Project title: Weed Control and Crop Tolerance Evaluations in Processing Tomatoes

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Objectives:

1) To evaluate the tolerance of tomato varieties to thifensulfuron-methyl (Pinnacle) applied postemergence. Data collected from both locations indicate acceptable crop tolerance with control of selected broadleaf species including triazine resistant lamb's-quarters and pigweed.

2) To evaluate a tank mix of Prism (rimsulfuron) plus Sencor or Lexone (metribuzin) applied postemergence for tolerance and weed control in tomatoes. Research conducted in one field season indicated acceptable crop tolerance with excellent control of common lamb's-quarters, redroot pigweed, velvetleaf, lady's thumb and green foxtail, but was weak on ragweed.

3) To evaluate a tank mix of Pinnacle (thifensulfuron-methyl) plus Sencor or Lexone (metribuzin) applied postemergence for tolerance and weed control in tomatoes. Preliminary research indicated that there was some injury initially after application but the crop recovered with no effect on yield. This tank mix provided excellent control of common lamb's-quarters, redroot pigweed, lady's thumb and green foxtail.

4) To evaluate a tank mix of Prism (rimsulfuron) plus Pinnacle (thifensulfuron-methyl) applied postemergence for tolerance in tomatoes. Preliminary research indicates acceptable crop tolerance with broad-spectrum broadleaf weed control.

5) To compare the effect of various weed management programs (preplant incorporated, surface pre-transplant, total postemergence) on crop tolerance transplant establishment and yield.

6) To evaluate new chemistry (clomazone – various rates 360 g/ha and up) as it becomes available for tolerance in processing tomatoes.

Methodology:

Research studies were completed at the Greenhouse and Processing Crop Research Centre in Harrow, Ontario and at Ridgetown College, University of Guelph in Ridgetown, Ontario. The trials consisted of small plots, which were replicated four times. Herbicide treatments were applied with a CO_2 pressurized sprayer calibrated to deliver 200 L/ha at 200 kPa. The data collected included visual crop tolerance ratings, tomato fresh and dry weight, visual weed control ratings and crop yields.

Results:

Postemergence application of thifensulfuron-methyl at 6 and 12 g/ha did not cause commercially significant visual injury or yield reductions in the following processing tomato varieties: CC337, H9144, H9314, H9478, H9492, H9553, H9909, N1069, N1082, N1480E, N1480L, N1522, and PETO696. H9909 and N1069 did show some visual injury at Ridgetown (only N1069 showed injury at Harrow), primarily leaf curling, but the plants outgrew this injury by the end of the growing season. Application of Pinnacle did not result in yield reductions for any of the varieties tested at either location.

Prism + Sencor/Lexone applied postemergence to processing tomatoes did not cause any visual injury to or yield reduction. When applied as a postemergence treatment in sequence with three postemergence microrate treatments of Sencor/Lexone, excellent season long control of shepherd's purse, velvetleaf, and redroot pigweed was recorded. Ragweed control was fair, and eastern black nightshade control was poor.

Pinnacle + Sencor/Lexone applied postemergence to processing tomatoes resulted in less than 1% visual injury 7 days after treatment, but the crop recovered with no effect on yield. When applied along with three postemergence microrate treatments of Sencor/Lexone, this tank mix provided excellent control of shepherd's purse, common lamb's-quarters, velvetleaf and redroot pigweed. Good control of common ragweed, fair control of green foxtail, and poor control of eastern black nightshade were observed.

Prism + Pinnacle applied postemergence to processing tomatoes did not result in visual injury or yield reductions. Earlier research has indicated that this tank mix provides excellent control of common lamb's-quarters, redroot pigweed, lady's thumb and green foxtail, but is weak on common ragweed.

A comparison of the effect of various tank mix combinations indicated there was no commercially significant visual injury in postemergence tank mix applications of Sencor/Lexone + Prism and Sencor/Lexone + Pinnacle. Yields were greatest in a Dual + Sencor/Lexone (PPI) treatment when followed by sequential POST micro rate applications of Sencor/Lexone. Excellent season long control of common ragweed, lamb's-quarters, green foxtail, eastern black nightshade and velvetleaf was recorded in

tank mixes of s-metolachlor and metribuzin (PPI), with and without sequential POST micro rate applications of metribuzin, when tank mixed with either Prism or Pinnacle. The addition of Venture L (fluazifop-p-butyl) to sequential postemergence microrate treatments of metribuzin resulted in excellent control of green foxtail.

Command (clomazone) rates of 0, 120, 240, 360, 480, 600, 720 and 840 g/ha were applied to tomatoes to test for effect on visual injury and yield in processing tomatoes. There was no commercially significant injury at any of the rates tested, though early season injury was noted, which increased with Command rate. The plants outgrew most or all of the visual injury by the end of the growing season, and yields were not less than in the untreated check. Command provided excellent control of shepherd's purse, good control of eastern black nightshade, and fair control of common lamb's-quarters.