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Potato PPO Inhibitor Crop Safety - Mineral Soil

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Location: Langlade County Ag Research Station, Antigo WI

Plot Information:

Soil Type: Silt Loam, O.M. 2.8%, pH 5.2 (25% sand, 54% silt, 20% clay)

Crop: Potato 'Pike'

Date Planted: 5/25/19

Row Spacing: 36"

Plant Spacing: 12"

Date Harvested: 9/27/19

Plot Size-Design: 6'x20'-3 reps

Rating Dates: 6/25, 7/10, 7/23, 8/10

Weed Control Rating Scale: 0% = no control, 100% = complete control

Phytotoxicity Rating Scale: 0% = no injury, 100% = plant death

Application Equipment: Backpack CO2 pressure sprayer. GPA 20, PSI 27, MPH 3.3,

Nozzle: XR8003VS, Nozzle spacing 18", Height 18"

Herbicide Application Data:

Date	6/7/19	
Time	3:45 pm	
Treatment	H.S.	
Soil Moisture		
	SF	dry
	1"	moist
	3"	moist
Soil Temp (F°)		
	SF	100.7
	3"	86.1
Air Temp (F°)	86.3	
Wind (mph/dir.)	3.9 SE	
%RH	39.2%	
Sky Condition-% clouds	10%	
Crop Stage	hilled	
Weed & Size	-----	

Summary: This trial was set up to primarily evaluate the crop safety of PPO inhibiting herbicides and determine if reduced rates of these herbicides are useful in potato production. Injury from this class of herbicide in a hill spray application generally produces a stunting and possibly slightly disfigured leaf shape. The cooler and wetter than normal growing season at this location resulted in highly variable emergence making early season injury ratings impossible. By July 10th, nearly 3 weeks after any initial emergence, there was no visible injury in any of the treatments, so no phyto ratings are presented here. Weed pressure was incredibly low at this location, so only one late season rating is presented. There was a slight trend of greater culls with increasing rates of Sulfentrazone (Spartan). No differences were noted in B sized tubers for any treatments. Yields were highly variable, so although minor differences were observed, there were no distinguishable trends among herbicide or rates.

Weed Abbreviations:

COLQ = Common Lambsquarter

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2019 Maintenance Pesticides

<u>Date</u>	<u>Product</u>	<u>Rate</u>	<u>Unit</u>
12-Jul	Blackhawk	3.3	oz/A
16-Jul	Echo 720	1.5	pt/A
22-Jul	Blackhawk	3.3	oz/A
22-Jul	Echo 720	1.5	pt/A
30-Jul	Echo 720	1.5	pt/A
6-Aug	Echo 720	1.5	pt/A
13-Aug	Echo 720	1.5	pt/A
21-Aug	Echo 720	1.5	pt/A
9-Sep	Reglone	1.5	pt/A

2019 Field Season Precipitation/Irrigation

<u>Date</u>	<u>Type</u>	<u>Amount (inches)</u>	<u>Date</u>	<u>Type</u>	<u>Amount (inches)</u>
28-May	Precipitation	1	26-Jul	Precipitation	0.06
1-Jun	Precipitation	0.22	27-Jul	Precipitation	0.04
9-Jun	Precipitation	0.01	29-Jul	Precipitation	0.32
10-Jun	Precipitation	0.18	1-Aug	Irrigation	0.5
11-Jun	Precipitation	0.08	4-Aug	Precipitation	0.06
12-Jun	Precipitation	0.05	6-Aug	Precipitation	1
13-Jun	Precipitation	0.77	7-Aug	Irrigation	0.5
15-Jun	Precipitation	1.79	8-Aug	Precipitation	0.09
18-Jun	Precipitation	0.14	15-Aug	Irrigation	0.5
24-Jun	Precipitation	0.08	16-Aug	Precipitation	0.03
25-Jun	Precipitation	0.04	17-Aug	Precipitation	0.3
28-Jun	Precipitation	0.72	18-Aug	Precipitation	0.03
30-Jun	Precipitation	0.01	27-Aug	Precipitation	0.23
1-Jul	Precipitation	0.12	28-Aug	Precipitation	0.23
2-Jul	Precipitation	0.37	3-Sep	Precipitation	1.3
3-Jul	Precipitation	0.02	4-Sep	Precipitation	0.03
5-Jul	Precipitation	0.25	6-Sep	Precipitation	0.34
6-Jul	Precipitation	0.41	10-Sep	Precipitation	0.96
13-Jul	Precipitation	0.11	12-Sep	Precipitation	1.05
15-Jul	Precipitation	0.66	13-Sep	Precipitation	0.78
16-Jul	Precipitation	1.12	14-Sep	Precipitation	0.01
17-Jul	Irrigation	0.25	15-Sep	Precipitation	0.67
17-Jul	Precipitation	0.09	16-Sep	Precipitation	0.04
18-Jul	Precipitation	0.4	19-Sep	Precipitation	0.1
19-Jul	Precipitation	0.04	20-Sep	Precipitation	0.35
19-Jul	Irrigation	0.5	22-Sep	Precipitation	0.16
20-Jul	Precipitation	1.01	23-Sep	Precipitation	0.14
21-Jul	Precipitation	0.37	25-Sep	Precipitation	0.41
23-Jul	Irrigation	0.5			

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Trt No.	Treatment Name	Rate	Appl Unit	Timing	% Control 8-10-19	Tuber Yield 9-27-9019		
					COLQ	B cwt/A	Cull cwt/A	Total A cwt/A
1	Dual Magnum	1 pt/a		HS	100 -	26.015 -	19.239 ab	288.585 abc
	Metribuzin	0.5 lb/a		HS				
2	Dual Magnum	1 pt/a		HS	100 -	24.321 -	20.57 ab	302.984 ab
	Chateau	0.5 oz/a		HS				
3	Dual Magnum	1 pt/a		HS	91.7 -	26.741 -	19.239 ab	279.147 abc
	Chateau	1 oz/a		HS				
4	Dual Magnum	1 pt/a		HS	95 -	27.83 -	21.659 ab	310.849 a
	Chateau	1.5 oz/a		HS				
5	Dual Magnum	1 pt/a		HS	95 -	28.072 -	14.036 b	311.817 a
	Spartan	1 oz/a		HS				
6	Dual Magnum	1 pt/a		HS	93.3 -	27.709 -	18.513 ab	244.42 c
	Spartan	2 oz/a		HS				
7	Dual Magnum	1 pt/a		HS	100 -	22.99 -	26.015 a	300.685 ab
	Spartan	3 oz/a		HS				
8	Dual Magnum	1 pt/a		HS	90 -	28.314 -	24.684 ab	306.372 ab
	Reflex	0.5 pt/a		HS				
9	Dual Magnum	1 pt/a		HS	88.3 -	29.04 -	28.556 a	254.584 bc
	Reflex	1 pt/a		HS				
10	Dual Magnum	1 pt/a		HS	100 -	28.435 -	13.794 b	275.154 abc
	Reflex	1.5 pt/a		HS				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).