

Yields And Economic Return Of Cotton Technology Systems In Alabama

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Three cotton technology systems were evaluated in northern and central Alabama for the 2008 and 2009 growing seasons. In 2008 the cotton varieties ST 4554 B2RF (Bollguard II + Roundup Flex), PHY 485 WRF (Widestrike + Roundup Flex) and CT 210 (Conventional) were evaluated. In 2009 the PHY 485 WRF variety was replaced with PHY 440W (Widestrike) so another non-Roundup herbicide system could be evaluated. Both test sites were irrigated as needed to produce optimum yields.

Each season each variety was managed separately using best managements systems in making weed and insect control decisions. At planting, half the plots of each variety received a preemergence herbicide treatment of Prowl (1.5pt/A) and Cotoran (1qt/A). Additional weed control applications were made through the season as needed by each variety. Cotton was scouted weekly and all insects except Heliethines were controlled when they reached threshold levels. Larvicide treatments for Heliethine control were applied to half the plots of each variety when threshold levels were reached.

The 2008 growing season was excellent for both locations. Cotton lint yields ranged from two bales to slightly over four bales in the test areas. Insect pressures at both sites were also above normal. The central Alabama location (EVS) was over-sprayed five times to control plant bugs while the northern Alabama location was over-sprayed three times for plant bug control. Reductions in beneficial insects caused by the plant bug spraying also increased the need for Heliethine control at both tests. Four applications were made for Heliethine control at EVS while at the TVS site three Heliethine applications were made in 2008. The CT 210 cotton yields were dramatically reduced where Heliethine controls were not applied at both sites (Figure 1). Phytogen 485 WRF cotton yields declined slightly without larvicide application at the TVS site but larvicides had no affect on PHY 485 WRF yields at the EVS site in 2008. Stoneville 4554 B2RF yields were not affected by larvicide treatment at either site. All the ST 4554 B2RF and PHY 485 WRF plots produced significantly more cotton than any of the CT 210 treatments at both locations.

In 2008, herbicide treatments had only a small effect on final cotton yields. The largest difference was found where the CT 210 cotton grew off slowly at the TVS location and early season grass competition reduced yields significantly where pre-emergence herbicides and larvicides were not applied.

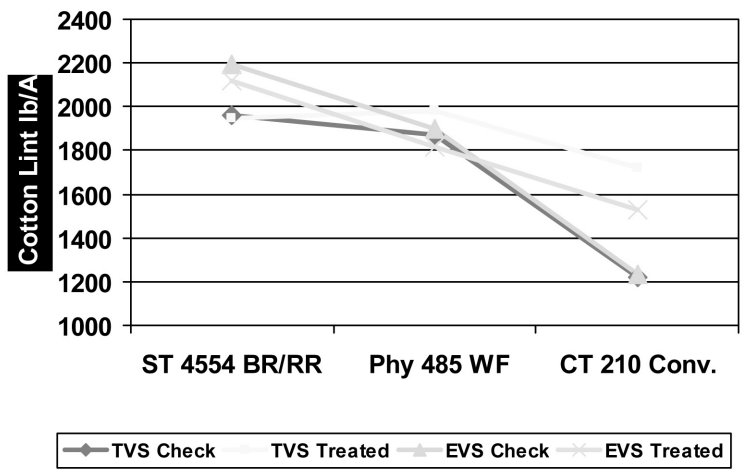
Late planting due to a wet spring and delayed

harvest caused by a very wet and cool fall reduced cotton yields in 2009. These yields, however, were still well above normal for each area. The best treatment at the TVS site in 2009 produced over three bales per acre. Insect pressure was much lighter in 2009 than in 2008 with only one plant bug control and two larvicide applications required at the TVS site. As in 2008, ST 4554 did not produce a yield increase when larvicide applications were applied. The PHY 440W and CT210 produced a significant yield improvement with the larvicide applications. Both CT 210 and PHY 440W produced lint yields equal to ST 4554 when larvicides were applied at the TVS location.

As in 2008 the CT 210 cotton grew slowly early in the 2009 growing season and was later maturing than either PHY440W or ST 4554 B2RF at the TVS site. Herbicide applications again had little effect on cotton growth or yield in 2009. The late planting date in 2009 and warmer temperatures caused cotton to grow more rapidly which reduced possible weed competition. The EVS test site was harvested very late and yield data is still incomplete at this time.

The economic data from the two year study reveals the difficulty in determining which cotton technology will provide the best return for Alabama farmers. In 2008 with heavy plant bug and Heliethine pressure in central Alabama the CT210 WRF variety had low yields even where larvicides were applied. This resulted in CT 210 producing net return of \$300-\$400 less than ST 4554 B2RF. The PHY 485 WRF produced better yields but net returns were still about \$100 less per acre than ST 4554 B2RF. In northern Alabama in 2008 the PHY 485 variety produced

Figure 1. Cotton lint yields with and without larvicide treatment in 2008.



equal yields and returns compared to ST 4554 B2RF. The conventional variety CT 210 however produced net returns of over \$200 less than either PHY 485 WRF or ST 4554 B2RF due to lower yields and higher insecticide costs. By comparison in northern Alabama in 2009 with much lower insect pressure, CT 210 produced a slightly higher net return than PHY 485 WRF or ST 4554 B2RF due to lower cost of seed and insect control. These results indicate there may be alternatives to the Bt and Roundup technologies currently used by most Alabama cotton farmers. Growing cotton without these technologies however, will require more management by the farmer especially if varieties do not contain Heliethine resistance. Δ