

2011 Spinach Weed Control Trials

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Methods: *Trial No. 1:* The trial was conducted south of King City. Applications were made post planting on September 13 immediately following planting and incorporated into the soil with the germination water on September 14. The soil type was Mocho silt loam and the variety was Mississippi. *Trial No. 2:* The trial was east of San Juan Bautista. Applications were made post planting on September 16 immediately following planting and incorporated into the soil with the germination water on September 17. The soil type was Sorrento silty clay loam and the variety was Avenger. *Trial No. 3:* The trial was conducted north west of Salinas. Applications were made post planting on September 21 and incorporated into the soil with the germination water on September 22. The soil type at the site was Cropley silty clay and the variety was El Real. **Details common to all trials:** Each plot was one 80-inch bed wide by 10 feet long and randomized three times in a randomized complete block design. All treatments were applied with a backpack CO₂ applicator with 4 passes of a one-nozzle wand with an 8008E tip pressurized at 30 psi applying the equivalent of 66 gallons of water per acre.

Results: *Trial No. 1:* All treatments had fewer weeds than the untreated control on Sept. 26 (Table 1). The combination of RoNeet at 2.0 pints/A plus Dual Magnum at 0.66 pint/A had no weeds. RoNeet at 2.0 pints, Dual Magnum at 0.17 and 0.33 pints/A as well as the combination of RoNeet at 2.0 pints/A plus Dual Magnum at 0.17 pint/A had phytotoxicity ratings below 2.0* on September 26, indicating acceptable crop damage. However, the combination of RoNeet and Dual Magnum at 0.17 pint/A had a phytotoxicity rating greater than 2.0 on October 3. Weeding time of all treatments was less than the untreated control and RoNeet plus Dual Magnum at 0.33 or 0.66 had the lowest weeding time. Yield was reduced by all herbicide treatments; RoNeet at 2.0 pints, and Dual Magnum at 0.17 and 0.33 pints/A had the lowest reduction in yield. The combination of RoNeet plus Dual Magnum had greater yield reduction than Dual Magnum alone at the same rate. *Trial No. 2:* There were no weeds at this site. Phytotoxicity was at acceptable levels in the RoNeet at 2.0 pints/A and the Dual Magnum at 0.17 and 0.33 pints/A (Table 2). RoNeet at 2.0 pints/A plus Dual Magnum at 0.17 pint/A also had low phytotoxicity rating. All herbicide treatments reduced the yield of spinach; RoNeet at 2.0 pints/A and Dual Magnum at 0.17 pint/A reduced the yield the least. The combination of RoNeet plus Dual Magnum had greater yield reduction than Dual Magnum alone at the same rate. *Trial No. 3:* Weed pressure was light at this site, but all treatments had lower weeds per plot than the untreated control (Table 3). Phytotoxicity ratings were lowest in the RoNeet at 2.0 pints/A, Dual Magnum at 0.17 and 0.33 pints/A and the combination of RoNeet plus Dual Magnum at 0.17 pint/A. All herbicide treatments reduced the yield of spinach; RoNeet at 2.0 pints/A and Dual Magnum at 0.17 pint/A reduced the yield the least. The combination of RoNeet plus Dual Magnum had greater yield reduction than Dual Magnum alone at the same rate. **Summary of the three trials:** All herbicide treatments had fewer weeds than the untreated control (Table 4). Phytotoxicity ratings were lowest in the RoNeet at 2.0 pints/A, Dual Magnum at 0.17 and 0.33 pints/A and the combination of RoNeet plus Dual Magnum at 0.17 pint/A. All herbicide treatments reduced the yield of spinach; RoNeet at 2.0 pints/A and Dual Magnum at 0.17 pint/A reduced the yield the least. The combination of RoNeet plus Dual Magnum had greater yield reduction than Dual Magnum alone at the same rate.

* Phytotoxicity ratings less than 2.0 are assumed to have acceptable crop damage from the herbicide application

Table 1. Trial No. 1. Weed and phytotoxicity ratings and harvest evaluations

Treatments	lbs a.i./A	Material/A	September 26				October 3			October 10	
			Purslane (6 ft ²)	Shepherd's Purse (6 ft ²)	Total Weeds (6 ft ²)	Phyto ¹	Phyto	Total Weeds (1 m ²)	Weed time (hrs/A)	Harvest yield (tons/A)	Yield decrease ² (percent)
Untreated	---	---	15.33	3.00	18.67	0.00	0.00	10.67	86.93	9.38	---
RoNeet Dual Magnum	1.5 0.0	2.0 pint 0.0	6.33	1.33	8.33	1.00	0.67	2.00	59.20	8.26	11.94
RoNeet Dual Magnum	0.0 0.158	0.0 0.17 pint	4.33	0.00	4.67	1.00	0.33	3.33	65.95	8.55	8.88
RoNeet Dual Magnum	0.0 0.315	0.0 0.33 pint	2.67	0.00	3.00	1.17	1.67	1.00	52.46	8.65	7.81
RoNeet Dual Magnum	0.0 0.63	0.0 0.66 pint	0.00	0.00	0.00	2.50	2.33	0.00	45.71	7.14	23.91
RoNeet Dual Magnum	1.5 0.158	2.0 0.17 pint	0.00	0.00	0.33	1.67	2.33	0.33	46.09	7.78	17.03
RoNeet Dual Magnum	1.5 0.315	2.0 0.33 pint	0.33	0.00	0.67	2.33	3.00	0.00	39.34	7.64	18.58
RoNeet Dual Magnum	1.5 0.63	2.0 0.66 pint	0.00	0.00	0.00	4.00	4.00	0.00	28.10	4.82	48.64
		Pr>treatment	0.001	0.048	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	
		Pr>block	0.969	0.801	0.974	0.907	0.134	0.074	0.646	0.61	
		LSD0.05	6.00	1.99	7.90	0.60	0.90	3.60	13.50	1.062	

