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Potato Herbicide Efficacy

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Location: Hanock Ag Research Station R-3 Pivot, Hancock WI

Plot Information:

Soil Type: Plainfield Loamy Sand, O.M. 0.9%, pH 5.4 (83% sand, 5% silt, 12% clay)

Crop: Potato 'Russet Burbank'

Date Planted: 4/30/19

Row Spacing: 36"

Plant Spacing: 12"

Date Harvested: 9/11/19

Plot Size-Design: 12'x20'-4 reps

Rating Dates: 6/3, 6/11, 6/14, 6/20, 8/14

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	5/20/19	6/11/19
Time	3:00 pm	10:45 am
Treatment	H.S.	POST
Soil Moisture		
	SF moist	dry
	1" moist	moist
	3" moist	moist
Soil Temp (F°)		
	SF 73.6	93.2
	3" 68.3	72.0
Air Temp (F°)	60.3	78.5
Wind (mph/dir.)	1.9 W	2.1 NW
%RH	46.7%	36.4%
Sky Condition-% clouds	5%	15%
Crop Stage	hook	10"-14"
Weed & Size	-----	COLQ 1-2"
		CORW 1-2"
		RRPW 1-2"
		HANS 1-2"

Summary: This trial evaluating crop safety and weed control contained both registered and experimental treatments. No injury was observed in any registered hill spray applications therefore this data is not presented. Post-emergence applications of Vegetable Pro (prometryn) and Sandea (halosulfuron) resulted in substantial crop injury (>10%) at rates tested. Injury symptoms were evident for 2-3 weeks following application. Yield effects were not evident from the injury. Post-emergence applications of Basagran (bentazon) resulted in moderate crop injury (<10%) and cleaned up emerged common ragweed and hairy nightshade. No yield effect was observed from either the 1 or 2 pt/A bentazon rate. Hill spray applications of Zidua (pyroxasulfone) and A16003 (bicyclopyrone) continue to show promise with excellent crop safety and weed control over the spectrum observed. Sonalan in several tank mixes performed well. Data from this trial and others will be used further develop new herbicide registrations for potato.

Weed Abbreviations:

COLQ = Common Lambsquarter

LASW = Ladysthumb Smartweed

SMGA = Smallflower Galinsoga

RRPW = Redroot Pigweed

FAPA = Fall Panicum

CORW = Common Ragweed

SMPW = Smooth Pigweed

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2019 Field Season Precipitation/Irrigation (R-3 Pivot)

<u>Date</u>	<u>Type</u>	<u>Amount (inches)</u>	<u>Date</u>	<u>Type</u>	<u>Amount (inches)</u>
30-Apr	Precipitation	0.07	17-Jul	Irrigation	0.6
1-May	Precipitation	0.33	18-Jul	Precipitation	0.23
6-May	Precipitation	0.06	19-Jul	Irrigation	0.5
9-May	Precipitation	0.65	19-Jul	Precipitation	0.07
10-May	Precipitation	0.2	20-Jul	Precipitation	1.6
15-May	Irrigation	0.3	21-Jul	Precipitation	1.21
18-May	Precipitation	0.41	23-Jul	Irrigation	0.4
19-May	Precipitation	0.59	24-Jul	Irrigation	0.25
22-May	Precipitation	0.3	25-Jul	Irrigation	0.4
23-May	Irrigation	0.3	27-Jul	Irrigation	0.4
23-May	Precipitation	0.03	29-Jul	Precipitation	0.61
24-May	Precipitation	0.11	30-Jul	Irrigation	0.4
26-May	Irrigation	0.3	1-Aug	Irrigation	0.5
28-May	Precipitation	1.81	3-Aug	Irrigation	0.5
30-May	Irrigation	0.4	5-Aug	Irrigation	0.4
2-Jun	Irrigation	0.35	5-Aug	Precipitation	0.12
2-Jun	Precipitation	0.15	6-Aug	Precipitation	0.98
4-Jun	Irrigation	0.35	8-Aug	Precipitation	0.37
5-Jun	Precipitation	0.22	10-Aug	Irrigation	0.4
7-Jun	Irrigation	0.4	11-Aug	Precipitation	0.29
9-Jun	Irrigation	0.4	12-Aug	Precipitation	0.13
10-Jun	Precipitation	0.24	13-Aug	Irrigation	0.4
11-Jun	Irrigation	0.25	13-Aug	Precipitation	0.01
12-Jun	Precipitation	0.4	14-Aug	Precipitation	0.41
13-Jun	Precipitation	0.32	16-Aug	Precipitation	0.12
14-Jun	Irrigation	0.3	18-Aug	Precipitation	0.22
14-Jun	Precipitation	0.03	19-Aug	Irrigation	0.4
15-Jun	Precipitation	1.04	22-Aug	Irrigation	0.4
16-Jun	Precipitation	0.79	24-Aug	Irrigation	0.4
19-Jun	Irrigation	0.35	26-Aug	Precipitation	0.02
19-Jun	Precipitation	0.03	27-Aug	Irrigation	0.4
21-Jun	Irrigation	0.35	27-Aug	Precipitation	0.1
23-Jun	Irrigation	0.3	28-Aug	Precipitation	0.11
24-Jun	Precipitation	0.12	29-Aug	Irrigation	0.4
25-Jun	Irrigation	0.35	2-Sep	Irrigation	0.5
25-Jun	Precipitation	0.26	3-Sep	Precipitation	0.41
27-Jun	Irrigation	0.4	4-Sep	Precipitation	0.02
28-Jun	Precipitation	1.39	5-Sep	Irrigation	0.3
30-Jun	Irrigation	0.35	9-Sep	Precipitation	0.11
1-Jul	Precipitation	0.78	10-Sep	Precipitation	1.2
2-Jul	Precipitation	1.6	11-Sep	Precipitation	0.11
3-Jul	Precipitation	0.02			
4-Jul	Irrigation	0.35			
5-Jul	Precipitation	0.64			
6-Jul	Precipitation	0.07			
7-Jul	Irrigation	0.35			
9-Jul	Irrigation	0.4			
11-Jul	Irrigation	0.5			
13-Jul	Irrigation	0.5			
15-Jul	Irrigation	0.5			
16-Jul	Precipitation	0.35			

