

How do I control bluegrass in winter wheat?

Bluegrass competition in winter wheat can result in yield losses of up to 50%. We reviewed current research to provide recommendations for reliable control of annual and roughstalk bluegrass in Ontario.

The simple answer

For best control of	Product	Application	Notes
Annual bluegrass	Focus (pyroxasulfone)	Pre-emergent	
	Simplicity GoDRI (pyroxsulam)	Post-emergent	Early spring
Roughstalk bluegrass	Axial (pinoxaden)	Post-emergent	Early spring when bluegrass is <10 cm tall
	Simplicity GoDRI (pyroxsulam)		
	Varro (thiencarbazone)		

A little more information

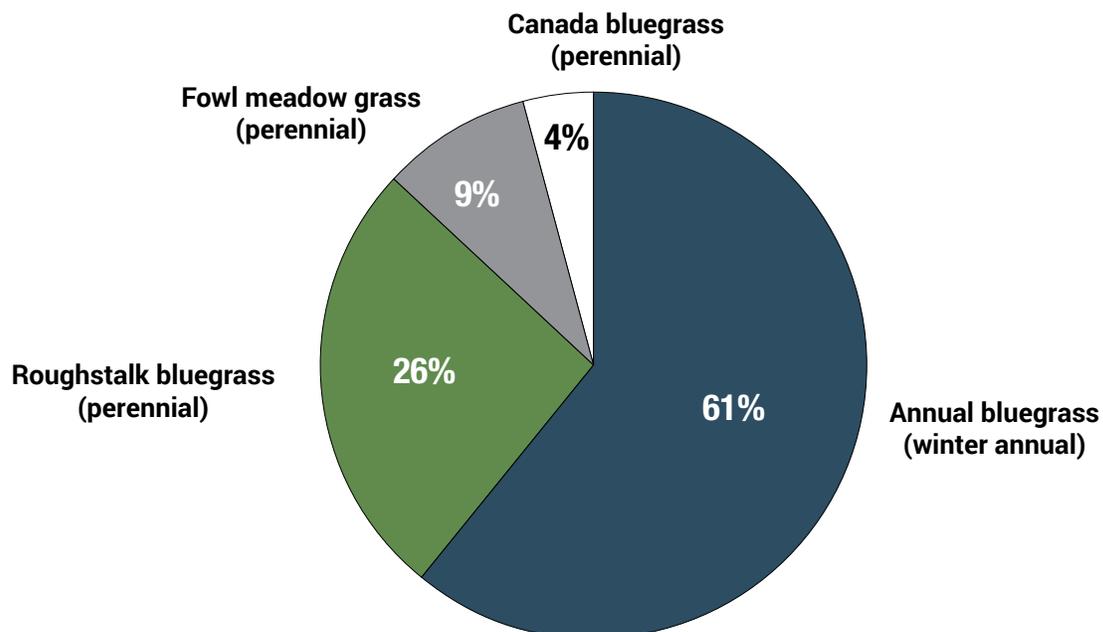
Research done by Michigan State University’s Dr. Christy Sprague has shown that yield losses of up to 50% can occur from bluegrass competition in winter wheat. Bluegrass species often head at the same time as winter wheat, and could intercept and reduce the amount of fusarium head blight fungicide reaching the grain head (Figure 1).

These competitive grassy weeds emerge primarily in the fall but also in early spring. Plants smaller than 10 cm in height are easier to control with herbicides. Early spring applications provide better control than fall applications. Some bluegrass seedlings – that are missed by fall applications – emerge in early spring. Both fall and early spring applications provide better control than late spring applications.



Figure 1. There are two predominant species of bluegrass in Ontario fields – annual and roughstalk bluegrass (Table 1).

Table 1. Breakdown of bluegrass species identified in Ontario fields.



The full story

Building on Dr. Sprague's research, an on-farm research trial evaluated five different herbicides – three are currently available in Ontario and one has a 20% lower use rate compared to its U.S. counterpart (Table 2). The field site contained primarily roughstalk bluegrass. Herbicides were applied when bluegrass was 5-7.5 cm tall (Figure 2) and the winter wheat crop was just at stem elongation. The rest of the field was sprayed one month later when bluegrass was 20-30 cm tall.

Table 2. Herbicides applied to roughstalk bluegrass in winter wheat.

Herbicide (active ingredient and concentration)	Rate
Simplicity GoDRI (pyroxsulam – 21.5%) + Merge – CAN rate	28 g/acre + 400 mL/ac
Simplicity GoDRI (pyroxsulam – 21.5%) + Merge – U.S. rate	35 g/acre + 400 mL/ac
Axial (pinoxaden – 50 g/L)	500 mL/ac
Osprey* (mesosulfuron-methyl – 4.5%) + Agral 90	135 g/ac + 0.5% v/v
Varro (thiencarbazone-methyl – 10 g/L) + Agral 90	200 mL/ac + 0.25% v/v
Sencor 480** (metribuzin – 480 g/L)	450 mL/ac

*Only available in the U.S.

** Only labelled for use on winter wheat in Western Canada



Figure 2. Roughstalk bluegrass was <10 cm tall at time of herbicide applications.

Key learnings

Axial, Simplicity GoDRI and Varro provided excellent control of roughstalk bluegrass that was less than 10 cm tall at application. (Table 3, Figures 3 & 4)



Figure 3. Axial, Simplicity GoDRI and Varro herbicides delivered excellent control of roughstalk bluegrass compared to unsprayed check.



Figure 4. Roughstalk bluegrass under the winter wheat canopy at 48 days after an April application made to plants <10 cm tall.

Table 3. Herbicide control of roughstalk bluegrass.

Herbicide	Date applied, weed size	Control – 56 DAA*
Simplicity GoDRI + Merge – CAN rate	April 10 (<10 cm tall)	99%
Simplicity GoDRI + Merge – CAN rate	May 14 (20-30 cm tall)	70%
Simplicity GoDRI + Merge – U.S. rate	April 10 (<10 cm tall)	99%
Axial	April 10 (<10 cm tall)	99%
Osprey** + Agral 90	April 10 (<10 cm tall)	99%
Varro + Agral 90	April 10 (<10 cm tall)	99%
Sencor 480***	April 10 (<10 cm tall)	99%

*DAA = Days after application

**Only available in the U.S.

*** Only labelled for use on winter wheat in Western Canada

Delaying herbicide applications into May, when bluegrass was greater than 20 cm tall, reduced control but did keep bluegrass from heading above the wheat canopy (Figure 5 and 6 aerial). However, there was a considerable amount of roughstalk bluegrass at the bottom of the wheat canopy that began to grow and set seed after harvest. In contrast, the mid-April applications to small roughstalk bluegrass eliminated the majority of plants, and fields were essentially bluegrass free after harvest (Figure 7).



Figure 5. Roughstalk bluegrass under the winter wheat canopy 28 days after a May application to plants >20 cm tall. Application prevented bluegrass from emerging above the crop canopy but didn't stop flowering



Figure 6. Aerial application of Simplicity GoDRI on May 14 but wasn't fully primed in spray boom providing unsprayed check to compare the late spring application.



Figure 7. Post harvest, the area sprayed mid-May with large roughstalk bluegrass had considerably more plants compared to area sprayed at the same time on plants <10 cm tall.

Varro herbicide has labelled guidelines that restrict its use when temperatures are below 3°C and/or when winter wheat has reached the first node stage of growth. Both restrictions were violated in this experiment, resulting in slight stunting and significant yellowing. Plants did fully recover within 14 days of application.