Preemergence Weed Control Trials in Peppers

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Summary: This year's trial indicated that all pretransplant herbicide treatments provided moderate early season weed control. Matrix provided the best early season weed control but was phytotoxic to the peppers. Layby applications of Dacthal and Dual Magnum did not provide significant weed control into August; however, post directed sprays of V-10142 provided good late season weed control. All herbicides appeared to reduce yield to some degree and Matrix and Sandea reduced yield below the other herbicides. These studies indicate that late season weed control in peppers continues to be a very difficult area. Unfortunately layby applications of Dual and Dacthal did not provide late season weed control, but V-10142 show promise for reducing late season weed pressure.

Methods: The following trial was established in cooperation with Peter Iverson near King City. Peppers were transplanted on May 29. Pretransplant applications were made on May 28. Layby applications were made on July 2 and post directed applications were made on June 28 (see Table for details). Each plot was one 40-inch bed wide by 20 feet long and replicated four times in a randomized complete block design. Pretransplant treatments were applied to the entire bed in 74 gallons of water per acre with two passes of 1-8008E teejet nozzle at 30 psi. Layby and post directed applications were made with directed spray to the base of the plant using two passes of a one nozzle wand with an 8008E teejet nozzle per seed line at 30 psi applying 148 gallons of water per acre. Yield was conducted on October 22 by harvesting a 10 foot strip in the middle of each plot and separating red, green, turning and culled fruit. All fruit was counted and weighted. Soil type = Lockwood gravelly loam (pH = 7.2; % sand – 55, silt – 29 and clay – 16). Variety = pimento. See table 1 for treatments and data tables for evaluation dates.

Results: There was good weed pressure at this site. On the first weed evaluation date on June 21 there were good differences among the treatments. Only pretransplant applications were evaluated on this day as the layby and post directed applications had not yet been applied. All treatments provided moderate weed control except for Matrix which provide good weed control, but had unacceptable phytotoxicity (Table 2). The second weed evaluation was conducted on July 2. Layby and post directed applications had not been applied yet. Weed pressure was lower on this evaluation date because weed evaluations were made of the uncultivated seedlines (Table 3). Total weeds and time to weed were not significantly different among treatments. Phytotoxicity was still high for Matrix. The third evaluation date on August 9 had low weed populations. The sequential application of 0.52 lb of V-10142 provided complete weed control on this date (Table 4). Weed populations were higher on the fourth weed evaluation on September 5 which was a measure of late season weed pressure. The layby treatments did not improve weed control over the untreated control (Table 5); however, the sequential application of V-10142 provided significantly better weed control. In past years we have seen that the percent of red fruit was a sensitive measure of stress on the peppers caused by the herbicides. None of the herbicides had a lower percent of red fruit than the untreated control (Table 6); V-10142 at 0.30 lb a.i./A had a greater percent of red fruit. Nearly all herbicide treatments had lower tonnage and number of fruit than the untreated. This was a surprising result that we have not observed in prior years. Matrix and Sandea both had lower tonnage and number of fruit than

the other herbicide treatments. Two sequential applications of 0.52 lb/A of V-10142 had the lowest mean fruit weight.

Table 1. Materials, rates and timing of the various treatments.

No.	At Transplant[1]	Lbs a.i./A	Mat./A	Layby	Lbs a.i./A	Mat./A
1	Untreated	---		Untreated	---	----
2	Dual Magnum 7.62	1.43	1.50 pts	----	----	----
3	Outlook 6.0[3]	0.60	0.80 pt	----	----	----
4	Spartan 4F	0.10	0.13 lb	----	----	----
5	Matrix SG25	0.03	0.12 lb	----	----	----
6	Dual Magnum 7.62	1.43	1.50 pts	Dacthal 6F[2]	7.00	1.17 gal
7	Dual Magnum 7.62	1.43	1.50 pts	Dual Magnum 7.62[2]	1.43	1.50 pts
8	Outlook 6.0[3]	0.60	0.80 pt	Dacthal 75W [2]	7.00	9.3 lbs
9	Outlook 6.0[3]	0.60	0.80 pt	Dual Magnum 7.62[2]	1.43	1.50 pts
				Post directed		
10	----	----	----	Sandea 75WG[3] NIS	0.047 0.25%	1.0 oz
11	----	----	----	V-10142 75WG[3] Kinetic	0.20 0.25%	0.26 lb
12	----	----	----	V-10142 75WG[3] Kinetic	0.40 0.25%	0.52 lb
13	----	----	----	V-10142 75WG[3] Kinetic V-10142 75WG[3] Kinetic	0.40 0.25% 0.40 0.25%	0.52 lb 0.52 lb

1 –one day before transplanting; 2 – layby applied on July 2; and 3 – post directed treatment applied on June 28

Table 2. Weed count (no. weeds per 40 ft^2) and phytotoxicity rating on June 21.

