Foxtail control in spring wheat at Rosemount, MN – 2019. Durgan, Beverly R., Douglas W. Miller, Ryan Mentz, McKenzie Barth and Lewis Sheaffer. This experiment had several objectives.   To evaluate foxtail control and wheat injury with: 1) Luxxur B tanked mixed with Luxxur A plus other broadleaf herbicides, 2) Trondus alone and with several adjuvant treatments, 3) Slam'R alone and with several adjuvant treatments, and 4) compare Luxxur B, Trondus, and Slam'R with several standard grass herbicides treatments. The experiment was conducted at Rosemount, MN on a Waukegon silt loam soil (5% sand, 53% silt, 42% clay) with pH 5.4 and 4.3% organic matter. Soil test for P and K were 40 lbs/A and 214 lbs/A, respectively.   Following soybeans, the experimental area was fall chisel plowed. On April 25, the area was tilled with a field cultivator. On April 29, the area was fertilized with 70 lbs/A N, 120 lbs/A P, and 120 lbs/A K and field cultivated. The area was field cultivated on May 6 and 'Linkert' hard red spring wheat was seeded with a 12 foot wide drill at 120 lbs/A. Broadleaf weeds were controlled with an application of bromoxynil + MCPA ester (0.375 lb ai/A + 0.375 lb ae/A) on June 10. The experimental design was a randomized complete block with three replications. Plot size was 10 by 24 ft. All herbicide treatments were applied to a 6 foot wide strip with a backpack type CO_2 powered sprayer delivering 10 gpa at 35 psi using 11001 flat fan nozzles with 18 inch spacing. Application data and environmental conditions are listed below. Weed control and wheat injury were visually rated. Yields were determined by harvesting a 5.74 X 24 foot strip in the treated area with a small plot combine. Foxtail emergence was monitored weekly in untreated check plots. Emergence results are presented in the chart below. Data is summarized in the Table below.

Treatment Date	June 3
Foxtail (giant 80-85% and yellow 15-20%)	
stage	25%-1 lf, 40%-2 lf, 25%-3 lf, 10%-4 lf
height (inch)	0.25-3
density (#/ft^2)	37
Wheat	
stage (Haun)	3.3-3.9 leaf
	(Zadoks Z13, Z20-22)
tillers	0-2
height (inch)	4-7
Air temperature (°F)	73
Relative humidity (%)	46
Dewpoint (°F)	51
Sky	50% clouds
Wind	S 7
Soil conditions	moist at 0.5"
Soil temperature (°F)	81
Rainfall before Application	
Week 1 (inch)	1.56
Rainfall after Application	
Week 1 (inch)	1.05
Week 2 (inch)	0.20

Results

Giant (80-85%) and yellow (15-20%) foxtail densities were the primary target weeds in this experiment. Based on weekly counts, few or no foxtail species emerged after June 10 when the density in the weedy check plots averaged 69/ft^2. The average density on the June 3 application date was 37/ft^2, which represented about 54% of total emergence. Foxtail species densities were slightly variable in the first replication but consistent in the second and third reps.

Woolly cupgrass was also present and populations were variable with an average density of 4/ft^2 on June 3. Woolly cupgrass has been observed to emerge over an extended (later) period than foxtail species at this experimental location. However woolly cupgrass densities were not monitored on a weekly basis and total density was not recorded later in the growing season.

Foxtail and woolly cupgrass control were rated together on June 28 and July 19. Variability in woolly cupgrass densities and control were more pronounced at the July 19 rating date compared to the June 28 date.

Overall grass control was generally good to excellent with the Trondus, Slam'R, Axial Bold and Wolverine Advanced treatments. Overall grass control was only fair with the Luxxur B, GoldSky, Huskie Complete, PerfectMatch, and Varro treatments. The Rimfire Max treatment had the lowest grass control. At the July 27 rating date, average foxtail control was slightly better than average woolly cupgrass control for all herbicide treatments.

Within the Luxxur B tank mix treatments, grass control differences were generally not statistically significant. Control of foxtail species and woolly cupgrass was less than 80% at the last two rating dates with the exception of foxtail control with Luxxur B + Luxxur A + MCPA ester at the July 27 rating date.

Trondus showed better grass control when applied with an adjuvant than when applied alone. Norac MSO was slightly less effective for foxtail control than the other adjuvant treatments at the July 27 rating date but the difference was not statistically significant.

None of the Slam'R treatments differed significantly from each other at any of the rating dates.

Slight wheat injury symptoms were observed on the June 28 rating date. Wheat yields of herbicide treated plots did not significantly differ from each other but were all significantly greater than the untreated check yield of 21 Bu/A.

