

Evaluation of DuPont's group 2 herbicides and their effect on downy brome control in winter wheat

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A field study was conducted at the Wilke Research Farm near Davenport, WA to evaluate downy brome control in winter wheat. Glean[®] XP (chlorsulfuron), Ally[®] XP (metsulfuron), PowerFlex[®] HL (pyroxsulam), Harmony[®] (thifensulfuron), Express[®] (tribenuron), Osprey[®] (mesosulfuron), and Olympus[®] (propoxycarbazone) are Group 2 herbicides. Group 2 herbicides are inhibitors of acetolactate synthase (ALS), a key enzyme in the biosynthesis of the branched-chain amino acids isoleucine, leucine, and valine. The objective of the study was to evaluate various herbicide tank mixtures and their effects on downy brome control.

The soil for this site is a Broadax silt loam with 3.2% organic matter and a pH of 4.9. On September 9, 2014, 'ARS-Crescent' winter wheat was planted into chemical fallowed ground using a Case IH, Flexicoil no-till drill with 12-inch row spacing. Seeding rate was 70 lb/acre and seed was planted to a 3-inch depth. Starter fertilizer was applied below the seed at planting at a rate of 10 and 9 lb/acre of P:S. Treatments 2 through 5 were applied early post-emerge (downy brome at 1-leaf stage) on November 2, 2014 using a CO₂ backpack sprayer set to deliver 15 gpa at 30 psi and 3.5 mph. Conditions were an air temperature of 51°F, relative humidity of 48% and the wind out of the southwest at 7 mph. Treatments 6 through 17 were applied at typical spring post-emerge (downy brome at 3-tiller stage) on May 6 using a CO₂ backpack sprayer set to deliver 15 gpa at 30 psi and 3.5 mph. Conditions were an air temperature of 58°F, relative humidity of 38% and the wind out of the south at 7 mph. The plots were harvested on July 30 using a Kincaid 8XP combine.

No significant crop injury was observed in this study (data not shown). Downy brome emergence in the fall was light, but late winter emergence was moderate. There were no significant differences among treatments in relation to downy brome control. Numerically, fall applied treatments (2 through 5) provided the best control of downy brome. Many of the treatments provided excellent control of tumble mustard. The exceptions were PowerFlex HL (2.0 oz/A) and Olympus (0.9 oz/A) applied in the fall. There were no significant differences among the nontreated check and herbicide treatments in relation to test weight and yield (data not shown). The average test weight and yield were 53 lb/bu and 53 bu/a, respectively.

Trt#	Treatment	Rate oz/A	Application Date	5/29	
				Downy brome control (0 to 100)	Tumble mustard control (0 to 100)
1	Non-Treated Check			--	--
2	Glean XP	0.33	11/2/14	91 a ¹	84 a
2	Ally XP	0.083	11/2/14		
2	PowerFlex HL	2.0	11/2/14		
2	NIS	0.25% v/v	11/2/14		
3	Glean XP	0.33	11/2/14	95 a	96 a
3	Ally XP	0.083	11/2/14		
3	PowerFlex HL	2.0	11/2/14		
3	Dagger [®]	12.8 fl oz	11/2/14		
3	NIS	0.25% v/v	11/2/14		
4	PowerFlex HL	2.0	11/2/14	91 a	19 c
4	NIS	0.25% v/v	11/2/14		
5	Olympus	0.9	11/2/14	90 a	59 b
5	NIS	0.25% v/v	11/2/14		
6	Harmony	0.16	5/6/15	65 a	94 a
6	Express	0.082	5/6/15		
6	Ally XP	0.054	5/6/15		
6	PowerFlex HL	2.0	5/6/15		
6	NIS	0.25% v/v	5/6/15		
7	Harmony	0.16	5/6/15	71 a	97 a
7	Express	0.082	5/6/15		
7	Ally XP	0.054	5/6/15		
7	PowerFlex HL	2.0	5/6/15		
7	2,4-D LV6	11.6 fl oz	5/6/15		
7	NIS	0.25% v/v	5/6/15		
8	Harmony	0.16	5/6/15	77 a	99 a
8	Express	0.082	5/6/15		
8	Ally XP	0.054	5/6/15		
8	PowerFlex HL	2.0	5/6/15		
8	Huskie	13.5 fl oz	5/6/15		
8	NIS	0.25% v/v	5/6/15		
9	Harmony	0.27	5/6/15	74 a	90 a
9	Express	0.136	5/6/15		
9	Ally XP	0.091	5/6/15		
9	PowerFlex HL	2.0	5/6/15		
9	NIS	0.25% v/v	5/6/15		

¹ Means, based on four replicates, within a column, followed by the same letter are not significantly different at P = 0.05 as determined by Fisher's protected LSD test, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.

Trt#	Treatment	Rate oz/A	Application Date	5/29	
				Downy brome control (0 to 100)	Tumble mustard control (0 to 100)
10	Harmony	0.273	5/6/15	81 a ¹	100 a
10	Express	0.136	5/6/15		
10	Ally XP	0.091	5/6/15		
10	PowerFlex HL	2.0	5/6/15		
10	2,4-D LV6	11.6 fl oz	5/6/15		
10	NIS	0.25% v/v	5/6/15		
11	Harmony	0.273	5/6/15	82 a	100 a
11	Express	0.136	5/6/15		
11	Ally XP	0.091	5/6/15		
11	PowerFlex HL	2.0	5/6/15		
11	Huskie	13.5 fl oz	5/6/15		
11	NIS	0.25% v/v	5/6/15		
12	Harmony	0.273	5/6/15	67 a	95 a
12	Express	0.136	5/6/15		
12	Ally XP	0.091	5/6/15		
12	Osprey	4.75	5/6/15		
12	NIS	0.25% v/v	5/6/15		
13	Harmony	0.06	5/6/15	81 a	99 a
13	Express	0.24	5/6/15		
13	PowerFlex HL	2.0	5/6/15		
13	Huskie	13.5 fl oz	5/6/15		
13	NIS	0.25% v/v	5/6/15		
14	Harmony	0.1	5/6/15	71 a	99 a
14	Express	0.4	5/6/15		
14	PowerFlex HL	2.0	5/6/15		
14	Huskie	13.5 fl oz	5/6/15		
14	NIS	0.25% v/v	5/6/15		
15	Harmony	0.02	5/6/15	75 a	99 a
15	Express	0.08	5/6/15		
15	PowerFlex HL	2.0	5/6/15		
15	Huskie	13.5 fl oz	5/6/15		
15	NIS	0.25% v/v	5/6/15		
16	Harmony	0.1	5/6/15	50 a	92 a
16	Express	0.4	5/6/15		
16	Osprey	4.75	5/6/15		
16	NIS	0.25% v/v	5/6/15		
17	Harmony	0.1	5/6/15	67 a	95 a
17	Express	0.4	5/6/15		
17	Osprey	4.75	5/6/15		
17	Huskie	13.5 fl oz	5/6/15		
17	NIS	0.25% v/v	5/6/15		

¹ Means, based on four replicates, within a column, followed by the same letter are not significantly different at P = 0.05 as determined by Fisher's protected LSD test, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.

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.