STRIP-TILL COTTON RESPONSE TO 2,4-D AND DICAMBA APPLIED AT BURNDOWN A. C. York North Carolina State University Raleigh, NC A. S. Culpepper University of Georgia Tifton, GA R. B. Batts and J.D. Hinton North Carolina State University Raleigh, NC

## Abstract

Acreage devoted to strip-till or no-till cotton is increasing across the Southeast. A burndown herbicide to desiccate cover crops or winter vegetation is a necessary component of the management program. Small grain cover crops and most winter weeds have been relatively easy to kill. The major exception has been cutleaf eveningprimrose. Roundup has not given adequate control of primrose. A number of potential tank mix partners with Roundup have been evaluated for primrose control. Dicamba and 2,4-D have been the most effective.

Experiments were conducted at seven locations in North Carolina and Georgia during 1999 and 2000 to determine cotton response to 2,4-D and dicamba applied at various times ahead of planting strip-till cotton. Land was prepared in the fall and a wheat cover sown. The wheat was killed with Roundup about 3 weeks ahead of planting. Plots were strip-tilled and planted to a Roundup Ready variety on the same day. Weeds in cotton were controlled with Roundup overtop and Caparol plus MSMA directed.

Treatments were in a split-plot design. Whole plots were the herbicides Clarity (diglycolamine salt of dicamba, 4 lb a.e./gallon) at 0.5 and 1 pt/A and 2,4-D (dimethylamine salt, 3.8 lb a.e./gallon) at 1 and 2 pt/A. Subplots were application timing, where the Clarity and 2,4-D were applied 1, 2, 3, 4, or 6 weeks ahead of planting. Subplots were four rows by 50 feet, and treatments were replicated four times. Soil types were sandy loams or loamy sands with 0.8 to 1.6% organic matter.

Minor leaf distortion was noted at some locations when the herbicides were applied 1 or 2 weeks ahead of planting. These symptoms were transitory and were not observed after cotton was three-leaf or larger. Stand reduction was the most obvious visible symptom.

At three of the seven locations, there was no effect of treatments on cotton stand or yield regardless of herbicide or time of application. At two locations, cotton stand was reduced but yields were unaffected. At one of those locations, the interaction of herbicides and rates by time of application was not significant. Pooled over herbicides and rates, stand was reduced 9% when application occurred 1 week prior to planting. At the second location, a herbicide and rate by time of application interaction was noted. Neither rate of 2,4-D reduced stands regardless of time of application. In contrast, 0.5 pt/A of Clarity 1 week ahead of planting reduced stand 15%. Clarity at 1 pt/A 1 and 2 weeks ahead of planting reduced stand 31 and 16%, respectively.

At the final two locations, both stands and yields were impacted. At the first of these locations, there was not a herbicide by application time interaction for cotton stand, and the main effect of herbicides was not significant. Pooled over herbicides, stands were reduced 10% when the herbicides were applied 1 week ahead of planting. There was an interaction for yield. With 0.5 pt/A of Clarity, yield was not affected regardless of time

Reprinted from the *Proceedings of the Beltwide Cotton Conference* Volume 2:1214-1215 (2001) National Cotton Council, Memphis TN of application. With 1 pt/A of Clarity, yield was reduced 14% if the herbicide was applied 1 week ahead of planting but there was no effect if applied 2 or more weeks ahead. Neither rate of 2,4-D affected yield.

At the second location where both stands and yield were impacted, there was an interaction for stand. Clarity at 0.5 pt/A did not affect stand with any application timing. Stand was reduced 40, 56, and 79% by 1 pt/A of Clarity applied 3, 2, or 1 week ahead of planting, respectively. Yields mirrored stands. Clarity at 0.5 pt/A did not reduce yield. Clarity at 1 pt/A reduced yield 20, 22, and 51% when applied 3, 2, or 1 week ahead of planting. Stand was unaffected by 2,4-D at 1 pt/A. At 2 pt/A, 2,4-D reduced stand 57% if applied 1 week ahead of planting but had no effect at 2 or more weeks ahead. Yield was reduced 28% when 2,4-D at 2 pt/A was applied 1 week ahead of planting. Application of 2,4-D at 2 pt/A 2 or more weeks ahead of planting did not reduce yield. Application of herbicides 1 week ahead of planting reduced the percent open bolls. This appeared to be an indirect effect of stands. Where the stands were greatly reduced, the plants branched out and produced a number of later-maturing vegetative bolls.

Crop response and rainfall records were compared. There was no correlation between cotton response and accumulated rainfall between herbicide application and cotton planting.