

IMPACT OF TILLAGE SYSTEM AND APPLICATION TIMING OF POSTEMERGENCE HERBICIDES ON ITALIAN RYEGRASS CONTROL. James R. Martin, Charles R. Tutt, and Dorothy L. Call, Extension Professor, Research Specialist, and Technician, Department of Plant and Soil Sciences, University of Kentucky, Princeton, KY 42445-0469.

Because of the increased interest in using no-tillage practices in wheat, research was conducted to determine if tillage system impacts Italian ryegrass growth and control when a postemergence herbicide is applied in the fall or spring. Experiments were conducted during 2006-2007, 2007-2008, and 2008-2009 growing seasons and were referenced as studies 1, 2, and 3 respectively.

Wheat was planted using conventional and no-tillage practices in mid October. The timings of applications common to all three studies were mid November and mid March. Studies 2 and 3 also included a mid December timing.

Mesosulfuron methyl was used in the first two studies for managing ryegrass. Crop injury became a concern when mesosulfuron methyl was applied in the spring near the time for topdressing nitrogen fertilizer; therefore, pinoxaden was used in the third study for postemergence control of ryegrass.

Ryegrass plant samples were collected at the time of application to estimate density and growth stage. Visual ratings of control were also made at 4 weeks after treatment (WAT) and at maturity. Wheat was harvested with a plot combine and yields were adjusted to 13.5 percent moisture.

Tillage system influenced ryegrass density in two of the three studies, yet results were inconsistent. Densities in the first study were greater in the conventional tillage plots, compared with the no-tillage plots for both fall and spring timings. However, densities in the third study were greater in the no-tillage plots than the conventional tilled plots for both fall timings, but were statistically equal for both systems for the spring timing.

The development of ryegrass was diverse in both tillage systems at all sampling times. The percentage of ryegrass plants that exceeded two tillers was used as a standard for comparing treatments, since this is the maximum growth stage on the labels of most postemergence herbicides used for ryegrass control. Ryegrass plants in all three studies did not exceed two tillers for the November timing in both tillage systems. Delaying herbicide treatment until mid December resulted in 3.7 to 17 percent plants with more than two tillers. The mid March timing had a larger portion of the population with greater than two tillers in the conventional till system than the no-till system.

A few ryegrass seedheads were observed at maturity in nearly all herbicide-treated plots, regardless of tillage system or timing of herbicide. The check plots of the first study had more seedheads in the conventional till plots than the no-till plots.

Ryegrass control was slower when the herbicide was applied in the fall than in the spring. Ryegrass control at the end of the season exceeded 90 percent in most instances. In a few instances, late-season control with the fall applications was 5 to 7 percent greater in no-till than conventional till plots. In some cases, late-season control increased 3 to 11 percent when the herbicide timing was delayed until mid-March. Crop injury and competition from other weeds were factors that made it difficult to determine a consistent pattern where wheat yield was affected by tillage system and timing of herbicide.

Tillage system can influence ryegrass density in some cases, yet the results may be inconsistent. Delaying applications until March resulted in more plants that exceeded the maximum label stage of two tillers, particularly in conventional till plantings. The level of ryegrass control at the end of the season exceeded 90 percent in most cases and any differences due to tillage system or timing of herbicide were minor

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