

CONTROL OF EARLY SEASON THRIPS WITH SELECTED INSECTICIDES

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Introduction

Thrips are predictable pests of seedling cotton and failure to use a preventive treatment will require the use of foliar sprays for thrips which are typically less effective than at-plant treatments. Thus, the majority of cotton planted in Georgia receives a preventive systemic insecticide for control of early season thrips. Various preventive treatments provide a range of thrips control and residual activity. Herbicide tolerant cottons allow opportunity for foliar thrips insecticides to be tank-mixed with herbicides. Growers have questions about the value of supplemental foliar thrips insecticide applications when various preventive treatments have been used. The objective of these trials was to evaluate selected preventive thrips insecticides and also the value of supplemental foliar thrips insecticides applied at the one and five leaf stage.

Methods

Small plot replicated field trials were established in Tift County, GA at the RDC Pivot on the Coastal Plain Experiment Station and on the ABAC farm. Plots were 2 rows wide, 40 feet in length, and arranged in a split plot design with four replications at the RDC location with at-plant insecticides as the main plots and foliar sprays as subplots. Foliar sprays (Orthene 97 at 3 ozs/acre) were applied on May 19 (1 true leaf) and June 1 (5 true leaves). Plots were of similar size and arranged in a randomized complete block design with four replications at the ABAC site. Plots were seeded with a cone planter on May 3, 2005 at both locations. A Roundup Ready Flex Bollgard II variety was used at the RDC location and DP 555 BG/RR was used at the ABAC site.

Thrips populations were sampled at 2, 3, and 4 weeks after planting by randomly collecting five seedlings per plot and immediately immersing and swirling in a container filled with 70 percent ETOH to dislodge thrips. Adult and immature thrips were then counted in the laboratory with a dissecting microscope. Visual damage ratings were made for individual plots at 3 and 4 weeks after planting. A rating scale of 1-5 was used where 1=no damage, 2=slight damage, 3=moderate (acceptable damage), 4=heavy damage, and 5=severe damage. Mean plant heights were assessed at 4 weeks after planting by measuring 10 plants per plot. Plots were machine harvested on September 8 and 22 at the RDC and ABAC locations respectively.

Results

Thrips populations were moderate at the ABAC location, exceeding 10 plants per plot at 3 WAP in untreated plots (Table 1). All treatments significantly reduced immature thrips per five plants at 2 and 3 WAP compared with the untreated, however only Temik treatments significantly reduced thrips at 4 WAP compared with the untreated. STAN

(abamectin, nematicide seed treatment) provided limited, but statistically significant, control of immature thrips at 2 and 3 WAP. Differences were observed in damage ratings at 3 and 4 WAP, but insecticides typically provided acceptable control. Most treatments significantly increased yield compared with the untreated.

Table 1. Thrips infestations, and damage ratings, plant heights, and lint yields for selected thrips control programs, Tift County GA (ABAC) 2005.

| DP 555 BG/RR Planted May 3, 2005 | | Immature Thrips per Five Plants | | | Damage Rating (1-5) | | Plant Height (cm) | Lint/a (lbs) |
|-------------------------------------|-----------------|------------------------------------|--------|--------|------------------------|--------|-------------------------|-----------------|
| Treatment Name | Rate Unit | May 17 | May 24 | May 31 | May 24 | May 31 | May 31 | Sep 22 |
| 1 Untreated | | 8.00 | 73.50 | 40.50 | 3.88 | 4.50 | 15.50 | 1359 |
| 2 STAN | 0.15 mg ai/seed | 4.00 | 33.50 | 40.00 | 3.63 | 4.00 | 17.50 | 1615 |
| 3 Cruiser | 0.3 mg ai/seed | 0.25 | 25.25 | 53.50 | 2.50 | 3.13 | 18.48 | 1554 |
| 4 Cruiser | 0.34 mg ai/seed | 0.50 | 20.00 | 59.75 | 2.25 | 3.13 | 18.88 | 1687 |
| 5 Cruiser Diamond | 0.3 mg ai/seed | 0.50 | 25.25 | 72.50 | 2.25 | 3.00 | 18.35 | 1605 |
| 6 Cruiser Diamond | 0.34 mg ai/seed | 1.75 | 13.75 | 49.00 | 2.00 | 3.00 | 18.50 | 1512 |
| 7 Cruiser | 0.34 mg ai/seed | 1.75 | 16.50 | 56.00 | 2.00 | 3.13 | 18.80 | 1593 |
| + STAN | 0.15 mg ai/seed | | | | | | | |
| 8 Cruiser Diamond | 0.34 mg ai/seed | 1.00 | 18.75 | 50.25 | 1.75 | 3.00 | 18.75 | 1686 |
| + STAN | 0.15 mg ai/seed | | | | | | | |
| 9 Gaucho | 250 g ai/100 kg | 1.00 | 45.25 | 52.25 | 2.13 | 3.38 | 18.48 | 1588 |
| 10 Temik | 4 lb/a | 0.00 | 3.25 | 16.75 | 1.00 | 1.63 | 20.23 | 1578 |
| 11 Temik | 5 lb/a | 0.25 | 3.50 | 15.75 | 1.00 | 1.38 | 20.35 | 1689 |
| LSD (P=0.05) | | 1.70 | 14.56 | 19.68 | 0.33 | 0.29 | 1.29 | 193 |

