

Project Title: Evaluation of Topaz (propiconazole) for transplant size control and earlier maturity of processing tomato.

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Objectives:

1. Determine optimum rates, timings of application, and subsequent fertilizer regimes for producing high quality tomato transplants using propiconazole.
2. Document field performance of propiconazole treated tomato transplants

Methodology: Transplants of TSH4 (early commercial hybrid - Tomato Solutions) and CC337 (late commercial inbred - Kraft) were grown in Kraft Canada's research greenhouse in Dresden ON. Treatments were applied in 100 ml of solution to the transplants according to the following schedule:

1. Control: no treatment
2. Paclobutrazol as a 5 ppm solution applied at the 2nd true leaf stage
3. Propiconazole as a 25 ppm solution applied at the 2nd true leaf stage
4. Propiconazole as a 25 ppm solution applied at the 2nd true leaf stage and 10 days later
5. Propiconazole as a 37.5 ppm solution applied at the 2nd true leaf stage
6. Propiconazole as a 50 ppm solution applied at the 2nd true leaf stage

Trials were established on the Ridgetown College Research Farm and the Kraft Research Farm in Dresden. Plant fresh weights and flower counts were taken once flowers were present on the most mature treatments, and again every 5-7 days. Plots were harvested (4 plants per plot) when 80% of the fruit appeared mature. Fruit was graded into mature red, green and rots.

Results:

While propiconazole treated transplants demonstrated a growth response similar to paclobutrazol, the effect was not as great. By the end of the 42 day greenhouse production period, propiconazole treated transplants had greater top fresh weights, root fresh weights, and stem diameters than untreated, but not as great as paclobutrazol treated transplants. No difference in plant fresh weight were found between untreated and propiconazole treated transplants at either location when evaluated several weeks after transplanting, while flowers per plant were greater on transplants treated with the highest rate of propiconazole at the Dresden location only. Paclobutrazol treated transplants demonstrated increased plant weights and flower numbers at both locations. Total yields did not differ among treatments at either location. However, based on peeling data at Dresden, paclobutrazol treated plants were earlier maturing. All treatments (propiconazole and paclobutrazol) increased the percent red fruit and decreased the percent green fruit when compared to untreated at the Ridgetown location, with paclobutrazol generally giving a greater effect. Further work using repeated rates of 50 ppm propiconazole on transplants found that this provided greater growth control in the greenhouse, and earlier flowering in the field.