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**NATIONAL PEANUT BOARD
FINAL REPORT**

PROJECT TITLE: Evaluation of Temik 15G Alternatives for Thrips Management in Peanut

TERM OF PROJECT: 1 year (January 1, 2011-December 31, 2011)

FUNDS RECIEVED: \$4,588

PROJECT INVESTIGATOR: D. Ames Herbert, Jr.

LOCATION: Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA

OBJECTIVE:

1. To evaluate new insecticide seed and liquid in-furrow treatments for management of thrips.

METHODS

All research was conducted at the Virginia Tech Tidewater Agricultural Research and Extension Center (TAREC). Randomized complete block experimental designs were used, with 4 replicates and 4-row plots x 35 ft. Conventional seeding rates and weed, disease, and late-season insect (leafhopper and corn earworm) management practices were used. Insecticides tested are provided below, and included liquid in-furrow (IF) insecticides, with and without foliar broadcast (BC) applications, seed treatments, and conventional in-furrow (Temik, Thimet) and foliar-applied (Orthene) insecticides for comparison.

Test 1 (PT11-THP-1) included the following treatments:

1. Thimet @ 5 lb
2. Orthene @ 12.4 oz (IF)
3. Orthene @ 12.4 oz (IF) + Orthene @ 6 oz (BC)
4. Orthene @ 16.5 oz (IF)
5. Orthene @ 16.5 oz (IF) + Orthene @ 6 oz (BC)
6. Orthene @ 6 oz (BCx2)
7. Benevia 100D @ 13.6 oz (BCx2)
8. Verimark 20SC @ 13.5 oz (IF) + Orthene @ 6 oz (BC)
9. Verimark 20SC @ 13.5 oz (IF) + Benevia 100D @ 13.6 oz (BC)
10. Admire Pro @ 8.5 oz (IF)
11. Untreated

Test 2 (PT11-Thp-2) included the following treatments, all applied in-furrow at-planting:

1. Orthene @ 16.5 oz
2. Orthene @ 16.5 oz + Proline @ 5.7 oz
3. Orthene @ 16.5 oz + Propulse @ 13.69 oz
4. Orthene @ 16.5 oz + Optimize Lift @ 15 oz
5. Orthene @ 16.5 oz + Proline @ 5.7 oz + Optimize Lift @ 15 oz
6. Verimark 20SC @ 10.2 oz

7. Verimark 20SC @ 13.5 oz
8. Verimark 20SC @ 13.5 oz + Proline @ 5.7 oz
9. Verimark 20SC @ 13.5 oz + Propulse @ 13.69 oz
10. Verimark 20SC @ 13.5 oz + Optimize Lift @ 15 oz
11. Verimark 20SC @ 13.5 oz + Proline @ 5.7 oz + Optimize Lift @ 15 oz
12. Untreated

Test 3 (PT11-Thp-Syngenta-2) evaluated the following peanut seed treatments:

1. Untreated
2. Cruiser 70WS @ 1 oz/cwt
3. Dynasty PD @ 4 oz/cwt
4. Dynasty PD @ 4 oz/cwt + Cruiser 70WS @ 1 oz/cwt
5. A17461 @ 4 oz/cwt
6. Dynasty PD @ 4 oz/cwt + Cruiser 5FS @ 1 oz/cwt
7. Dynasty PD @ 4 oz/cwt + Thimet 20G @ 5 lb
8. Dynasty PD @ 4 oz/cwt + Temik 15G @ 7 lb

Thrips counts were taken in late May and early June by collecting ten unopened terminal leaflets per plot in vials containing 30 ml soapy water. The soapy water was examined under a stereoscope and adult and immature thrips were recorded. Thrips injury to plants was determined during late May and early June by visually rating injury using the following 0 to 10 scale:

- 0 = no thrips induced plant injury
- 1 = 10% injured leaves
- 2 = 20% injured leaves
- 3 = 30% injured leaves
- 4 = 40% injured leaves
- 5 = $\geq 50\%$ injured leaves + $\leq 5\%$ terminal buds injured
- 6 = $\geq 50\%$ injured leaves + 25% terminal buds injured
- 7 = $\geq 50\%$ injured leaves + 50% terminal buds injured
- 8 = $\geq 50\%$ injured leaves + 75% terminal buds injured
- 9 = $\geq 50\%$ injured leaves + 90% terminal buds injured
- 10 = dead plants

Yield was determined from digging and picking peanuts from 2 rows of each plot. Data were analyzed using ANOVA and LSD statistical procedures.