Thrips populations were moderate to heavy at the RDC location, exceeding 10 immature thrips per plant at 3 and 4 weeks after planting (WAP) in untreated plots (Table 2). Only immature thrips are reported since immature thrips are considered a better measure of insecticide efficacy compared with adult or total thrips counts. All insecticide treatments including Temik 15G at 3.5 lbs/acre, Cruiser seed treatment, and Orthene 97 treated seed at 22.5 ozs per cwt significantly reduced immature thrips per five plants at 2 and 3 WAP compared with the untreated. However, only Temik significantly reduced immature thrips at 4 WAP compared with the untreated. At four weeks after planting, foliar Orthene applications at the 1 leaf stage significantly reduced immature thrips compared with the untreated. A significant at-plant by foliar insecticide interaction also occurred at 4 WAP. Immature thrips were significantly reduced by the Orthene spray in untreated and Cruiser plots, but populations were similar regardless of Orthene sprays in Temik plots. Thrips damage ratings and mean plant heights followed similar trends as immature thrips counts. All at-plant insecticide treatments numerically increased yield compared with the untreated, however only Temik and Cruiser treatments significantly improved yield. Temik treatments were significantly greater than Cruiser treatments at this location. Orthene foliar sprays tended to increase yields in untreated, Cruiser, and

Orthene seed treatments. There appeared to be no yield benefit of treating cotton with Orthene at the 1 and 5 leaf stage compared with only at the 1 leaf stage.

Table 2. Thrips infestations, and damage ratings, plant heights, and lint yields for selected thrips control programs, Tift County GA (CPES RDC Pivot) 2005.

| Planted May 3, 2005 | | Immature Thrips per Five Plants | | | Damage Rating (1-5) | | Plant Height (cm) | Lint/a (lbs) |
|---------------------------------------|-------------------|------------------------------------|--------|--------|------------------------|--------|-------------------------|-----------------|
| Treatment Name | | May 17 | May 24 | May 31 | May 24 | May 31 | May 31 | Sep 8 |
| Factorial/Pooled Error AOV (Prob (F)) | | | | | | | | |
| At-Plant Insecticides | | *** | *** | *** | *** | *** | *** | *** |
| Foliar Insecticides | | * | * | *** | *** | *** | ** | * |
| At-Plant by Foliar | | ** | n.s. | *** | n.s. | *** | n.s. | n.s. |
| At-Plant Insecticide Means | | | | | | | | |
| No At-Plant | | 13.04 | 39.69 | 32.11 | 3.56 | 3.68 | 12.88 | 735 |
| Temik 15G | | 1.25 | 3.25 | 23.25 | 1.08 | 1.42 | 14.67 | 932 |
| Cruiser | | 0.92 | 11.58 | 38.92 | 1.92 | 2.33 | 14.67 | 850 |
| Orthene ST | | 0.84 | 4.19 | 16.65 | 1.73 | 1.94 | 14.06 | 804 |
| LSD (P=0.05) | | 2.02 | 18.88 | 9.96 | 0.20 | 0.26 | 0.62 | 77 |
| Foliar Insecticide Means | | | | | | | | |
| No Foliar | | 2.81 | 23.88 | 46.75 | 2.25 | 2.81 | 13.65 | 785 |
| Foliar 1 leaf | | 4.60 | 6.09 | 17.63 | 2.00 | 2.08 | 14.29 | 862 |
| Foliar 1 & 5 leaf | | 4.63 | 14.06 | 18.81 | 1.97 | 2.13 | 14.27 | 844 |
| LSD (P=0.05) | | 1.75 | 16.35 | 8.62 | 0.18 | 0.18 | 0.53 | 67 |
| At-Plant by Foliar Means | | | | | | | | |
| No At Plant | No Foliar | 7.50 | 71.75 | 68.75 | 4.00 | 4.50 | 12.00 | 645 |
| No At Plant | Foliar 1 leaf | 15.62 | 9.81 | 12.07 | 3.32 | 3.28 | 13.39 | 834 |
| No At Plant | Foliar 1 & 5 leaf | 16.00 | 37.50 | 15.50 | 3.38 | 3.25 | 13.25 | 727 |
| Temik | No Foliar | 0.50 | 3.75 | 25.00 | 1.13 | 1.63 | 14.42 | 953 |
| Temik | Foliar 1 leaf | 2.25 | 2.50 | 22.50 | 1.13 | 1.25 | 14.83 | 904 |
| Temik | Foliar 1 & 5 leaf | 1.00 | 3.50 | 22.25 | 1.00 | 1.38 | 14.75 | 938 |
| Cruiser | No Foliar | 1.75 | 15.25 | 69.75 | 2.00 | 2.88 | 14.33 | 798 |
| Cruiser | Foliar 1 leaf | 0.25 | 10.00 | 22.00 | 1.88 | 2.13 | 14.92 | 886 |
| Cruiser | Foliar 1 & 5 leaf | 0.75 | 9.50 | 25.00 | 1.88 | 2.00 | 14.75 | 865 |
| Orthene ST | No Foliar | 1.50 | 4.75 | 23.50 | 1.88 | 2.25 | 13.83 | 744 |
| Orthene ST | Foliar 1 leaf | 0.28 | 2.06 | 13.94 | 1.68 | 1.68 | 14.01 | 822 |
| Orthene ST | Foliar 1 & 5 leaf | 0.75 | 5.75 | 12.50 | 1.63 | 1.88 | 14.34 | 845 |
| LSD (P=0.05) | | 3.49 | 32.69 | 17.24 | 0.35 | 0.36 | 1.07 | 134 |

In summary, these trials illustrate the need to use a preventive systemic insecticide at planting for control of thrips on seedling cotton. Insecticide seed treatments in these trials provided thrips control up to 3 weeks after planting and Temik treatments provided thrips control for up to 4 weeks after planting. An Orthene foliar spray at the 1-leaf stage increased yields in untreated plots. There appeared to be little value of a second Orthene foliar spray at the 5-leaf stage in terms of yield.