



Controlling Japanese and downy brome

CATEGORY [weeds](#) | *April 17, 2019*

Field trials found pyroxasulfone (Focus), pyroxasulfone + flumioxazin (Fierce), and pyroxsulam (Simplicity) provided effective control of Japanese and downy brome in winter wheat.

Trials were established at Lethbridge and Kipp, Alberta, and Scott, Saskatchewan, over three growing seasons to compare herbicides for control of downy and Japanese brome in winter wheat.

Winter wheat was direct seeded into standing stubble on 9 to 12 inch row spacing (23 to 31 cm). Downy and Japanese brome seeds were surface broadcast prior to seeding at 15 plants per square foot (150 plants per square metre) to supplement natural populations of the weeds. Plots were fertilized to soil test recommendations. Broadleaf weed control was conducted with a spring post-emergence (post) application of bromoxynil (Conquer) and pyrasulfatole (Infinity) at the 3 to 4 leaf stage of winter wheat.

Seven herbicide treatments were applied in both experiments at different timings in the fall or spring. A non-treatment check was also included.

Herbicide and treatment timings

Common name	Herbicide example	Group	Timing
Pyroxsulam	Simplicity	2	Post fall (late Sept – early Oct); Post spring (2 – 3 leaf stage)
Flucarbazone	Everest 70WDG Everest 2.0 SC	2	Post fall (late Sept – early Oct); Post spring (2 – 3 leaf stage)
Thiencarbazone	Varro	2	Post fall (late Sept – early Oct); Post spring (2 – 3 leaf stage)
Flumioxazin	Valtera	14	Preplant surface applied 3 – 5 days before seeding
Pyroxasulfone (two rates)	Focus	15	Preplant surface applied 3 – 5 days before seeding
Pyroxasulfone + Flumioxazin	Fierce	14 + 15	Preplant surface applied 3 – 5 days before seeding

Crop Safety

Winter wheat injury from most herbicide applications was minor. No injury was observed with pyroxasulfone, even at high rates. At the Scott site in two of three years, higher crop injury was observed especially with fall applications, possibly due to a harsher overwinter environment.

Despite slightly higher injury at Scott in 2012 and 2013, overall injury at other sites was acceptable.

Downy brome control

Pyroxasulfone herbicides provided more than 80% control when assessed at 21 to 28, and 50 days after application of spring post herbicides. Pyroxsulam provided 70% control of downy brome at these stages. All other treatments provided between 50% and 70% control of downy brome, with the exception of fall-applied thiencarbazone, which provided less than 50% control.

Pyroxsulam and pyroxasulfone-containing herbicides provided the most consistent control of downy brome. These herbicides also reduced seed-producing stems of downy brome by more than 65%, which should reduce the amount of seed returned to the seedbank.

Japanese brome control

When assessed at 21 to 28 days after spring post herbicide application, pyroxasulfone-containing herbicides and fall applications of pyroxsulam and flucarbazone provided greater than 90% Japanese brome control. Thiencarbazone, flumioxazin, and spring applications of pyroxsulam and flucarbazone provided 70% to 78% control.

However, at 50 days after POST applications, all treatments provided greater than 90% control of Japanese brome, except for flumioxazin at 73% control.

In summary, preplant pyroxasulfone-containing herbicides, (Focus and Fierce herbicides) and fall or spring post pyroxsulam (Simplicity) provided consistent, effective control of both Japanese and downy brome, and consistently maintained optimum winter wheat yield. Flucarbazone (Everest) and thiencarbazone (Varro) controlled Japanese brome but not downy brome. Flumioxazin (Valtera) only suppressed Japanese brome.

Pyroxasulfone provides an additional Group 15 mode of action for brome control. This will help to delay the development of Group 2 herbicide-resistant *Bromus* species.

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