RESULTS

Test 1 (PT11-THP-1) is summarized in Fig. 1. In general, the in-furrow-applied Admire Pro, Orthene, and Thimet had lower (better) thrips injury ratings, fewer TSWV hits, and higher yields than foliar applications of Benevia or Orthene, and in-furrow applications with Verimark. Thrips counts were conducted on selected products, with Orthene and Thimet having fewer immature thrips than Benevia and Verimark.

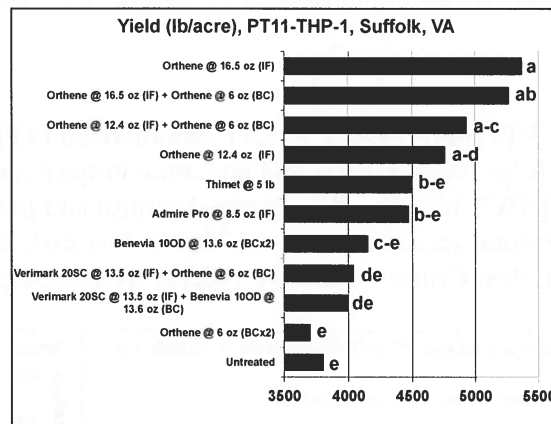
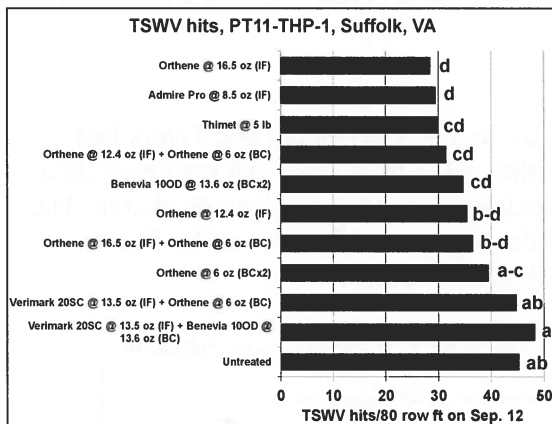
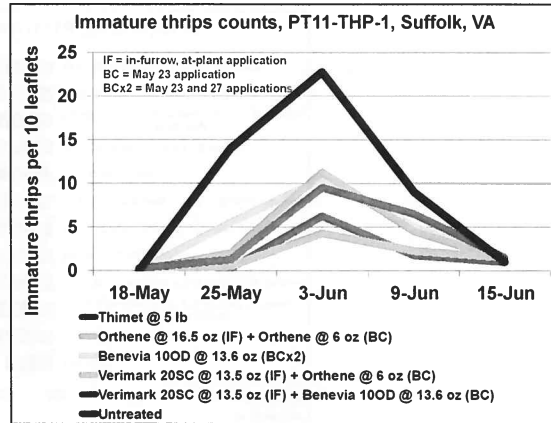
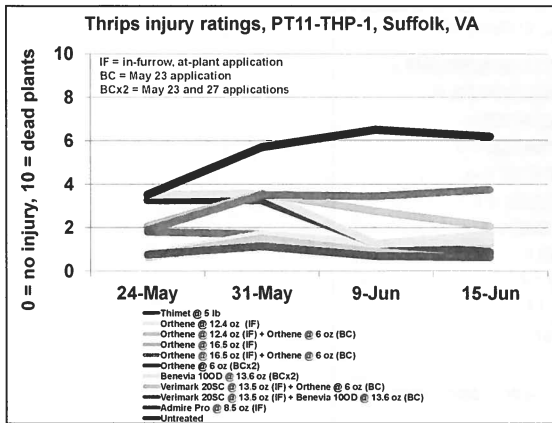
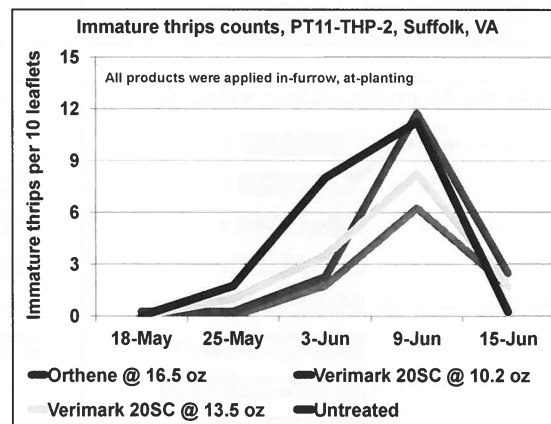
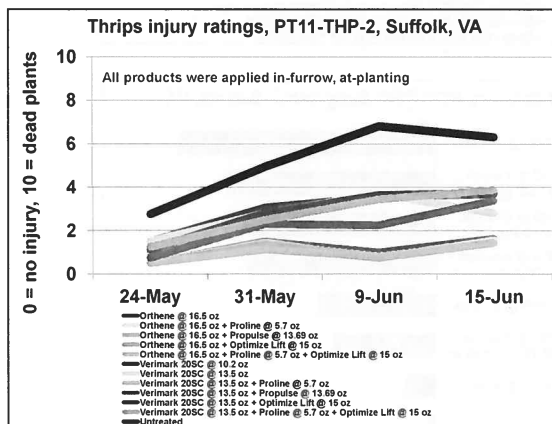


