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2017 Research Report:
What gives you the biggest bang for your buck? Working toward validation of BMPs for bacterial disease management in processing tomatoes

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Study

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Highlights/Summary:

- *Background:* Management practices for bacterial spot of tomato are limited. There is widespread tolerance to copper in bacteria that cause the disease, and other crop protection products have shown little to no benefit in controlled field trials in Ontario. Time was spent in discussions with transplant growers, field growers, and processor representatives to review and develop best management practices for plug and field production. Many of these practices were extrapolated from strategies developed for greenhouse vegetable production systems, but there is little to no data to predict which practices will give the most benefit to the processing tomato industry (i.e. where do you focus efforts and what gives you the biggest bang for the buck?). This report include results from Year 2 of a three year project to validate BMPs for bacterial disease management by evaluating practices that we hypothesize represent a significant risk for spread of BSX.
- *Plug trailer transmission*: The results demonstrate that *X. gardneri* can move vertically from symptomatic seedlings to healthy seedlings in a simulated plug trailer setup and exhibit symptoms within 8 to 14 days of these irrigation events. Therefore, growers should limit watering tomato seedlings in plug trays on trailer or transplanter racks as much as possible. These results also support the idea that growers should clean and sanitize plug trailers regularly during the transplanting season to limit the buildup of inoculum. The effect of tray dip irrigation to limit bacterial spot spread was also evaluated. In one trial with high disease pressure, this did appear to

limit spread compared to irrigation treatments in the trailer, but additional trials are needed to confirm this result.

- *BSX transmission during transplanting*
  - *Indoor study:* Unlike results from 2016, there was evidence this year that *Xg* can be transmitted on transplanting equipment. There were issues with cross-contamination in the first trial, but in the second trial symptoms developed on otherwise healthy seedlings that passed through a transplanter after symptomatic seedlings with dry or wet foliage. A leaf wash confirmed the presence of *Xg* in both trials. Further refinement of the trial design is needed to limit cross-contamination.
  - *Field study:* The purpose of this experiment was to determine the importance of transplanting equipment in the spread of bacterial spot causing Xanthomonads (BSX) in the field. The spread of bacterial spot symptoms within the trial was much slower than expected, probably due to the very dry conditions during the growing season, which was similar to 2016. Even when seedlings with bacterial spot symptoms were present in plots, it took at least 28 days for symptoms to appear on nearby plants and there were generally no differences in the timing of symptom appearance regardless of whether symptomatic seedlings passed through the transplanter or not. In both 2016 and 2017 symptom development appeared to be primarily related to precipitation events.

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