

Report of 2006 Research Results
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Project Title: Evaluation of New Novel Insecticides and Genetically Altered Varieties To Determine Where They Best Fit in the Alabama Cotton Pest Management System

A total of eleven field tests were conducted under the above project title for 2006. Numerous pages of data tables were generated. These eleven tests can be categorized as follows: Early season insect (Thrips) control- 3 trials; plant bug/stink bug control – 3 trials; caterpillar control – 2 trials; genetically altered varieties (Bollgard II, Wide Strike, VipCot) – 3 Trials.

A description of these trials and a summary of most significant findings are presented. Complete reports are available from Ron H. Smith at smithrh@auburn.edu.

I. Early Season Insect (Thrips) Trials

Test #1 Avicta was evaluated with Variants A-F to determine their effectiveness in comparison to Temik at 5 lbs a.i in a small plot replicated study at the Prattville Research Field. All Variants performed equal to each other, and to Temik. This test conducted in the absence of nematode pressure. All treatments were more effective than the untreated control. All treatments were similar in maturity and above that of the untreated control.

Test #2 All at-planting treatment choices available to growers for the 2007 season, including the new Bayer Complete Pak (AERIS), were evaluated in a small plot replicated trial at the Prattville Research Field. Treatments included: Gaucho Grande, Cruiser, Avicta, Aeris and Temik. Thrips pressure was extremely high and the cotton grew off very slow in the spring of 2006. Therefore, this test was conducted under extreme conditions. Thrips damage was moderate to high in all treatments. However, all treatments were similar in effectiveness by all measurements taken and had much less damage than the untreated control. Temik, Cruiser, and Aeris showed slightly more earliness than did Gaucho Grande and Avicta.

Test #3 A small plot replicated test was conducted at the Prattville Research Field to determine the advantages or disadvantages of adding an automatic insecticide treatment to Roundup applications made to RR Flex cotton as late as the 12 leaf stage. Measurements were taken as to thrips control in addition to plant bug, aphid and beneficial insect numbers. The automatic application of Orthene to Roundup at the three, eight and twelve leaf cotton and the five and twelve true leaf cotton reduced the thrips injury compared to plots that received no Orthene. Plots that received the automatic Orthene showed distinctly more plant height. No differences were seen in the numbers of plant bugs, aphids or beneficial insects. All were fewer than normal, possibly due to the extreme drought and high temperatures experienced in June of 2006. All plots were treated with Gaucho Grande seed at planting. Plots that received Orthene showed more earliness as measured by the number of white blooms on July 5 and open bolls on August 18.

II. Plant Bug/Stink Bug Trials

Test #1 Seventeen treatments were evaluated in a large plot non-replicated strip-trial for adult tarnished plant bug control on the E.V. Smith Research Station, Milstead, AL. Treatments included: Intruder, Acetamiprid, Centric, Trimax Pro, Orthene, Bidrin, generic lambda cyhalothrin, and generic acephate (Spitfire). All treatments reduced the number of plant bug adults below the untreated check after 24 hours. This reduction ranged from 73-100%, depending on the various treatments. Centric was the most effective treatment. This trend continued at the one week evaluation point. The least effective treatment after 7 days was generic acephate (Spitfire).

Test #2 Six treatments were compared to an untreated in a large plot non-replicated strip-trial for stink bug control at the Wiregrass Research Center, Headland, AL. Treatments included: Bidrin + Discipline (pyrethroid), Bidrin, Diamond, Diamond + Bidrin, Trimax Pro, and Trimax Pro + Baythroid. Two applications were made, 14 days apart. Damaged boll evaluations were made at 7 and 14 days after each application. 2006 was a very light stink bug year, especially when compared to the 2005 season. It is suspected that the extremely high temperatures and low humidity decimated the first generation of immature stink bugs when they emerged in June of 2006. In this test, all treatments had much less boll injury after the second application than did the untreated. Diamond + Bidrin was the most effective treatment. This treatment offered both quick knock down of the population combined with long residual control. All combination treatments were more effective than those with a single insecticide (single chemistry).

