

**ROUNDUP READY® COTTON TOLERANCE TO  
ROUNDUP® ULTRA (glyphosate) HERBICIDE  
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**Abstract**

Field trials were conducted across the cotton belt in 1996 to evaluate the tolerance of Roundup Ready® cotton (*Gossypium hirsutum L.*) to various topical and post-directed applications of Roundup® Ultra (glyphosate) herbicide. Current label recommendations limit topical applications to 0- to 4-leaf cotton. After the 4-leaf stage, applications must be post directed at the base of the cotton plant. All trials were replicated small-plot studies maintained weed free by including a full residual herbicide program.

No yield reductions occurred in any of the 11 locations where Roundup Ultra at 0.75 lb ae/a was applied topically at the 1-leaf stage, the 3- to 4-leaf stage, or applied post directed at the base of the plant in the 10-node or 14-node stage (labeled treatments). There were no yield reductions from sequential treatments, even when all four applications were made. Yields for the treatments ranged from 102 to 108% of the untreated control. Plant mapping data showed that first position boll retention for the entire plant was also increased slightly when Roundup Ultra was applied (100 to 107% of the untreated control).

Eight post-directed trials were conducted where Roundup Ultra applications at 1.12 lb ae/a (1.5 times the maximum labeled rate) were either directed at the base of the cotton plant or directed to cover the bottom 25% of the plant. Applications were made at the 6-, 10- and 14-leaf stage, and sequentially at the 10- and 14-leaf stage. An additional treatment was included at the 14-leaf stage where the bottom 33% of the plant was sprayed. Averaged across all eight locations, yields ranged from 98 to 106% of the untreated check. At several locations, there was a yield reduction from the treatment where the bottom 25% of the plant was sprayed at the 10- and 14-leaf stage.

In a third study, Roundup Ultra was topically applied to Roundup Ready cotton in the 10-node stage at 0.28, 0.38 or 0.75 lb ae/a, or tank mixed with Staple® herbicide at 0.156 and 0.312 lb/a. Averaged across three locations, yields ranged from 105 to 108% of the untreated check. At one location, all treatments increased yields (119 to 132% of untreated check) and at one location they tended to reduce yields (85 to 96% of untreated check) and at the third location they were unaffected by treatment (100 to 106% of the untreated check). There were no yield differences between the various herbicide treatments though all

treatments containing Staple caused an average of 9 to 11% foliar necrosis one week after treatment.

In conclusion, when Roundup Ultra is applied as labeled, there is no negative affect on yield. More research is required to determine if less restrictive applications can be recommended after the 4-leaf stage.

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