

COMPARING ROUNDUP ULTRA AND TOUCHDOWN IQ IN GLYPHOSATE-RESISTANT COTTON

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Abstract

Two experiments were conducted to evaluate glyphosate-resistant cotton tolerance and weed control with Roundup Ultra (isopropylamine salt of glyphosate) and Touchdown IQ (diammonium salt of glyphosate) applied topically and postemergence-directed. An additional experiment was conducted to evaluate glyphosate-resistant cotton tolerance and weed control with new and old formulations of Touchdown applied topically.

In the crop tolerance experiment, Touchdown IQ did not injure glyphosate-resistant cotton when applied overtop 1) in the cotyledonary stage of growth, 2) in the cotyledonary stage of growth followed by an application at the 2-leaf stage of growth, and 3) in the cotyledonary stage of growth followed by an application at both the 2- and 4-leaf stages of growth. Yields were similar when treated with Roundup Ultra or Touchdown IQ, and these yields were similar to the weed-free check.

Sicklepod, Palmer amaranth, and morningglory species were controlled similarly throughout the season by Touchdown IQ and Roundup Ultra applied at various timings in the weed control experiment. Touchdown IQ or Roundup Ultra applied overtop of 2-leaf cotton and postemergence-directed to 15-inch cotton controlled these weeds at least 88% by late-season. Delaying the over-the-top application until 5-leaf cotton reduced late-season control of Palmer amaranth and morningglory species 9 to 22%. Lower yields were observed when initial applications of Touchdown IQ or Roundup Ultra were delayed until 5-leaf cotton. Although less late-season weed control was noted with these systems, lower yields (57 to 66%) were actually a result of early-season weed competition that occurred prior to the first herbicide application.

In the formulation comparison experiment, one and two applications of Touchdown 5 (trimesium salt of glyphosate) injured glyphosate-resistant cotton 39 and 63%, respectively. Touchdown IQ did not injure glyphosate-resistant cotton. During early-season, smooth pigweed, morningglories, and a mixture of fall panicum, large crabgrass, and goosegrass were controlled similarly by Touchdown IQ and Touchdown 5. However, greater weed control was noted in systems containing Touchdown IQ as compared to Touchdown 5 by late-season. Late-season weed control was inversely related to cotton injury and the ability of the cotton plant to compete with weeds germinating after the 4-leaf stage of cotton. Cotton yields followed similar trends with 100% greater yields in systems treated with Touchdown IQ as compared to Touchdown 5 because of less cotton injury and greater late-season weed control.