Managing Annual Ryegrass with Preharvest Applications of Roundup Ultra
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Introduction:
Italian ryegrass (*Lolium multiflorum*) is increasing as a problem weed in wheat. It is a cool-season annual that emerges in the fall and matures around late June to early July. Italian ryegrass plants may mature near wheat harvest time; therefore, its seed can spread behind the combine during the harvesting process.

The similarity in the life cycles of Italian ryegrass and wheat may provide an opportunity to use a preharvest treatment of Roundup Ultra (glyphosate) to limit the viability of Italian ryegrass seed and spread of this problem weed. The Roundup Ultra label recommends that applications be made after wheat has reached the hard-dough stage of grain (30% or less grain moisture). In order for this treatment to be successful, applications must be made before ryegrass has matured and wheat seed reaches the hard-dough stage.

Objective:
Evaluate the impact of preharvest application of Roundup Ultra on control and seed viability of annual ryegrass.

Methods:
Madison wheat was seeded October 22, 1997 at a rate of 35 seed/ft^2 at the UKREC in Princeton, Kentucky. The plot area had a 3-year history of annual ryegrass. Nitrogen in the form of ammonia nitrate was applied as a split treatment of 60 units (2-24-98) plus 60 units (3-24-98).

Preharvest treatments of Roundup Ultra at 2 pt/A were applied at two times:

Preharvest I = June 2 and an average wheat grain moisture of 49.3 %

Preharvest II = June 11 and an average wheat grain moisture of 26.1 %

The following data were collected:

1. Annual ryegrass control ratings: Visual ratings were made on June 23 and were based on a 0 to 100 scale with 0 = no control and plants were green in color and 100 = plants dead with no green color.

2. Annual ryegrass and wheat seed germination: Seedheads were collected at random from each plot. Seeds were threshed by hand and analyzed by University of Kentucky Regulatory Services for percent germination.

Results:
Timing had a significant impact on effectiveness of the Roundup Ultra preharvest treatments. The preharvest I treatment provided 100 % control of annual ryegrass compared with 47% control with the preharvest II treatment (Table 1). The annual ryegrass seed from the preharvest I treatment had only 38% germination compared with 88% for preharvest II treatment and 93% for the nontreated check. The wheat seed collected from the preharvest I treatment had 82% germination which was significantly less than the 93% germination for the wheat seed from the nontreated check. The viability of the wheat seed from the preharvest II treatment tended to be slightly less in comparison with the nontreated check, however, this difference was not statistically significant.

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Table 1. Impact of Timing of Preharvest Applications of Roundup Ultra at 2 pt/A on Annual Ryegrass and Wheat.

	Timing[1]	Annual Ryegrass		Wheat
		% Control	% Seed Germ	% Seed Germ
Roundup Ultra 2 pt/A	Preharvest I	100	38	82
Roundup Ultra 2 pt/A	Preharvest II	47	88	88
Nontreated Check		0	93	93
	LSD (0.05)	23	34	10

Timing[1]: Preharvest I applied on 6-02-98 (49.3% wheat seed moisture).
Preharvest II applied on 6-11-98 (26.1% wheat seed moisture).

Conclusions:
These results indicate Roundup Ultra provided effective control of annual ryegrass plants and significantly reduced annual ryegrass seed viability when the herbicide was applied earlier than the hard-dough stage (i.e. 30% moisture) label restriction. The nine days that lapsed between the preharvest I and II treatments appeared to allow time for annual ryegrass seed to become mature and maintain its viability. It is

important to note this research is based on only one season and may not represent all situations when using preharvest treatments of Roundup Ultra. Additional research is needed to determine if differences in the maturity of wheat and annual ryegrass seed are large enough to allow safe and legal use of Roundup Ultra as a preharvest application in wheat.