

**Project Number:** 13K 3419 6228

**Title:** Weed control in cucumbers.

**Personnel:** Tim Miller and Carl Libbey, WSU NWREC

**Reporting Period:** 2006-07

**Accomplishments:** One cucumber study was conducted in 2006, the herbicide by timing trial. Six herbicides in various combinations were tested for crop safety in cucumbers; a total of fifteen treatments were applied.

**Results:** Results will be presented at the Western Washington Horticultural Association meeting in January, 2007.

Three plantings of pickling cucumber (cv. 'Calypso') were seeded at WSU NWREC approximately one month apart (May 4, June 7, and July 16). Herbicides were applied preemergence (PRE) and postemergence (POST) at similar timings for each planting. Dates for the early planting were May 9 and June 24 for PRE and POST, respectively; the middle planting was treated June 8 and July 15, and the late planting was treated July 16 and August 11. Command at 10.7 fl.oz/a was applied PRE to two of the four rows in each plot to determine the impact of additional herbicide to the broadcast treatments. Cucumber plants from 1-m sections of all rows were counted July 21, August 7, and September 5, and total vine and fruit fresh weight was recorded. Fresh weight of weeds growing in those row sections was also tallied. The experimental design was a split-block, randomized complete block with three replicates.

When averaged across all herbicide treatments, the additional Command did not statistically affect crop density or fresh crop biomass, but reduced weed biomass from 211 to 32 g/plot by harvest (Table 1). Cucumber planting date significantly affected all measured parameters. Crop density was lowest in the late planting followed by early and mid plantings. Weed weight was highest in the early planting while crop weight was maximized in the early and late plantings.

The interaction of herbicide effects, planting date, and additional Command on weed and crop biomass is provided in Tables 2 and 3. Additional Command dramatically improved weed control in the early planting, but only slightly in middle and late plantings (Table 2), indicating either that Command was more effective earlier or that weeds were far less a problem in later plantings. Weight of cucumber vines and fruit was not greatly changed by additional Command in any plantings (Table 3). This is illustrated by setting an arbitrary level of 4 kg harvested per plot. In the early season planting, six treatments with additional Command achieved the 4 kg level, while only three achieved that level without additional Command. For late season cucumbers, additional Command resulted in three treatments achieving the 4 kg level, while nine achieved that level without additional Command.

Table 1. Effect of Command application or planting date on crop density, cucumber weight, and weed weight (2006).

Treatment	Crop density <sup>a</sup> plants/plot	Crop weight <sup>a</sup> Kg	Weed weight <sup>a</sup> g
Command	27.7	3.2	32 b
No command	27.8	3.3	211 a
LSD <sub>0.05</sub>	ns	ns	39
Early planting	27.9 b	3.7 a	274 a
Middle planting	25.5 c	2.3 b	25 b
Late planting	29.9 a	3.8 a	64 b
LSD <sub>0.05</sub>	1.2	0.2	48

<sup>a</sup>Crop density, crop weight, and weed weight determined at harvest (July 21, August 7, and September 5).

Table 2. Fresh weed biomass at harvest after treatment with several herbicide combinations at three different timings (2006).

Treatment	Rate product/a	Timing	Weed weight by planting date with and without Command <sup>a</sup>					
			Early planting		Mid planting		Late planting	
			Com +	Com -	Com +	Com -	Com +	Com -
Sandea	0.5 oz	PRE	73	437	0	20	90	10
Curbit	2 pt	PRE	3	1233	0	217	150	250
Dual Magnum	13.4 fl.oz	PRE	0	697	0	67	0	10
Outlook	12.8 fl.oz	PRE	30	677	0	7	0	23
Command + Curbit	5.3 fl.oz + 2 pt	PRE + PRE	13	3	0	30	390	7
Curbit + Sandea	2 pt + 0.5 oz	PRE + PRE	3	443	0	20	40	13
Dual Magnum + Sandea	+ 0.5 oz	PRE + PRE	7	583	3	30	0	0
Outlook + Sandea	+ 0.5 oz	PRE + PRE	7	117	0	3	0	173
Command + Curbit + Sandea	5.3 fl.oz + 2 pt + 0.5 oz	PRE + PRE + PRE	0	17	0	3	3	0
Basagran	8 fl.oz	POST	37	1813	7	263	127	23
Sandea fb Basagran	0.5 oz fb 8 fl.oz	PRE fb POST	13	610	3	7	0	3
Curbit fb Basagran	2 pt + 8 fl.oz	PRE fb POST	13	757	0	90	13	13
Dual Magnum fb Basagran	13.4 fl.oz fb 8 fl.oz	PRE fb POST	7	293	7	23	45	10
Outlook fb Basagran	12.8 fb 8 fl.oz	PRE fb POST	0	733	0	0	0	230
Command + Curbit fb Basagran	5.3 fl.oz + 2 pt fb 8 fl.oz	PRE + PRE fb POST	0	173	0	0	23	7
Hand weeded	---	---	0	0	0	0	0	0

