

Use of fomesafen (Reflex) in Irrigated Potato. Harlene Hatterman-Valenti and Collin Auwarter.

Field research was conducted at the Northern Plains Potato Growers Association Irrigation Research site near Inkster, ND to evaluate potato tolerance and weed control of fomesafen +/- s-metolachlor or +/- prepackaged mix of s-metolachlor and metribuzin to standards using four popular varieties grown under irrigation in North Dakota (Blazer, Russet Norkotah, Shepody, and Dakota Pearl). Seed pieces (2 oz) were planted on 36 inch rows and 12 inch spacing on May 24, 2009. Plots were 4 rows by 20 ft arranged in a randomized complete block design with 4 replicates. Herbicide treatments were applied 24 DAP with a CO<sub>2</sub> pressurized sprayer equipped with 8002 flat fan nozzles with a spray volume of 20 gpa and a pressure of 40 psi. Extension recommendations were used for cultural practices throughout the year. At time of application Blazer was 80% emerged, Russet Norkotah was 75%, Shepody was 60%, and Dakota Pearl was 95%. Plants emerged at application ranged from barely poking through soil up to 1 inch in height. Injury was expected since the application timing was pre-emergence to crop and weeds.

Application Date:	6/17/09
Air Temperature (F):	67
Rel. Humidity (%):	62
Wind (mph):	4
Soil Moisture:	Below Normal
Cloud Cover (%):	100

Dakota Pearl, with the most emerged plants, showed the greatest tolerance with 5 to 16% injury 5 DAA from applications with fomesafen. Other varieties had 6 to 28% visual injury with chlorosis as the main symptom. Potatoes treated with fomesafen and the premix of s-metolachlor plus metribuzin (Reflex @ 2 pt/a + Boundary @ 4 pt/a) had the greatest injury 5 DAA; Blazer-26%, Russet Norkotah and Shepody-28%, and Dakota Pearl-16%. This treatment also provided 100% control of common lambsquarters throughout the trial. By 14 DAA, all treatments where fomesafen was applied still showed signs of injury ranging between 1 to 9%, and by 26 DAA, only slight chlorosis was observed (0 to 2%). Treatments with fomesafen alone had less control of common lambsquarters than treatments tank mixed with either a prepackaged mix of s-metolachlor and metribuzin, metribuzin, s-metolachlor, or rimsulfuron throughout the trial. Russet Norkotah had the greatest yields, while Blazer was the lowest yielding variety. The marketable yields (>4 oz) were similar to total yields. Dakota Pearl had the greatest tuber counts with the untreated having the most tubers in 20 ft of row (259 tubers). However, this variety also had the most unmarketable tubers, having between 53 and 69% of the tubers considered culls. Shepody had the lowest tuber number with all treatments having less than 141 tubers in 20 ft of row. Herbicide treatments had only slight effect on potato yield and grade due to low weed density/ competitive pressure. The trial location reportedly had high weed pressure, but due to the delay in being able to work the field and plant, most weeds were controlled with the hilling procedure just prior to herbicide applications.

Effect of herbicide treatments on common lambsquarters control, Blazer injury, and yield.