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2019 Maintenance Fertilizer and Pesticides (R-3 Pivot)

<u>Date</u>	<u>Product</u>	<u>Rate</u>	<u>Unit</u>
9-Apr	0-0-60	450	lb/A
9-Apr	0-0-0-17S-21Ca	500	lb/A
30-Apr	6-30-22-4S, Platinum impreg.	550	lb/A
20-May	21-0-0-24S	360	lb/A
11-Jun	34-0-0	350	lb/A
28-Jun	Fortuna 75WDG	1.5	lb/A
28-Jun	Asana XL	3	oz/A
28-Jun	Agri-Mek SC	3.5	oz/A
28-Jun	NIS	0.5	pt/A
5-Jul	Initiate 720	1.5	pt/A
8-Jul	32-0-0 UAN	166	lb/A
12-Jul	Tanos	8	oz/A
12-Jul	Initiate 720	1.5	pt/A
12-Jul	Coragen	7.5	oz/A
12-Jul	Asana XL	6	oz/A
12-Jul	COC	1	pt/A
19-Jul	Initiate 720	1.5	pt/A
19-Jul	Coragen	3.5	oz/A
19-Jul	MSO	8	oz/A
24-Jul	32-0-0 UAN	166	lb/A
26-Jul	Headline SC	12	oz/A
26-Jul	Initiate 720	1.5	pt/A
2-Aug	Initiate 720	1.5	pt/A
9-Aug	Initiate 720	1.5	pt/A
9-Aug	Tanos	8	oz/A
16-Aug	Revus Top	7	oz/A
16-Aug	Fortuna 75WDG	1.5	lb/A
16-Aug	NIS	1	pt/A
23-Aug	Tanos	8	oz/A
23-Aug	Fortuna 75WDG	1.5	lb/A
30-Aug	Forum	6	oz/A
30-Aug	Fortuna 75WDG	1.5	lb/A
3-Sep	Diquat 2L AG	1.5	pt/A
3-Sep	NIS	1	pt/A

