

**HERBICIDE SYSTEM AFFECTS LINT YIELD OF
ROUNDUP READY® (GLYPHOSATE-TOLERANT)
COTTON CULTIVARS**

O. L. May

University of Georgia

Tifton, GA

E. C. Murdock and R. Graham

Clemson University

Florence, SC

of a herbicide system x cultivar interaction indicates that the yield rank of Roundup Ready cultivars was unaffected by herbicide system, suggesting that data from Official Cultivar Trials can be used to evaluate yield potential of Roundup Ready cotton cultivar.

Abstract

Roundup Ready cotton cultivars have expanded grower options for weed control, but have also complicated Official Cultivar Trials, because it is not feasible to apply Roundup Ultra® (glyphosate) topically or post-direct to only the Roundup Ready cultivars in the trial. Evaluation of Roundup Ready cultivars along with non-transgenic cultivars, all produced with a standard soil-applied herbicide system, has raised concerns about the validity of yield data from Official Cultivar Trials. To address this issue, we conducted trials in 1998 and 1999 that compared yields of early- and later-maturing Roundup Ready cultivars in three herbicide systems. The three herbicide systems were 1) a standard system utilizing soil-applied herbicides, a postemergence (POST) application of Staple® (pyrithiobac), and a layby treatment of Cotton-Pro® (prometryn)/MSMA, but NO ROUNDUP ULTRA; 2) a system using soil-applied herbicides, Roundup Ultra applied POST at the 4-leaf stage, and the layby treatment; 3) a system with no soil-applied herbicides where Roundup Ultra was applied POST at 4-leaf stage and the layby treatment. Cultivars included in the earlier maturity (Deltapine 425RR, Paymaster 1218BG/RR, Paymaster 1220BG/RR, SureGrow 125BG/RR, and SureGrow 501BG/RR) and later-maturity (Deltapine 458BG/RR, Deltapine 5415RR, Deltapine 5690RR, and Deltapine 655BG/RR) trials accounted for the majority of those available to growers in 1998 and 1999. The treatment design was a strip-plot, with cultivar the horizontal factor and herbicide system the vertical factor. Four replicates were arranged in randomized complete blocks. All trials were oversprayed for complete insect control. The ANOVA of yield data from the early and later-maturity trials found a highly significant ($P < 0.01$) herbicide system main effect, but no herbicide system x cultivar interaction. There were no two- or three-way interactions among years, herbicide systems, or cultivars. The herbicide system main effect means averaged over years and cultivars, revealed that the Roundup Ultra only herbicide system produced the highest yields (533 and 749 lbs/ac early- and late-trials, respectively), while the lowest yields occurred in the standard herbicide system (374 and 575 lbs/ac early- and late-trials, respectively). The lack