No.	Name	Rate	Unit	Colq		Colq		Colq		Colq		<4oz	4-6oz	6-8oz	8-10oz	10-12oz	>12oz	Total	>4oz
				---6/22/09--		---7/1/09---		--7/13/09---		---8/13/09--									
				%	%	%	%	%	%	%	%								
				Con.	Inj.	Con.	Inj.	Con.	Inj.	Con.	Inj.	-----CWT/A-----							
1	Untreated			0	0	0	0	0	0	0	0	69	84	60	49	16	19	298	228
2	Reflex	1	pt/a	81	9	86	2	86	0	76	0	51	72	82	60	42	57	364	313
3	Reflex	2	pt/a	89	16	91	5	90	0	86	0	59	75	59	55	36	23	308	249
4	Dual Magnum	1.33	pt/a	90	5	95	1	88	0	91	0	46	83	77	51	28	28	312	266
5	Reflex Dual Magnum	1 1.33	pt/a pt/a	100	21	98	6	96	1	96	0	42	56	69	71	38	54	331	288
6	Boundary	2	pt/a	99	4	100	1	99	0	100	0	58	74	84	51	36	60	363	305
7	Reflex Boundary	0.5 2	pt/a pt/a	100	18	100	4	100	0	100	0	57	68	77	51	30	31	314	256
8	Reflex Boundary	1 2	pt/a pt/a	100	21	100	4	100	0	100	0	46	63	75	77	53	50	364	318
9	Reflex Boundary	2 4	pt/a pt/a	100	26	100	9	100	1	100	0	52	55	55	45	27	39	274	222
10	Sencor Boundary	0.25 2	lb/a pt/a	100	3	100	0	100	0	100	0	53	72	70	68	32	27	323	270
11	Matrix Boundary	1.5 2	oz/a pt/a	100	4	100	1	99	0	100	0	50	68	70	64	45	62	360	309
12	Sencor Reflex Boundary	0.25 1 2	lb/a pt/a pt/a	100	25	100	6	100	0	100	0	51	78	95	60	48	45	376	325
13	Matrix Reflex Boundary	1.5 1 2	oz/a pt/a pt/a	100	20	100	7	100	0	100	0	46	62	67	73	43	42	332	286
LSD (P=0.05)				3	4	3	2	3	NS	7	NS	21	20	27	28	22	27	65	64

Effect of herbicide treatments on common lambsquarters control, Russet Norkotah injury, and yield.

No.	Name	Rate	Rate Unit	Colq		Colq		Colq		Colq		<4oz	4-6oz	6-8oz	8-10oz	10-12oz	>12oz	Total	>4oz
				---6/22/09--		---7/1/09---		--7/13/09---		---8/13/09--									
				%	%	%	%	%	%	%	%								
				Con.	Inj.	Con.	Inj.	Con.	Inj.	Con.	Inj.	-----CWT/A-----							
1	Untreated			0	0	0	0	0	0	0	0	59	76	109	94	61	88	487	428
2	Reflex	1	pt/a	84	10	91	5	91	1	85	0	62	87	99	88	54	100	489	427
3	Reflex	2	pt/a	90	14	95	6	97	1	99	0	51	64	80	111	80	157	542	491
4	Dual Magnum	1.33	pt/a	91	5	93	3	90	1	93	0	71	95	92	91	61	91	502	430
5	Reflex Dual Magnum	1 1.33	pt/a pt/a	99	24	99	9	96	0	99	0	54	74	87	89	57	107	469	414
6	Boundary	2	pt/a	100	7	100	3	100	0	98	0	59	71	96	87	91	123	526	467
7	Reflex Boundary	0.5 2	pt/a pt/a	100	19	100	8	100	0	100	0	45	84	101	86	62	121	499	453
8	Reflex Boundary	1 2	pt/a pt/a	100	23	100	5	100	0	100	0	52	62	88	83	74	128	487	435
9	Reflex Boundary	2 4	pt/a pt/a	100	28	100	9	100	1	100	0	49	67	96	85	59	104	460	410
10	Sencor Boundary	0.25 2	lb/a pt/a	100	4	100	1	100	0	100	0	57	83	89	90	62	144	524	467
11	Matrix Boundary	1.5 2	oz/a pt/a	100	2	100	0	100	0	100	0	70	84	94	109	82	84	524	454
12	Sencor Reflex Boundary	0.25 1 2	lb/a pt/a pt/a	100	21	100	6	100	0	100	0	54	67	83	84	67	98	454	399
13	Matrix Reflex Boundary	1.5 1 2	oz/a pt/a pt/a	100	23	100	6	100	0	100	0	63	73	95	92	58	132	513	449
LSD (P=0.05)				4	6	2	3	2	NS	6	NS	NS	24	26	24	26	27	65	64

Effect of herbicide treatments on common lambsquarters control, Shepody injury, and yield.

