Celery Weed Control Studies 2009

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Summary: This trial was conducted on a loamy sand soil which gave us a good opportunity to evaluate the safety of the various herbicides on a worst case scenario. All materials provided good weed control for 25 days following transplanting; however, pretransplant applications of Chateau at 3.0 and 6.0 ounces, Goal Tender at 8.0 fl. ounces, and Caparol at 3.0 pint/A provided better weed control than Prowl H2O at 1.58 pint and Nortron at 48 fl ounces/A. Post transplant applications of Chateau at 3.0 and 6.0 ounces/A provided excellent weed control, but were too phytotoxic to the celery and had lower mean head weights at harvest. A summary of three years of trials indicates that pretransplant applications of Chateau on sandy have good safety on this crop on loam sand and sandy loam soils.

Methods: Trial was conducted in cooperation with Mike Kennedy at Pura Farms in Greenfield. Pretransplant applications were made on July 28, and the field was transplanted and watered the same day. Over-the-top post transplant applications were made to plots immediately adjacent to the pretransplant treatments that had been just transplanted. Irrigation water was applied to the plants approximately 2 hours following the post transplant treatments. Soil type was Metz loamy sand (pH 7.7; organic matter 0.84%; sand 70%, silt 19% and clay 11%). and the variety was Sonora. All materials were applied with 2 passes of a one tip wand with an 8008E nozzle at 30 psi applying the equivalent of 68 GPA. Each plot was one 40-inch bed wide by 10 feet long and was replicated three times in a randomized complete block design. Weed evaluations were conducted on August 13 and August 19 (the field had been cultivated on August 18). Following these weed evaluations, the field was treated with Caparol and no further weed evaluations were conducted. Harvest evaluations were conducted on November 9 by harvesting and weighing 15 head per plot.

Results: There was good weed pressure at the site and, on the first evaluation date, August 13 (17 days after transplanting), there were 18.7 weeds per plot in the untreated (Table 1). All treatments except Prowl H2O at 1.58 pints and Nortron at 48 ounce/A provided complete weed control on this evaluation date. There was slight phytotoxicity in the pretransplant applications of Chateau and Goal Tender treatments. However, there was significant phytotoxicity in the two post transplant applications of Chateau. The field was cultivated prior to the second evaluation on August 19 (23 days after transplanting), and weed counts were made of weeds in the uncultivated bands around the seedline. There was complete weed control in all treatments except Prowl H2O at 1.58 pints and Nortron at 48 ounce/A (Table 2). Slight phytotoxicity was still evident in the two pretransplant applications of Chateau and Goal Tender, but there was significant phytotoxicity in the post transplant applications of Chateau. All treatments reduced weeding time over the untreated control (Table 3). All pretransplant treatments had no visible phytotoxicity on September 25 (60 days after transplanting); however, the two post transplant applications of Chateau still had obvious signs of stunting. There was also significantly lower mean head weight in the two post transplant applications of Chateau in the yield evaluations on November 9. The pretransplant application of Chateau at 3.0

ounces/A also had lower yield than the untreated control. However, over the past three years the yield of celery treated with Chateau on sandy soils has been mostly comparable to the untreated control. However, over the past three years the yield of celery treated with Chateau on sandy soils has been comparable to the untreated control indicating good safety (Table 4).

