

## Celery Weed Control Study 2016

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**Methods:** Two trials were conducted in commercial celery fields with cooperating growers in the Salinas Valley in 2016: *Trial No 1*. This trial was conducted west of Salinas on a site with Clear Lake clay soil (pH = 6.14; organic matter = 3.31; percent sand, silt and clay = 25, 34, 41). The variety was ‘Conquistador’. The field was transplanted on April 7 and at-transplant applications (over the top of transplants) were made within 2 hours after transplanting prior to sprinkler irrigation used to set the plants and incorporate applied herbicides. Foliar broadcast treatments were applied on May 2 (25 days post-transplant). Each plot was one 40-inch bed wide by 7 feet long and replicated three times in a randomized complete block design. All treatments were applied with 2 passes of a one tip wand with an 8008EVS nozzle at 30 psi applying the equivalent of 80 GPA. Weed and phytotoxicity evaluations were made evaluating the at-transplant and foliar applications. The phytotoxicity scale was 0 = no crop damage to 10 = crop dead. Harvest evaluations were made by harvesting 12 heads per plot were made on July 8. *Trial No 2*. This trial was conducted east of King City on a site with Rincon loam soil (pH = 7.81; organic matter = 1.84; percent sand, silt and clay = 30, 40, 30). The variety was ‘Matador’. The field was transplanted on April 28 and at-transplant applications (over the top of transplants) were made within 2 hours after transplanting prior to sprinkler irrigation used to set the plants and incorporate applied herbicides. Foliar broadcast treatments were applied on June 14 (47 days post-transplant). Each plot was one 40-inch bed wide by 7 feet long and replicated three times in a randomized complete block design. All treatments were applied with 2 passes of a one tip wand with an 8008EVS nozzle at 30 psi applying the equivalent of 80 GPA. Weed and phytotoxicity evaluations were made evaluating the at-transplant and foliar applications. The phytotoxicity scale was 0 = no crop damage to 10 = crop dead. Harvest evaluations were made by harvesting 12 heads per plot were made on August 2. See tables for treatments, evaluations and dates.

**Results:** *Trial No. 1*. Weed pressure was light at this site and only one weed species, chickweed, was present. Phytotoxicity from at-transplanting applications (evaluated on May 2) of Zidua increased with increasing rate (Table 1). All rates of Zidua above 0.027 lbs a.i./A provided significant weed control. Significant phytotoxicity of at-transplanting applications of Zidua were still evident on the May 11 evaluation date. The foliar applications were safe on celery, but did not provide any burn down control of weeds. The 0.133 lbs a.i./A rate of Zidua applied at-transplanting significantly reduced the yield of celery; broadcast foliar applications of Zidua did not reduce the yield of celery. *Trial No. 2*. At-transplanting applications of Zidua caused significant damage to celery and was worse with increasing rate. Damage was worse at this site than Trial No. 1, presumably due to the lighter soil texture. All rates of Zidua provided significant weed control. Foliar applications of Zidua did not have visible phytotoxicity on the June 30 evaluation date, and did not provide post emergence weed control. The yield of celery was reduced by all at-transplanting applications of Zidua, but not by foliar applications.

Table 1. Trial No. 1. Number of weeds and phytotoxicity ratings on May 2 (after at-transplanting application) and May 11 (after foliar application) and yield

Treatments	Lbs a.i./A	Material/A	Timing	May 2		May 11		July 8
				Phyto	Chickweed No/m <sup>2</sup>	Phyto	Chickweed No/m <sup>2</sup>	Yield Tons/A
Untreated	---	---	---	0.0	0.6	0.0	1.3	43.41
Zidua 85WG	0.027	0.5 oz	At-transplant	1.0	0.4	1.3	0.0	45.23
Zidua 85WG	0.053	1.0 oz	At-transplant	2.0	0.0	2.0	0.0	45.87
Zidua 85WG	0.106	2.0 oz	At-transplant	3.7	0.0	4.0	0.0	41.06
Zidua 85WG	0.133	2.5 oz	At-transplant	5.0	0.0	6.0	0.0	35.41
Zidua 85WG MOS <sup>1</sup> +AMS <sup>2</sup>	0.106	2.0 oz	Foliar broadcast	0.0	0.6	0.0	0.7	45.31
Zidua 85WG MOS <sup>1</sup> +AMS <sup>2</sup>	0.213	4.0 oz	Foliar broadcast	0.0	0.2	0.3	0.7	44.16
Caparol	1.0	2 pt	Foliar broadcast	0.0	0.4	0.0	0.0	43.76
Pr>F treat				<0.0001	0.7185	<0.0001	0.1300	0.134
LSD <sub>0.05</sub>				0.8	ns	0.9	ns	7.41

1 – methylated seed oil rate = 1% v/v; 2 – ammonium sulfate = 1% wt/v (lbs/gallon)

Table 2. Trial No. 2. Number of weeds (per m<sup>2</sup>) and phytotoxicity ratings on May 18 (after at-transplanting application) and June 30 (after foliar application) and yield

Treatments	Lbs a.i./A	Timing	May 18						May 31	June 30		Aug 2
			Phyto	Purse-lane	Malva	Night shade	Lambs quarter	Total weeds	Phyto	Phyto	Total weeds	Yield T/A
Untreated	---	---	0.0	3.9	0.0	0.0	0.0	3.9	0.0	0.0	1.5	52.71
Zidua 85WG	0.027	At-transplant	2.7	0.2	0.2	0.0	0.0	0.5	2.7	1.7	0.0	37.40
Zidua 85WG	0.053	At-transplant	4.0	0.0	0.0	0.0	0.0	0.0	4.7	5.0	0.0	24.71
Zidua 85WG	0.106	At-transplant	7.0	0.0	0.0	0.0	0.0	0.0	7.3	7.3	0.0	9.65
Zidua 85WG	0.133	At-transplant	9.0	0.0	0.0	0.0	0.0	0.0	8.7	8.3	0.0	5.71
Zidua 85WG MOS <sup>1</sup> +AMS <sup>2</sup>	0.106	Foliar broadcast	0.0	3.3	0.0	0.5	0.5	4.3	0.0	0.0	1.8	52.25
Zidua 85WG MOS <sup>1</sup> +AMS <sup>2</sup>	0.213	Foliar broadcast	0.0	3.3	0.5	0.5	0.5	4.8	0.0	0.0	1.1	48.06
Caparol	1.0	Foliar broadcast	0.0	1.5	0.0	0.2	0.2	2.0	0.0	0.0	0.0	53.41
Pr>F treat			<0.0001	0.0160	0.0788	0.4316	0.4316	0.0179	<0.0001	<0.0001	0.0014	<0.0001
LSD <sub>0.05</sub>			0.9	2.6	0.3	ns	ns	3.2	0.58	0.86	0.9	5.76

1 – methylated seed oil rate = 1% v/v; 2 – ammonium sulfate = 1% wt/v (lbs/gallon)

Photos from trial No. 2 on May 18 (20 days after at-transplant treatments):



Photo 1. Untreated (left), Zidua 0.27 lb a.i./A at transplant (right)



Photo 2. Zidua 1.33 lb a.i./A at transplant (left), untreated (right)



Photo 3. Close up of Zidua 0.27 lb a.i./A



Photo 4. Close up of untreated for comparison with Zidua 0.27 lb a.i./A