Wild oat control in spring wheat with three application times at Crookston, MN - 2020. Durgan, Beverly R., Jochum Wiersma, Houston Lindell, and Douglas Miller. This experiment was designed to evaluate wild oat control with several herbicides applied at three different wild oat stages. The experiment was conducted at Crookston, MN on a Donaldson and Wheaton loam soil. Following weedy fallow, the area was chisel plowed in the fall of 2019. In the spring of 2020, 149 lbs/A N and 52 lbs/A P was applied and a seedbed was prepared using a field cultivator with rolling baskets. 'Linkert' hard red spring wheat was seeded on May 18 at 1.75 bu/a. The experimental design was a randomized complete block with three replications. Plot size was 10 by 16 ft. Target application stages were 1 leaf, 3-4 leaf and 5-6 leaf wild oat. All herbicide treatments were applied with a backpack type sprayer delivering 10 gpa at 30 psi using 80015 flat fan nozzles. Application data and environmental conditions are listed below. Crop injury and wild oat control were rated visually. Yields were measured. All data are presented in the table below. Wild oat emergence was monitored weekly (data not shown).

Treatment Date	May 28	June 11	June 17
Target wild oat stage	1 leaf	3-4 leaf	5-6 leaf
Air temperature (°F)	67	68	78
Relative humidity (%)	40	55	65
Wind	E 13 mph	E 5 mph	SE 10 mph
Sky	20% clouds	0% clouds	25% clouds
Rainfall before Application			
Week 1 (inch)	0.10	2.13	0.00
Rainfall after Application			
Week 1 (inch)	0.03	0.40	2.19
Week 2 (inch)	2.10	1.79	0.35

Results

Seedbed conditions were not optimal due to wet soil conditions during the previous fall tillage and the initial spring tillage. As a result, wheat emergence was variable, especially in tire tracks. After seeding, drier and cooler weather prevailed resulting in slower, sporadic emergence of wild oat. The resulting wild oat densities were low and variable. Final densities in the area monitored for emergence were 15/ft^2. However, densities in other areas in the experimental area were visually estimated to be 30 to 60/ft^2. Excessive rain returned mid-growing season with standing water noted in plots in early July.

All treatments applied on the second (June 11) and third (June 17) application timings resulted in excellent wild oat control with no significant differences between the individual treatments. Among the treatments applied on the early (May 28) application date, PerfectMatch and OpenSky resulted in the greatest wild oat control and Rimfire Max, Axial XL, and Wolverine Advanced resulted in the lowest control.

With a few exceptions, visible wheat injury was low. Within the early application timing, the first rating date (June 19) was 3 weeks after the application. Rimfire Max and PerfectMatch caused the greatest wheat injury among treatments applied at the first timing. Within the second application timing, the June 19 rating date occurred 8 days after the herbicide application. Rimfire Max, PerfectMatch, and OpenSky caused the greatest wheat injury among treatments applied at the second timing. Within the third application timing, the July 10 rating date occurred 3 weeks days after the herbicide application. Little injury was observed for treatments applied at this later date.

Wheat yields did not differ significantly between treatments including the weedy check. Uneven wheat emergence and water logged soil mid-season, along with low wild oat pressure contributed to the variability throughout the trial and inability to detect yield differences between treatments.