Plot over view

Untreated on left post transplant of 3.0 oz/A of Chateau on right

3.0 oz/A of Chateau post transplant

Untreated

Table 1. Weed counts (no./20 ft^2) on August 13

Treatments	a.i./A	Material/A	Timing	Malva	Cheno	Sow thistle	Purslane	Other weeds	Total weeds	Phyto[1]
Untreated	----	----	----	3.0	4.0	7.7	2.3	0.7	18.7	0.0
Chateau 51WG	0.094	3.0 oz	Pre transplant	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Chateau 51WG	0.188	6.0 oz	Pre transplant	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Prowl H2O 3.8	0.75	1.58 pints	Pre transplant	0.7	0.0	1.7	0.7	0.0	3.0	0.0
GoalTender 4F	0.25	8.0 fl oz	Pre transplant	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Nortron 4SC	1.25	48 fl oz	Pre transplant	1.0	0.7	1.7	0.3	0.3	4.0	0.0
Caparol 4L	1.5	3.00 pints	Pretransplant	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chateau 51WG	0.094	3.0 oz	Post transplant	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Chateau 51WG	0.188	6.0 oz	Post transplant	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Pr>Treat				0.120	0.003	0.015	0.309	0.57	0.006	<0.001
Pr>Block				0.523	0.390	0.432	0.485	0.576	0.419	0.177
$LSD_{0.05}$				NS	1.8	4.0	NS	NS	8.90	0.60

1 – Scale: 0 = no crop damage to 10 = crop dead

Table 2. Weed counts (no./5 ft^2) on August 19 and yield evaluations on November 9.

Treatments	a.i./A	Material/A	Timing	Malva	Cheno	Sow thistle	Purslane	Other weeds	Total weeds	Phyto[1]
Untreated	----	----	----	0.3	1.7	0.7	0.3	0.3	4.3	0.0
Chateau 51WG	0.094	3.0 oz	Pre transplant	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Chateau 51WG	0.188	6.0 oz	Pre transplant	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Prowl H2O 3.8	0.75	1.58 pints	Pre transplant	0.3	0.0	0.0	0.0	0.0	0.7	0.0
GoalTender 4F	0.25	8.0 fl oz	Pre transplant	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Nortron 4SC	1.25	48 fl oz	Pre transplant	0.3	0.0	0.0	0.0	0.0	0.3	0.0
Caparol 4L	1.5	3.00 pints	Pretransplant	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chateau 51WG	0.094	3.0 oz	Post transplant	0.0	0.0	0.0	0.0	0.0	0.0	2.3
Chateau 51WG	0.188	6.0 oz	Post transplant	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Pr>Treat				0.473	<0.001	0.001	0.473	0.473	<0.001	<0.001
Pr>Block				0.039	0.390	0.390	0.390	0.390	0.118	0.800
$LSD_{0.05}$				NS	0.3	0.3	NS	NS	0.9	0.7

1 – Scale: 0 = no crop damage to 10 = crop dead

Table 3. Weed time evaluations on August 19, phytotoxicity on September 25 and yield evaluations on November 9.

Treatments	a.i./A	Material/A	Timing	Weed time Hrs/A	Phyto[1]	Yield mean head (lbs)	Yield marketable heads (tons/A)
Untreated	----	----	----	7.0	0.0	2.1	62.7
Chateau 51WG	0.094	3.0 oz	Pre transplant	3.1	0.0	1.8	55.5
Chateau 51WG	0.188	6.0 oz	Pre transplant	3.1	0.0	2.0	61.0
Prowl H2O 3.8	0.75	1.58 pints	Pre transplant	3.5	0.0	2.1	61.7
GoalTender 4F	0.25	8.0 fl oz	Pre transplant	2.9	0.0	2.0	58.0
Nortron 4SC	1.25	48 fl oz	Pre transplant	3.1	0.0	2.0	61.8
Caparol 4L	1.5	3.00 pints	Pretransplant	3.1	0.0	2.1	62.9
Chateau 51WG	0.094	3.0 oz	Post transplant	2.9	3.7	1.6	47.9
Chateau 51WG	0.188	6.0 oz	Post transplant	2.9	3.7	1.6	45.9
Pr>Treat				<0.001	<0.001	0.011	0.073
Pr>Block				0.416	0.134	0.787	0.555
$LSD_{0.05}$				0.8	0.4	0.3	NS

1 – Scale: 0 = no crop damage to 10 = crop dead

Table 4. Comparative yield of Chateau on light soils over three years.

Treatments	Material/A	2007	2008	2009
Chateau 51WG	3.0 oz	----	----	85.7
Chateau 51WG	6.0 oz	102.5	97.8	95.2
Chateau 51WG	8.0 oz	102.9	----	----