

Winter Wheat Yield Following Treflan® Applied the Previous Year in Spring Canola

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Italian ryegrass is a cool-season annual to short-lived perennial grass that has become a major weed in the higher rainfall region of eastern Washington within the last 30 years. Italian ryegrass has developed resistance to all Group 1 (ACCase inhibitors) herbicides, e.g., clethodim, Hoelon®, Poast®, Assure®, Axial®, and Group 2 (ALS inhibitors) herbicides, e.g., Osprey®, Outrider®, Amber®, PowerFlex®, and Beyond®. Currently, growers have included glyphosate-resistant spring canola in their rotations so they can control Italian ryegrass in the canola crop with glyphosate. Resistance to glyphosate has occurred in other areas but is not yet widespread in eastern Washington. Concern over developing glyphosate resistance in Italian ryegrass has prompted research into using herbicides with sites of action different from glyphosate in spring canola.

Treflan (trifluralin) is a Group 3 dinitroaniline herbicide used for preemergence control of grass and broadleaf weeds, including Italian ryegrass, in many crops. Its mode of action is to inhibit mitosis in the developing root tips by binding to tubulin, thus interfering with the formation of microtubules critical for cell division. Treflan can be effective if applied and incorporated into the soil before weed seeds germinate. Following incorporation, adequate precipitation is needed to move Treflan into the soil water where it can be taken up by seedling roots. Treflan also has soil residual activity that can injure sensitive crops if they are planted too soon after application. Treflan is labeled for preplant incorporated application in wheat, but only if the wheat is planted below the zone of herbicide incorporation. Planting winter wheat following spring canola where Treflan has been applied has raised concerns regarding residual carryover damage to the wheat crop and labeling between products is not consistent regarding the rotational interval.

In 2022, we compared herbicides for Italian ryegrass control in spring canola at the WSU Cook Agronomy Farm near Pullman, WA (Table 1). Treatments included Treflan HFP by itself and in combination with PowerMax (glyphosate) and Liberty 280 SL (glufosinate) in 10 by 30 ft plots with four replications per treatment. In addition, Kerb® SC (pronamide) was included as an experimental Group 3 treatment. In the fall of 2022, winter wheat was planted over the study site with a Horsch direct-seed drill. In August 2023, we harvested winter wheat from all plots with a small plot harvester. Samples were cleaned and weighed for yield.

We found no statistically significant yield loss caused by Treflan applied in the previous spring crop as all applications with Treflan grouped with the highest yielding treatments (Table 1). This is congruent with a similar comparison in 2022 where no winter wheat yield loss was caused by Treflan applied the previous year.

Table 1. Winter wheat yield in 2023 following herbicides applied in 2022 for Italian ryegrass control in spring canola.

Herbicides applied in 2022 spring canola*	Winter wheat yield in 2023**
	bu/A
PowerMax 44 oz/A EPOST	105 a
PowerMax 22 oz/A EPOST + LPOST	101 ab
Treflan 24 oz/A PPI	100 ab
Treflan 24 oz/A PPI + PowerMax 22 oz/A LPOST	100 ab
Treflan 24 oz/A PPI + PowerMax 44 oz/A EPOST	99 ab
Liberty 22 oz/A EPOST + LPOST	98 ab
Treflan oz/A PPI + PowerMax 22 oz/A EPOST + LPOST	97 ab
Treflan 24 oz/A PPI + Liberty 22 oz/A EPOST	96 ab
Nontreated check	94 b
PowerMax 22 oz/A LPOST	90 b
Kerb 20 oz/A PRE + Liberty 22 oz/A EPOST	62 c
Kerb 20 oz/A Pre	62 c

*PPI=preplant incorporated; PRE=post-plant preemergence to crop; EPOST=early postemergence; LPOST=late postemergence.

**Means followed by the same letter are not statistically different ($P \leq 0.05$).

We did, however, see reduced yield from the Kerb applied in 2022 (Figure 1). Overall, Treflan applied for Italian ryegrass control in spring canola does not appear to cause yield loss in winter wheat the following year.

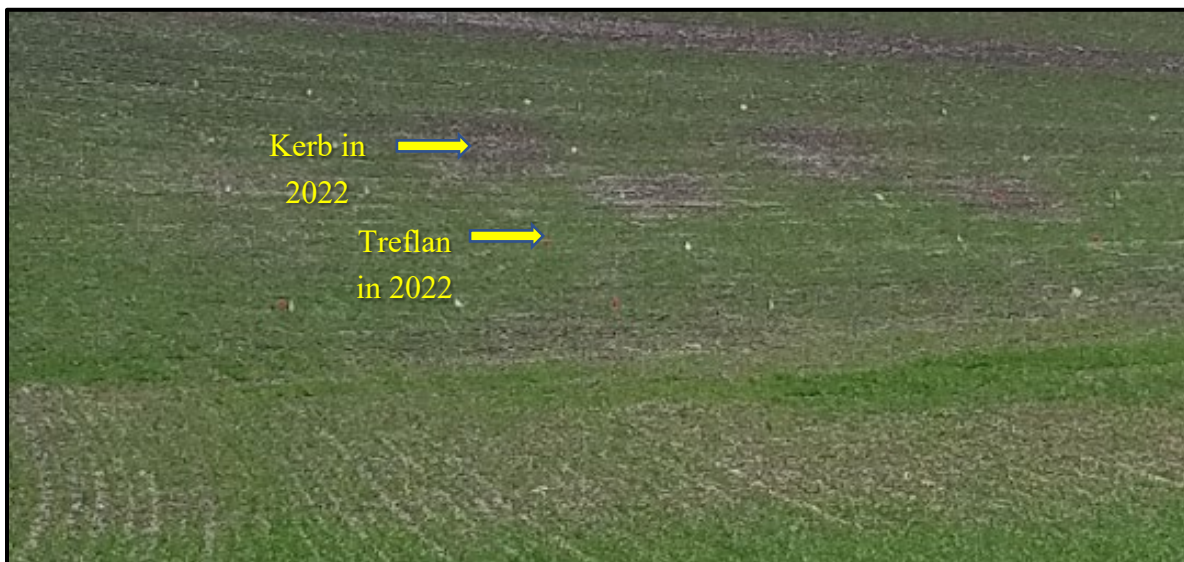


Figure 1. 2023 winter wheat crop showing injury from Kerb applied in 2022, but no visible injury from Treflan applied in 2022.

Off-label or Experimental-Use 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.