

Broadleaf Weed Control in Onion

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An experiment was conducted at the Carrington Research Extension Center to evaluate broadleaf weed control in onion. ‘Teton’ onion was sown April 28, 2004, in 4-inch paired rows on 16-inch centers at 167,000 seeds/A. The experimental design was a randomized complete block

design with four replicates. Application dates, timings, and environmental conditions are listed in Table 1. All herbicide treatments were applied to 6 ft. by 25 ft. plots with a CO₂ hand-boom sprayer. Post-emergence treatments including Buctril and/or Goal were applied through XR 11006 flat-fan nozzles delivering 40 gpa at 30 psi. All other herbicide treatments were applied through XR 8003 flat-fan nozzles delivering 20 gpa at 30 psi. Best management practices were used for fertility, disease, insect, and grass control. The onions were harvested October 3, placed in a forced-air drier for 48 hours, and graded by the end of October. Split and diseased bulbs were graded as culls, regardless of diameter.

Table 1. Application dates, timings, and environmental conditions.

Application date:	5/6	5/16	6/3	6/14	6/22	6/29	7/7	7/12
Timing:	PRE	PRE1	flag-leaf	1-leaf	2-leaf	3-leaf	4-leaf	5-leaf
Air Temp. (F):	45	53	74	54	64	82	69	81
Soil Temp. (F):	52	59	69	60	71	82	72	82
Relative Humidity (%):	56	42	63	87	52	37	57	60
Wind Velocity (MPH):	9	9	10	4	7	7	6	11
% Cloud Cover:	5	30	30	100	100	0	20	0

V-10146 caused significant crop injury (Table 2). Crop injury was minimal with all other herbicide treatments. Most of the wild mustard had emerged by the PRE1 timing and was controlled by PRE1 applications that included Glyphomax Plus and Buctril (data not shown). With the

exception of V-10146 applied alone (Treatments 15 and 16), weed control for all herbicide treatments was near 100% when evaluated June 22, July 19, and October 31 (data not shown). The weed-free check had the highest numerical yield of 3-4.5 inch onions and total yield.

The 2004 season was unusually cool. The onions did not mature, resulting in soft bulbs that did not cure in the drier. The immature onions probably would develop a high percentage of sprout damage and neck rot in storage.



Treatment 18, Aug. 4, 2004



Treatment 19, Aug. 4, 2004



Treatment 20, Aug. 4, 2004

Table 2. Onion tolerance and weed control.

Trt No.	Treatment	Product rate	Rate unit	Timing	Onion injury		Weed control		
					6/22	7/15	Wild mustard	Redroot pigweed	Common lambsquarters
					%		#/100ft ²		
1	Dacthal	10	lb/a	PRE1	5	5	0	0	0
	Buctril+Goal	16+8	oz/a	2-lf					
	Prowl	24	oz/a	3-lf					
	Buctril+Goal	24+8	oz/a	5-lf					
2	Prowl	20.9	oz/a	PRE1	6	6	0	0	0
	Buctril+Goal	24+8	oz/a	2-lf					
	Valor SX	1.96	oz/a	3-lf					
	Buctril+Goal	24+8	oz/a	5-lf					
3	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	14	16	0	0	0
	Buctril+Goal	16+8	oz/a	2-lf					
	Prowl	24	oz/a	3-lf					
	Buctril+Goal	24+8	oz/a	5-lf					
4	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	5	5	0	0	0
	Buctril+Goal+Prowl	16+8+24	oz/a	2-lf					
	Buctril+Goal	24+8	oz/a	5-lf					
5	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	6	10	0	0	0
	Buctril+Goal	16+8	oz/a	2-lf					
	Buctril+Goal+Prowl	24+8+24	oz/a	5-lf					
6	Buctril+Prowl	16+13.9	oz/a	PRE1	6	6	0	0	0
	Buctril+Goal	24+8	oz/a	2-lf					
	Prowl	24	oz/a	3-lf					
	Buctril+Goal	24+8	oz/a	5-lf					
7	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	1	10	0	0	0
	Buctril+Goal+Prowl	24+8+33.7	oz/a	3-lf					
8	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	9	8	5	7	8
	Buctril+Goal+Prowl	24+8+33.7	oz/a	4-lf					
9	Prowl	21	oz/a	flag-lf	4	11	2	4	5
	Buctril+Goal	16+8	oz/a	2-lf					
	Buctril+Goal+Dual	24+8+16	oz/a	5-lf					
10	Prowl	21	oz/a	flag-lf	6	6	0	0	5
	Buctril+Goal	16+8	oz/a	2-lf					
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf					
11	Prowl	21	oz/a	flag-lf	8	9	0	0	1
	Buctril+Goal	16+8	oz/a	2-lf					
	Buctril+Goal+Prowl	24+8+33.7	oz/a	5-lf					
12	Prowl+Goal	21+4	oz/a	1 lf	8	11	0	0	0
	Buctril+Goal	16+8	oz/a	2-lf					
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf					
13	Prowl	21	oz/a	PRE1	4	10	1	1	5
	Valor SX	3	oz/a	2-lf					
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf					
14	Prowl	21	oz/a	PRE1	8	11	0	0	0
	Buctril+Goal	12+4	oz/a	1 lf					
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf					
15	V-10146	7.76	oz/a	flag-lf	55	93	0	0	1
16	V-10146+NIS	7.76+0.25	oz/a+%v/v	1 lf	28	86	0	5	96
17	Buctril+Prowl	16+21	oz/a	PRE2	15	8	0	0	0
	Buctril+Goal+Prowl	24+8+21	oz/a	2-lf					
	Buctril+Goal	24+8	oz/a	5-lf					
18	Buctril	16	oz/a	PRE2	5	10	0	0	0
	Buctril+Goal+Prowl	24+8+21	oz/a	2-lf					
	Buctril+Goal+Prowl	24+8+21	oz/a	4-lf					
19	Handweeded Chk				0	0	0	0	1
20	Untreated				0	0	11	55	391
LSD (P=.05)					8	7	3	16	124

