

## **Weed Control in Celery and Spinach with Dual Magnum®**

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### **Introduction**

Celery has a good set of herbicides available such as linuron (Lorox) and prometryn (Caparol) that control most weeds in celery. However, yellow nutsedge is difficult to control in celery with existing herbicides. We found that *S*-metolachlor (Dual Magnum), applied prior to transplanting, controlled yellow nutsedge and was safe on celery.

In contrast, spinach has few herbicide options for control of broadleaf weeds. Cycloate (RoNeet), is the only herbicide available for broadleaf weed control in fresh market spinach. Dual Magnum also appears to be another herbicide option for spinach.

### **Methods**

Celery field studies were conducted near Salinas and Oxnard, CA during 2002 and 2003. Pre-plant (PRE) applications of Dual Magnum 7.6 E were made at 0.5, 0.67, and 1 pt/A. About two weeks after celery was transplanted, post-plant applications of Lorox 50 DF at 2 lb product/A and Caparol 4 F at 3 pt/A were made. The trials utilized a randomized complete block design and treatments were replicated 3 to 4 times. The plots were one 40-inch bed wide by 20 ft. long. Weed densities and crop injury estimates (0 = no injury, 10 = dead) were measured early in each growing season. At commercial maturity, celery was harvested and graded by marketable and non-marketable stalks, and fresh weights were measured.

Ten spinach field studies were conducted near Salinas, CA during 1999 and 2000. Treatments included post-plant preemergence applications of Dual Magnum 7.6 E at 0.5, 0.67, and 1 pt/A and the commercial standard RoNeet 6 E at 4 pt/A. The trial designs and assessments were similar to those used for celery above. At commercial maturity, spinach was harvested and fresh weights were measured.

### **Results**

Visual injury symptoms and marketable yields indicated that Dual Magnum was safe on celery (Tables 1&2). Nutsedge control in Dual Magnum treatments was better than Lorox or Caparol (Table 1). Dual Magnum at 0.5 and 0.67 pt/A treatments were safe on spinach, but the 1 pint treatment injured spinach in one trial (Table 3). Dual Magnum provided better control of

common chickweed than RoNeet, and Dual Magnum and RoNeet both provided good control of nettle leaf goosefoot and shepherd's-purse. Requests for special local needs registrations for Dual Magnum on celery and spinach have been submitted to the California Department of Pesticide Regulation.

Table 1. Celery visual crop injury and nutsedge control resulting from Dual Magnum in two trials at Salinas in 2002 and 2003, and visual crop injury in one trial at Oxnard in 2002.

Herbicide	Rate	Crop injury			Nutsedge control	
		Salinas 02	Salinas 03	Oxnard 02	Salinas 02	Salinas 03
		----- 0 = no injury, 10 = dead -----			----- % -----	
Dual Mag.	0.5 pt	0.1	0.4	1.0	94	88
Dual Mag.	0.67 pt	0	0.3	1.7	93	91
Dual Mag.	1.0 pt	0.1	0.6	1.0	96	98
Lorox	2 lbs pr/A	0.3	0.1	0.5	46	39
Caparol	3.0 pt/A	0.1	0	1.2	0	30
Check	0	0	0.2	0	0	0
LSD 0.05		NS	NS	NS	12	24

Table 2. Marketable celery yield at Salinas in 2003 and at Oxnard in 2002 resulting from Dual Magnum treatments.

Herbicide	Rate	Marketable yield	
		Salinas 03	Oxnard 02
		----- lb/A -----	
Dual Mag.	0.5 pt	162,171	75,608
Dual Mag.	0.67 pt	179,449	70,720
Dual Mag.	1.0 pt	177,606	67,558
Lorox	2 lbs pr/A	168,194	71,295
Caparol	3.0 pt/A	185,587	66,983
Check	0	186,817	63,677
LSD 0.05		NS	NS

Table 3. Spinach visual crop injury and yield resulting from Dual Magnum treatments in ten trials in coarse to medium or coarse soils at Salinas in 1999 and 2000.

Herbicide	Rate	Crop injury			Yield	
		Coarse-med. <sup>1</sup>	Coarse 1	Coarse 2	Coarse-med. <sup>2</sup>	Coarse
		----- 0 = no injury, 10 = dead -----			----- lb/A -----	
Dual Mag.	0.5 pt	0.3	0.6	0.4	13,082	11,662
Dual Mag.	0.67 pt	0.9	1.0	0.5	13,894	11,418
Dual Mag.	1.0 pt	1.0	1.9	1.5	13,912	8,889
RoNeet	4 pt/A	0.6	1.0	1.5	13,028	12,478
LSD 0.05		0.4	0.7	0.8	2,022	3,427

<sup>1</sup> Data pooled from six locations

<sup>2</sup> Data pooled from four locations

Table 4. Weed control in spinach provided by Dual Magnum treatments.

Herbicide	Rate	Weed control		
		Chickweed	Goosefoot	Shepherd's-purse
		----- % -----		
Dual Mag.	0.5 pt	81	98	96
Dual Mag.	0.67 pt	82	97	88
Dual Mag.	1.0 pt	99	99	100
RoNeet	4 pt/A	17	96	98
LSD 0.05		46	23	34