

**Project Title:** Weed Management Studies for Processing Vegetables

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**Objective:**

The objective of this research project was to develop improved weed management programs for processing peppers, cole crops, squash, and pumpkins by evaluating a range of herbicides for crop tolerance and weed control efficacy on these crops. Information on yield, crop sensitivity and control of problem weeds was developed. Improved weed management programs reduce the need for labor for hand hoeing and weeding, reduce the cost of production to the grower and enhance competitiveness of the processing vegetable industry.

**Methodology:**

Research trials were carried out at the Dept. of Plant Agriculture, University of Guelph, Simcoe during the summer of 2006. Treatments were replicated four times in each experiment. Plots were 10 m long by either 2 m or 1.5 m wide. Plants were thinned to a known stand appropriate for each crop. Crops were grown according to accepted commercial practices used in Ontario. Crop injury, weed counts, weed biomass, weed ratings and yield were recorded. All trials were harvested by hand at crop maturity. Data was statistically analyzed, tabulated and reported.

**Results:**

***Bell and Banana Peppers***

Both varieties of peppers were very tolerant to high-rate applications of Command (clomazone) (0.94 L/A). There was no crop injury at this application rate. Bell and banana peppers were also tolerant to preemergence applications of Dual Magnum (s-metolachlor) and Outlook (dimethenamid-P). A combination of Command plus Dual Magnum or Command plus Outlook gave improved broad spectrum weed control with no crop injury. Dual Magnum is now registered for bell peppers. Outlook gave results comparable to Dual Magnum. Spartan (sulfentrazone) and Valor (flumioxazin) (preplant) at low rates caused no injury and gave excellent broadleaf weed control but poor grass control. The addition of a grass herbicide increased yields and improved broadleaf and grass weed control. Sandea (halosulfuron-methyl) post caused slight injury, gave poor weed control and reduced yields. Spartan and Valor (preplant) at low rates, combined with a grass herbicide require further testing and look most promising for improved pepper weed control.

**Squash**

Squash were tolerant to applications of Command (clomazone). There was no injury and there was good broadleaf weed control. Squash were less tolerant to

preemergence applications of Sandea (halosulfuron-methyl). There was no injury to squash from Dual Magnum (s-metolachlor) or Devrinol (napropamide). Combinations of Command plus, Dual Magnum, Devrinol or Sandea gave the best broad spectrum weed control and highest yields. Command has been submitted for a minor use registration for pumpkin, squash, cucumber, and pepper. Several treatment combinations with Command gave yields comparable to the weeded check. Only Sandea alone or in combination gave any significant injury but this did not reduce yields.

### ***Pumpkins***

Pumpkins were tolerant to applications of Command (clomazone). There was no injury and there was good broadleaf weed control. Pumpkins were also tolerant to preemergence applications of Sandea (halosulfuron-methyl), Dual Magnum (s-metolachlor) and Devrinol (napropamide). There was no injury to pumpkins from any treatments. A combination of Command plus Sandea gave the best broad spectrum weed control with no crop injury and yields comparable to the weeded check. Command has been submitted for a minor use registration for pumpkin, squash, cucumber, and pepper.

### ***Cabbage***

Only Spartan (sulfentrazone), Outlook (dimethenamid-P) and Dacthal (chlorthal-dimethyl) caused slight injury (<15%). Combinations of Dacthal plus Dual Magnum or Outlook gave 100 % grass control. Several herbicide combinations and Spartan gave excellent broadleaf weed control and yields comparable to the weeded check.

### ***Cauliflower***

Only Spartan (sulfentrazone), Outlook (dimethenamid-P) and Dacthal (chlorthal-dimethyl) caused slight injury (<15%). Dual Magnum and Frontier gave excellent grass control. Herbicide combinations gave improved broadleaf weed control. Several herbicide combinations gave yields comparable to the weeded check.