

Weed Control with Preplant Burndown Herbicide Application prior to Planting Spring Wheat

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A trial was conducted to evaluate preplant burndown herbicides applied to control emerged winter annual weeds prior to planting spring wheat. Herbicide treatments (see Table 1) were applied on April 30, 2020 using a tractor mounted research sprayer at a spray volume of 15 gallons per acre using XR8002 flat fan nozzles. Environmental conditions at time of application was; air temperature, 60 F; humidity, 36%, wind speed 8 mph from south; soil temperature, 49 F; the soil surface was dry; no dew was present on leaves; 10% cloud cover. No rainfall occurred after treatment application until May 5 (5 days after treatment application). Weeds present at time of application included downy brome, prickly lettuce, flixweed, and shepherds purse. Spring wheat 'Shelly' was planted at a rate of 120 lbs seed per acre on May 1, 2020 using a no-till drill at a depth of 2.5 inches.

Weed control was evaluated 15 and 32 days after treatment (DAT). Downy brome control at 15 DAT was best with most treatments containing glyphosate (Roundup PowerMAX). Tank mixing saflufencil (Sharpen) with glyphosate increased downy brome control compared with glyphosate alone. All other treatment combinations were statistically similar to glyphosate alone. At 32 DAT, downy brome control was 100% with all treatments containing glyphosate. Treatments containing paraquat (Gramoxone) controlled downy brome 84 to 89% 32 DAT. The treatment containing clethodim (Section Three) controlled downy brome 88% 32 DAT. Prickly lettuce was controlled 88% by glyphosate alone and 87% with paraquat alone 15 DAT. Addition of 2,4-D as a tank-mix with paraquat improved prickly lettuce control to 97. Additional of 2,4-D, saflufencil, or carfentrazone (Aim) as a tank-mix with glyphosate improved prickly lettuce control to 96, 100, and 95%, respectively. Other treatments did not significantly improve prickly lettuce control compared with either paraquat or glyphosate alone. Flixweed was controlled 61% 32 DAT with paraquat alone. Addition of 2,4-D or saflufencil increased control to 100% and 72%, respectively. All treatments containing glyphosate controlled flixweed 100% 32 DAT, including glyphosate alone. Clethodim plus fluroxypyr (Starane Ultra) plus halauxifen (Elevore) controlled flixweed 98% 32 DAT. Shepherdspurse control was 98% or greater at 32 DAT for all herbicide treatments. Applying herbicides for burndown of weeds prior to planting is necessary when using no-till production practices. Tank-mixing herbicides with glyphosate or paraquat can sometimes reduce the timing required for weed control. For example, prickly lettuce control 15 DAT with glyphosate alone was 88%, compared with 96% with the addition of 2,4-D, 100% with the addition of saflufencil, and 95% with the addition of carfentrazone. However, over time glyphosate was just as successful at controlling the weeds evaluated in this trial as when tank-mixes were used. However, the addition of 2,4-D to paraquat increased control of both prickly lettuce and flixweed compared with paraquat alone.

Table 1. Weed control with preplant burndown in spring wheat.

Treatment	Product name	Rate (oz/A)	Downy brome		Prickly Lettuce		Flixweed		Shepherdspurse	
			15DAT	32DAT	15DAT	32DAT	15DAT	32DAT	15DAT	32DAT
			%							
1	Gramoxone SL 2.0	32	73 e	88 cd	87 def	89 cd	69 c	61 b	88 c	100 a
2	Gramoxone SL 2.0 2,4-D LV-6	32 16	84 cd	89 cd	97 ab	100 a	100 a	100 a	93 abc	100 a
3	Gramoxone SL 2.0 Sharpen	32 2	77 de	84 d	92 a-f	84 d	91 b	72 b	95 abc	100 a
4	Roundup PowerMAX	24	91 bc	100 ab	88 def	100 a	100 a	100 a	93 abc	100 a
5	Roundup PowerMAX 2,4-D LV-6	24 16	89 bc	100 ab	96 abc	100 a	99 ab	100 a	94 abc	100 a
6	Roundup PowerMAX Sharpen	24 2	100 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a
7	Roundup PowerMAX Aim	24 2	98 ab	100 ab	95 a-d	92 abc	100 a	100 a	96 ab	100 a
8	Roundup PowerMAX Anthem Flex	24 4	92 abc	100 ab	91 b-f	97 ab	100 a	100 a	98 ab	100 a
9	Roundup PowerMAX Quelex	24 0.75	88 c	100 ab	90 b-f	93 abc	100 a	100 a	98 ab	100 a
10	Roundup PowerMAX Elevore	24 1	90 bc	100 ab	87 ef	100 a	95 ab	100 a	92 bc	100 a
11	Roundup PowerMAX Starane Ultra Elevore	24 4.5 1	90 bc	100 ab	93 a-e	100 a	100 a	100 a	97 ab	100 a
12	Section Three Starane Ultra Elevore	5.33 4.5 1	73 e	88 cd	85 f	90 bcd	36 d	98 a	80 d	98 b
LSD P=.10			8.05	6.80	7.97	7.85	8.92	21.86	7.27	1.66
CV			8.43	6.39	8.13	7.85	8.75	22.01	7.04	1.57
Treatment F			49.000	78.987	57.546	89.570	55.569	12.449	65.871	1961.97
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Treatments were applied on April 30, 2020.

NIS (0.5% v/v) was added to treatments 1 and 2.

AMS (17 lb/100 gallons) was added to treatments 3-13.

MSO Destiny HSOC (1% v/v) was added to treatments 3, and 7-13.