

ANNUAL GRASS CONTROL WITH GLYPHOSATE TANK-MIX COMBINATIONS

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Abstract

Transgenic cotton resistant to glyphosate has been widely accepted throughout the Southeast because of broad-spectrum weed control, good crop tolerance, and convenience. Use of this technology has led to significant changes in weed management programs. One of the primary changes has been reduction or elimination of soil-applied herbicides. In the absence of residual control from soil-applied herbicides, grasses are sometimes large when lay-by applications are made. Extension personnel have encouraged growers to use conventional chemistry for directed applications in Roundup Ready cotton. In order to control larger grasses, however, growers commonly direct glyphosate. It also is common practice to mix another broadleaf herbicide with directed glyphosate to better control morningglory species or obtain some residual control. In doing so, some growers have complained about the loss of grass control with glyphosate. This led us to conduct tests with glyphosate tank-mixed with a number of cotton lay-by herbicides.

In 2003, five tests were conducted in tilled, fallow fields heavily infested with grasses. Treatments were replicated three times in a randomized complete block design. Treatments consisted of Roundup WEATHERMAX at 16 or 22 fl oz/A alone or mixed with Aim at 1 or 2 fl oz/A, Caparol at 14 or 28 fl oz/A, Cobra at 6 or 12 fl oz/A, Direx at 14 or 28 fl oz/A, Envoke at 0.1 or 0.2 oz/A, Harvade at 6 or 12 fl oz/A, Linex at 14 or 28 fl oz/A, and MSMA at 19 or 38 fl oz/A. A non-treated check was included. Treatments were applied to 4- to 6-inch grasses. All applications were at 15 GPA and 23 psi. Weed control was estimated visually at 14 and 21 days after application. Data were arcsin transformed and subjected to ANOVA with partitioning for the factorial arrangement of two rates of Roundup WEATHERMAX by nine tank-mix partners by two rates for each partner.

Results were pooled over locations due to lack of treatment by location interaction. Growing conditions, especially soil moisture, were ideal for good glyphosate activity. Annual grass control was 97% or greater for all treatments 14 DAT. However, a small but significant glyphosate rate by tank-mix partner interaction was observed. Rate of tank-mix partners had no effect. Caparol, Direx, and Linex in combination with Roundup WEATHERMAX at 16 fl oz/A reduced annual grass control 3% compared to WEATHERMAX alone. No differences were observed when WEATHERMAX was applied at 22 oz/A. Annual grass control was 100% with all treatments at 21 DAT.

Results from these experiments agree with previous findings by a number of researchers indicating that tank-mixing herbicides with glyphosate can reduce control of annual grasses. These experiments need to be repeated in 2004 under different environmental conditions to better evaluate the effect of tank-mixing glyphosate with other cotton lay-by herbicides.