No.	Name	Rate	Unit	Colq		Colq		Colq		Colq		<4oz	4-6oz	6-8oz	8-10oz	10-12oz	>12oz	Total	>4oz
				---6/22/09--		---7/1/09----		--7/13/09---		---8/13/09--									
				%	%	%	%	%	%	%	%								
				Con.	Inj.	Con.	Inj.	Con.	Inj.	Con.	Inj.	-----CWT/A-----							
1	Untreated			0	0	0	0	0	0	0	0	34	63	66	63	64	118	407	374
2	Reflex	1	pt/a	86	6	95	2	93	2	96	0	41	55	89	67	63	122	437	396
3	Reflex	2	pt/a	93	9	97	6	97	2	94	0	46	62	84	70	65	115	443	397
4	Dual Magnum	1.33	pt/a	98	11	95	1	89	1	96	0	41	69	83	68	61	102	424	383
5	Reflex Dual Magnum	1 1.33	pt/a pt/a	100	23	100	2	96	0	99	0	35	63	66	79	69	166	478	443
6	Boundary	2	pt/a	100	15	100	2	100	0	100	0	29	56	71	79	57	144	435	406
7	Reflex Boundary	0.5 2	pt/a pt/a	99	20	98	1	99	0	100	0	40	70	88	81	69	99	447	408
8	Reflex Boundary	1 2	pt/a pt/a	100	23	100	3	100	0	100	0	38	47	63	71	62	147	427	389
9	Reflex Boundary	2 4	pt/a pt/a	100	28	100	6	100	1	100	0	29	41	59	87	72	146	434	405
10	Sencor Boundary	0.25 2	lb/a pt/a	100	11	100	2	100	0	100	0	34	63	79	82	66	133	457	423
11	Matrix Boundary	1.5 2	oz/a pt/a	100	3	100	2	100	1	100	0	37	63	70	80	74	156	481	443
12	Sencor Reflex Boundary	0.25 1 2	lb/a pt/a pt/a	100	24	100	4	100	1	100	0	31	56	75	64	76	137	440	409
13	Matrix Reflex Boundary	1.5 1 2	oz/a pt/a pt/a	100	24	100	6	100	2	100	0	36	47	83	68	58	142	432	396
LSD (P=0.05)				3	5	3	4	2	1	4	NS	NS	19	28	NS	NS	NS	65	68

Effect of herbicide treatments on common lambsquarters control, Dakota Pearl injury, and yield.

No.	Name	Rate	Rate Unit	Colq		Colq		Colq		Colq		<4oz	4-6oz	6-12oz	>12oz	Total	>4oz
				---6/22/09--	---7/1/09---	---7/13/09---	---8/13/09--	%	%	%	%						
-----CWT/A-----																	
				Con.	Inj.	Con.	Inj.	Con.	Inj.	Con.	Inj.						
1	Untreated			0	0	0	0	0	0	0	0	190	138	98	12	438	248
2	Reflex	1	pt/a	84	5	88	1	93	0	84	0	142	133	87	9	371	229
3	Reflex	2	pt/a	86	5	95	2	96	0	86	0	156	140	95	15	406	251
4	Dual	1.33	pt/a	86	1	91	0	89	0	85	0	165	135	96	19	415	250
	Magnum																
5	Reflex	1	pt/a	98	5	100	2	98	0	99	0	139	151	124	27	441	302
	Dual	1.33	pt/a														
	Magnum																
6	Boundary	2	pt/a	100	0	100	0	99	0	100	0	181	135	93	16	426	244
7	Reflex	0.5	pt/a	100	5	100	1	99	0	99	0	159	138	98	20	415	257
	Boundary	2	pt/a														
8	Reflex	1	pt/a	100	8	100	2	100	0	99	0	179	112	67	6	365	186
	Boundary	2	pt/a														
9	Reflex	2	pt/a	100	16	100	4	99	0	100	0	138	125	118	25	407	269
	Boundary	4	pt/a														
10	Sencor	0.25	lb/a	100	1	100	0	100	0	100	0	163	134	78	17	392	229
	Boundary	2	pt/a														
11	Matrix	1.5	oz/a	99	1	100	0	100	0	100	0	169	123	75	12	380	211
	Boundary	2	pt/a														
12	Sencor	0.25	lb/a	100	9	100	3	100	0	100	0	153	125	105	10	393	240
	Reflex	1	pt/a														
	Boundary	2	pt/a														
13	Matrix	1.5	oz/a	100	14	100	3	100	0	99	0	133	129	107	17	386	253
	Reflex	1	pt/a														
	Boundary	2	pt/a														
LSD (P=0.05)				5	3	3	1	3	NS	6	NS	38	NS	NS	NS	NS	95