Test #3 Eight treatments were compared to an untreated check in a second large plot non-replicated strip-trial for stink bug control at the Wiregrass Research Center, Headland, AL. Treatments included: Trimax Pro + Bidrin; Trimax Pro + Diamond; Diamond + Spitfire (acephate); Diamond + Baythroid; Spitfire; generic lambda cyhalothrin (Karate); and Karate Z. One application was made and the plots were evaluated for damaged bolls at 7 and 14 days after application. This test was conducted under light stink bug pressure as occurred throughout the state and the Southeast during the 2006 season. At 14 days after the application all treated plots had much less boll damage than the untreated. All treatments were similar showing 92-100% control, except those containing Trimax Pro in combination, which only reduced stink bug damage by 75-84%.

Test #4 Attempts were made to continue the 2005 work on stink bug thresholds. Eight row cotton strips were planted through the middle of a peanut field to insure season long migration of stink bugs from peanuts into cotton. Stink bug populations were so light in 2006 that this test was abandoned. Plans are to continue studies on stink bug thresholds and sampling techniques in 2007.

III Lepidopterous (Caterpillar) Trials

Test #1 The new Dupont larvacide (E2Y45) (Altacor) for worm control was evaluated in a small plot replicated trial at the Prattville Research Field. Various rates of Altacor were compared to a standard (Tracer) and untreated. 2006 was a light bollworm/budworm year. However, the worm population was about 5-7 days old when this test was initiated. One application was made, followed by one evaluation 5 days post treatment. Altacor performed similar at all three rates tested. Altacor gave 80-90% reduction in the number of damage squares and small bolls compared to the untreated check. Tracer only gave about a 50% reduction in fruit damage compared to the untreated. Altacor should receive EPA registration by mid 2008.

Test #2 A new Bayer Larvicide (NNI-0001) (BELT) for worm control was evaluated in a small plot replicated trial at the Prattville research field. Various rates of BELT were compared to Larvin, Discipline (pyrethroid) and untreated. The worm population was about 5-7 days old when this test was initiated. One application was made followed by one evaluation 5 days post treatment. BELT performed similar at all three rates tested giving about 75% control compared to the untreated plots. Both Larvin and Discipline only gave about 50% control compared to the untreated plots. BELT should receive EPA registration in early to mid 2008.

IV Genetically Altered Variety Trials

Test #1 Two Stoneville BGII RRF varieties were compared to their sisterlines without the generic worm traits at both the Prattville Research Field and the Wiregrass Research Center. Varieties evaluated were: ST 6565 BG II RRF compared to ST 6622RF; and ST 4554 BGII RRF compared to ST 4664 RF. At both locations the 2006 season consisted of severe drought and light caterpillar pressure. The only evaluations that could be made were yields. At the Prattville site, both Bollygard II varieties out yielded their sisterlines without BGII. This difference was most likely varietal since worm pressure was very low. Controls were applied to the entire test area for plant bug/stink bug controls. At the Headland site, the Bollgard II varieties and ST 4664 RF had fewer worm damaged bolls than did the ST 6622RF sisterline. At this location there were no differences in yield.

Test #2 Wide Strike (Phytogen) varieties PHY 370 WR, PHY 310 R, PHY 485 WRF and PHY 425 RF were evaluated at both the Prattville Field and Wiregrass Research Station sites in 2006. These varieties contain the Roundup gene with and without Wide Strike and the Roundup Flex gene with and without Wide Strike. At the Prattville site, drought and the lack of worm pressure dominated the trial. Yields were not even taken. At the Wiregrass site moderate worm pressure occurred. Some square damage occurred in all varieties. However, bloom and boll damage was limited to the non Wide Strike varieties. Slight yield increases were recorded from the varieties that contained the Wide Strike gene.

Test #3 Seven lines (events) of the VipCot cotton gene trait were compared to their parent non genetic variety (Coker 312) in a small plot replicated trial at the Wiregrass Research Center. A very low number of worms or square damage was found in the VipCot lines during the season compared to a moderate level of worms and damage to the Coker 312 variety. A damage boll count was made at the end of the season. VipCot lines had 1-5% boll damage while the non genetic Coker 312 had 20% worm damaged bolls. The VipCot line that is to be selected for development or commercialization (Cot 102 x Cot 67B) had 2% boll damage in this test. This test was unsprayed for caterpillar pests in 2006. All VipCot lines and the Coker 312 had similar yields. The VipCot 102 x 67B line yielded 2735 lbs of seed cotton under the 2006 conditions at the Wiregrass in 2006. Limited irrigation was applied to this test area.