

TWO-YEAR PERFORMANCE SUMMARY OF SOIL AND SEED APPLIED SYSTEMIC INSECTICIDES ON COTTON ALONG THE TEXAS UPPER COAST

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Abstract

Data from 5 field tests conducted in the Texas Upper Coast production region from 2000 and 2001 were combined for analysis to compare the effects of seed (Cruiser and Gaucho) and soil applied (Temik) systemic insecticides on thrips. In this analysis, thrips numbers on 2-5 true leaf cotton, plant damage ratings, boll production, lint per boll, lint yield and economic impacts are reported. No significant differences were found in the number of thrips; however, numerically all the insecticide treatments had less numbers of thrips compared to the untreated cotton. No significant differences were found in the number of bolls to produce a pound of lint; however, numerically it took less number of bolls to produce a pound of lint in all the insecticide treatments. All insecticide treatments had statistically lower plant damage ratings, greater number of harvested bolls and more lint production than untreated cotton. Lint yield increase in insecticide treatments ranged from 66-115 lb/acre.

Introduction

Field studies to evaluate the effects of seed and in-furrow at-planting systemic insecticides on early season insects and subsequent favorable impact on lint production and economic returns have been demonstrated in cotton grown along the Texas Upper Coast production region. Herein is a summary of the test conducted in 2000 and 2001.

Materials and Methods

Five sets of data from field studies conducted in Wharton, Matagorda and Colorado counties over a 2-year period (2000-2001) were used in this analysis. Tests were planted in March and April in 4 or 8 row plots on 36, 39 and 40- inch centers. Plot lengths ranged from 500-1294 feet and treatments were replicated three times in a randomized complete block design. Soil types that field studies were evaluated on consisted of heavy clays, a silt loam and a fine sandy loam with an average pH of 7.5 and 1-2% organic matter. Cotton varieties utilized in these tests included DPL 20B, DPL 33B, DPL 458B/RR, Stoneville 474, and PayMaster 1560B. Seeding rates ranged from 12-14 pounds per acre. Soil moisture conditions were good in both years and at all five test locations for favorable lint yields. Insecticide treatments included granular Temik 15G (4.2 oz/1000 row ft) applied in-furrow and seed treated with Cruiser 5FS (7.6 oz/cwt seed) or Gaucho 480FS (8.0 oz/cwt seed).

Treatment effects were measured in the center two rows of plots (1) counting the number of thrips and aphids (aphids not reported herein) on 5 plants per plot on 2-5 true leaf stage cotton (plants were placed in alcohol, washed, and insects collected on filter paper and counted under a microscope), (2) assigning a visual plant damage rating (1=no damage up to 5=severe stunting and leaf curling), (3) harvesting seed cotton by hand from 1/1000th acre lengths of row at three different locations in each plot, and (4) processing cotton for lint weight on a 10-Saw Eagle Laboratory gin. Data from the various tests were considered as replicates for statistical analysis.

Results/Discussion

No significant differences in number of thrips were found. However, numerically the Cruiser, Temik and Gaucho treated cotton had less number of thrips compared to the untreated cotton. Visual plant damage was significantly reduced in the Cruiser, Temik and Gaucho treated cotton. Untreated cotton was easy to identify due to visual plant damage symptoms.

There were no significant differences in the number of bolls to produce a pound of lint across the Cruiser, Temik and Gaucho treated and untreated cotton. However, numerically it took less number of bolls to produce a pound of lint in the Cruiser, Temik and Gaucho treated cotton. Number of harvested bolls for the Cruiser treated cotton were significantly higher compared to the Gaucho treated and untreated cotton. Temik and Gaucho treated cotton produced significantly more number of harvested bolls than the untreated cotton.

Cruiser treated cotton produced significantly more lint yield than the Temik and Gaucho treated cotton and the untreated cotton. Temik and Gaucho treated cotton produced significantly more lint yield than the untreated cotton. The increase averaged 84 lb/acre for the three insecticides and ranged from 66-115 lb/acre. Dollar return due to insecticide treatment over the untreated cotton averaged \$18.61/acre.

Conclusions

Tests conducted over the two year period provides evidence of the economic benefit from the use of systemic insecticides applied at-planting on cotton along the Texas Upper Coast. Our conclusions are that Cruiser, Gaucho and Temik (1) reduce early season insect damage to cotton, (2) result in increased lint yields, and (3) provide an economic return.

References

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Table 1. Thrips numbers, plant damage ratings, boll production, lint yield and dollar return from use of systemic insecticide seed and granular treatments on cotton, Texas Upper Coast, 2000 and 2001.

Treatment (rate)	Thrips ^a no./10 plants	Plant ^b damage rating	Bolls (1000's/acre)		Yield lb. lint /acre	Return ^c \$/acre over untreated
			har- vested	no./ lint lb		
Cruiser 5FS (7.6 oz/cwt seed)	13.7 a	1.28 b	314 a	272 a	1189 a	29.72
Temik 15G (4.2 oz/1000 ft row)	4.1 a	1.43 b	306 ab	273 a	1144 b	12.63
Gaucho 480FS (8.0 oz/cwt seed)	13.4 a	1.69 b	302 b	270 a	1140 b	13.48
Check	23.7 a	2.67 a	292 c	279 a	1074 c	---
LSD (P=0.05)	NS	0.577	9.153	NS	40.4	
P>F	.1343	.0009	.0021	.0941	.0004	

Means in a column followed by the same letter are not significantly different by ANOVA (LSD).

^a Average number of thrips on 2-5 true leaf stage cotton.

^b Ratings range from 1 = no damage to 5 = severe stunting and leaf curling.

^c Cotton value based on \$ 0.51/lb lint and \$ 0.05/lb for seed; costs include Gaucho (\$0.74/lb at 13 lbs seed/acre), Cruiser (\$0.81/lb at 13 lbs seed/acre), Temik (\$3.32/lb) and labor for Temik application (\$0.25/acre); and harvest and hauling etc. (\$0.21/lint pound).