

## 2006 Dry Bulb Onion Weed Control Studies

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**Objective:** To evaluate preemergence and postemergence weed control materials on weed control and yield of dry bulb onions

**Summary:** Weed pressure was intense this year. Due to the rapid growth of the weeds, applications of Goal Tender made at the 1<sup>st</sup> true leaf stage were much superior to applications at the 2<sup>nd</sup> true leaf stage when weeds were larger and harder to kill. Preemergence applications of Prowl H2O were too injurious to onions, but applications made at the loop stage of growth were safe and, if followed by a post emergence application of Goal Tender, it provided excellent weed control. Outlook and Dual Magnum provided dramatic season-long control of nutsedge. Scythe was safe to the onions when applied at the 2<sup>nd</sup> true leaf stage, but did not control the large weeds found at this growth stage.

**Methods:** The trials were conducted in collaboration with Bob Martin, grower with Rio Farms and Wyatt Duncan of ICMC on the Tognetti Ranch Block 365. The soil type at the site was the Mocho silt loam. **Trial No. 1:** Each plot was one 40-inch bed wide by 20 feet long and replicated four times in a randomized complete block design. The trial was seeded to the variety Tamara on March 30 and the post plant preemergence applications were made on the same day. Applications at the loop stage of the onions (flag leaf emergence) were made on April 14 (13 days after planting), first true leaf applications were made on April 27 (28 days after planting) and second true leaf applications were made on May 8 (39 days after planting). **Trial No. 2:** Was conducted in the same field as trial no. 1. Each plot was one 40-inch bed wide by 15 feet long and replicated three times in a randomized complete block design. Post plant preemergence applications were made on March 30, 2006. Second true leaf applications were made on May 8. Split applications (treatments 5 & 6) we made on May 30. **Trial No. 3:** The trial was established on June 15 in an area infested with Yellow Nutsedge. The area had received the grower weed control program of Dacthal preplant followed by Goal + Buctril at the two true leaf stage. The plot was established in an area infested with established nutsedge plants and was treated with combination of Outlook and Goal 2XL.

All applications (unless otherwise noted) made with two passes of a one tip wand with an 8008E nozzle applying the equivalent of 72 GPA.

**Results: Trial No. 1:** The cool, wet spring created early and intense weed pressure in this trial. Weed growth was more rapid and aggressive than we had seen in the past few years. As a result, there were dramatic differences in weed control between first and second true leaf applications of the postemergence materials Goal Tender and Goal 2XL. On the May 8 evaluation date (following the loop and 1<sup>st</sup> true leaf applications) good weed control was seen in all Dacthal preemergence followed by Goal Tender (at 0.125 lb a.i./A) applications at the first true leaf stage (Table 1). Goal Tender alone at 0.188 lb a.i./A at the first true leaf stage provided improved weed control over Goal Tender at 0.125 lb a.i./A. On the May 23 evaluation date preemergence applications of Prowl H2O did not provide good weed control, however Prowl H2O applied at the loop stage followed by Goal Tender at the 1<sup>st</sup> true leaf stage provided excellent weed control (Table 2). Goal Tender applied at the first true leaf stage provided moderate to good weed control depending on the rate, but Goal Tender and Scythe applied at the second true leaf stage

were not able to burn back the weeds that were too big by the 2<sup>nd</sup> true leaf stage (39 days after planting). Outlook and Dual Magnum had low phytotoxicity ratings on this evaluation date. Preemergence applications of Dacthal followed by Goal Tender at the first true leaf, and Prowl applied at the loop stage followed by Goal Tender at the first true leaf stage and Goal 2XL at the second true leaf stage had the lowest hours/A to weed. The weed control trends observed on May 23 were also observed on June 19. Goal Tender alone applied at the first and second true leaf stages and both Prowl treatments applied at the loop stage had the greatest tonnage and bulbs per acre (Table 3).

***Trial No. 2:*** Nutsedge was just beginning to emerge (i.e. 2 leaves) by the 2<sup>nd</sup> true leaf application date on May 23, however all treatments of Outlook and Dual Magnum eliminated nutsedge on the June 13 evaluation date (Table 4). Nutsedge levels continued to remain low in the Outlook and Dual Magnum treatments on the July 19; however some nutsedge plants began to break through by the September 5 evaluation date (Table 5). There were no differences in yield among treatments in this trial (Table 6).

***Trial No. 3:*** Due to the control of emerged nutsedge plants observed in trial no. 2 we initiated this follow-up trial to test the post emergence activity of Outlook and Goal 2XL on nutsedge. The herbicides were applied to well established nutsedge and the results indicated that Outlook does not have the ability to control this weed once it has become well established (weed counts not taken). The data in trial no. 2 indicate however that Outlook in combination with Goal Tender applied when nutsedge is just emerging (i.e. one to two true leaves) controls this weed.

**Acknowledgements:** We would like to thank Bob Martin of Rio Farms and Wyatt Duncan of ICMC for cooperating with us on these studies.

Table 1. Trial No. 1. Number of weeds (4 ft<sup>2</sup>) on May 8.

Treatment	a.i./A lbs	Application <sup>1</sup>	Nightshade	Pigweed	Purslane	Total Weeds
Untreated	----	----	31.3	1.5	6.8	40.3
Dacthal W 75	8.0	Pre	25.5	0.8	0.8	27.5
Prowl H2O 3.8	0.18	Pre	32.0	1.8	0.0	34.3
Prowl H2O 3.8	0.24	Pre	23.3	0.8	1.8	26.8
Dacthal W 75	8.0	Pre	0.0	0.0	0.0	0.5
Fb Goal Tender 4F	0.125	Post 1 t. leaf				
Dacthal W 75	8.0	Pre	26.0	1.3	0.3	28.3
Fb Goal 2XL	0.125	Post 2 t. leaf				
Goal Tender 4F	0.125	Post 1 t. leaf	12.3	0.0	1.0	15.8
Goal Tender 4F	0.188	Post 1 t. leaf	3.8	0.0	0.5	5.0
Goal Tender 4F	0.125	Post 2 t. leaf	31.5	1.8	8.0	43.3
Scythe <sup>2</sup>	3% v/v	Post 2 t. leaf	40.8	3.3	3.8	49.5
Prowl H2O 3.8	0.71	Post loop	23.5	3.8	2.8	31.3
Prowl H2O 3.8	0.71	Post loop	0.0	0.0	0.0	0.0
Fb Goal Tender	0.125	Post 1 t. leaf				
Dacthal W 75	8.0	Pre	0.0	0.0	0.0	0.3
Fb Goal Tender 4F	0.125	Post 1 t. leaf				
Fb Outlook 6.0	0.66	Post 2 t. leaf				
Dacthal W 75	8.0	Pre	0.0	0.0	0.0	0.8
Fb Goal Tender 4F	0.125	Post 1 t. leaf				
Fb Dual Magnum 7.63	0.53	Post 2 t. leaf				
LSD (0.05)			17.5	2.2	3.8	17.6

1 – Pre = post plant preemergence; and Post 2 t. leaf = second true leaf stage of growth

Table 2. Trial No. 1. Number of weeds density, phytotoxicity and time of weeding on two dates

Treatment	a.i./A lbs	Application <sup>1</sup>	May 23 Weeds per 4ft <sup>2</sup>					July 19 Weeds per 20 ft <sup>2</sup>		
			Night-shade	Pig-weed	Purslane	Total Weeds	Phyto Rating <sup>2</sup>	Time to Weed hrs/A	Broad Leaf weeds	Phyto Rating <sup>2</sup>
Untreated	----	----	32.8	1.0	2.0	36.0	0.3	97.3	2.3	1.3
Dacthal W 75	8.0	Pre	13.5	3.3	0.0	16.8	0.7	16.9	2.0	0.0
Prowl H2O 3.8	0.18	Pre	29.3	2.3	0.3	31.8	0.3	55.9	2.0	0.0
Prowl H2O 3.8	0.24	Pre	23.0	1.3	0.8	25.3	0.0	31.7	2.0	0.0
Dacthal W 75	8.0	Pre	1.0	0.0	0.0	2.0	0.5	2.4	2.5	0.8
Fb Goal Tender 4F	0.125	Post 1 t. leaf								
Dacthal W 75	8.0	Pre	2.8	0.5	0.0	3.3	1.5	3.3	0.8	0.8
Fb Goal 2XL	0.125	Post 2 t. leaf								
Goal Tender 4F	0.125	Post 1 t. leaf	13.0	0.3	0.0	15.8	0.0	18.2	0.8	0.0
Goal Tender 4F	0.188	Post 1 t. leaf	5.3	0.0	0.0	6.0	0.0	7.3	1.0	0.0
Goal Tender 4F	0.125	Post 2 t. leaf	30.0	1.5	2.0	34.3	0.0	43.1	1.5	0.0
Scythe <sup>2</sup>	3% v/v	Post 2 t. leaf	38.5	2.0	3.8	44.8	0.0	96.9	2.0	1.0
Prowl H2O 3.8	0.71	Post loop	12.3	3.5	0.3	16.3	0.0	16.3	2.0	0.0
Prowl H2O 3.8	0.71	Post loop	0.3	0.0	0.0	0.3	0.0	2.3	1.5	0.5
Fb Goal Tender	0.125	Post 1 t. leaf								
Dacthal W 75	8.0	Pre	0.0	0.0	0.0	0.3	1.0	1.8	0.8	1.8
Fb Goal Tender 4F	0.125	Post 1 t. leaf								
Fb Outlook 6.0	0.66	Post 2 t. leaf								
Dacthal W 75	8.0	Pre	0.0	0.0	0.0	0.3	1.5	1.7	0.5	1.0
Fb Goal Tender 4F	0.125	Post 1 t. leaf								
Fb Dual Magnum 7.63	0.53	Post 2 t. leaf								
LSD (0.05)			17.9	2.4	2.4	17.7	0.6	46.9	n.s.	1.3

1 – Pre = post plant preemergence; and Post 2 t. leaf = second true leaf stage of growth

2 – Scale: 0 no crop damage to 10 crop dead

Table 3. Trial No. 1. Yield evaluation on October 3

Treatment	a.i./A lbs	Application <sup>1</sup>	Marketable Yield			Culls		Total Yield		
			Weight T/A	No./A	Mean Bulb (lbs)	Weight T/A	No./A	Weight T/A	No./A	Mean Bulb (lbs)
Untreated	----	----	41.67	92,157.6	0.91	0.35	4,901.3	42.03	97,046.2	0.86
Dacthal W 75	8.0	Pre	44.07	90,523.6	0.97	0.78	8,168.8	44.86	98,680.0	0.91
Prowl H2O 3.8	0.18	Pre	44.09	94,772.0	0.93	0.98	7,188.6	45.07	101,948.0	0.88
Prowl H2O 3.8	0.24	Pre	48.37	97,386.4	0.99	0.44	6,208.3	48.81	103,581.0	0.94
Dacthal W 75	8.0	Pre	43.39	86,928.8	0.99	0.55	6,535.1	43.94	93,451.9	0.94
Fb Goal Tender 4F	0.125	Post 1 t. leaf								
Dacthal W 75	8.0	Pre	42.72	77,451.6	1.11	0.68	6,535.1	43.40	83,976.0	1.04
Fb Goal 2XL	0.125	Post 2 t. leaf								
Goal Tender 4F	0.125	Post 1 t. leaf	51.00	113,400.0	0.90	0.50	4,247.8	51.51	117,632.0	0.87
Goal Tender 4F	0.188	Post 1 t. leaf	51.18	111,439.0	0.92	0.31	2,940.8	51.49	114,364.0	0.90
Goal Tender 4F	0.125	Post 2 t. leaf	48.71	112,419.0	0.87	0.27	2,614.0	48.99	115,018.0	0.85
Scythe <sup>2</sup>	3% v/v	Post 2 t. leaf	42.67	98,366.8	0.86	0.75	7,842.1	43.42	106,195.0	0.81
Prowl H2O 3.8	0.71	Post loop	48.65	111,439.0	0.87	0.44	4,574.5	49.09	115,998.0	0.85
Prowl H2O 3.8	0.71	Post loop	50.45	106,864.0	0.94	0.27	3,921.1	50.72	110,770.0	0.91
Fb Goal Tender	0.125	Post 1 t. leaf								
Dacthal W 75	8.0	Pre	44.81	90,196.8	1.01	0.89	8,168.8	45.71	98,353.3	0.94
Fb Goal Tender 4F	0.125	Post 1 t. leaf								
Fb Outlook 6.0	0.66	Post 2 t. leaf								
Dacthal W 75	8.0	Pre	46.41	96,079.2	0.97	0.86	8,168.8	47.28	104,235.0	0.91
Fb Goal Tender 4F	0.125	Post 1 t. leaf								
Fb Dual Magnum 7.63	0.53	Post 2 t. leaf								
LSD (0.05)			6.21	14,130.1	0.11	0.53	5,303.5	5.99	13,997.9	0.12

1 – Pre = post plant premergence; and Post 2 t. leaf = second true leaf stage of growth

Table 4. Trial No. 2: Number of weeds per 22 ft<sup>2</sup> and phytotoxicity ratings on two dates

Treatment	a.i./A lbs	Application <sup>1</sup>	May 23		June 13			
			Nutsedge	Phyto Rating <sup>2</sup>	Nutsedge	Nightshade	Total Weeds	Phyto Rating <sup>2</sup>
Dacthal W 75 Fb Goal 2XL	8.0 0.125	Pre Post 2 t. leaf	5.1	0.0	8.0	1.5	10.3	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 0.66	Pre Post 2 t. leaf Post 2 t. leaf	7.3	0.3	0.0	1.3	1.5	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 1.32	Pre Post 2 t. leaf Post 2 t. leaf	2.8	1.3	0.0	0.3	0.5	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 2.64	Pre Post 2 t. leaf Post 2 t. leaf	1.5	1.0	0.0	0.0	0.0	1.5
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0 Fb Outlook 6.0	8.0 0.125 0.33 0.33	Pre Post 2 t. leaf Post 2 t. leaf 14 days later	3.7	0.7	0.0	0.0	0.0	0.1
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0 Fb Outlook 6.0	8.0 0.125 0.66 0.66	Pre Post 2 t. leaf Post 2 t. leaf 14 days later	4.4	0.4	0.0	0.5	1.3	0.1
Dacthal W 75 Fb Goal 2XL Fb Dual Magnum 7.63	8.0 0.125 0.95	Pre Post 2 t. leaf Post 2 t. leaf	3.4	1.1	0.0	1.2	1.3	0.1
LSD (0.05)			6.2	0.9	4.1	ns	3.9	0.4

1 – Pre = post plant preemergence; and Post 2 t. leaf = second true leaf stage of growth

2 – Scale: 0 no crop damage to 10 crop dead

Table 5. Trial No. 2: Number of weeds per 22 ft<sup>2</sup> and phytotoxicity ratings on two dates

Treatment	a.i./A lbs	Application <sup>1</sup>	July 19			Sept 5		
			Nutsedge	Broad leaf	Phyto Rating <sup>2</sup>	Nutsedge	Broad leaf	Phyto Rating <sup>2</sup>
Dacthal W 75 Fb Goal 2XL	8.0 0.125	Pre Post 2 t. leaf	82.0	2.7	0.0	89.0	3.3	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 0.66	Pre Post 2 t. leaf Post 2 t. leaf	2.0	1.7	0.0	2.3	1.7	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 1.32	Pre Post 2 t. leaf Post 2 t. leaf	0.0	0.7	1.0	1.3	1.0	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 2.64	Pre Post 2 t. leaf Post 2 t. leaf	0.0	0.3	1.7	1.3	0.0	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0 Fb Outlook 6.0	8.0 0.125 0.33 0.33	Pre Post 2 t. leaf Post 2 t. leaf 14 days later	0.0	0.7	0.7	1.3	2.7	0.0
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0 Fb Outlook 6.0	8.0 0.125 0.66 0.66	Pre Post 2 t. leaf Post 2 t. leaf 14 days later	0.3	0.3	1.0	0.7	1.0	0.0
Dacthal W 75 Fb Goal 2XL Fb Dual Magnum 7.63	8.0 0.125 0.95	Pre Post 2 t. leaf Post 2 t. leaf	0.3	0.3	1.3	4.3	1.3	0.0
LSD (0.05)			47.1	2.0	1.1	50.6	2.1	n.s.

1 – Pre = post plant preemergence; and Post 2 t. leaf = second true leaf stage of growth

2 – Scale: 0 no crop damage to 10 crop dead

Table 6. Trial No. 2: Yield evaluation on October 3

Treatment	a.i./A lbs	Application <sup>1</sup>	Marketable Yield			Culls		Total Yield		
			Weight T/A	No./A	Mean Bulb (lbs)	Weight T/A	No./A	Weight T/A	No./A	Mean Bulb (lbs)
Dacthal W 75 Fb Goal 2XL	8.0 0.125	Pre Post 2 t. leaf	42.45	82,632.7	1.03	0.58	3,194.9	43.04	85,827.6	1.00
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 0.66	Pre Post 2 t. leaf Post 2 t. leaf	46.88	91,491.4	1.02	0.57	3,594.3	47.46	95,085.7	1.00
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 1.32	Pre Post 2 t. leaf Post 2 t. leaf	43.06	82,995.8	1.04	1.38	11,109.7	44.45	94,105.4	0.94
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0	8.0 0.125 2.64	Pre Post 2 t. leaf Post 2 t. leaf	43.13	80,381.7	1.08	0.52	4,901.3	43.65	85,283.1	1.02
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0 Fb Outlook 6.0	8.0 0.125 0.33 0.33	Pre Post 2 t. leaf Post 2 t. leaf 14 days later	43.56	77,404.6	1.12	0.63	5,373.3	44.19	82,777.9	1.06
Dacthal W 75 Fb Goal 2XL Fb Outlook 6.0 Fb Outlook 6.0	8.0 0.125 0.66 0.66	Pre Post 2 t. leaf Post 2 t. leaf 14 days later	44.34	82,197.0	1.10	0.67	6,680.3	45.02	88,877.4	1.03
Dacthal W 75 Fb Goal 2XL Fb Dual Magnum 7.63	8.0 0.125 0.95	Pre Post 2 t. leaf Post 2 t. leaf	44.73	82,197.0	1.08	0.82	6,680.3	45.56	88,877.4	1.02
LSD (0.05)			n.s.	n.s.	n.s.	0.89	4,722.2	n.s.	n.s.	0.12

1 – Pre = post plant preemergence; and Post 2 t. leaf = second true leaf stage of growth