1 – phytotoxicity rating scale: 0 = no crop damage to 10 crop dead; 2 – yield decrease relative to the unsprayed control

Table 2. Trial No. 2. Weed and phytotoxicity ratings and harvest evaluations

Treatments	lbs a.i./A	Material/A	Sept 30	October 11	
			Phyto ¹	Harvest yield (tons/A)	Yield decrease ² (percent)
Untreated	---	---	0.0	4.3	---
RoNeet Dual Magnum	1.5 0.0	2.0 pint 0.0	0.8	3.7	12.8
RoNeet Dual Magnum	0.0 0.158	0.0 0.17 pint	0.8	3.5	18.7
RoNeet Dual Magnum	0.0 0.315	0.0 0.33 pint	2.0	2.6	38.1
RoNeet Dual Magnum	0.0 0.63	0.0 0.66 pint	3.3	1.6	62.4
RoNeet Dual Magnum	1.5 0.158	2.0 0.17 pint	2.2	2.3	45.4
RoNeet Dual Magnum	1.5 0.315	2.0 0.33 pint	3.2	1.9	56.8
RoNeet Dual Magnum	1.5 0.63	2.0 0.66 pint	3.7	1.2	73.1
		Pr>treatment	<0.001	<0.001	
		Pr>block	0.033	1.751	
		LSD _{0.05}	0.9	0.8	

1 – phytotoxicity rating scale: 0 = no crop damage to 10 crop dead;

2 – yield decrease relative to the unsprayed control

Table 3. Trial No. 3. Weed and phytotoxicity ratings and harvest evaluations

Treatments	lbs a.i./A	Material/A	October 6					October 25	
			Sow Thistle (20 ft ²)	Clover (20 ft ²)	Chick- Weed (20 ft ²)	Total Weeds (20 ft ²)	Phyto ¹	Harvest yield (tons/A)	Yield decrease ² (percent)
Untreated	---	---	1.3	0.7	0.7	3.0	0.0	4.4	---
RoNeet Dual Magnum	1.5 0.0	2.0 pint 0.0	1.0	0.0	0.0	1.0	0.0	4.0	9.6
RoNeet Dual Magnum	0.0 0.158	0.0 0.17 pint	1.0	0.0	0.0	1.3	0.2	4.0	8.8
RoNeet Dual Magnum	0.0 0.315	0.0 0.33 pint	0.0	0.0	0.0	0.0	0.7	3.0	32.8
RoNeet Dual Magnum	0.0 0.63	0.0 0.66 pint	0.0	0.0	0.0	0.0	2.5	1.8	58.1
RoNeet Dual Magnum	1.5 0.158	2.0 0.17 pint	0.3	0.0	0.0	0.3	1.0	3.5	21.2
RoNeet Dual Magnum	1.5 0.315	2.0 0.33 pint	0.0	0.0	0.0	0.0	2.3	2.5	43.2
RoNeet Dual Magnum	1.5 0.63	2.0 0.66 pint	0.0	0.0	0.0	0.0	3.7	1.9	55.8
		Pr>treatment	0.006	NA	NA	<0.001	<0.001	<0.001	
		Pr>block	0.260	NA	NA	0.260	0.947	0.002	
		LSD _{0.05}	0.8	NA	NA	0.8	0.8	1.1	

1 – phytotoxicity rating scale: 0 = no crop damage to 10 crop dead; 2 – yield decrease relative to the unsprayed control

Table 4. Summary of weed control, phytotoxicity, yield and treatment impact on yield

Treatments	lbs a.i./A	Material/A	Weeds per m ²	Phyto ¹	Yield tons/A	Yield decrease ² (percent)
Untreated	---	---	10.36	0.00	6.02	0.00
RoNeet Dual Magnum	1.5 0.0	2.0 pint 0.0	2.06	0.61	5.32	11.45
RoNeet Dual Magnum	0.0 0.158	0.0 0.17 pint	3.34	0.67	5.35	12.13
RoNeet Dual Magnum	0.0 0.315	0.0 0.33 pint	0.90	1.28	4.75	26.26
RoNeet Dual Magnum	0.0 0.63	0.0 0.66 pint	0.00	2.78	3.53	48.13
RoNeet Dual Magnum	1.5 0.158	2.0 0.17 pint	0.39	1.61	4.53	27.89
RoNeet Dual Magnum	1.5 0.315	2.0 0.33 pint	0.00	2.61	4.00	39.52
RoNeet Dual Magnum	1.5 0.63	2.0 0.66 pint	0.00	3.78	2.64	59.17

1 – phytotoxicity rating scale: 0 = no crop damage to 10 crop dead;

2 – yield decrease relative to the unsprayed control

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