

Project Title: Evaluation of growth regulators 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 various growth regulators.
2. Document field performance of growth regulator 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 at the 2nd true leaf, according to the following schedule:

1. Untreated
2. Paclobutrazol (Bonzi) @ 5 ppm
3. Propiconazole (Tilt; Topaz) @ 50 ppm
4. Propiconazole (Tilt, Topaz) @ 100 ppm - 2 applications of 50 ppm 7 days apart
5. Uniconazole (Sumagic) @ 5 ppm
6. Uniconazole (Sumagic) @ 10 ppm
7. Uniconazole (Sumagic) @ 20 ppm
8. Prohexadione Ca (Apogee) @ 50 ppm
9. Myclobutanil (Nova) @ 125 ppm
10. Myclobutanil (Nova) @ 250 ppm -2 applications of 125 ppm 7 days apart

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 (8 plants per plot) when 80% of the fruit appeared mature. Fruit was graded into mature red, green and rots.

Results:

Uniconazole treated transplants demonstrated growth rates in the greenhouse similar to paclobutrazol treated transplants at similar rates (5-10 ppm). In order to reach a marketable size in 6 weeks, 4-5 times the nitrogen and potassium, and 7-9 times the phosphorus needed to be applied to paclobutrazol and uniconazole treated transplants. These treatments also provided the greatest improvements in plant top weights, root weights, total plant weights and stem diameters when compared to untreated transplants. Uniconazole and paclobutrazol treated transplants demonstrated improved growth and advanced flowering in the field. Field development of propiconazole, myclobutanil and prohexadione treated transplants generally did not differ from untreated plants. No treatments advanced fruit maturity, which is likely due to the hot weather. Uniconazole treated transplants exhibited slight distortions in growth (horizontal leaf orientation, twisted stems) which will be addressed in future trials by using multiple applications of lower rates.