

**TANK MIX COMBINATIONS OF GLYPHOSATE AND GLUFOSINATE IN GLYTOL™ PLUS
LIBERTYLINK® COTTON**

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Abstract

Field experiments were conducted in 2008 and 2009 to examine GlyTol™ plus LibertyLink® cotton response following sequential applications of glyphosate (Glyphos X-TRA), of glufosinate-ammonium (Ignite 280), glyphosate followed by (fb) glufosinate-ammonium, glufosinate-ammonium fb glyphosate, and glyphosate + glufosinate-ammonium in tank mixture. No adverse affects on plant establishment, plant height, maturity, vigor, and yield were observed following any herbicide treatment. GlyTol™ plus LibertyLink® cotton exhibited exceptional tolerance to glyphosate, glufosinate-ammonium, and glyphosate + glufosinate-ammonium “systems” at rates up to 2X. Cotton lint yield ranged from 920 to 1000 lb/A and was not different from the non-treated control (980 lb/A). The objective of this research was to determine Palmer amaranth (*Amaranthus palmeri* S. Wats.) and ivyleaf morningglory [*Ipomoea hederacea* (L.) Jacq.] control in non-cropland areas following tank mix combinations of glyphosate (Roundup PowerMax) and glufosinate-ammonium (Ignite 280) when holding the rate of Roundup PowerMax at 1X (0.75 lb ae/A or 21 oz/A) and varying the rate of Ignite 280 (1X (0.52 lb ai/A or 29 oz/A), 0.75X, 0.5X, 0.25X). Applications were made to 2- to 3-inch Palmer amaranth or 2- to 6-inch ivyleaf morningglory in separate field experiments. Additional studies examined Palmer amaranth and ivyleaf morningglory control following reduced rates of glyphosate and glufosinate-ammonium (1X + 0X, 0.75X + 0.25X, 0.5X + 0.5X, 0.25X + 0.75X, 0X + 1X). Applications were made using a tractor-mounted compressed-air sprayer calibrated to deliver 10 GPA at 3 MPH using 110015 TT flat fan nozzles.

Roundup PowerMax alone controlled Palmer amaranth 100% 10 days after application (DAA) in 2008. When Ignite 280 at 1X, 0.75X, 0.5X, or 0.25X was added in tank mixture, Palmer amaranth control decreased to 62 to 88%. Roundup PowerMax at 1X plus Ignite 280 at 0.25X provided the greatest level of Palmer amaranth control (88%) when using this tank mix combination, but control was less than the Roundup PowerMax alone. At 24 DAA, Roundup PowerMax alone controlled Palmer amaranth 77%, whereas tank mix combinations controlled this weed no greater than 15%. The reduced control at 24 DAA compared to 10 DAA was due to weed regrowth and subsequent flushes of Palmer amaranth. In a separate study, Roundup PowerMax at 1X controlled Palmer amaranth 100% 10 DAA. When Roundup PowerMax rates were reduced to 0.75X, 0.5X, and 0.25X with the addition of Ignite 280 at 0.25X, 0.5X, and 0.75X, respectively, control was reduced. Roundup PowerMax or Ignite 280 alone at 1X controlled ivyleaf morningglory 58 and 85%, respectively, 14 DAA in 2008. The 1X rate of both herbicides in tank mix controlled this weed 79% and control declined as the rate of Ignite 280 was reduced in tank mixture. Similar results were observed in 2009 although the overall control of ivyleaf morningglory was improved when compared to 2008. This result is likely due to the growing conditions prior to application.

GlyTol™ plus LibertyLink® cotton has shown exceptional tolerance to glyphosate and glufosinate-ammonium. Tank mix combinations of glyphosate and glufosinate-ammonium may be antagonistic on some weeds and sequential applications of glyphosate fb glufosinate-ammonium or glufosinate-ammonium fb glyphosate is suggested. The herbicide order will likely be dependent on the weed size and density, weed species, environmental conditions at application, and individual grower production practices. The anticipated launch of GlyTol™ plus LibertyLink® in 2011 will be a valuable tool for cotton growers.