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Trt No.	Treatment Name	Rate	Appl Unit	Timing	6/3/2019				
					% Weed Control				
					CORW	COLQ	RRPW	CORW	HANS
1	Untreated Check				0	0	0	0	0
2	Dual Magnum	1 pt/a	HS		100 a	100 a	100 a	94.5 b	95 ab
	Metribuzin	0.5 lb/a	HS						
	Vegetable Pro NIS	1 pt/a	POST						
		0.25 % v/v	POST						
3	Dual Magnum	1 pt/a	HS		96.3 abc	100 a	100 a	87 b	90 abc
	Metribuzin	0.5 lb/a	HS						
	Vegetable Pro NIS	2 pt/a	POST						
		0.25 % v/v	POST						
4	Prowl H2O	1 pt/a	HS		93.8 bc	100 a	100 a	90 b	100 a
	Vegetable Pro	2 pt/a	HS						
5	Dual Magnum	1 pt/a	HS		95 abc	100 a	100 a	87.5 b	91.3 abc
	Metribuzin	0.5 lb/a	HS						
	Basagran	1 pt/a	POST						
	COC	1 pt/a	POST						
6	Dual Magnum	1 pt/a	HS		96.3 abc	100 a	98.8 a	84.5 b	99.5 a
	Metribuzin	0.5 lb/a	HS						
	Basagran	2 pt/a	POST						
	COC	1 pt/a	POST						
7	Dual Magnum	1 pt/a	HS		96.3 abc	98.8 ab	100 a	94.5 b	96.5 ab
	Metribuzin	0.5 lb/a	HS						
	Sandea	1 oz/a	POST						
	NIS	0.25 % v/v	POST						
8	Sonalan HFP	2 pt/a	HS		92.5 c	93.8 ab	96.3 ab	63.8 b	47.5 f
9	Sonalan HFP	2 pt/a	HS		98.8 ab	100 a	100 a	93.3 b	98.8 a
	Boundary	2.8 pt/a	HS						
10	Tripzin ZC	42 oz/a	HS		100 a	100 a	100 a	83.8 b	67.5 def
11	Boundary	2 pt/a	HS		99.5 ab	100 a	100 a	90 b	99.5 a
12	Eptam	5 pt/a	HS		96.3 abc	98.3 ab	98.8 a	67.5 b	72.5 cde
	Sonalan HFP	2 pt/a	HS						
13	Sonalan HFP	2 pt/a	HS		98.8 ab	100 a	100 a	321.5 a	57.5 ef
	TriCor	1 pt/a	HS						
14	Eptam	3.5 pt/a	HS		98.8 ab	100 a	100 a	100 b	82.5 a-d
	TriCor	2.5 pt/a	HS						
15	Sonalan HFP	2 pt/a	HS		95.8 abc	100 a	100 a	96.3 b	98.8 a
	Linex	1.5 pt/a	HS						
16	Prowl H2O	3 pt/a	HS		93.8 bc	100 a	77.5 b	88.8 b	92.5 abc
17	Zidua	2 oz/a	HS		98.8 ab	98.3 ab	99.5 a	94.5 b	97.5 a
18	Zidua	4 oz/a	HS		100 a	100 a	77.5 b	99 b	100 a
19	A16003	1.28 oz/a	HS		96.3 abc	73.8 c	82.5 ab	85 b	76.3 b-e
20	A16003	2.57 oz/a	HS		100 a	93.3 b	93.3 ab	95 b	68.8 de

