ECONOMIC ASSESSMENT OF ROUNDUP READY COTTON TILLAGE SYSTEMS

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Abstract

Field trials were conducted in Alabama during 1996 and 1997 to evaluate Roundup Ready cotton in different tillage systems for weed control, seed cotton yield and economic value. Trials were conducted at the Tennessee Valley Substation (TVS) in north Alabama, the E.V. Smith Research farm (EVS) in central Alabama, and the Wiregrass Substation (WGS) in southeast Alabama. Soil types at EVS and WGS are sandy loams found in much of the Coastal Plain, while the soil at TVS is a clay loam. Systems consisted of: 1) conventional tillage using Prowl (2 pts/A) incorporated, Cotoran (3 pts/A) preemergence (pre), Staple (1.2 oz/A) banded post over-the-top (pot), and Caparol + MSMA (2 pts + 2 pts/A) layby; 2) notill with Prowl + Cotoran pre, Staple pot, and Caparol + MSMA layby; 3) notill with Roundup Ultra (2 pts/A) pot, post-directed (pds), and layby; 4) notill with Roundup Ultra pot and pds, and Bladex layby; 5) Stale seedbed with Treflan (1.5 pts/A) incorporated in March followed by Roundup Ultra pot and pds, and Bladex layby; 6) notill with Cotoran pre, Roundup Ultra pot and pds, and Bladex layby. The stale seedbed and all notill systems received a preplant foliar application of Roundup Ultra at 2 pts/A to kill emerged weeds prior to planting. Treatments were applied to plots 4 rows wide by 30 to 40 feet long, each replicated 6 times. Cotton varieties DPL 5415RR was used at TVS, and DPL 5690RR at EVS and WGS. Late season weed control was rated on a scale of 0 to 100 where 0 = no control and 100 = complete control. Seed cotton was harvested by plot with spindle pickers and converted to lint by assuming a 40 percent lint yield. Net returns were calculated for each plot using actual yields and Alabama Cooperative Extension System cotton production budgets.

No differences in weed control ratings or seed cotton yields were observed at EVS over the two year period. Large crabgrass and yellow nutsedge control was above 87% for all treatments and seed cotton yields ranged from 2261 to 2580 lbs/A in 1996 and from 1793 to 2057 lbs/A in 1997. Volunteer peanut (1996) and bristly starbur (1997) control was lower for systems 1 and 2 at WGS compared to systems 3,4,5,and 6. No differences in yield were observed in 1996, but systems 4 and 6 made more cotton than system 2 in 1997. System 2 at TVS provided lower large crabgrass (76%) and redroot pigweed (88%) control than other systems (range 93 to 97%). Systems 1 and 5 provided yields higher than systems 3 and 4 in both 1996 and 1997.

Average net returns for the two coastal plains sites (EVS and WGS) show a notill system using Roundup pot and pds followed by Bladex layby generally provided the highest return. Conventional till with standard herbicides generally finished last. The stale seedbed system using Treflan ppi followed by Roundup pot and pds, with Bladex layby provided the best net returns at TVS. Conventional till with standard herbicides also did well at this location.

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