

Project Title: Evaluation of Herbicides for Broadleaf Weed Control in Spring Wheat

Objective: To evaluate the effects of herbicides and rates on broadleaf weed control and spring wheat tolerance and yield.

Materials and Methods:

Several new products have recently been introduced for the control of broadleaf weeds. The purpose of this study was to evaluate newly release herbicides and standard products for the control of common broadleaf weeds and for crop tolerance. The experiment consisted of 10 different herbicides applied in various combinations for a total of 14 herbicide treatments. Two non-treated checks were also included. The experimental design was a randomized complete block with three replications.

The field had previously been in peas and was fertilized with 97-30-120-24. Volt spring wheat was planted on April 22 at 70 lb/A, to a depth of two inches on seven inch row spacing's. Herbicide treatments were applied on May 25 when the majority of weeds were 1 to 2 inches tall. Treatments were applied in 20 GPA with a CO₂ backpack sprayer equipped with Teejet XR11002 nozzles. Weed pressure was extensive, with the dominate species consisting of common lambsquarters, wild buckwheat, common chickweed, and white cockle. Discover was applied on June 2 for the control of wild oats. Treatments were evaluated for crop injury at one and three weeks after application, while weed control was assessed at three and seven weeks after application. Spring wheat test weight and yield were determined on September 15.

Results

Wolverine caused some minor crop injury, otherwise crop tolerance was excellent (Table 1). Most treatments did an excellent job of controlling lambsquarters and wild buckwheat. All treatments provided greater than 90 percent control of lambsquarters, except for Pulsar and Goldsky. Chickweed and white cockle were more difficult to control (Table 2). This was especially true for the plant growth regulator products Widematch and Pulsar. The remaining products did an excellent job controlling the entire weed complex. Yields were phenomenal and ranged from a low of 62 bu/A to a high of 113 bu/A. There were no significant yield differences among the herbicide treatments.

Table 1. Effect of broadleaf herbicides on crop injury and weed control. Kalispell, MT 2010.

Treatment	Rate		Heading Julian	Percent		Percent Control			
				Crop Injury		Lambsquarters		Wild Buckwheat	
				1-Jun	18-Jun	18-Jun	13-Jul	18-Jun	13-Jul
Untreated			184	0	0	0	0	0	0
Untreated			187	0	0	0	0	0	0
Widematch MCPA Ester	0.75 0.50	PT/A PT/A	186	0	0	99	99	98	99
Widematch MCPA Ester	1.00 0.50	PT/A PT/A	187	0	0	99	99	99	99
Pulsar MCPA Ester NIS	8.30 0.50 0.25	OZ/A PT/A % V/V	187	3	0	99	99	99	98
Pulsar	12.50	OZ/A	186	0	0	86	93	98	99
Goldsky NIS	16.00 0.25	OZ/A % V/V	187	0	0	79	88	98	99
Orion	17.00	OZ/A	187	0	0	98	99	98	99
Orion Starane	17.00 0.33	OZ/A PT/A	187	0	0	99	99	99	99
Wolverine	27.40	OZ/A	187	12	0	99	99	99	99
Huskie Axial XL	11.00 16.00	OZ/A OZ/A	187	0	0	99	99	98	98
Huskie AMS	11.00 0.50	OZ/A LB/A	186	0	0	99	99	98	99
Huskie AMS	13.50 0.50	OZ/A LB/A	187	0	0	99	99	98	99
Huskie AMS	15.00 0.50	OZ/A LB/A	187	0	0	99	99	98	99

Table 1. Continued

Treatment	Rate		Percent			Percent Control			
			Heading Julian	Crop Injury		Lambsquarters		Wild Buckwheat	
				1-Jun	18-Jun	18-Jun	13-Jul	18-Jun	13-Jul
Huskie	13.50	OZ/A	187	0	0	99	99	99	99
AMS	0.50	LB/A							
NIS	0.25	% V/V							
Huskie	11.00	OZ/A	188	0	0	99	99	98	99
AMS	0.50	LB/A							
MCPA	0.50	PT/A							
Affinity TM	0.60	OZ /A	189	0	0	98	99	98	99
Starane	0.33	PT/A							
NIS	0.25	% V/V							
MIN			184.3	0	0	0	0	0	0
MAX			188.7	12	0	99	99	99	99
MEAN			186.86	1	0	85	86	87	87
LSD (P=.05)			1.67	4.72	0.00	9.32	5.44	1.87	1.28
CV			0.53	321.00	0.00	6.55	3.77	1.29	0.88
Treatment Prob(F)			0.0097	0.0029	1.0000	0.0001	0.0001	0.0001	0.0001

Table 2. Effect of broadleaf herbicides on weed control and yield. Kalispell, MT 2010.

Treatment	Rate		Percent Control				Test weight lb/Bu	Yield Bu/A
			Chickweed		White Cockle			
			18-Jun	13-Jul	18-Jun	13-Jul		
Untreated			0	0	0	0	57.2	73.2
Untreated			0	0	0	0	60.5	62.1
Widematch MCPA Ester	0.75 0.50	PT/A PT/A	42	62	58	53	61.8	113.2
Widematch MCPA Ester	1.00 0.50	PT/A PT/A	50	66	50	53	62.0	112.7
Pulsar MCPA Ester NIS	8.30 0.50 0.25	OZ/A PT/A % V/V	47	60	50	27	61.3	108.6
Pulsar	12.50	OZ/A	33	43	33	66	61.9	111.5
Goldsky NIS	16.00 0.25	OZ/A % V/V	99	99	99	99	62.0	110.0
Orion	17.00	OZ/A	99	99	99	99	62.3	110.8
Orion Starane	17.00 0.33	OZ/A PT/A	99	99	97	99	61.9	95.5
Wolverine	27.40	OZ/A	90	86	90	86	61.8	110.0
Huskie Axial	11.00 16.00	OZ/A OZ/A	88	65	96	99	61.8	110.5
Huskie AMS	11.00 0.50	OZ/A LB/A	93	99	97	99	61.5	105.2
Huskie AMS	13.50 0.50	OZ/A LB/A	94	96	97	96	61.7	106.7
Huskie AMS	15.00 0.50	OZ/A LB/A	87	83	96	96	61.6	104.0

Table 2. Continued

Treatment	Rate		Percent Control				Test	
			Chickweed		White Cockle		Weight lb/Bu	Yield Bu/A
			18-Jun	13-Jul	18-Jun	13-Jul		
Huskie	13.50	OZ/A	95	99	98	99	61.6	101.9
AMS	0.50	LB/A						
NIS	0.25	% V/V						
Huskie	11.00	OZ/A	91	83	95	94	62.3	110.3
AMS	0.50	LB/A						
MCPA	0.50	PT/A						
Affinity TM	0.60	OZ/A	99	99	98	99	61.5	100.4
Starane	0.33	PT/A						
NIS	0.25	% V/V						
MIN			0	0	0	0	57.23	62.053
MAX			99	99	99	99	62.27	113.2
MEAN			71	73	74	74	61.452	102.74
LSD (P=.05)			21.07	50.04	14.41	29.57	1.80	20.50
CV			17.82	41.22	11.73	23.83	1.76	11.97
Treatment Prob(F)			0.0001	0.0012	0.0001	0.0001	0.0016	0.0004