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Trt No.	Treatment Name	Rate	Appl Unit	Timing	6/14/2019	6/20/2019	% Weed Control 6/20/2019			
					% Injury	% Injury	COLQ	RRPW	CORW	HANS
1	Untreated Check				0	0	0	0	0	0
2	Dual Magnum	1 pt/a		HS	11.3 a	12.3 c	100 b	100 a	100 a	100 a
	Metribuzin	0.5 lb/a		HS						
	Vegetable Pro NIS	1 pt/a		POST						
		0.25 % v/v		POST						
3	Dual Magnum	1 pt/a		HS	12.5 a	31.2 a	100 b	100 a	100 a	100 a
	Metribuzin	0.5 lb/a		HS						
	Vegetable Pro NIS	2 pt/a		POST						
		0.25 % v/v		POST						
4	Prowl H2O	1 pt/a		HS	1.3 d	0 e	100 b	97 ab	91.9 a-d	97.4 ab
	Vegetable Pro NIS	2 pt/a		HS						
5	Dual Magnum	1 pt/a		HS	6.3 c	5 d	100 a	100 a	96.9 ab	99.7 a
	Metribuzin	0.5 lb/a		HS						
	Basagran	1 pt/a		POST						
	COC	1 pt/a		POST						
6	Dual Magnum	1 pt/a		HS	8.8 b	6 d	100 b	100 a	100 a	100 a
	Metribuzin	0.5 lb/a		HS						
	Basagran	2 pt/a		POST						
	COC	1 pt/a		POST						
7	Dual Magnum	1 pt/a		HS	11.3 a	23.6 b	81.3 b	100 a	100 a	100 a
	Metribuzin	0.5 lb/a		HS						
	Sandea	1 oz/a		POST						
	NIS	0.25 % v/v		POST						
8	Sonalan HFP	2 pt/a		HS	0 d	0 e	88.8 b	90 ab	73.2 e	71.1 cd
9	Sonalan HFP	2 pt/a		HS	0 d	0 e	100 b	75 bc	94.9 abc	99.7 a
	Boundary	2.8 pt/a		HS						
10	Tripzin ZC	42 oz/a		HS	0 d	0 e	100 b	100 a	91.2 bcd	57.5 de
11	Boundary	2 pt/a		HS	0 d	0 e	98.8 b	100 a	90.6 bcd	99.7 a
12	Eptam	5 pt/a		HS	0 d	0 e	93.3 b	97 ab	76.8 e	86.2 bc
	Sonalan HFP	2 pt/a		HS						
13	Sonalan HFP	2 pt/a		HS	0 d	0 e	100 b	75 bc	97 ab	42.5 e
	TriCor	1 pt/a		HS						
14	Eptam	3.5 pt/a		HS	0 d	0 e	100 b	100 a	100 a	96.4 ab
	TriCor	2.5 pt/a		HS						
15	Sonalan HFP	2 pt/a		HS	0 d	0 e	99.5 b	100 a	94.3 a-d	99.4 a
	Linex	1.5 pt/a		HS						
16	Prowl H2O	3 pt/a		HS	0 d	0 e	100 b	98.8 ab	86.1 d	96.4 ab
17	Zidua	2 oz/a		HS	0 d	0 e	97 b	100 a	95.7 abc	100 a
18	Zidua	4 oz/a		HS	0 d	0 e	100 b	100 a	100 a	100 a
19	A16003	1.28 oz/a		HS	0 d	0 e	62.5 b	60 c	87.5 cd	65.4 d
20	A16003	2.57 oz/a		HS	0 d	0 e	90 b	86.3 ab	96.5 ab	73 cd

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Trt No.	Treatment Name	Rate	Appl Unit	Timing	6/20/2019		% Weed Control 8/14/2019			
					% Weed Control		COLQ	RRPW	CORW	LASW
					LASW	FAPA				
1	Untreated Check				0	0	0	0	0	0
2	Dual Magnum	1 pt/a	HS		100 a	100 a	100 a	100 a	100 a	100 a
	Metribuzin	0.5 lb/a	HS							
	Vegetable Pro NIS	1 pt/a	POST							
		0.25 % v/v	POST							
3	Dual Magnum	1 pt/a	HS		100 a	100 a	100 a	100 a	99.7 ab	100 a
	Metribuzin	0.5 lb/a	HS							
	Vegetable Pro NIS	2 pt/a	POST							
		0.25 % v/v	POST							
4	Prowl H2O	1 pt/a	HS		100 a	100 a	98.1 abc	98.8 ab	76.6 fg	93.6 a
	Vegetable Pro	2 pt/a	HS							
5	Dual Magnum	1 pt/a	HS		100 a	100 a	99.7 ab	100 a	94.9 bcd	100 a
	Metribuzin	0.5 lb/a	HS							
	Basagran	1 pt/a	POST							
	COC	1 pt/a	POST							
6	Dual Magnum	1 pt/a	HS		100 a	100 a	100 a	100 a	98.7 abc	97.5 a
	Metribuzin	0.5 lb/a	HS							
	Basagran	2 pt/a	POST							
	COC	1 pt/a	POST							
7	Dual Magnum	1 pt/a	HS		100 a	100 a	100 a	100 a	100 a	100 a
	Metribuzin	0.5 lb/a	HS							
	Sandea	1 oz/a	POST							
	NIS	0.25 % v/v	POST							
8	Sonalan HFP	2 pt/a	HS		92.5 ab	100 a	84 d	98.8 ab	45 h	44.4 c
9	Sonalan HFP	2 pt/a	HS		100 a	100 a	100 a	100 a	87 def	100 a
	Boundary	2.8 pt/a	HS							
10	Tripzin ZC	42 oz/a	HS		100 a	100 a	100 a	100 a	82.7 def	97.5 a
11	Boundary	2 pt/a	HS		100 a	100 a	99.4 ab	98.8 ab	79.7 efg	100 a
12	Eptam	5 pt/a	HS		93.8 ab	100 a	94.5 c	98.8 ab	53 h	88.4 ab
	Sonalan HFP	2 pt/a	HS							
13	Sonalan HFP	2 pt/a	HS		100 a	100 a	100 a	100 a	93.6 b-e	100 a
	TriCor	1 pt/a	HS							
14	Eptam	3.5 pt/a	HS		100 a	100 a	99.7 ab	100 a	99.7 ab	98.7 a
	TriCor	2.5 pt/a	HS							
15	Sonalan HFP	2 pt/a	HS		90 ab	100 a	94.3 c	100 a	83.8 def	75.3 abc
	Linex	1.5 pt/a	HS							
16	Prowl H2O	3 pt/a	HS		95 a	100 a	100 a	97.5 ab	61.6 gh	94.9 a
17	Zidua	2 oz/a	HS		100 a	100 a	96.1 bc	100 a	87.8 def	91.2 a
18	Zidua	4 oz/a	HS		100 a	100 a	100 a	100 a	100 a	100 a
19	A16003	1.28 oz/a	HS		81.3 b	75 b	65.4 e	96.3 b	89.7 c-f	54.8 bc
20	A16003	2.57 oz/a	HS		97.5 a	73.8 b	82.8 d	93.8	94.3 bcd	89.9 a

