Wild oat control in spring wheat with three application times at Crookston, MN - 2019. 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, 149 lbs/A N and 52 lbs/A P was applied and the area was chisel plowed in the fall of 2018. In the spring of 2019, a seedbed was prepared using a field cultivator with rolling baskets. 'Linkert' hard red spring wheat was seeded on May 13 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 and data are presented in the chart below.

Treatment Date	May 30	June 5	June 13
Target wild oat stage	1 leaf	3-4 leaf	5-6 leaf
Air temperature (°F)	75	70	60
Soil temperature (°F)	--	--	60
Relative humidity (%)	40	60	28
Wind	W 3 mph	NW 5 mph	SSW 8 mph
Sky	clear	clear	--
Rainfall before Application			
Week 1 (inch)	0.57	0.00	0.76
Rainfall after Application			
Week 1 (inch)	0.00	0.66	0.17
Week 2 (inch)	0.75	0.27	0.38

Results

Wild oat populations averaged 295/ft^2. Over 45% of wild oat had emerged prior to the first application date (May 30). 84% had emerged prior to the second application date (June 5) and 96% by the late application date (June 13).

At the June 21 and July 1 rating dates, overall wild oat control was significantly greater for treatments applied on the early application date and significantly lower for treatments applied on the late application date. At the later rating dates (July 17 & 26), overall control was significantly greater for treatments in the second application date (June 5) compared to those in the early or late application date groups.

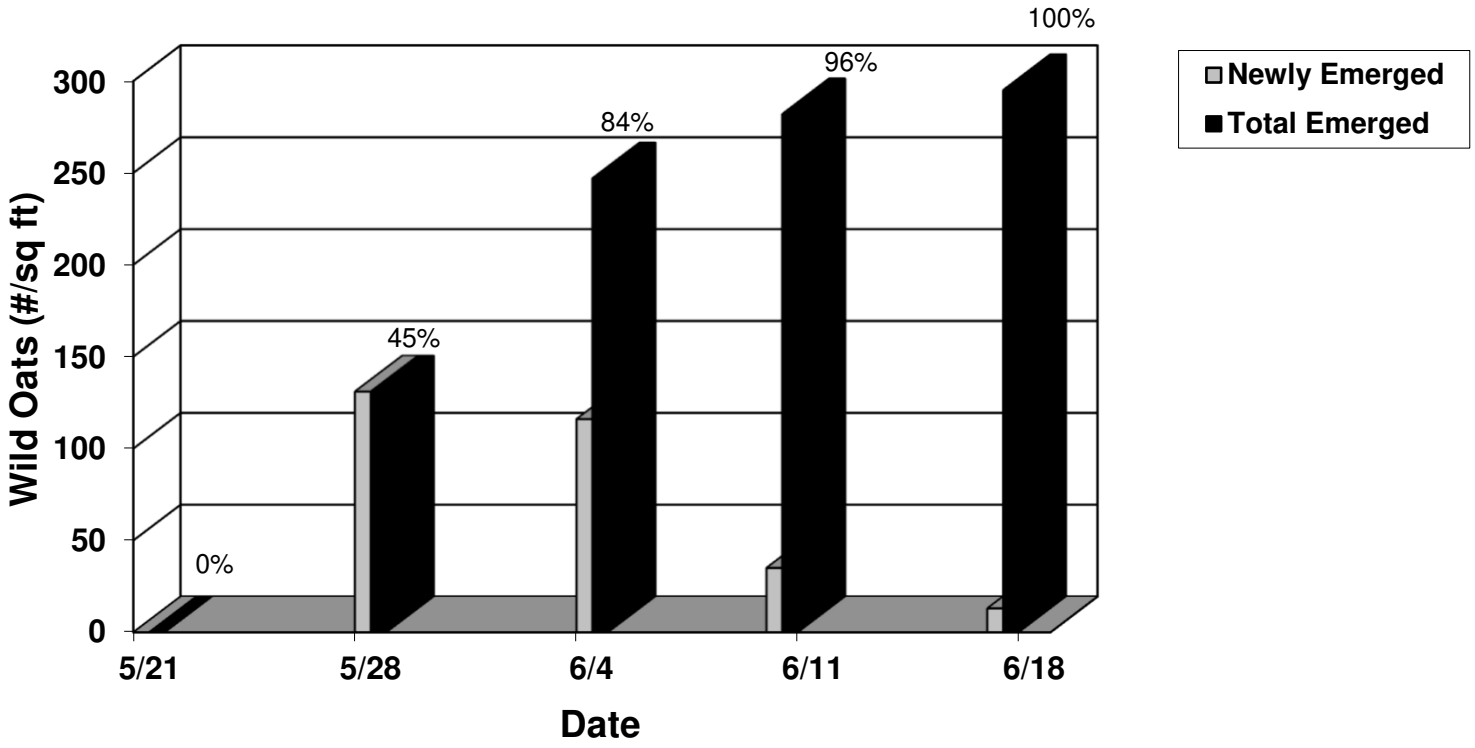
Within the first application date, herbicide treatments did not differ significantly at the first four rating dates. At the last rating date within this timing group, Perfectmatch had the best overall control followed by Everest 3.0 and GoldSky. Within the second application date, Rimfire Max and Axial XL had the greatest control over all rating dates. Herbicide treatments differences within the second application group did not differ significantly at the last two rating dates. Within the third application date, Axial XL and Wolverine Advanced had the best overall control by the final rating date, followed by Axial Bold and Rimfire Max.

