# APPLICATION TIMINGS AND RATES IN ROUNDUP READY FLEX COTTON

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## Abstract

Roundup Ready cotton varieties are widely planted on the Texas High Plains, with effective control of a wide range of annual and perennial weeds achieved with glyphosate. With the current Roundup Ready technologies, postemergence over-the-top (POST) applications must be made prior to the 5-leaf cotton growth stage. Wet or windy conditions may make it difficult to treat large acreages during this application window. The use of Roundup Ready Flex varieties will widen the window of application and allow POST applications to be made beyond the 5-leaf cotton growth stage with the additional benefit of higher glyphosate rates, which could improve control of more difficult to control weeds. Keeling et al. (2003) found Roundup Ready Flex lines to exhibit excellent tolerance to POST glyphosate applications up to the 14-leaf cotton growth stage at rates 2 to 3 times higher than the currently used rate in Roundup Ready cotton.

Field experiments were conducted in 2003 at the Texas Agricultural Experiment Station near Lubbock to evaluate rates and timings of glyphosate for optimum control of Palmer amaranth (*Amaranthus palmeri* S. Wats), devil's-claw (*Proboscidea* louisianica (Mill.) Thellung), ivyleaf morningglory (*Ipomoea hederacea* (L.) Jacq.), and silverleaf nightshade (*Solanum elaeagnifolium* Cav.). Glyphosate was applied at rates ranging from 0.75 to 1.5 lb ae/A. Treatments based on cotton growth stage were compared to as needed treatments based on weed population and size. Treflan at 0.75 lb ai/A was applied preplant incorporated to all trial areas.

Palmer amaranth, devil's-claw, and silverleaf nightshade was controlled at least 90% with POST treatments based on cotton growth stage or as needed applications. For these weeds, effective control was achieved with 0.75 lb ae/A treatments, with no benefit from higher glyphosate rates. Similar results were observed on silverleaf nightshade by Dotray and Keeling (1996). The most effective ivyleaf morningglory control was achieved with four POST applications applied as needed beginning at the 2-leaf cotton growth stage, with the last treatment applied at the 20-leaf cotton growth stage. When applied at the 1.5 lb ae/A rate, three POST applications provided similar control by delaying the first application. Initial observations indicate that timely applications are better than increased rates. Similar results were reported by Croon et al. (2003) who also reported that increased rates may only be advantageous when harder to control perennials are present.