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Trt No.	Treatment Name	Rate	Appl Unit	Timing	% Weed Control 8/14/19		Tuber Yield (cwt/A) 9/11/2019			
					SMPW	SMGA	B's	Culls	2-4 oz	4-6 oz
1	Untreated Check				0	0	72.28	12.16	164.43	39.45
2	Dual Magnum	1 pt/a	HS		98.8 a	100 a	28.76 efg	20.24 ab	192.47 abc	191.18 a
	Metribuzin	0.5 lb/a	HS							
	Vegetable Pro NIS	1 pt/a	POST							
		0.25 % v/v	POST							
3	Dual Magnum	1 pt/a	HS		100 a	100 a	27.38 fg	17.94 ab	175.87 cd	185.51 ab
	Metribuzin	0.5 lb/a	HS							
	Vegetable Pro NIS	2 pt/a	POST							
		0.25 % v/v	POST							
4	Prowl H2O	1 pt/a	HS		97.5 a	97.5 a	42.22 b-e	10.02 bc	238.66 a	190.33 a
	Vegetable Pro	2 pt/a	HS							
5	Dual Magnum	1 pt/a	HS		98.8 a	95 a	38.70 c-g	18.27 ab	201.12 abc	198.82 a
	Metribuzin	0.5 lb/a	HS							
	Basagran	1 pt/a	POST							
	COC	1 pt/a	POST							
6	Dual Magnum	1 pt/a	HS		100 a	100 a	40.33 c-f	17.08 abc	231.82 ab	181.12 ab
	Metribuzin	0.5 lb/a	HS							
	Basagran	2 pt/a	POST							
	COC	1 pt/a	POST							
7	Dual Magnum	1 pt/a	HS		100 a	100 a	25.86 g	19.31 ab	136.32 d	154.78 abc
	Metribuzin	0.5 lb/a	HS							
	Sandea	1 oz/a	POST							
	NIS	0.25 % v/v	POST							
8	Sonalan HFP	2 pt/a	HS		95 ab	72.5 cd	58.62 a	18.86 ab	213.89 abc	111.69 c
9	Sonalan HFP	2 pt/a	HS		100 a	93.8 ab	41.34 c-f	24.83 a	203.74 abc	164.27 ab
	Boundary	2.8 pt/a	HS							
10	Tripzin ZC	42 oz/a	HS		96.3 a	86.3 abc	35.55 d-g	11.50 bc	183.59 bcd	173.37 ab
11	Boundary	2 pt/a	HS		100 a	100 a	43.44 bcd	8.50 c	216.39 abc	177.54 ab
12	Eptam	5 pt/a	HS		96.3 a	60 d	56.16 ab	14.36 abc	223.21 abc	114.71 c
	Sonalan HFP	2 pt/a	HS							
13	Sonalan HFP	2 pt/a	HS		98.8 a	97.5 a	44.22 bcd	15.75 abc	231.06 ab	193.42 a
	TriCor	1 pt/a	HS							
14	Eptam	3.5 pt/a	HS		100 a	98.8 a	40.48 c-f	15.08 abc	186.35 bcd	184.77 ab
	TriCor	2.5 pt/a	HS							
15	Sonalan HFP	2 pt/a	HS		96.3 a	97.5 a	37.19 c-g	17.90 ab	211.89 abc	165.68 ab
	Linex	1.5 pt/a	HS							
16	Prowl H2O	3 pt/a	HS		96.3 a	77.5 bc	51.30 abc	14.22 abc	236.62 a	137.92 bc
17	Zidua	2 oz/a	HS		100 a	100 a	42.97 bcd	13.96 abc	222.32 abc	194.94 a
18	Zidua	4 oz/a	HS		100 a	100 a	42.59 b-e	25.33 a	202.73 abc	194.71 a
19	A16003	1.28 oz/a	HS		82.5 c	100 a	55.56 ab	10.91 bc	241.59 a	115.56 c
20	A16003	2.57 oz/a	HS		88.8 bc	97.5 a	44.41 bcd	13.81 abc	214.76 abc	157.62 abc

