COMPARISON OF FALL RESIDUAL HERBICIDES TARGETING ITALIAN RYEGRASS

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Abstract

Glyphosate-resistant (GR) Italian ryegrass (*Lolium perenne* ssp. *multiflorium*) was first documented in field crops in Washington County, Mississippi, in 2005. Thirty-one counties in Mississippi now contain populations of GR Italian ryegrass. Fields with GR Italian ryegrass not controlled at burndown will have significant plant residue at planting. Residue will impede planting practices, contribute to competition between crop seedlings and established GR Italian ryegrass, and hinder herbicide programs due to inadequate coverage. Populations of Italian ryegrass with multiple resistance to glyphosate, ALS inhibitors, and ACCase inhibitors in the Mississippi Delta greatly reduce the quantity of herbicides effective for control after crops emerge. Research demonstrated that residual herbicides applied in the fall (mid-October to mid-November) offer the best opportunity for controlling GR Italian ryegrass. The most effective fall residual herbicides have been identified as Boundary, Command, Dual Magnum, and Treflan. Understanding the response of GR Italian ryegrass to fall residual herbicides is important for developing effective management programs in Mississippi.

The study was conducted in 2011-12 at an on-farm site near Elizabeth, MS, known to be infested with GR Italian ryegrass. Soil at the research site was a Dundee very fine sandy loam with a pH of 6.7 and 1.2% organic matter. Individual plots were 10 by 40 feet. The experimental design was a randomized complete block with four replications. Residual herbicide treatments were applied November 7, 2011. All applications included Gramoxone SL (paraquat) at 0.75 lb ai/A and a crop oil concentrate at 1% (v/v). Treatments were applied with a tractor-mounted sprayer equipped with a compressed air sprayer set to deliver 15 GPA. A nontreated check was included for comparison. Glyphosate-resistant Italian ryegrass control was visually estimated at 42, 74, 107, and 134 d after treatment (DAT). Data were subjected to ANOVA with means separated by Duncan's multiple range test at P=0.05.

All fall residual herbicides controlled GR Italian ryegrass at least 91% 42 DAT except Warrant. GR Italian ryegrass control with Sencor was less than that with Boundary 74 and 107 DAT, although Sencor was as effective as most treatments. Warrant controlled GR Italian ryegrass less than all other treatments 74 and 107 DAT. Fierce and Zidua at 0.11 lb/A controlled GR Italian ryegrass less than Zidua at 0.13 lb/A 134 DAT. Boundary controlled more GR Italian ryegrass than Alert, Axiom, Command, Fierce, Sencor, and Zidua at 0.11 lb/A 134 DAT.

No treatments evaluated in the current research controlled GR Italian ryegrass better than currently recommended fall residual herbicides. Axiom, Fierce, Sencor, and Zidua at 0.11 lb/A did not provide the length of residual control that was observed with other fall residual herbicides. Fall applications of Warrant were ineffective for GR Italian ryegrass control. The lack of control with Warrant is likely due to its encapsulated formulation. Harness and Warrant contain the same active ingredient, and Harness controlled GR Italian ryegrass 86 to 94% at all evaluations.