Figure 1. Thrips injury ratings, immature thrips counts, tomato spotted wilt virus hits, and yield results for Test 1 (PT11-THP-1).

Test 2 (PT11-THP-2) is summarized in Fig. 2. In this test, all products were applied in-furrow, at planting. Overall, treatments containing Orthene had lower thrips injury ratings, fewer immature thrips, and higher yields than treatments containing Verimark.



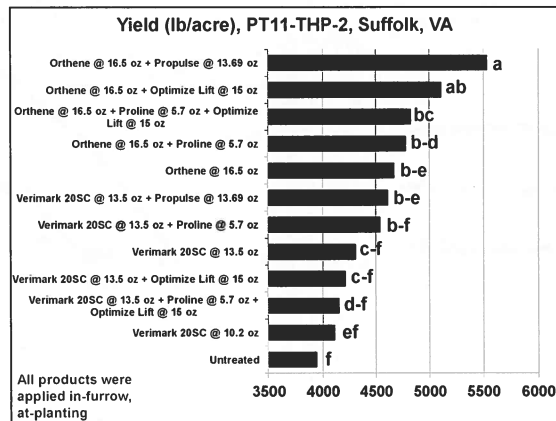


Figure 2. Thrips injury ratings, immature thrips counts, and yield results for Test 2 (PT11-THP-2).

Test 3 (PT11-THP-Syngenta-2) is summarized in Fig. 3. In this test, Thimet and Temik had lower thrips injury ratings and immature thrips counts than other treatment. All treatments had fewer TSWV hits than the untreated control and fungicide-only treatment (Dynasty alone). The experimental seed treatment, A17461 at 4 oz/cwt, had the highest yield, followed by Temik, Thimet, then Cruiser. However, yields were not significantly different.

