EFFICACY OF SELECT MAX PLUS AUXINIC HERBICIDES ON GLYPHOSATE-RESISTANT ITALIAN RYEGRASS

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Abstract

Glyphosate-resistant (GR) Italian ryegrass has become a tremendous problem in the midsouthern United States, especially in Mississippi. Currently, GR Italian ryegrass has been documented in 32 counties in Mississippi. The only postemergence herbicide options for GR Italian ryegrass control are Select Max (clethodim) and paraquat. Limited control options and the lengthy germination window for GR Italian ryegrass make it difficult to control. While GR Italian ryegrass is a driver weed for winter burndown applications, it does not exist in a monoculture. It co-exists with winter annual broadleaf weed species. Many winter annual broadleaf weed species are difficult to control with glyphosate alone. Burndown applications in Mississippi often consist of glyphosate plus an auxinic herbicide. Research was conducted to evaluate the efficacy of glyphosate plus Select Max when applied in mixtures with auxinic herbicides on GR Italian ryegrass and other winter annual broadleaf weed species.

Research was conducted in 2012 at the Delta Research and Extension Center in Stoneville, MS. The experiment was designed as a split-plot with four replications. Whole plots were rates of Select Max and included Select Max at 0, 0.0625, 0.094, and 0.125 lb ai/A. All treatments that contained Select Max also included glyphosate at 0.77 lb ae/A. Subplots were auxinic herbicides and included no auxinic herbicide, 2,4-D Ester at 1 lb ae/A, Clarity at 0.25 lb ae/A, and 2,4-D plus Clarity (dicamba) at 1 plus 0.25 lb/A. Crop oil concentrate at 1% (v/v) was included with all herbicide treatments. Individual plots were 10 by 40 feet. Treatments were applied on January 5 with a tractor-mounted sprayer calibrated to deliver 15 gallons per acre. Weed control was visually assessed at 15, 30, and 48 days after treatment (DAT). All data were subjected to analysis of variance (ANOVA) and means were separated using Fisher's protected LSD with $\alpha = 0.05$.

GR Italian ryegrass was reduced when 2,4-D Ester or Clarity alone were added to mixtures of glyphosate plus Select Glyphosate plus Select Max controlled more GR Italian ryegrass at 0.125 compared with 0.0625 lb/A. Control of Max at 0.0625 and 0.094 lb/A; however, GR Italian ryegrass control was not influenced by auxinic herbicides when mixed with glyphosate plus Select Max at 0.125 lb/A. All combinations of glyphosate plus Select Max plus an auxinic herbicide controlled shepherd's-purse at least 90% 48 DAT. All combinations of auxinic herbicides improved control of henbit compared with glyphosate plus Select Max at 0.094 or 0.125 lb/A. 2,4-D Ester and Clarity were required to optimize control of henbit with glyphosate plus Select Max at 0.125 lb/A. Auxinic herbicides were required with glyphosate plus Select Max to control cutleaf evening-primrose greater than 66% 48 DAT.

Glyphosate plus Select Max at 0.094 or 0.125 lb/A was required to maximize control of GR Italian ryegrass 48 DAT. Auxinic herbicides reduced control of GR Italian ryegrass control when added to glyphosate plus Select Max at 0.0625 or 0.094 lb/A. 2,4-D Ester, Clarity, or a combination of both auxinic herbicides was required to maximize control of winter annual broadleaf weed species; however, the response to auxinic herbicides varied by species. 2,4-D Ester and Clarity should be added to glyphosate and Select Max at the full use rate of 0.125 lb/A for optimum control of GR Italian ryegrass and winter annual broadleaf weed species. No herbicide combinations completely controlled GR Italian ryegrass and winter annual broadleaf weed species; therefore, sequential applications would be required for a clean seedbed at planting.