Robocrop/Tillett Vision-Guided Cultivation Evaluations on Pepper

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Objective: To evaluate the effectiveness of the Robo/Tillet cultivator in transplant pepper for intra-row weeding compared to standard cultivation practices

Table 1. Trial Methods and Event Dates for Transplant Pepper.

	2009 Bell Pepper Trial - UC WSREC (Transplant)
Planting	
Date:	3/25/09
Cultivar:	Encore (Rogers/Syngenta)
Soil Type:	Panoche Clay Loam
Irrigation Method:	Sprinkler followed by furrow
Herbicide Applications	
(At Planting - PRE) Date/Herbicide/Rate:	3/25/09; Dual Magnum 83.7% @1.43 lbs ai/ac
(POST) Date/Herbicide/Rate:	none
Cultivation Dates	Standard: 4/24/09; Tillett: 4/24/09; Standard: bed sides & furrow 6/15/09
Evaluations	
Crop Stand:	5/15/09
Pre / Post Cultiv Weed Counts:	PRE: 4/23/09; POST: 5/15/09
Timed Hoeing:	5/15/09 (Weeding only)
Yield (Marketable Crop):	7/7/09

Table 2. Effect of cultivation type, weeding procedures, and at planting application of Dual Magnum on weed control, crop stand and crop vigor in transplanted peppers, WSREC - 2009.

Cultivation type	**Weeding procedure**	**Dual Magnum rate (lb ai/A)**	**Pre cultiv. weed counts** (no./10 ft²)	**Post cultiv. weed counts** (no./10 ft²)	**Post cultiv. crop stand** (no./150 ft)
Tillett	Hand weed	1.43 lb	20.3	6.0	176.0
Standard	Hand weed	1.43 lb	19.0	10.5	187.3
Tillett	No hand weed	1.43 lb	21.8	5.8	172.0
Standard	No hand weed	1.43 lb	24.0	10.8	183.0
Tillett	Hand weed	0	332.5	44.3	158.5
Standard	Hand weed	0	333.3	77.0	181.3
Tillett	No hand weed	0	325.8	42.0	163.3
Standard	No hand weed	0	318.8	72.0	184.8
LSD (P=0.05)					
Treatment Prob (F)					
Main effects of cultivation type					
Tillett			175.1	24.5	167.4
Standard			173.8	42.6	184.1
LSD (P=0.05)					
Treatment Prob (F)					
Main effects of weeding procedure					
	Hand weed		176.3	34.4	175.8
	No hand weed		172.6	32.6	175.8
LSD (P=0.05)					
Treatment Prob (F)					

Table 3. Effect of cultivation type, weeding procedures, and at planting application of Dual Magnum on weeding time in transplanted bell peppers, WSREC - 2009.

Cultivation type	**Thinning / weeding procedure**	**Dual Magnum rate (lb ai/A)**	**Total time** (min/150 ft)
Tillett	Hand weed	1.43 lb	10.5
Standard	Hand weed	1.43 lb	12.3
Tillett	No hand weed	1.43 lb	0.0
Standard	No hand weed	1.43 lb	0.0
Tillett	Hand weed	0	33.4
Standard	Hand weed	0	50.1
Tillett	No hand weed	0	0.0
Standard	No hand weed	0	0.0
LSD (P=0.05)			
Treatment Prob (F)			
Main effects of cultivation type			
Tillett			11.0
Standard			16.6
LSD (P=0.05)			
Treatment Prob (F)			
Main effects of weeding procedure			
	Hand weed		26.6
	No hand weed		0.0
LSD (P=0.05)			
Treatment Prob (F)			

Table 4. Effect of cultivation type, weeding procedures, and at planting application of Dual Magnum on crop yield in transplanted bell peppers, WSREC - 2009.

Cultivation type	**Weeding procedure**	**Dual Magnum rate (lb ai/A)**	**Market Yield** (Med, L, XL sizes) (T/A)	**Culls** (small, rotten, or misshapen) (T/A)	**Total Yield** (Tons/Acre)
Tillett	Hand weed	1.43 lb	18.48	2.77	21.25
Standard	Hand weed	1.43 lb	16.97	2.61	19.57
Tillett	No hand weed	1.43 lb	13.85	2.89	16.73
Standard	No hand weed	1.43 lb	13.02	1.50	14.52
Tillett	Hand weed	0	13.65	1.50	15.15
Standard	Hand weed	0	12.16	1.82	13.97
Tillett	No hand weed	0	0.86	0.15	1.01
Standard	No hand weed	0	0.08	0.14	0.22
LSD (P=0.05)					
Treatment Prob (F)					
Main effects of cultivation type					
Tillett			11.71	1.83	13.54
Standard			10.55	1.52	12.07
LSD (P=0.05)					
Treatment Prob (F)					
Main effects of weeding procedure					
	Hand weed		15.31	2.17	17.49
	No hand weed		6.95	1.17	8.12
LSD (P=0.05)					
Treatment Prob (F)					