampling date by collecting 5 mainstem leaves (4 nodes below the terminal) per plot (5 leaves per subplot in the 1996 test). The leaves were placed in ziplock plastic bags, held on ice and transported to the laboratory. In the lab, one 20X microscope field (4.5mm₂) containing the central leaf vein was examined and the live spider mites were counted. Data from each plot (subplot in 1996) were averaged and the plot or subplot means were analyzed. Kruskal-Wallis and LSD were used to analyze the 1996 test, while ANOVA and LSD were used with the 1997 and 1998 data.

Results and Discussion

The results of the testing conducted over 3 years are shown in Tables 1-3.

The 1996 data (Table 1) shows relatively good separation of the treatments two days after treatment (2 DAT), but at 6 DAT a fungal pathogen had reduced spider mite populations in all treatments. Two days after treatment, Pirate at 0.15 lb ai/ac provided statistically superior reduction of mite populations. Curacron 1.0 ai/ac was the only other treatment which lowered mite numbers significantly below the level in the untreated check 2 DAT.

The 1997 data (Table 2) shows good treatment separation at 2 and 5 DAT, but non-significant trends only by 6 DAT. At 2 DAT, all miticides significantly reduced mite numbers below the average level in the untreated check plots. Ovasyn 0.5 lb ai/ac had higher mite survival than did the other treatments. Lorsban 1.0 lb ai/ac and Pirate 0.1 and 0.15 lb ai/ac treated cotton had low mite survival. By 5 DAT, Lorsban treated plots had increased considerably in mite numbers. The only treatments which significantly lowered mite populations below those seen in the untreated check 5 DAT were the two rates of Pirate. By 6 DAT Pirate treated plots showed only a non-significant trend toward lower mite levels.

The 1998 data (Table 3) shows strong separation of the treatments at 1, 2 and 3 DAT. At 1 DAT, only Curacron 1.0 lb ai/ac and Pirate at all 3 rates gave significant reductions in mite numbers as compared to the untreated check. Ovasyn 0.25 lb ai/ac, Curacron and all three rates of Pirate produced fewer mites than were seen in the untreated check

2 DAT. At 3 DAT only Ovasyn and the 3 rates of Pirate had significantly fewer mites than were in check plots.

Summary

Pirate 3SC, at all 3 rates tested, provided strong control of two-spotted spider mite populations with no indications (in this data) of short term population rebound. Lorsban at both .75 and 1.0 lb ai/ac showed less consistent initial control and at 1.0 lb ai/ac, a mite populations tended to rebound. Curacron at both 1.0 and 0.75 lb ai/ac provided good initial population suppression, but mite population rebound was seen in the 1998 data. Stuebaker (1997) reported similar population rebound after Curacron and Lorsban treatment in a 1996 miticide trial conducted near Keiser, AR. He showed good miticidal activity from both Pirate and Kelthane 4MF in that study.

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References

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Table 1. Live spider mites after miticide application¹. Rohwer, AR. 1996.

Miticide	Rate lb ai/ac	Mites/Microscope Field	
		2 DAT	6 DAT
Check	---	5.3a	1.9a
Lorsban 4E	0.75	3.6ab	1.2a
Curacron 8E	1.0	2.1b	0.7a
Zephyr 0.15EC	0.0094	3.1ab	0.9a
Pirate 3SC	0.15	0.4c	0.5a

¹Means in columns followed by the same letter are not significantly different at the 5% level of significance.

Table 2. Live spider mites after miticide application¹. Grady, AR. 1997.

Miticide	Rate lb ai/ac	Mites/Microscope Field		
		2 DAT	5 DAT	6 DAT
Check	---	6.0a	6.2a	4.2a
Ovasyn 1.5	0.5	3.4b	2.0ab	0.4a
Curacron 8E	0.75	1.2c	1.5ab	0.9a
Lorsban 4E	1.0	0.8c	3.3ab	0.6a
Pirate 3SC	0.1	0.4c	0.2b	0.1a
Pirate 3SC	0.15	0.4c	0.1b	0.1a

¹Means in columns followed by the same letter are not significantly different at the 5% level of significance.

Table 3. Live spider mites after miticide application¹. Pickens, AR. 1998.

Miticide	Rate lb ai/ac	Mites/Microscope Field		
		1 DAT	2 DAT	3 DAT
Check	---	8.5a	11a	9.6a
Curacron 8E	1.0	1.9b	4.0c	8.8ab
Lorsban 4E	1.0	5.6ab	8.5ab	6.2abc
Ovasyn 1.5	0.25	5.0ab	4.8bc	4.3bc
Pirate 3SC	0.05	3.7b	1.8c	1.8c
Pirate 3SC	0.1	2.3b	1.1c	1.3c
Pirate 3SC	0.15	3.8b	1.1c	1.1c

¹Means in columns followed by the same letter are not significantly different at the 5% level of significance.