

EFFICACY OF BLACK CUTWORMS TO TRANSGENIC BT COTTONS

John J. Adamczyk
Shoil M. Greenberg
USDA, ARS
Weslaco, TX

Abstract

A comparison of Roundup Ready (RR), Liberty-Link (LL), and conventional variety (CV) cotton grown in conventional till and reduced till systems was conducted in north (Belle Mina) and south (Headland) Alabama during 2005 and 2006. Varieties used for both locations were FM 960RR, FM 966LL, and FM 966. Herbicide selection and use for each system was based on obtaining optimum weed control and yield. The soil types were clay loam and sandy loam for Belle Mina and Headland, respectively. Plot size was 4 rows by 50 ft with 4 border rows between each plot to minimize the effect of spray drift. Treatments were replicated four times. Strict no-till was used at Belle Mina while strip till was used at Headland. Conventional till consisted of two diskings followed by a Roterra at Belle Mina and strip till followed by disking and Roterra at Headland. A pre-plant foliar (burndown) treatment consisting of glyphosate at 1.0 lb. per acre was applied to all reduced tillage plots prior to planting. Prowl at 1.0 lb active per acre was used for all systems at both locations, applied either pre-plant incorporated or pre-emergence depending on tillage system. Cotoran at 1.25 lb active per acre was applied pre-emergence to all CV plots. Roundup or Ignite was applied early post-emergence to RR and LL plots, respectively. Staple was applied early post-emergence to CV plots. Envoke was applied post-emergence to all plots at the 7 to 8 leaf cotton stage. A late post-directed application of Layby Pro (diuron + linuron) plus MSMA was used in all plots. The trial site at Belle Mina was not irrigated while the site at Headland was irrigated. Total weed control and tillage cost for each system was calculated based on cost of tillage, herbicides, application, and technology fee. These figures were subtracted from gross dollars per system obtained by multiplying lint yield by \$0.50 per pound.

Data analysis revealed no yield differences or economic differences between herbicide/tillage systems at Belle Mina either year. Fiber strength (29.7 to 31.7 g/tex) and turnout (%lint) (43.1 to 44.6) varied slightly, but inconsequently. There was a decrease in late season broadleaf weed control for conventional tilled systems compared to no-till at Belle Mina during 2006 (93 vs. 84%).

Yield differences were found between strip till (1576 lb./A) and conventional till (1425 lb./A), and between RR (1564 lb./A), LL (1461 lb./A), and CV (1326 lb./A) varieties in both years at Headland. Annual grass and broadleaf weed control was lower for conventional (85 & 89%) than for RR (95 & 94%), or LL (94 & 89%) systems. Minor differences were noted between herbicide systems for micronaire (4.2 to 4.5), length (1.12 to 1.15 inch), and strength (31.5 to 34.1 g/tex). Turnout was highest for RR (41.6%) and lowest for LL (39.4%).

Economically there were no differences between the costs of herbicide/tillage systems at Headland. However, the strip till system returned approximately \$75.00 per acre more than conventional tillage. Also, RR and LL systems returned \$108.00 and \$71.00 per acre more, respectively than the conventional herbicide system.

The implication of this data for south Alabama growers in light of the recent discovery of glyphosate and ALS resistant pigweed, is a probable reduction in economic return if they change back to cotton in conventional tillage and conventional herbicide technology. Over 90 percent of Alabama cotton growers currently use RR varieties and an estimated 75% use some form of reduced tillage. The need for new cotton herbicide technology that has post-emerge activity on pigweed is evident.