<sup>a</sup>Early planting May 4, mid planting June 7, and late planting July 16; PRE = preemergence, applied May 9, June 8, and July 16;

POST = postemergence, applied June 24, July 15, and August 11. Weed biomass evaluated July 21, August 7, and September 5.

Com + = additional Command at 10.7 fl.oz/a applied to standard treatment; Com - = no additional Command applied to standard treatment.

Table 3. Cucumber and fruit fresh weight after treatment with several herbicide combinations at three different timings (2006).

Treatment	Rate product/a	Timing	Cucumber weight by planting date with and without Command <sup>a</sup>					
			Early planting		Mid planting		Late planting	
			Com +	Com -	Com +	Com -	Com +	Com -
Sandea	0.5 oz	PRE	4.2	3.3	2.3	3.3	3.9	4.7
Curbit	2 pt	PRE	3.7	3.9	2.6	2.6	3.2	4.4
Dual Magnum	13.4 fl.oz	PRE	3.9	3.2	2.4	1.8	3.3	4.2
Outlook	12.8 fl.oz	PRE	3.5	3.2	2.3	2.5	3.8	3.3
Command + Curbit	5.3 fl.oz + 2 pt	PRE + PRE	4.4	3.7	2.6	2.3	2.9	5.1
Curbit + Sandea	2 pt + 0.5 oz	PRE + PRE	4.0	4.5	2.0	2.4	3.8	3.8
Dual Magnum + Sandea	+ 0.5 oz	PRE + PRE	3.8	3.2	2.7	2.5	3.2	3.2
Outlook + Sandea	+ 0.5 oz	PRE + PRE	3.5	3.2	2.1	1.8	3.6	4.2
Command + Curbit + Sandea	5.3 fl.oz + 2 pt + 0.5 oz	PRE + PRE + PRE	3.5	4.8	2.4	2.2	4.7	4.9
Basagran	8 fl.oz	POST	4.9	2.1	2.2	2.1	3.2	4.1
Sandea fb Basagran	0.5 oz fb 8 fl.oz	PRE fb POST	3.9	3.5	2.1	2.0	3.4	3.6
Curbit fb Basagran	2 pt + 8 fl.oz	PRE fb POST	4.2	3.0	1.8	1.9	2.9	4.0
Dual Magnum fb Basagran	13.4 fl.oz fb 8 fl.oz	PRE fb POST	4.0	2.9	2.5	2.0	2.6	3.7
Outlook fb Basagran	12.8 fb 8 fl.oz	PRE fb POST	3.3	3.6	1.8	2.3	2.9	3.9
Command + Curbit fb Basagran	5.3 fl.oz + 2 pt fb 8 fl.oz	PRE + PRE fb POST	3.8	4.6	2.2	2.2	4.2	4.1
Hand weeded	---	---	3.3	4.1	2.5	2.2	4.1	3.7

<sup>a</sup>Early planting May 4, mid planting June 7, and late planting July 16; PRE = preemergence, applied May 9, June 8, and July 16;

POST = postemergence, applied June 24, July 15, and August 11. Cucumber biomass evaluated July 21, August 7, and September 5.

Com + = additional Command at 10.7 fl.oz/a applied to standard treatment; Com - = no additional Command applied to standard treatment.