

Evaluation of herbicides and mowing to control smooth scouringrush in winter wheat

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A field study was established on the ground of the Spokane Hutterian Brethren near Reardan, WA to evaluate the effects of mowing and herbicides on the control of smooth scouringrush in a direct-seed system. This study followed a year of chemical fallow. The soil at this location is an Athena silt loam with a pH of 4.9 and 3.3% organic matter. Four of the eight blocks, each block containing a nontreated check and 10 herbicide treatments, were rotary mowed July 24, 2014. Herbicides were applied on July 25th using a CO₂ backpack sprayer set to deliver 15 gpa at 30 psi and 3.5 mph. The air temperature at the time of application was 70°F with 36% relative humidity and the wind was out of the SW at 6 mph. On September 10th, Whetstone hard red winter wheat was seeded with a Bourgault 3710 disc drill on a 10-inch row spacing at the rate of 60 lb/acre. The field was fertilized at the rate of 85-10-15 lb N-P-S per acre at the time of planting.



Visual injury on the smooth scouringrush was assessed on August 20th, 26 days after treatment. Plants treated with Curtail[®] M, Glean[®] XP + Rhonox[®] and Permit[®] + Rhonox exhibited the most injury. Mowing in combination with the various herbicide treatments did not have a significant effect on smooth scouringrush control, thus treatment means are averaged over the mowing factor. Smooth scouringrush stem counts were taken by placing a meter stick between two wheat rows and counting all the stems between and within the rows. This was done at two locations within each plot. All treatments except Rhonox, Curtail M, Starane[®] Ultra and RoundUp PowerMax[®] + Liberty[®] reduced smooth scouringrush stem counts compared to the nontreated check when evaluated on May 15, 2015. Glean XP + Rhonox was the most effective treatment in reducing smooth scouringrush stems in the spring and on the second evaluation date (August 10th), it was the only treatment that was significantly different from the nontreated check. There were no significant differences among test weight or yield (data not shown) in relation to the herbicide treatments. The average test weight and yield were 55 lb/bu and 72 bu/a, respectively. In this study, the presence of smooth scouringrush in the nontreated checks did not negatively impact winter wheat yield.

Treatment ¹	Rate fl oz pr/a	Injury (%) 8/20/14	Stem counts per linear meter	
			5/15/15	8/10/15
Nontreated check	--	--	38 a	38 a
2,4-D LV 6	23.3	33 d ⁵	22 b-d	34 a
Rhonox MCPA	34.6	55 c	32 ab	36 a
Curtail M	37.4	70 ab	30 a-c	42 a
Glean XP + Rhonox MCPA	0.5 oz + 34.6	79 a	1 e	2 b
Permit + Rhonox MCPA	1.33 oz + 34.6	67 b	23 b-d	28 a
RoundUp PowerMax ²	32	17 e	15 d	29 a
RoundUp PowerMax + Sharpen ^{®2,3}	32.0 + 4.0	10 e	21 b-d	29 a
Starane Ultra	11.2	29 d	28 a-c	36 a
Paramount ^{®2,4}	5.3 oz	19 e	18 cd	30 a
RoundUp PowerMax + Liberty ²	21.3 + 30.0	46 c	32 ab	32 a

¹All treatments, except RoundUp PowerMax plus Sharpen, and Paramount, were applied with 90% nonionic surfactant (R-11) at 0.33% v/v.

²These treatments were applied with ammonium sulfate at 50 oz/A.

³This treatment was applied with a 99% crop oil concentrate (Agri-Dex) at 1.0% v/v.

⁴This treatment was applied with a 98.1% modified vegetable oil (Kalo) at 32 fl oz/A.

⁵Means, based on eight 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.

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