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		Wild Oat Control			Wheat Injury			Wheat
Treatment	Rate	7/10	7/17	8/7	6/19	7/10	7/17	Yield
	(Product/A)	(%)	(%)	(%)	(%)	(%)	(%)	(Bu/A)
Application #1 (May 28)								
Everest 3.0 + Widematch + MCPA ester + Preference + AMS	2 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	92	90	90	0	0	0	40
OpenSky + Widematch + MCPA ester + Preference + AMS	1 pt + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	96	96	99	8	3	5	43
Varro + Widematch + MCPA ester + Preference + AMS	6.85 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	93	90	90	5	5	2	50
Rimfire Max + Widematch + MCPA ester+ Destiny HC	3 oz + 1 pt + 0.5 pt + 0.75 pt	98	85	83	8	13	9	53
Axial XL+ Widematch + MCPA ester	16.4 oz+ 1 pt + 0.5 pt	85	82	83	0	5	0	45
Wolverive Advanced	27.4 oz	85	80	82	2	0	0	46
Huskie Complete	13.7 oz	96	92	87	3	2	2	47
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	99	96	98	8	8	7	48
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	96	95	94	3	5	2	46
Application Date Mean *		**93b**	**89b**	**90b**	**--**	**--**	**--**	**46a**
Application #2 (June 11)								
Everest 3.0 + Widematch + MCPA ester + Preference + AMS	2 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	99	99	98	0	2	0	47
OpenSky + Widematch + MCPA ester + Preference + AMS	1 pt + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	99	99	100	10	7	3	53
Varro + Widematch + MCPA ester + Preference + AMS	6.85 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	99	99	99	7	5	2	47
Rimfire Max + Widematch + MCPA ester+ Destiny HC	3 oz + 1 pt + 0.5 pt + 0.75 pt	99	99	100	12	10	7	42
Axial XL+ Widematch + MCPA ester	16.4 oz+ 1 pt + 0.5 pt	99	99	100	2	2	0	43
Wolverive Advanced	27.4 oz	99	98	98	0	0	0	50
Huskie Complete	13.7 oz	99	98	100	5	2	2	51
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	99	99	100	12	7	2	45
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	99	99	100	3	2	0	46
Application Date Mean *		**99a**	**99a**	**99a**	**--**	**--**	**--**	**47a**
Application #3 (June 17)								
Everest 3.0 + Widematch + MCPA ester + Preference + AMS	2 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	99	99	100	--	0	2	40
OpenSky + Widematch + MCPA ester + Preference + AMS	1 pt + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	99	99	100	--	0	0	47
Varro + Widematch + MCPA ester + Preference + AMS	6.85 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	99	99	100	--	3	0	50
Rimfire Max + Widematch + MCPA ester+ Destiny HC	3 oz + 1 pt + 0.5 pt + 0.75 pt	99	99	100	--	2	0	45
Axial XL+ Widematch + MCPA ester	16.4 oz+ 1 pt + 0.5 pt	99	99	100	--	5	0	48
Wolverive Advanced	27.4 oz	99	98	100	--	2	0	45
Huskie Complete	13.7 oz	98	96	96	--	2	0	46
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	99	99	100	--	0	2	54
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	99	97	93	--	2	0	44
Application Date Mean *		**99a**	**98a**	**99a**	**--**	**--**	**--**	**47a**
Weedy Check	--	--	--	--	0	0	0	38
LSD (0.05) **		5.3	4.3	7.4	3.6	4.8	3.0	ns

Everest 3.0 1.75SC = flucarbazone-sodium & cloquintacet (safener).
Widematch 1.5E = clopyralid (0.75 lb ae/gal) & fluroxypyr (0.75 lb ae/gal).
MCPA Ester 4E.
Preference = nonionic surfactant.
AMS = N-PaK AMS = 34% ammonium sulfate solution (3.4 lbs ammonium sulfate/gal).
OpenSky 1.057L = pyroxsulam (0.107 lb ai/gal) & fluroxypyr (0.95 lb ae/gal).
Varro 0.083OD = thiencarbazone-methyl & safener.
Rimfire Max 6.67WDG = propoxycarbazone-sodium (4.76%) & mesosulfuron-methyl (1.91%).
Destiny HC = methylated soybean oil, high fructose corn syrup, sorbitan fatty acid esters.
Axial XL 0.42EC = pinoxaden and adigor adjuvant.
Wolverine Advanced 1.58E = fenoxaprop-p-ethyl (0.40 lb ai/gal) & pyrasulfotole (0.13 lb ai/gal) & bromoxynil (1.05 lb ai/gal).
Huskie Complete 1.76L = thiencarbazone-methyl (0.042 lb ai/gal) & pyrasulfotole (0.26 lb ai/gal) & bromoxynil phenol equivalent (1.46 lb ai/gal).
PerfectMatch 1.61SE = clopyralid (0.75 lb ae/gal) & fluroxypyr (0.75 lb ae/gal) & pyroxsulam (0.11 lb ai/gal).
Activator 90 = nonionic surfactant.
Axial Bold 0.685EC = pinoxaden (0.457 lb/gal) & fenoxaprop-p-ethyl (0.228 lb/gal).
* Application date means followed by same letter are not significantly different as determined by factorial anova (P=0.05, LSD).
** LSD for comparing all herbicide treatment means.