

**GLYPHOSATE IMPACT ON IRRIGATED AND DRYLAND ROUNDUP READY™ COTTON**  
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**Abstract**

Over the past few years, the capability for applying glyphosate over-the-top of cotton for controlling weeds has been realized on a commercial level with Monsanto's development of Roundup Ready™ technology. The objective of this study was to compare the effects of glyphosate on irrigated and dryland cotton when applied according to the manufacturer's label directions. This study was conducted in 1999 and 2000 at the Tennessee Valley Research and Extension Center in north central Alabama on a Decatur silt loam (1% organic matter and pH = 6.1). A stacked gene cotton variety (DPL 458 BR) was planted in late April each year using conventional procedures. Plots were kept weed-free with trifluralin (0.5 lb ai/acre, preplant incorporated), fluometuron (2.0 lb ai/acre) plus pyriithiobac (0.0625 lb ai/acre), and cultivation. Main plots were sprinkler irrigated individually for maximum yield based on previous research or were left dryland. Glyphosate subplots included four treatments: untreated, 1.0 quart/acre formulated material applied postemergence over-the-top at the 4-leaf stage (POST), 1.0 quart/acre post-directed to pre-bloom cotton (DIR), and 1.0 quart/acre applied both POST and DIR. Data collection included seed and lint cotton yield, plant mapping (10 plants/plot), first and second position boll harvest from 30 plants in each plot (15 consecutive plants from 2 adjacent rows), and fiber quality using HVI techniques. Glyphosate applications had no effect on overall yield, growth parameters, number of total bolls by node, number of reproductive nodes, or fiber quality (except for micronaire on node 14 in 2000). Irrigation increased yield, reproductive nodes/plant, and the total number of bolls at each node. Irrigation had a positive effect on plant growth and fiber quality compared to cotton produced under dryland conditions.