



Grower Summary

CP 191

**Improved management of bacterial
diseases of horticultural crops**

Annual Report 2020

Project title: Improved management of bacterial diseases of horticultural crops

Project number: CP 191

Project leader: Dr S J Roberts, Plant Health Solutions Ltd

Report: Annual Report, September 2020

Previous report: None

Key staff: Dr S J Roberts, Plant Health Solutions Ltd
Dr Lauren Branfield, Stockbridge Technology Centre

Location of project: Warwick, Cawood, various grower sites

Industry Representatives: Rob Richardson, Johnson's of Whixley
Richard Haacker, East of Scotland Growers

Date project commenced: 01-Oct-2019

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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Signature Date

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Report authorised by:

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Signature Date

GROWER SUMMARY

Headline

Case studies have confirmed the presence of bacterial pathogens in propagation/bought-in material (e.g. seed, transplants, liners), but some discrepancies remain and will continue to be pursued.

Background

There are more than 100 known bacterial plant pathogens that affect, or could potentially affect, UK crops. Despite much previous research, diseases caused by bacterial pathogens continue to cause economic losses to growers, particularly in field vegetables, hardy nursery stock and protected ornamentals. The options for control with plant protection products have always been limited, and it is likely that this will continue. For the majority of bacterial plant diseases the primary source of infection is likely to be the seed or propagation material. The use of clean starting material provides the best prospects of long-term sustainable control of bacterial pathogens in horticultural crops; the exclusion of the pathogen through the use of clean starting material avoids the need for secondary interventions with e.g. Plant Protection Products etc. This is a collaborative project between Plant Health Solutions (PHS), Stockbridge Technology Centre (STC), Warwick Crop Centre (WCC) and growers and will primarily focus on developing best practice for the deployment of such a strategy. For a number of high priority model bacterial pathogens the prevalence of the pathogen in starting material will be determined, the benefits of clean starting material will be demonstrated, and epidemiological data obtained to set health standards for starting material. We will also examine the feasibility of novel methods to produce high-health planting material as a second-line defence, and examine the potential for resistance deployment where we think this may be feasible. This report covers the first year of the project.

Summary

Brassicas and Black Rot

- Thirty-six sub-samples of seed, representing eight seed lots, have been tested for the presence of the pathogen, *Xanthomonas campestris* pv. *campestris* (*Xcc*). *Xcc* was detected in four lots, with infestation levels estimated at less than 0.02%.
- Thirty-five sub-samples of transplants, representing seven batches, have been tested for the presence of *Xcc*. *Xcc* was detected in one batch.

- More than 30 crops/locations have been walked/examined and levels of black rot assessed. Varying levels of disease have been observed from zero to effectively 100% incidence.
- High Health Transplants were successfully planted and will continue to be monitored over the winter until harvest.

Broccoli spear rot

- A resistance screening trial is underway at East of Scotland Growers.
- Thirty-seven sub-samples representing 13 seed lots (nine varieties) have been tested. The spear rot bacterium was not detected in any of the seed lots.
- In an experiment to examine the rate of spread during plant-raising, no spread of the pathogen was detected.

Coriander bacterial blight

- *Pseudomonas syringae* pv. *coriandricola* was detected in three out of four seed lots tested.

Cherry laurel and bacterial shot-hole

- Forty-four sub-samples (8 batches) of mother-plants/liners were tested at potting. The pathogen, *Pseudomonas syringae* pv. *syringae* (*Pss*) was detected in four batches with levels ranging from 0.5 to 2.7%
- Follow-up of resulting crops indicated higher levels of disease in batches in which *Pss* was detected.
- Cv Otto Luyken has been successfully established in tissue-culture, with reasonable multiplication rates. Rooting has been successfully induced and the first batch of plants are in the process of being weaned.

Hardy Geraniums and Xanthomonas leaf spot

- Thirty-five sub-sample representing six batches/suppliers have been tested. *Xanthomonas hortorum* pv. *pelargonii* was not detected in any batches.
- Follow-up of batches on the nursery indicated significant disease in some batches, suggesting that some of the test results were false negatives.

Delphiniums and bacterial blotch

- Forty-four sub-samples of plug plants representing 14 batches from a range of suppliers have been tested for *Pseudomonas syringae* pv. *delphinii*. The pathogen was not detected in any batches.
- No disease was detected in follow up of batches in production.

Novel Production System

- A pilot sub-irrigation system was set up on commercial brassica plant-raising nursery at one end of large glasshouse.
- Transplants were successfully raised during the hottest time of the year and both plant-raiser and grower were happy with the quality of the plants.
- The trial system needed less watering and feeding than conventional production.

Financial Benefits

At the present time, no specific financial benefits have been identified.

Action Points

Growers should question suppliers of seed and young plants on the health standards that have been applied and request assurances that those standards have been achieved.