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		Control				Wheat Injury	Wheat
		Foxtail + Wocg		Foxtail	Wocg		
Treatment	Rate	6/28	7/19	7/27	7/27	6/28	Yield
	(Product/A)	(%)	(%)	(%)	(%)	(%)	(Bu/A)
Luxxur B + Luxxur A	6.85 oz + 0.2141 oz	85	75	75	67	2	30
Luxxur B + Luxxur A + Starane Ultra	6.85 oz + 0.2141 oz + 4.8 oz	88	75	73	62	5	29
Luxxur B + Luxxur A + MCPA-Ester	6.85 oz + 0.2141 oz + 0.5 pt	90	83	85	75	2	32
Luxxur B + Luxxur A + WideMatch	6.85 oz + 0.2141 oz + 1 pt	90	78	78	73	3	32
Luxxur B + Luxxur A + Bison	6.85 oz + 0.2141 oz + 1 pt	90	75	77	72	3	33
Luxxur B + Luxxur A Supremacy	6.85 oz + 0.2141 oz + 4.5 oz	85	72	73	68	3	30
Trondus	8.2 oz	90	73	78	70	3	32
Trondus + Norac MSO	8.2 oz + 6.86 oz	95	92	88	85	0	33
Trondus + Adigor	8.2 oz + 9.6 oz	95	98	98	90	2	32
Trondus + Destiny HC	8.2 oz + 6.86 oz	95	98	96	88	0	34
Trondus + Destiny HC	8.2 oz + 9.6 oz	95	98	96	90	0	34
Trondus + Destiny HC + Interlock	8.2 oz + 6.86 oz + 3.38 oz	93	98	95	80	7	32
Slam'R	3.14 oz	95	95	93	85	0	34
Slam'R + Norac MSO	3.14 oz + 6.86 oz	93	88	88	82	0	33
Slam'R + AG19088	3.14 oz + 3.2 oz	95	95	95	88	0	33
Slam'R + Destiny HC	3.14 oz + 6.86 oz	95	95	93	88	0	34
Slam'R + Destiny HC	3.14 oz + 11 oz	95	95	92	87	0	31
Slam'R + Destiny HC + Interlock	3.14 oz + 6.86 oz + 3.38 oz	95	95	93	87	0	30
Axial Bold	15 oz	95	96	95	88	0	34
Axial Bold+ Widematch + MCPA ester	15 oz+ 1 pt + 0.5 pt	93	90	88	82	2	33
GoldSky + Preference + AMS	1 pt + 3.2 oz + 2.35 pt	85	80	82	73	3	33
Huskie Complete	13.7 oz	88	80	85	83	7	30
PerfectMatch + Activator 90 + AMS	1 pt + 6.4 oz + 3.5 pt	88	83	83	82	7	30
Rimfire Max + Destiny HC	3.0 oz + 0.75pt	80	40	60	33	7	30
Varro	6.85 oz	83	85	85	80	5	32
Varro + Widematch + MCPA ester	6.85 oz + 1 pt + 0.5 pt	88	80	82	73	5	34
Wolverine Advanced	24.7 oz	95	96	96	83	0	30
Weedy Check	--	--	--	--	--	0	**
LSD (0.05)		4.7	14.3	10.8	15.0	5.3	ns

Luxxur B 0.083L = thiencarbazone-methyl.
Luxxur A 50SG = tribenuron-methyl.
Starane Ultra 2.8 E = fluroxypyr.
MCPA Ester 4E.
Widematch 1.5E = clopyralid (0.75 lb ae/gal) & fluroxypyr (0.75 lb ae/gal).
Bison 4E = bromoxynil (2 lb ai/gal) & MCPA (2 lb ae/gal).
Supremacy 42DF = fluroxypyr (36%) + thifensulfuron (4.5%) & tribenuron (1.5%).
Trondus = pinoxaden.
Norac MSO = adjuvant.
Adigor = adjuvant blend of surfactant and methylated canola oil.
Destiny HC = methylated soybean oil, high fructose corn syrup, sorbitan fatty acid esters.
Interlock = drift and deposition adjuvant.
Slam'R = clodinofop-propargyl.
AG190088 = experimental adjuvant from Winfield Solutions.
Axial Bold 0.685EC = pinoxaden (0.457 lb/gal) and fenoxaprop-p-ethyl (0.228 lb/gal).
GoldSky 0.84L = pyroxsulam (0.11 lb ai/gal) & fluroxypyr (0.71 lb ae/gal) & florasulam (0.018 lb ai/gal).
Preference = nonionic surfactant.
AMS = N-PaK AMS = 34% ammonium sulfate solution (3.4 lbs ammonium sulfate/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.
Rimfire Max 6.67WDG = propoxycarbazone-sodium (4.76%) & mesosulfuron-methyl (1.91%).
Varro 0.083L = thiencarbazone-methyl.
Wolverine Advanced 1.58E = fenoxaprop-p-ethyl (0.40 lb ai/gal) & pyrasulfotole (0.13 lb ai/gal) & bromoxynil (1.05 lb ai/gal).
** Weedy check yield = 21 Bu/A not included in Wheat Yield anova results in the Table.