Wheat injury was low or non-existent for all treatments.

Average wheat yields were significantly greater for treatments applied on the first application date and lowest for treatments applied on the third application date. There were no significant yield differences between herbicide treatments within and application date grouping. All herbicide treatments yielded significantly greater than the untreated check.

For treatments applied on the first application date, later emerging wild oat were a factor in reduced control at the later rating dates. Larger wild oat at the late application date was most likely the reason for poorer control of the majority of the herbicide treatments applied on that date. Control of wild oat early in the growing season resulting from the early applied treatments resulted in the greatest wheat yields. While good to excellent control was achieved for treatments applied at the second application date, the resulting yield loss due to poorer early control was significant.

2019 Wild Oat Emergence at Crookston, MN



Average Total Population = 295/sq ft

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		Wild Oat Control					Wheat Injury		Wheat
Treatment	Rate	6/14	6/21	7/1	7/17	7/26	6/14	6/21	Yield
	(Product/A)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(Bu/A)
Application #1 (May 30)									
Everest 3.0 + Widematch + MCPA ester + Preference + AMS	2 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	87	92	92	85	94	0	0	48
GoldSky + Widematch + MCPA ester + Preference + AMS	1 pt + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	85	90	87	83	93	0	0	43
Varro + Widematch + MCPA ester + Preference + AMS	6.85 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	92	92	87	83	88	2	0	48
Rimfire Max + Widematch + MCPA ester+ Destiny HC	3 oz + 1 pt + 0.5 pt + 0.75 pt	80	93	93	62	83	0	0	44
Axial XL+ Widematch + MCPA ester	16.4 oz+ 1 pt + 0.5 pt	85	95	92	67	83	0	0	47
Wolverive Advanced	27.4 oz	88	93	82	63	83	0	0	39
Huskie Complete	13.7 oz	92	92	92	77	87	3	0	43
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	82	90	92	87	96	0	0	48
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	92	95	92	85	89	0	0	50
Application Date Mean *		**--**	**92a**	**89a**	**77b**	**89b**	**--**	**--**	**47a**
Application #2 (June 5)									
Everest 3.0 + Widematch + MCPA ester + Preference + AMS	2 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	--	73	80	91	96	0	0	35
GoldSky + Widematch + MCPA ester + Preference + AMS	1 pt + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	--	72	88	96	96	5	0	35
Varro + Widematch + MCPA ester + Preference + AMS	6.85 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	--	67	77	85	92	0	0	38
Rimfire Max + Widematch + MCPA ester+ Destiny HC	3 oz + 1 pt + 0.5 pt + 0.75 pt	--	82	88	93	96	5	2	38
Axial XL+ Widematch + MCPA ester	16.4 oz+ 1 pt + 0.5 pt	--	95	96	98	99	5	0	36
Wolverive Advanced	27.4 oz	--	95	93	98	98	2	0	33
Huskie Complete	13.7 oz	--	72	77	90	93	5	3	38
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	--	65	77	90	92	5	2	35
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	--	88	88	98	96	3	0	42
Application Date Mean *		**--**	**78b**	**85b**	**93a**	**95a**	**--**	**--**	**36b**
Application #3 (June 13)									
Everest 3.0 + Widematch + MCPA ester + Preference + AMS	2 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	--	30	63	73	87	--	2	33
GoldSky + Widematch + MCPA ester + Preference + AMS	1 pt + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	--	40	53	55	72	--	3	25
Varro + Widematch + MCPA ester + Preference + AMS	6.85 oz + 1 pt + 0.5 pt + 3.2 oz + 2.35 pt	--	27	57	62	73	--	3	26
Rimfire Max + Widematch + MCPA ester+ Destiny HC	3 oz + 1 pt + 0.5 pt + 0.75 pt	--	40	60	72	93	--	2	34
Axial XL+ Widematch + MCPA ester	16.4 oz+ 1 pt + 0.5 pt	--	50	80	96	99	--	3	28
Wolverive Advanced	27.4 oz	--	33	70	90	99	--	2	27
Huskie Complete	13.7 oz	--	33	60	52	80	--	0	27
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	--	27	57	65	82	--	2	26
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	--	27	73	83	96	--	2	25
Application Date Mean *		**--**	**34c**	**64c**	**72b**	**87b**	**--**	**--**	**28c**
Weedy Check	--	--	--	--	--	--	0	0	11
LSD (0.05) **		ns	17.5	13.4	17.0	8.7	3.4	2.7	10.8

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).
GoldSky 0.84L = pyroxsulam (0.11 lb ai/gal) & fluroxypyr (0.71 lb ae/gal) & florasulam (0.018 lb ai/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.