

## **Winter wheat yield following Treflan® applied the previous year in spring canola for Italian ryegrass control.**

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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 (Figure 1). 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 modes 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



Figure 1. Research plot with glyphosate-resistant spring canola.

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 labelling between products is not consistent regarding the rotational interval.

In 2021, a field study on Italian ryegrass control in spring canola was conducted at the WSU Cook Agronomy Farm near Pullman, WA. Several of the treatments included Treflan applied preplant and incorporated. Treflan TR10 granules were applied at 7.5 lb/A on April 21, 2021, in both no-till and tilled soil and were harrowed twice in opposite directions to incorporate. Tilled plots had been chisel plowed the previous fall in 2020, and then cultivated twice and roller packed to firm the soil in spring 2021 prior to planting. Plots measured 10 by 50 ft and there were four no-till blocks and four tilled blocks. On April 23, 2021, spring canola was planted in each plot. Very little precipitation followed application as 2021 was the worst drought year since 1977 in this region; therefore, the Treflan was not adequately activated and Italian ryegrass control in the canola was minimal. In the fall of 2021, winter wheat was planted with a Horsch direct-seed drill into dry, firm soil. In 2022, possible injury symptoms were observed in the growing wheat crop where Treflan had been the previous year (data not shown). Plots were re-flagged where a Treflan-treated plot was directly adjacent to a non-Treflan plot with one pair identified in each of the eight blocks. In August 2022, we harvested wheat from each flagged plot with a small plot combine. Samples were cleaned and weighed for yield.

In our analysis, we found no statistically significant yield loss caused by Treflan applied in the previous spring canola crop (Table 1). Furthermore, we found no difference in plots that had been tilled prior to Treflan application compared with non-tilled plots. Winter wheat yield averages ranged from 122 to 128 bu/A following an exceptionally wet spring, which may have helped the wheat overcome any suppressed growth that was observed in early spring.

Table 1. Effect of Treflan applications in 2021 spring canola on winter wheat yields in 2022.

2021 Tillage System	2021 Treatment	2022 Winter wheat yield*
		bu/A
No-till	No Treflan	122
No-till	Treflan	123
Tilled	No Treflan	128
Tilled	Treflan	124
		ns

\*Probability of a finding a true treatment difference between yield means was only 56% and thus not statistically significant (ns).

## **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.**