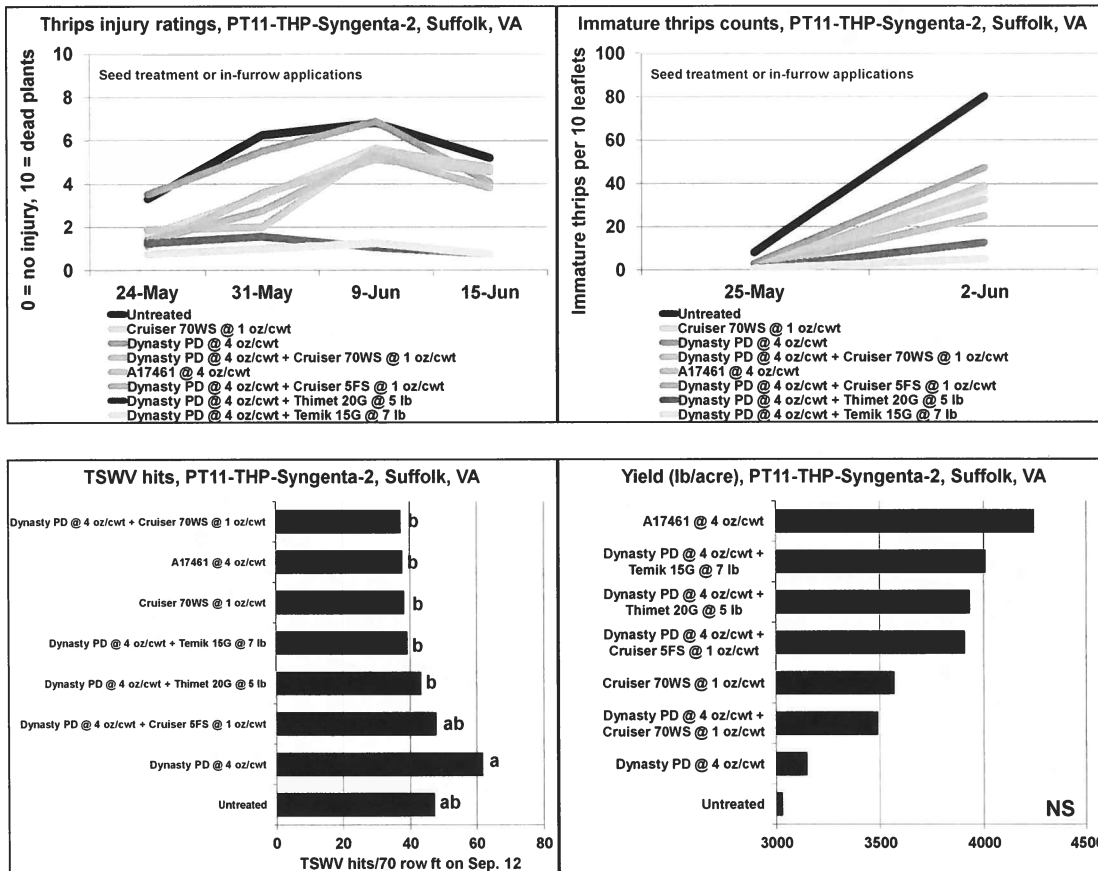


Figure 3. Thrips injury ratings, immature thrips counts, tomato spotted wilt virus hits, and yield results for Test 3 (PT11-THP-Syngenta-2).

DISCUSSION AND IMPACT

Until recently, there have been only two products that have been competitive with Temik 15G, that is, have provided near equal levels of thrips control and TSWV suppression: Thimet 20G applied as a granule in-furrow at planting, and Orthene 97 applied as a liquid in-furrow at planting. Although effective, each of these alternatives has some disadvantages. Thimet 20G allows a little more thrips damage compared with Temik and consistently causes a phytotoxic response that expresses as leaflet tip yellowing, and in extreme cases, causes leaflet death and shed. Orthene 97 is no longer legal to apply to peanut in-furrow at planting—its labeled use expired in 2008. In general, a problem with any liquid in-furrow alternative is one of mechanics, that is, it requires growers to mount additional spray tanks, pumps and tubing to accommodate the in-furrow liquid delivery; also, there is the potential to cause soil to cake on the planter disks.

DPX-HGW86 20SC (cyantraniliprole, an anthranilic diamide insecticide by DuPont), applied as a liquid in-furrow at planting, showed potential as a thrips management alternative in 2008 and 2009. In 2010, we continued evaluations of DPX-HGW86 20SC applied in-furrow, and also began our first year of evaluating a 10 OD formulation applied as an additional broadcast at late ground cracking. In 2011, DPX-HGW86 was renamed, using Verimark, Exirel, and Benevia for the 20SC, SE, and OD formulations, respectively. However, these formulations, at the rates and application techniques used in 2011, were not as efficacious against thrips as in the past.

In other crops (e.g., cotton, corn, wheat, soybean), there are insecticide seed or in-furrow delivered alternatives available that provide good levels of early season insect control. For the most part, the active ingredients in these products are less toxic to non-target species, less toxic to the user, and can be used at much lower rates of active ingredient per acre. Our research since 2009 has found that some of these products, such as the A17461 seed treatment by Syngenta, provide excellent levels of thrips control in peanut and result in high yields.

Findings from this research were published by the investigator in “Insect Pest Management in Virginia Cotton, Peanut, and Soybean” (Virginia Cooperative Extension Pub. No. 2812-1027); provided in quarterly and annual reports; discussed in production meetings and at the TAREC “Early Summer Row Crops Tour”; and used to update crop production information in the “Virginia Peanut Production Guide” (Virginia Cooperative Extension Pub. No. 2810-1017).

This research project funded by the National Peanut Board should help ensure that producers have the best tools possible to make informed decisions which can lead to improved profitability of virginia-type peanuts grown in the area.