2009 Leek Weed Control Study

University of California Cooperative Extension, Monterey County
Richard Smith, Vegetable Crops and Weed Science Farm Advisor

Methods: Trial was conducted in a commercial production field near San Juan Bautista, CA. Each plot was one 40-inch bed wide by 15 feet long and replicated three times in a randomized complete block design. The trial was transplanted on July 17 and the pre transplant applications were made to shaped beds on July 16 (temperature was 68 °F and wind was 1-2 mph from west); two inches of irrigation water was applied immediately post transplant. Post transplant applications were made on July 30 (temperature 73 °F and wind 2-3 mph from west). All applications were made with a CO_2 backpack sprayer with two passes of a one-nozzle wand with an 8008E tip at 30 psi applying the equivalent of 72 gallons per acre. The soil at the site was Sorrento silt loam (organic matter – 0.83%; sand – 56, silt – 28, and clay - 16%). The trial was evaluated for weeds by counting the number of each species. Phytotoxicity was evaluated on a scale of 0-10, hours per acre to weed the various treatments was estimated by timing how long it took to weed each plot and converting the data to acreage. Yield was conducted by harvesting 10 plants from each plot at random and weighing them. See tables for evaluations and dates.

Results: There was moderate weed pressure at the site and the main weeds were hairy nightshade and common purslane. On the August 5 evaluation date all pre and post emergence applications had been made were evaluated for weeds and phytotoxicity. There were 24.7 weeds per 22.5 ft^2 in the untreated control (Table 1). The pretransplant materials, Dacthal, Prefar, Prowl H2O and Goal Tender at 0.25 lb a.i./A all had less than 8.3 weeds per 22.5 ft^2. Pre transplant applications of Goal Tender at 0.50 and 0.75 lb a.i./A had 1.0 and 0.3 weeds per 22.5 ft^2, respectively. Post transplant applications of Goal Tender at 0.125, 0.188 and 0.25 lb a.i./A had the lowest weed counts with 0.3, 0.0 and 0.0 weeds per plot, respectively. Preemergence applications of Goal Tender at 0.50 and 0.75 lb a.i./A took fewer hours per acre to weed than the 0.25 lb a.i./A rate. All rates of Goal Tender applied post emergence had the lowest time per acre to weed. All treatments had acceptable phytotoxicity ratings on the August 5 and 19 and the September 24 evaluation dates, however the post emergence applications of Goal Tender at the highest rates always had the highest ratings (Table 2). There were no significant differences in the yield of leeks in any of the treatments.

Photos on August 5

Untreated

Goal Tender Pretransplant
0.25 lb a.i./A

Goal Tender Pretransplant
0.75 lb a.i./A

Goal Tender Post transplant
0.125 lb a.i./A

Goal Tender Post Transplant
0.188 lb a.i./A

Untreated

Dacthal Pretransplant
8.00 lbs a.i./A

Goal Tender Pretransplant
0.25 lb a.i./A

Table 1. Weed counts (per 22.5 sq. ft) and time of weeding evaluation on August 5.

	Treatment	Material/A	Lbs a.i./A	Application Timing	Common Purslane	Hairy night-shade	Lambs-quarter	Sow Thistle	Little Mallow	Total Weeds	Weed time hr/A
1	Untreated	----	----	----	9.0	9.3	4.0	0.7	1.7	24.7	9.8
2	Dacthal 6F	1.33 gals	8.0	Pre transplant	0.7	3.7	0.3	0.0	2.3	7.0	4.0
3	Prefar 6E	6.0 quarts	6.0	Pre transplant	1.0	4.0	0.3	0.0	1.0	6.3	3.8
4	Prowl H2O	33.7 oz	1.00	Pre transplant	2.0	3.0	2.0	0.7	0.7	8.3	4.2
5	Goal Tender 4F	8.0 oz	0.25	Pre transplant	0.0	1.3	4.7	0.3	0.7	7.0	3.2
6	Goal Tender 4F	16.0 oz	0.50	Pre transplant	0.0	0.7	0.3	0.0	0.0	1.0	1.8
7	Goal Tender 4F	24.0 oz	0.75	Pre transplant	0.0	0.0	0.0	0.3	0.0	0.3	1.7
8	Goal Tender 4F	4.0 oz	0.125	Post transplant	0.0	0.0	0.0	0.3	0.0	0.3	1.5
9	Goal Tender 4F	6.0 oz	0.188	Post transplant	0.0	0.0	0.0	0.0	0.0	0.0	1.5
10	Goal Tender 4F	8.0 oz	0.25	Post transplant	0.0	0.0	0.0	0.0	0.0	0.0	1.4
	Pr>Treat				<0.001	<0.001	2.570	0.594	0.012	<0.001	<0.001
	Pr>Block				0.856	0.527	0.237	0.439	0.201	0.667	0.717
	$LSD_{0.05}$				2.9	3.5	NS	NS	1.3	7.7	1.7

Table 2. Phytotoxicity ratings on three dates and yield evaluation on September 24, 2009.

Treatment	Material/A	Lbs a.i./A	Application Timing	Phyto[1] Aug 5	Phyto[1] Aug 19	Phyto[1] Sept 24	Weight/10 plants (lbs)	Grams per plant
Untreated	----	----	----	0.0	0.0	0.7	3.27	148
Dacthal 6F	1.33 gals	8.0	Pre transplant	0.0	0.0	0.0	3.65	166
Prefar 6E	6.0 quarts	6.0	Pre transplant	0.0	0.0	0.0	3.49	158
Prowl H2O	33.7 oz	1.00	Pre transplant	0.0	0.0	0.0	3.62	164
Goal Tender 4F	8.0 oz	0.25	Pre transplant	0.3	0.0	0.0	3.50	159
Goal Tender 4F	16.0 oz	0.50	Pre transplant	0.0	0.0	0.0	4.06	184
Goal Tender 4F	24.0 oz	0.75	Pre transplant	0.0	0.7	0.0	3.87	176
Goal Tender 4F	4.0 oz	0.125	Post transplant	1.7	1.3	0.0	3.55	161
Goal Tender 4F	6.0 oz	0.188	Post transplant	2.0	1.7	0.0	3.44	156
Goal Tender 4F	8.0 oz	0.25	Post transplant	2.0	2.0	2.0	3.15	143
Pr>Treat				<0.001	<0.001	0.001	0.272	0.272
Pr>Block				1.000	0.737	0.387	0.068	0.068
$LSD_{0.05}$				0.5	0.6	0.8	NS	NS

1 – Phytotoxicity rating scale: 0 = no crop damage to 10 = crop dead (a value >2.0 is not considered acceptable)