Pretransplant treatament	Material/ A	Night-shade	Shepherd's Purse	Purslane	Sow Thistle	Lambs-quarter	Total weeds	Phyto[1]
Untreated		11.3	8.8	1.3	1.8	0.5	24.0	0.0
Dual Magnum 7.62	1.50 pts	4.0	2.3	0.0	0.5	0.8	7.5	0.3
Outlook 6.0	0.80 pt	4.0	2.3	0.0	1.5	0.3	8.5	0.8
Spartan 4F	0.13 lb	14.5	6.3	0.0	0.5	0.8	22.8	0.6
Matrix SG25	0.12 lb	3.3	0.3	0.0	0.0	0.0	3.5	3.0
Dual Magnum 7.62	1.50 pts	4.5	2.0	1.0	0.3	0.5	8.5	0.0
Dual Magnum 7.62	1.50 pts	2.5	2.3	0.3	0.3	0.5	6.0	0.8
Outlook 6.0	0.80 pt	3.8	3.3	0.5	0.8	0.5	8.8	1.4
Outlook 6.0	0.80 pt	4.3	2.0	0.0	0.5	0.5	7.5	1.3
LSD (0.05)		6.1	2.9	0.9	1.3	1.0	8.4	1.3

1- Scale: 0=no crop injury to 10=crop dead

Table 3. Weed count (no. weeds per 20 ft^2) and phytotoxicity rating on July 2.

Pretransplant treatament	Material/ A	Night-shade	Shepherd's Purse	Purslane	Lambs-quarter	Total weeds	Weed time hrs/Acre	Phyto[1]
Untreated	----	1.8	1.3	0.5	0.5	4.0	3.6	0.0
Dual Magnum 7.62	1.50 pts	2.0	0.0	0.8	0.3	3.5	3.4	0.0
Outlook 6.0	0.80 pt	1.0	0.5	0.0	0.0	1.5	2.2	0.0
Spartan 4F	0.13 lb	4.0	0.8	0.3	0.8	5.7	4.9	0.0
Matrix SG25	0.12 lb	4.5	1.0	0.0	0.3	6.3	4.2	3.5
Dual Magnum 7.62	1.50 pts	1.5	0.0	0.3	0.0	1.8	3.0	0.0
Dual Magnum 7.62	1.50 pts	0.5	0.5	0.3	0.0	1.3	2.4	0.0
Outlook 6.0	0.80 pt	2.0	0.8	0.3	0.5	3.5	3.8	1.0
Outlook 6.0	0.80 pt	0.8	1.0	0.0	0.0	2.3	2.3	1.0
LSD (0.05)		n.s.	1.0	0.7	n.s.	n.s.	n.s.	0.7

1- Scale: 0=no crop injury to 10=crop dead

Table 4. Weed count (no. weeds per 20 ft^2) and phytotoxicity rating on August 9.

Pretransplant treatament	Material/ A	Layby/ Post directed	Material/A	Night-shade	Shepherd's Purse	Purslane	Total weeds	Phyto[1]
Untreated	----	Untreated	----	0.8	0.3	0.0	2.0	0.0
Dual Magnum 7.62	1.50 pts	----	----	0.3	1.0	0.0	1.5	0.8
Outlook 6.	0.80 pt	----	----	0.8	0.5	0.0	2.5	0.3
Spartan 4F	0.13 lb	----	----	0.8	0.0	0.3	1.8	0.0
Matrix SG25	0.12 lb	----	----	0.5	0.0	0.3	1.8	3.0
Dual Magnum 7.62	1.50 pts	Dacthal 6F[3]	1.17 gal	0.0	0.5	0.0	0.8	0.5
Dual Magnum 7.62	1.50 pts	Dual Magnum 7.62[3]	1.50 pts	0.0	1.3	0.0	1.8	0.3
Outlook 6.0	0.80 pt	Dacthal 75W	9.3 lbs	0.3	0.0	0.0	0.5	0.8
Outlook 6.0	0.80 pt	Dual Magnum 7.62[3]	1.50 pts	0.5	0.8	0.0	1.5	0.8
----	----	Sandea 75WG NIS	1.0 oz	0.8	0.3	0.0	1.0	0.0
----	----	V-10142 75WG Kinetic	0.26 lb	0.5	0.3	0.0	0.8	0.0
----	----	V-10142 75WG Kinetic	0.52 lb	0.0	0.0	0.0	0.5	0.0
----	----	V-10142 75WG Kinetic V-10142 75WG Kinetic	0.52 lb 0.52 lb	0.0	0.0	0.0	0.0	0.0
LSD (0.05)				1.0	1.2	0.2	2.2	0.8

1- Scale: 0=no crop injury to 10=crop dead

Table 5. Weed count (no. weeds per 20 ft^2) and phytotoxicity ratings on September 5.

