RESIDUAL HERBICIDES ARE CORNERSTONE OF GLYPHOSATE-RESISTANT ITALIAN RYEGRASS CONTROL Jason A. Bond Thomas W. Eubank Robin C. Bond Mississippi State University Stoneville, MS

Abstract

Italian ryegrass (*Lolium perenne* ssp. *multiflorium*) is often planted as a cover crop, as a temporary lawn grass, for roadside restoration, or for soil enrichment; however, it often escapes cultivation and becomes established in fallow fields as a winter weed. Italian ryegrass has a wide range of adaptability to soils, and it thrives in fertile soils in regions with mild climates. Plants emerge in the fall and grow vigorously through winter and early spring. Individuals of the species are highly competitive for nutrients, water, and sunlight.

Italian ryegrass resistant to glyphosate was identified in Mississippi in 2005, and it is now present in 13 counties. Glyphosate-resistant (GR) has also become problematic in other southern states. Populations of GR Italian ryegrass have been confirmed in at least one county/parish in Arkansas, Louisiana, and North Carolina during the last three years. Dense populations of GR Italian ryegrass are problematic for producers. This weed can jeopardize burndown programs, and few affordable postemergence herbicides are available. Fields containing GR Italian ryegrass not controlled at burndown will have significant 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.

Research to address management of GR Italian ryegrass was initiated in 2005 at the Mississippi State University Delta Research and Extension Center in Stoneville. This research has established that residual herbicides applied in the fall offer the best opportunity for controlling GR Italian ryegrass. Forty-six different residual herbicides have been screened in field studies for efficacy against GR Italian ryegrass since 2005. Dual Magnum (*S*-metolachlor), Treflan (trifluralin), and Command (clomazone), Boundary (S-metolachlor plus metribuzin), Outlook (dimethenamid-p), Harness (acetochlor formulated as emulsifiable concentrate), and Zidua (pyroxasulfone) effectively control GR Italian ryegrass for 120 to 150 days if the applications receive rainfall adequate for incorporation. Unfortunately, only Dual Magnum, Treflan, Command, and Boundary are labeled for fall applications.

A GR Italian ryegrass management program should begin with residual herbicides applied when weather permits between mid-October and mid-November. Depending on rainfall totals through the fall and winter months, residual herbicides applied in the fall prior to GR Italian ryegrass emergence may provide control that lasts until spring. Dual Magnum (1.27 lb ai/A) or Treflan (1.5 lb ai/A) should be utilized in fields that will be planted to cotton the following year. Dual Magnum, Treflan, and Boundary (1.63 lb ai/A) may be applied in fall prior to planting soybean. Dual Magnum is the only fall residual herbicide for GR Italian ryegrass that may be safely applied if the field will be planted in corn. In fields where the following year's crop will be rice, Command (0.75 lb ai/A) is the only fall residual herbicide to control GR Italian ryegrass emerged at time of application. During years where activating rainfall is inadequate, research indicates that shallow tillage will effectively incorporate fall residual herbicides.