

**PERFORMANCE OF ROUNDUP READY®
COTTON CULTIVARS UNDER THREE
HERBICIDE SYSTEMS**

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Abstract

Roundup Ready cultivars have expanded grower options for weed control, but have also complicated Official Cultivar Trials. In Official Cultivar Trials it is not feasible to evaluate Roundup Ready cultivars in a Roundup Ultra® herbicide system along with non-transgenic cultivars in a standard herbicide system. Evaluation of Roundup Ready cultivars along with non-transgenic cultivars in a standard herbicide system has raised concerns about the validity of yield data from Official Cultivar Trials. To address this issue, we conducted two trials in 1998 that evaluated early- and later-maturing Roundup Ready cultivars in three herbicide systems. The Roundup Ready cultivars included all those entered into the 1998 South Carolina Official Cultivar Trials. The three herbicide systems were 1) a standard system utilizing soil-applied herbicides, a POST application of Staple®, and a layby treatment of Cotton-Pro®/MSMA; 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 residual herbicides where only Roundup Ultra was used. 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. The herbicide system x cultivar interaction for lint yield was highly non-significant ($P>0.5$) in the early- and later-maturity trials. There was a highly significant ($P<0.01$) herbicide system main effect, with the highest yields produced in the Roundup Ultra only herbicide system (636 and 740 lbs/ac early- and late-trials, respectively) and lowest yields in the standard herbicide system (469 and 595 lbs/ac early- and late-trials, respectively). Cultivar main effects were non-significant in both trials. The lack of a herbicide system x cultivar interaction suggests that yield data from Official Cultivar Trials can be used to select a Roundup Ready cotton cultivar.