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					6-10 oz	10-13 oz	13-16 oz	>16 oz	Total Yld
1	Untreated Check				18.38	0	0	0	279.55
2	Dual Magnum	1 pt/a		HS	132.98 ab	2.90 bc	4.72 ab	0 -	563.33 abc
	Metribuzin	0.5 lb/a		HS					
	Vegetable Pro	1 pt/a		POST					
	NIS	0.25 % v/v		POST					
3	Dual Magnum	1 pt/a		HS	117.22 abc	7.62 abc	1.74 ab	0 -	526.04 a-d
	Metribuzin	0.5 lb/a		HS					
	Vegetable Pro	2 pt/a		POST					
	NIS	0.25 % v/v		POST					
4	Prowl H2O	1 pt/a		HS	81.32 c-f	6.65 abc	0 b	0 -	549.79 abc
	Vegetable Pro	2 pt/a		HS					
5	Dual Magnum	1 pt/a		HS	114.71 abc	10.77 abc	0 b	0 -	568.92 abc
	Metribuzin	0.5 lb/a		HS					
	Basagran	1 pt/a		POST					
	COC	1 pt/a		POST					
6	Dual Magnum	1 pt/a		HS	107.61 bc	7.29 abc	1.63 ab	1.94 -	597.68 a
	Metribuzin	0.5 lb/a		HS					
	Basagran	2 pt/a		POST					
	COC	1 pt/a		POST					
7	Dual Magnum	1 pt/a		HS	152.12 a	34.67 a	8.24 a	2.03 -	535.93 a-d
	Metribuzin	0.5 lb/a		HS					
	Sandea	1 oz/a		POST					
	NIS	0.25 % v/v		POST					
8	Sonalan HFP	2 pt/a		HS	25.47 g	1.42 c	0 b	0 -	440.59 d
9	Sonalan HFP	2 pt/a		HS	95.35 cd	8.79 abc	1.50 ab	0 -	538.75 a-d
	Boundary	2.8 pt/a		HS					
10	Tripzin ZC	42 oz/a		HS	112.15 bc	5.86 abc	3.06 ab	0 -	553.49 abc
11	Boundary	2 pt/a		HS	113.28 bc	8.95 abc	4.69 ab	0 -	574.47 ab
12	Eptam	5 pt/a		HS	52.20 fg	4.54 bc	1.49 ab	1.97 -	468.47 cd
	Sonalan HFP	2 pt/a		HS					
13	Sonalan HFP	2 pt/a		HS	90.42 cde	4.25 bc	0 b	0 -	566.16 abc
	TriCor	1 pt/a		HS					
14	Eptam	3.5 pt/a		HS	137.04 ab	14.29 ab	6.29 ab	0 -	585.37 a
	TriCor	2.5 pt/a		HS					
15	Sonalan HFP	2 pt/a		HS	112.06 bc	13.19 ab	3.00 ab	0 -	559.11 abc
	Linex	1.5 pt/a		HS					
16	Prowl H2O	3 pt/a		HS	57.45 efg	3.97 bc	0 b	0 -	479.98 bcd
17	Zidua	2 oz/a		HS	105.48 bc	4.90 bc	1.66 ab	0 -	593.69 a
18	Zidua	4 oz/a		HS	107.81 bc	8.94 abc	4.82 ab	1.95 -	596.94 a
19	A16003	1.28 oz/a		HS	63.60 def	1.83 bc	0 b	0 -	480.49 bcd
20	A16003	2.57 oz/a		HS	66.82 def	7.15 abc	1.54 ab	0 -	525.10 a-d

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