

COMPARISON OF WEED CONTROL SYSTEMS IN CONSERVATION TILLAGE COTTON

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Abstract

Cotton production in the Central Texas Blacklands is complicated by seasonal variance in rainfall, early season temperatures, and weed specie pressure. To deal with these dynamics, new and old crop production technologies are being combined and explored. Technologies currently tested in the Central Texas Blacklands include genetically engineered cotton varieties that contain herbicide and insect resistance, in addition, tillage practices such as conservational tillage are employed to reduce input costs. The genetically engineered cotton technologies are relatively new and therefore exploration into the benefit and limitations need to be investigated. This will help producers achieve a confidence level sufficient to make prudent decisions on which technology or combinations of technologies will function the best for their program goals.

Experiments were conducted to analyze Roundup Ready cotton technology within a conservational tillage program over a two year period, for the seasons of 1996 and 1997. Set up as a split plot design, this study employed the use of the Roundup Ready cotton variety Paymaster PM1560RR. Herbicide treatments examined were a pre-emergence herbicide application of Dual and Caparol, Roundup Ultra, Roundup Ultra applied broadcast followed by a layby application of Bladex, and Roundup Ultra applied once broadcast early post emergence after Dual and Caparol were applied pre-emergence at planting. In addition, a treatment of Staple and Assure II was included for comparison as an alternative post emergence herbicide program for broadleaf and grass control. All treatments were applied to both the conservation and conventional tillage plots.

In 1996, season-long dryness was experienced and therefore the only weed specie present was toothed spurge (*Euphorbia dentata*). However, in 1997 the season started out with a prolonged cool wet spring that was followed by normal seasonal temperatures and moisture. The dominant weed specie was browntop panicum (*Panicum fasciculatum*). In both years the Roundup treatments provided greater than 90 percent control of both toothed spurge and browntop panicum. Staple provided 60 percent control of toothed spurge early in the season, however, control dropped to 40 percent by late season rating in 1996.

The Assure II treatment in 1997 provided greater than 90 percent control of browntop panicum.

These studies concluded that Roundup Ready Cotton programs fit well into conservation tillage. When used alone or following pre-emergence applications of herbicides, Roundup effectively controlled the species examined in this study, and equaled or exceeded performance of the other alternatives.