Table 3. Onion yield.

Trt No.	Treatment	Product rate	Rate unit	Timing	Yield					# of bulbs 1000's/A
					1-2.25"	2.25-3"	3-4.5"	Total	Culls	
1	Dacthal	10	lb/a	PRE1	38	172	248	457	6	109.5
	Buctril+Goal	16+8	oz/a	2-lf						
	Prowl	24	oz/a	3-lf						
	Buctril+Goal	24+8	oz/a	5-lf						
2	Prowl	20.9	oz/a	PRE1	59	224	255	538	13	134.3
	Buctril+Goal	24+8	oz/a	2-lf						
	Valor SX	1.96	oz/a	3-lf						
	Buctril+Goal	24+8	oz/a	5-lf						
3	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	32	118	296	446	3	98.5
	Buctril+Goal	16+8	oz/a	2-lf						
	Prowl	24	oz/a	3-lf						
	Buctril+Goal	24+8	oz/a	5-lf						
4	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	66	228	222	517	15	141.6
	Buctril+Goal+Prowl	16+8+24	oz/a	2-lf						
	Buctril+Goal	24+8	oz/a	5-lf						
5	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	33	244	274	551	6	125.2
	Buctril+Goal	16+8	oz/a	2-lf						
	Buctril+Goal+Prowl	24+8+24	oz/a	5-lf						
6	Buctril+Prowl	16+13.9	oz/a	PRE1	40	240	280	559	6	132.0
	Buctril+Goal	24+8	oz/a	2-lf						
	Prowl	24	oz/a	3-lf						
	Buctril+Goal	24+8	oz/a	5-lf						
7	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	47	271	222	540	7	134.8
	Buctril+Goal+Prowl	24+8+33.7	oz/a	3-lf						
8	Prowl+Glyphomax Plus	20.9+16	oz/a	PRE2	39	213	263	514	10	118.0
	Buctril+Goal+Prowl	24+8+33.7	oz/a	4-lf						
9	Prowl	21	oz/a	flag-lf	32	214	245	491	19	126.6
	Buctril+Goal	16+8	oz/a	2-lf						
	Buctril+Goal+Dual	24+8+16	oz/a	5-lf						
10	Prowl	21	oz/a	flag-lf	31	222	276	530	2	123.4
	Buctril+Goal	16+8	oz/a	2-lf						
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf						
11	Prowl	21	oz/a	flag-lf	31	300	230	561	15	138.8
	Buctril+Goal	16+8	oz/a	2-lf						
	Buctril+Goal+Prowl	24+8+33.7	oz/a	5-lf						
12	Prowl+Goal	21+4	oz/a	1 lf	49	274	218	540	4	137.9
	Buctril+Goal	16+8	oz/a	2-lf						
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf						
13	Prowl	21	oz/a	PRE1	45	317	267	628	9	144.3
	Valor SX	3	oz/a	2-lf						
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf						
14	Prowl	21	oz/a	PRE1	32	225	289	547	7	119.3
	Buctril+Goal	12+4	oz/a	1 lf						
	Buctril+Goal+Outlook	24+8+16	oz/a	5-lf						
15	V-10146	7.76	oz/a	flag-lf	8	9	4	20	4	25.4
16	V-10146+NIS	7.76+0.25	oz/a+%v/v	1 lf	0	0	0	0	0	0.0
17	Buctril+Prowl	16+21	oz/a	PRE2	27	278	310	614	3	128.0
	Buctril+Goal+Prowl	24+8+21	oz/a	2-lf						
	Buctril+Goal	24+8	oz/a	5-lf						
18	Buctril	16	oz/a	PRE2	57	204	215	476	0	122.8
	Buctril+Goal+Prowl	24+8+21	oz/a	2-lf						
	Buctril+Goal+Prowl	24+8+21	oz/a	4-lf						
19	Handweeded Chk			-	34	307	319	658	2	139.8
20	Untreated			-	0	0	0	0	0	0.0
LSD (P=.05)					19	97	104	117	15	25.8