

# Fall Application of Metribuzin for Italian Ryegrass Control After Preemergence Herbicide Failure

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## Methods

The study was established at the Cook Agronomy Farm near Pullman, WA. Treatments were applied postemergence (POST) to 1 to 3-leaf Italian ryegrass in emerged 3 to 5-leaf winter wheat after failure of the delayed preemergent herbicide Zidua at  $1.75 \text{ oz A}^{-1}$  to control the Italian ryegrass, detailed in Table 1 and Table 2. The study was conducted in a randomized complete block with 4 replications. Plots were 10' by 10' long. Winter wheat, variety Puma, was planted on October 8, 2016. The trial site was then treated with  $1.75 \text{ oz A}^{-1}$  of Zidua as a delayed preemergent on October 12, 2016 for Italian ryegrass and mayweed chamomile control. Treatments were applied November 7, 2016. In the spring, Huskie ( $15 \text{ fl oz A}^{-1}$ ), Rhomene ( $0.75 \text{ pt A}^{-1}$ ), nonionic surfactant (NIS;  $0.25\% \text{ v/v}$ ), and urea ammonium nitrate (UAN;  $0.5 \text{ qt A}^{-1}$ ) was applied May 9, 2017 for broadleaf weed control. Paraquat ( $3 \text{ pt A}^{-1}$ ) was included as a negative control with the intention of killing all winter emerging Italian ryegrass present at time of application.

Italian ryegrass control was visually assessed 150 days after treatment (DAT). Crop stand reduction was also visually assessed 150 DAT (Table 2). Italian ryegrass biomass was collected 218 DAT by hand harvesting above ground biomass from two  $1/10^{\text{th}}$  meter quadrants in each plot and then air dried in oven for 72 hours before recording biomass. Plots were hand harvested by collecting  $1 \text{ m}^2$  quadrats per plot on August 1, 2017. All data was subjected to an analysis of variance using the statistical package built into the Agricultural Research Manager software system (ARM 8.5.0, Gylling Data Management).

## Results

There was no significant difference in winter wheat stand reduction 150 DAT for any of the metribuzin treatments. There was a significant stand reduction for both the glufosinate (28% reduction) and paraquat (97% reduction) treatments (Table 2).

Visually Italian ryegrass control at 150 DAT increased as the rate of metribuzin increased with 30, 66, 51, 54 and 84% control at  $0.047$ ,  $0.094$ ,  $0.140$ ,  $0.188$ , and  $0.375 \text{ lb ai A}^{-1}$  metribuzin, respectively. Metribuzin at  $0.375 \text{ lb ai A}^{-1}$  (84%) and the negative control of paraquat (90%) had the greatest control of the Italian ryegrass at 150 DAT. However, by 218 DAT, there was no longer a significant difference in Italian ryegrass control between treatments and the nontreated control with no difference in Italian ryegrass biomass (Table 2).

The metribuzin treatments had no significant effect on yield compared to the nontreated control.



**Fig 1.** Italian ryegrass control with metribuzin after preemergence herbicide failure. Left: nontreated control. Middle: Metribuzin at  $0.047 \text{ lb ai A}^{-1}$ . Right: Metribuzin at  $1.040 \text{ lb ai A}^{-1}$ .

**Table 1.** Treatment application details

| <b>Study Application</b>       |                   |
|--------------------------------|-------------------|
| Date                           | November 7, 2016  |
| Application volume (GPA)       | 15                |
| Crop Stage                     | 4 leaves          |
| Air temperature (°F)           | 51                |
| Soil temperature (°F)          | 47                |
| Wind velocity (mph, direction) | 10, E             |
| Cloud Cover                    | 60 %              |
| Next rain occurred on          | November 13, 2016 |

**Table 2.** Percent Italian ryegrass control, Italian ryegrass biomass, and winter wheat yield following applications of metribuzin. Pullman, WA, 2017. DAT = days after treatment. Means followed by the same letter are not statistically significantly different ( $\alpha=0.05$ ).

| Treatment   | Rate       |         | April 6, 2017   |                          | June 20, 2017            | August 1, 2017 |
|-------------|------------|---------|-----------------|--------------------------|--------------------------|----------------|
|             |            |         | 150 DAT         |                          | 218 DAT                  |                |
|             |            |         | Stand Reduction | Italian ryegrass control | Italian ryegrass biomass | Yield          |
|             | field rate | lb ai/A | %               | %                        | lb/A                     | bu/A           |
| Nontreated  | -          | -       | -               | -                        | 2108                     | 96 a           |
| Metribuzin  | 1 oz/A     | 0.047   | 3 c             | 30 b                     | 2275                     | 87 a           |
| Metribuzin  | 2 oz/A     | 0.094   | 1 c             | 66 ab                    | 2184                     | 87 a           |
| Metribuzin  | 3 oz/A     | 0.140   | 5 c             | 51 ab                    | 1622                     | 96 a           |
| Metribuzin  | 4 oz/A     | 0.188   | 0 c             | 54 ab                    | 2548                     | 92 a           |
| Metribuzin  | 8 oz/A     | 0.375   | 11 c            | 84 a                     | 2161                     | 105 a          |
| Glufosinate | 22 fl oz/A | 0.402   | 28 b            | 56 ab                    | 3685                     | 81 a           |
| Paraquat    | 3 pt/A     | 1.040   | 97 a            | 90 a                     | 3406                     | 15 b           |
|             |            | LSD     | 11              | 33                       | 1922                     | 18             |

## Disclaimer

Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to \$7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance.