

2012 Onion Weed Control Trials

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Summary: The trial was conducted on a site with good yellow nutsedge pressure and provided an opportunity to evaluate the effectiveness and safety of various pre and post emergent materials for use on dry bulb onions. All materials were compared with the standard yellow nutsedge treatment: acid fertilizer applied to burn down yellow nutsedge followed by Outlook to inhibit regrowth, as well as the standard general herbicide program: Dacthal, fb Goal Tender and Buctril. Zeus was applied preemergent and post emergent. The preemergent application of Zeus at 2.0 fl oz was weak on pig weed and purslane and did not provide measureable control of yellow nutsedge. However, given the safety at the 2.0 fl oz rate, further research of rates applied preemergent is warranted. Post emergent application of Zeus at 2.0 fl oz provided some control of yellow nutsedge, but was only marginally safe on the onions; although 3.0 and 4.0 fl oz of Zeus provided significant control of yellow nutsedge, these rates were too phytotoxic for use on onions. Final-San-O and Scythe are both fatty acid materials which provide good burn down activity on weeds; however, they do not have preemergence activity and had a lot of weed regrowth following application. In summary at this site, the standard weed control program and the standard yellow nutsedge control program provided the best weed control and yields. Preemergent applications of Zeus at higher rates (e.g. 3-4.0 oz/A) should be researched.

Methods: Trial was conducted in a commercial onion field with a cooperating grower in King City. Each plot was one 80-inch bed wide by 10 feet long and replicated three times in a randomized complete block design. The trial was seeded to the variety 'Tamara' on March 22 and the post plant preemergent (PPE) applications were made on the same day. Two true leaf applications were made on May 1 and third true leaf application was made on May 9. All applications were made with a CO₂ backpack sprayer with two passes of a one-nozzle wand with an 8008E tip at 30 psi applying the equivalent of 70 gallons per acre. The soil at the site was Metz complex with a loamy sand texture. See tables for treatments, rates and evaluations.

Results: There was good broadleaf, grass and nutsedge weed pressure at the site. The first evaluation date on May 1 just measured the effect of the PPE applications at planting (Table 1). Dacthal provided excellent control of the variety of weeds present and Zeus at 2.0 fl oz was weaker on pigweed and purslane. Yellow nutsedge was just starting to germinate on this evaluation date. The May 9 evaluation measured the effect of the 2nd true leaf applications. All materials provided significant weed control on this evaluation date; however, they also provided significant phytotoxicity to the onions as well (Table 2). The May 18 evaluation date measured the impact of the 2nd and 3rd leaf postemergent applications. Dramatic differences in total weeds and weeding time were observed between the untreated control and all other treatments (Table 3). The 7-7-0-7 + Outlook treatment and the postemergent applications of Zeus provided significant control of nutsedge; however, postemergent applications of Zeus were more phytotoxic. The 7-7-0-7 + Outlook treatment had the greatest yield of all the treatments which probably reflects the better nutsedge control in this treatment. Post emergence applications of Zeus at 3.0 and 4.0 fl oz also had reasonably good nutsedge control; however, it was more phytotoxic to the onions and had reduced yield. The lower yield in the untreated control reflected intense weed control in this plot. Zeus at 2.0 fl oz preemergence gave an equivalent yield to the standard Dacthal treatment and this use should be further investigated.

Table 1. Weed (per 3 ft²) on May 1 (only measuring the effect of the post plant preemergent (PPE) applications)

Treatment	Material/A	Timing ¹	Pig weed	Chenos	Purslane	Night-shade	Grasses	Nut sedge	Other Weeds ²	Total weeds
Untreated	----	----	22.0	4.7	13.3	1.3	0.7	1.7	4.0	48.3
Dacthal 6F Fb Goal Tender Fb Buctril	1.33 gals 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	3.7	0.0	0.7	0.3	0.7	0.3	1.3	8.7
Zeus 4 Fb Goal Tender Fb Buctril	2.0 fl oz 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	10.0	1.0	5.3	0.0	0.7	1.7	2.7	22.0
Dacthal 6F Fb Final-San-O	1.33 gals 20% v/v	Pre Post 2 t. leaf	2.3	0.0	1.0	0.0	0.3	1.7	5.3	13.7
Dacthal 6F Fb Scythe	1.33 gals 9% v/v	Pre Post 2 t. leaf	1.0	0.0	0.0	0.7	0.3	4.3	1.7	9.7
Dacthal 6F Fb Zeus 4	1.33 gals 2.0 fl oz	Pre Post 2 t. leaf	3.0	0.0	0.0	0.3	0.0	1.3	1.3	8.0
Dacthal 6F Fb Zeus 4	1.33 gals 3.0 fl oz	Pre Post 2 t. leaf	2.0	0.0	0.0	0.0	0.0	0.7	3.0	6.7
Dacthal 6F Fb Zeus 4	1.33 gals 4.0 fl oz	Pre Post 2 t. leaf	3.7	0.0	0.7	0.0	0.0	3.7	0.7	10.3
Dacthal 6F 7-7-0-7 Fb Goal Tender 4F Fb Outlook 6.0	1.33 gals 72 gals 6.0 oz 14.0 oz	Pre Post 2 t. leaf Post 2 t. leaf Post 2 t. leaf	4.7	0.0	0.7	0.0	0.0	1.7	1.7	11.3
		Pr>treatment	0.0001	0.0147	0.0001	0.0088	0.6875	0.9843	0.0919	0.0001
		LSD (0.05)	4.4	1.8	0.3	0.3	ns	ns	ns	5.5

1 – Pre = post plant preemergent; Post 2 t. leaf = 2nd true leaf application; Post 3 t. leaf = 3rd true leaf application;

2 – Other weeds = heliotrope, perennial pepper weed, mustards, clovers.

Table 2. Weed counts (per 3 ft²) on May 9 (measuring the effect of PPE applications and the 2nd true leaf applications)

Treatment	Material/A	Timing	Phyto-toxicity ¹	Pig weed	Chenos	Purslane	Night-shade	Grasses	Nutsedge	Other Weeds ²	Total weeds
Untreated	----	----	0.7	21.0	3.3	11.3	0.7	0.0	1.7	5.0	43.7
Dacthal 6F Fb Goal Tender Fb Buctril	1.33 gals 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	1.7	0.7	0.0	0.0	0.0	0.7	2.0	0.3	4.7
Zeus 4 Fb Goal Tender Fb Buctril	2.0 fl oz 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	3.0	0.3	0.3	0.0	0.0	0.7	2.0	4.0	8.7
Dacthal 6F Fb Final-San-O	1.33 gals 20% v/v	Pre Post 2 t. leaf	3.0	0.0	0.0	0.0	0.0	0.0	2.0	3.7	5.7
Dacthal 6F Fb Scythe	1.33 gals 9% v/v	Pre Post 2 t. leaf	3.0	0.0	0.0	0.0	0.0	0.0	2.3	0.3	2.7
Dacthal 6F Fb Zeus 4	1.33 gals 2.0 fl oz	Pre Post 2 t. leaf	2.7	0.3	0.0	0.0	0.0	0.0	1.7	0.7	4.7
Dacthal 6F Fb Zeus 4	1.33 gals 3.0 fl oz	Pre Post 2 t. leaf	3.7	0.0	0.0	0.0	0.0	0.3	2.0	1.7	5.0
Dacthal 6F Fb Zeus 4	1.33 gals 4.0 fl oz	Pre Post 2 t. leaf	3.0	0.0	0.0	0.0	0.0	0.0	1.7	0.7	3.3
Dacthal 6F 7-7-0-7 Fb Goal Tender 4F Fb Outlook 6.0	1.33 gals 72 gals 6.0 oz 14.0 oz	Pre Post 2 t. leaf Post 2 t. leaf Post 2 t. leaf	2.7	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.7
		Pr>treatment	0.2091	0.0001	0.0172	0.0001	0.0088	0.6875	0.9843	0.0919	0.0001
		LSD (0.05)	ns	4.4	1.8	0.3	0.3	ns	ns	ns	5.4

1 – scale: 0=no crop damage to 10 crop dead; 2 – other weeds = heliotrope, perennial pepper weed, mustards, clovers.

Table 3. Weed evaluation on May 18 (following PPE and 2nd & 3rd true leaf applications)

Treatment	Material/A	Timing	Weeds/A ¹	Weed Time Hours/A	Nutsedge/A	Phyto-toxicity ²
Untreated	----	----	479,857	222.6	33,544	1.0
Dacthal 6F Fb Goal Tender Fb Buctril	1.33 gals 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	20,693	9.4	14,812	1.0
Zeus 4 Fb Goal Tender Fb Buctril	2.0 fl oz 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	37,465	14.4	21,346	0.7
Dacthal 6F Fb Final-San-O	1.33 gals 20% v/v	Pre Post 2 t. leaf	46,613	16.8	19,822	2.2
Dacthal 6F Fb Scythe	1.33 gals 9% v/v	Pre Post 2 t. leaf	30,495	10.5	27,010	2.3
Dacthal 6F Fb Zeus 4	1.33 gals 2.0 fl oz	Pre Post 2 t. leaf	24,831	9.8	11,762	3.7
Dacthal 6F Fb Zeus 4	1.33 gals 3.0 fl oz	Pre Post 2 t. leaf	14,158	6.7	5,446	6.7
Dacthal 6F Fb Zeus 4	1.33 gals 4.0 fl oz	Pre Post 2 t. leaf	9,148	5.1	871	8.0
Dacthal 6F 7-7-0-7 Fb Goal Tender 4F Fb Outlook 6.0	1.33 gals 72 gals 6.0 oz 14.0 oz	Pre Post 2 t. leaf Post 2 t. leaf Post 2 t. leaf	2,832	2.6	1,307	1.3
		Pr>treatment	0.0001	0.0001	0.0002	0.0001
		LSD (0.05)	95,218	21.5	11,681	1.6

1 – Weeds removed from each plot were counted; 2 – scale: 0=no crop damage to 10 crop dead

Table 4. Onion yield on September 24

Treatment	Material/A	Timing	Nutsedge rating ¹	Yield Tons/A	Yield No. bulbs/A	Mean bulb wt (lbs)
Untreated	----	----	0.0	45.5	103,838	0.87
Dacthal 6F Fb Goal Tender Fb Buctril	1.33 gals 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	0.0	53.3	114,288	0.94
Zeus 4 Fb Goal Tender Fb Buctril	2.0 fl oz 6.0 fl oz 16.0 fl oz	Pre Post 2 t. leaf Post 3 t. leaf	0.0	53.8	104,822	1.04
Dacthal 6F Fb Final-San-O	1.33 gals 20% v/v	Pre Post 2 t. leaf	0.0	46.5	110,761	0.84
Dacthal 6F Fb Scythe	1.33 gals 9% v/v	Pre Post 2 t. leaf	0.0	48.6	120,646	0.80
Dacthal 6F Fb Zeus 4	1.33 gals 2.0 fl oz	Pre Post 2 t. leaf	0.0	42.4	110,323	0.77
Dacthal 6F Fb Zeus 4	1.33 gals 3.0 fl oz	Pre Post 2 t. leaf	1.7	29.4	120,577	0.49
Dacthal 6F Fb Zeus 4	1.33 gals 4.0 fl oz	Pre Post 2 t. leaf	2.7	22.9	86,537	0.54
Dacthal 6F 7-7-0-7 Fb Goal Tender 4F Fb Outlook 6.0	1.33 gals 72 gals 6.0 oz 14.0 oz	Pre Post 2 t. leaf Post 2 t. leaf Post 2 t. leaf	7.0	61.1	117,039	1.05
		Pr>treatment	0.0001	0.0003	0.3030	0.0001
		LSD (0.05)	1.2	12.9	ns	0.18

1 – scale: 0 = no nutsedge control to 10 = nutsedge completely controlled

May 1 – post plant preemergent treatments



1. Untreated



2. Dacthal



3. Zeus 2.0 fl oz

May 9 – following 2nd true leaf post emergent applications



4. Untreated



5. Dacthal



6. Zeus 2.0 fl oz preemergence

May 31 – following all pre and post emergence treatments



7. Dacthal fb Goal & Buctril



8. Zeus 2.0 fl oz preemergence



9. Scythe @ 9% post



9. Zeus 2.0 fl oz post



10. Zeus 3.0 fl oz post



11. Outlook 14.0 fl oz post