Treatment At transplanting	Material/ A	Layby/ Postemergence	Material/ A	Night-shade	Shepherd's Purse	Purslane	Sow Thistle	Total weeds	Phyto[1]
Untreated	----	Untreated	----	1.0	5.5	0.3	2.3	10.3	0.0
Dual Magnum 7.62	1.50 pts	----	----	0.8	4.8	1.3	0.5	8.3	1.0
Outlook 6.0	0.80 pt	----	----	2.7	7.0	0.3	1.8	13.3	1.0
Spartan 4F	0.13 lb	----	----	1.7	4.5	1.5	1.3	11.8	0.0
Matrix SG25	0.12 lb	----	----	2.2	8.0	1.0	2.3	18.5	3.3
Dual Magnum 7.62	1.50 pts	Dacthal 6F	1.17 gal	0.	4.8	0.3	0.3	7.5	0.3
Dual Magnum 7.62	1.50 pts	Dual Magnum 7.62	1.50 pts	0.8	2.5	0.3	1.5	6.8	0.0
Outlook 6.0	0.80 pt	Dacthal 75W	9.3 lbs	0.8	7.0	0.0	1.0	10.3	0.0
Outlook 6.0	0.80 pt	Dual Magnum 7.62	1.50 pts	0.8	4.0	0.5	2.5	9.8	0.0
----	----	Sandea 75WG NIS	1.0 oz	2.3	8.0	1.3	2.0	14.0	1.3
----	----	V-10142 75WG Kinetic	0.26 lb	1.8	0.8	0.0	1.5	5.0	0.8
----	----	V-10142 75WG Kinetic	0.52 lb	0.8	1.5	0.3	0.8	5.0	0.0
----	----	V-10142 75WG Kinetic V-10142 75WG[2] Kinetic	0.52 lb 0.52 lb	0.0	0.0	0.0	2.3	3.3	0.0
LSD (0.05)				2.1	4.2	1.0	2.2	6.4	1.7

1- Scale: 0=no crop injury to 10=crop dead

Table 6. Yield of peppers on October 22

Transplant Application Material a.i./A	Layby/Post directed Application Material a.i./A	Reds			Green		Turning		Total Marketable		
		Tons/A	Fruit/A[1]	% red	Tons/A	Fruit/A	Tons/A	Fruit/A	Tons/A	Fruit/A	Mean (gr)
Untreated	Untreated	13.30	84.10	48.43	5.62	56.73	8.25	63.70	27.17	204.63	121.4
Dual Magnum 1.43	----	13.25	69.03	55.05	3.30	36.35	7.87	49.40	24.45	154.78	146.3
Outlook 0.60	----	11.10	69.40	44.98	5.32	50.23	7.30	60.45	23.70	180.13	119.8
Spartan 0.10	----	13.48	81.65	57.03	3.92	43.68	5.75	51.05	23.12	176.43	119.7
Matrix 0.03	----	9.20	50.63	52.70	4.00	43.70	3.15	23.70	16.37	118.03	126.8
Dual Magnum 1.43	Dacthal 7.0	11.65	72.68	52.05	3.20	30.63	6.85	50.23	21.72	153.53	128.4
Dual Magnum 1.43	Dual Magnum 1.43	12.70	83.33	54.13	3.62	40.03	6.37	49.00	22.70	172.35	119.9
Outlook 0.60	Dacthal 7.0	10.88	65.35	47.03	4.62	45.73	6.75	51.43	22.20	162.55	124.5
Outlook 0.60	Dual Magnum 1.43	12.03	76.35	54.08	3.37	34.70	6.27	50.23	21.70	161.30	122.0
----	Sandea 0.047 NIS 0.25%	9.70	61.25	53.68	2.90	31.03	4.60	37.58	17.20	129.85	120.0
----	V-10142 0.20 Kinetic 0.125%	13.35	75.95	57.83	3.07	36.78	5.85	58.60	22.30	161.30	128.5
----	V-10142 0.30 Kinetic 0.125%	14.95	94.33	66.78	2.52	28.58	4.07	35.10	21.52	158.03	123.6
----	V-10142 0.30 Kinetic V-10142 0.30 Kinetic 0.125%	9.23	61.65	42.30	4.85	57.58	7.15	61.65	21.22	180.93	106.6
LSD (0.05)		2.54	15.11	10.55	1.56	16.88	2.74	17.34	3.02	25.90	16.4

1 – Number of fruit in 1,000’s