

2018 Research Report

Effective spray programs for cucurbit downy mildew in early and late seeded cucumbers

Prepared for the Ontario Cucumber Research Committee (OCRC)

November 1, 2018

Research Team:

- Cheryl Trueman, Ph.D., College Research Professor, University of Guelph – Ridgetown Campus

Highlights/Summary:

- The objectives were to a) identify effective fungicide programs using targeted (Orondis Ultra, Torrent, Zampro) and broad-spectrum fungicides (Bravo), b) evaluate programs with reduced applications of chlorothalonil, c) evaluate one versus two applications of Orondis Ultra A + B. Some programs were 'dynamic' and changed once downy mildew risk in the region was high.
- Downy mildew was not observed in the early seeded trial. In the late seeded trial, downy mildew was observed one month after the first fungicide application and pressure was low to moderate. All programs were effective, but programs including downy mildew specific fungicides at the end of the season were more effective than chlorothalonil, even when early fungicide applications included downy mildew specific products.
- Key conclusions over the course of the study (2016-2018):
 - In general, under conditions of high disease pressure, using a high input strategy with one or two applications of Orondis Ultra followed by continued applications of downy mildew specific fungicides provided better disease control and yield than the low input strategy of Bravo only. Programs that included Torrent alternating with Zampro or that ended with three applications of Bravo tended to have higher levels of disease at the time of harvest than those that included Orondis Ultra at any time plus downy mildew specific fungicides until harvest. When pressure was low to moderate, all fungicide programs provided acceptable downy mildew control.
 - We often switched to the high-risk fungicide program and then waited several weeks for downy mildew to appear in the growing region. This highlights an opportunity to identify ways to better predict high-risk conditions for downy mildew, such as using current methods in combination with a spore trapping network to identify incoming inoculum. Our lab has submitted a proposal in this regard for late blight in tomatoes, and it would be very interesting to validate a similar network for cucurbit downy mildew once the appropriate PCR markers for the pathogen are publically available.
 - Concurrent research comparing fungicide application intervals for 'Vlaspik' and the DM-defense hybrids 'Citadel' and 'Peacemaker' shows that there may be opportunities to reduce or modify fungicide use with these cultivars. It would be beneficial to compare the response of 'Vlaspik', used in this study, and a DM-defense hybrid using low and high input fungicide programs to determine if less intensive programs using DM-defense hybrids can provide better or equivalent than an intensive program using 'Vlaspik'.

Funding: Ontario Cucumber Research Committee, Ontario Ministry of Agriculture, Food and Rural Affairs