

OSGA Research Project Summaries – February 2022

Cheryl Trueman, Ph.D - RCUG

Title: Improving management of Cercospora leaf spot (CLS) in Ontario sugar beets

Principal Investigator: Dr. Cheryl Trueman

Research Institution: Ridgeway Campus, University of Guelph

External Funding Partners: Michigan Sugar Company, Ontario Agri-Food Innovation Alliance, Canadian Agricultural Partnership, Weather Innovations LLC (in-kind)

Project Start: May 1, 2019

Project End: April 30, 2023

Objectives

1. Improve efficacy of current fungicides: a) test the deposition aid Interlock with a broad-spectrum fungicide to evaluate effects on disease intensity, and b) test the ability of Interlock to improve canopy penetration using different nozzle types and water volumes.
2. Fungicide screening: screen fungicides for CLS management Year 1, and pending these results either a) evaluate fungicide programs integrating new and current tools, and/or b) explore the mechanisms of alternative fungicides (ex. iron, boron) against *C. beticola*.
3. Identify inoculum sources: improve understanding of initial inoculum sources of CLS by comparing detection of CLS symptoms on living spore traps and *C. beticola* conidia on Burkard spore traps to determine if there is evidence for sexual ascospores as a source of initial inoculum and compare spore activity to weather data to identify risk factors.

Impact

- Provide better guidance on the utility of deposition aids (Interlock), carrier volume, and nozzle selection for fungicide applications.
- Identify the potential of alternative fungicides such as Phostrol and nutrients such as iron and boron, to identify fungicide replacements because of developing resistance and/or regulatory phase-out and determine how to implement these in fungicide programs.
- Better understand early season inoculum sources so that in time, *Cercospora* leaf spot activity can be better predicted, resulting in more timely fungicide applications, which improve control and delay fungicide resistance.

Summary

There were no benefits to mixing the deposition aid Interlock with Manzate Pro-Stick for improved management of *Cercospora* leaf spot (CLS) or spray deposition in the sugarbeet canopy. Canopy coverage with Interlock alone was higher than spray applications of Interlock mixed with Manzate Pro-Stick, indicating that fungicide formulation may alter the effectiveness of Interlock. Nozzle type and application carrier volume did affect canopy deposition. A full plain language summary is available [here](#).

Phostrol, Cueva+Phostrol, and Parasol+Vegol reduced CLS symptoms and increased sugar yield in 2019 but only Parasol+Vegol had an effect in 2020 and 2021 in a partially resistant cultivar. In 2020, replacing all or some applications of Proline and Manzate Pro-Stick with Parasol+Vegol and/or Phostrol resulted in effective management of CLS, except where the fungicide program consisted only of Phostrol applied on a 14-day interval. In 2021, Programs with reduced applications of Proline and Manzate Pro-Stick were

OSGA Research Project Summaries – February 2022

Cheryl Trueman, Ph.D - RCUG

generally as effective at reducing CLS as standard programs, but there was some inconsistency with Phostrol in the partially resistant cultivar. In the susceptible cultivar, programs that replaced Proline and/or Manzate Pro-Stick with Parasol + Vegol were generally effective, but programs with Phostrol were not.

Iron and boron did not affect severity of CLS in field trials in 2019 or 2021.

Data on *Cercospora beticola* spore abundance and symptom appearance were collected in 2019 and 2021 and contributed to the development of a spore abundance prediction model at Michigan State University (J. Willbur). Model validation is expected to begin in 2022.