

**THE EFFECT OF ROUNDUP  
ON ROUNDUP READY COTTON**  
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**Abstract**

Field experiments were conducted in 1997 and 1998 at the Black Belt Branch Experiment Station near Brooksville, MS, the Delta Branch Research Station near Stoneville, MS, and the Plant Science Research Center near Starkville, MS to evaluate Roundup Ready cotton (*Gossypium hirsutum*) tolerance to various topical and post-directed applications of Roundup Ultra 4AS (glyphosate).

Treatments in the topical tolerance trials were arranged in a randomized complete block design with 4 or 6 replications. Treatments were applied in a total delivery volume of 15 GPA. Treatments consisted of topical applications of 16, 24, and 32 fl oz of Roundup Ultra at the 6, 9, and 12 node growth stage following a topical application of 32 fl oz of Roundup Ultra at the 3 node stage. Under these conditions, an early season plant mapping indicated these treatments did not affect the number of nodes, plant height, number of bolls or squares, or total fruit retention. Machine harvested yield did not differ among treatments but did vary from 1404 to 2720 lbs seed cotton / acre depending upon location and year.

Additionally, at two locations a 10 foot section of each plot was hand harvested and "boxed-mapped" to partition seed cotton weight by node and position on each fruiting branch. Plants with aborted apical dominance were quantified separately as was the vegetative branches from other plants. Although each fruiting position was quantified individually, yield was partitioned into the following fruiting zones for analysis: Zone One, nodes 4 - 9; Zone Two, nodes 10 - 14; Zone Three, nodes 15-19 and Zone Four, nodes 20 -24. Total yield was not different between locations and averaged 2,110 lbs seed cotton / acre. In 1997 yield in Zone One was decreased by all treatments while in 1998 only the 24 and 32 oz topical applications of Roundup Ultra at the 9<sup>th</sup> and 12<sup>th</sup> node decreased yield. Yield within Zone Two was unaffected by the treatments in either year. For both years, yield in Zone Three and aborted plants generally increased as yield decreased in Zone One. Analysis of the same data by fruiting Positions One, Two, or Three averaged over all nodes indicated that in some instances Position One yield was decreased, Position Two yield was unaffected, and Position Three yield increased.

These data indicate that off label topical applications of Roundup Ultra did not affect overall machine harvested yield but it did affect fruiting patterns by "pushing" the yield out and up the plant when compared to an untreated check. Favorable late season weather in 1997 and 1998 may have allowed plants to compensate for early season fruit losses. Conversely, unfavorable late season conditions may result in the plants inability to compensate for these losses and ultimately show significant yield losses.