Canadian Agri-Science Cluster for Horticulture 3

Update to Industry

Semi-Annual – Spring 2022

Activity title:
Activity 2: "Sustainable Control Practices for Apple Pests in Canada"

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Names of Collaborators and Institutions:
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Activity Objectives (as per approved workplan):

The activity has 3 objectives:
1. to compare four currently used commercially available pesticide products (Exirel, Imidan, Assail and Calypso) for apple maggot control and determine how many sprays are required to effect control,
2. to provide producers a model specific to their region to predict when apple leaf curling midge will be flying in their orchards and
3. evaluate the efficacy of host volatiles to capture both males and females of various leafroller species across apple growing regions in Canada.

Research Progress to Date (use plain language, not to exceed 500 words):

Objective 1. The activities associated with this objective were completed in March 2020.
Objective 2. A model was developed during 2020-21 and this was made available to collaborators for the 2021 field season. Nova Scotia, British Columbia and Ontario (Harrow) did a final year of ALCM sampling to validate/confirm the developed model. It was discovered that the grower-available platforms where degree day values can be calculated do not use the same method to calculate degree days. FarmWest (in British Columbia), for example, uses the standard method while Meteo (in Quebec) uses the single sine wave method. The difference between these methods is most obvious with lower temperatures, which is the time when growers would be wanting to control their first generation of leaf curling midge. Upon discovery of this, the model is being recalculated using both means to calculate degree day accumulations. These values will be included in a FactSheet (currently in development) and distributed to growers later this year.
Objective 3. Field experiments conducted in 2021 using host volatiles to attract leafroller species varied by location. In BC and NS, host volatiles were in a mass trapping configuration at 2 sites in both provinces (4 sites in total). Damage to fruit was lower by about 3% in orchard blocks where mass traps were installed. In ON (Vineland, Simcoe and Harrow), the host volatiles were paired with acetic acid (high and low release rates) with 3 sites in each region and each treatment replicated 3 times. This was a repeat of the second set of experiments that occurred in 2020 due to the late start as a consequence of COVID. Trap captures were low in Simcoe and Vineland, but quite high in Harrow. Species captured in Harrow were oriental fruit moth (OFM) and codling moth (CM). Results from Harrow indicate that CM

responds best to lures with pear ester and high acetic acid. OFM responded the most to low acetic acid (with or without other host volatile compounds). Orchards selected in Vineland and Simcoe suffered from very low populations and different sites will be sought for the final year of trials in 2022. In QC, the host volatiles were paired with pear ester to focus on CM captures. Acetic acid (low release rate) paired with pear ester had the highest captures of CM with equal numbers of males and females. This is contrary to results from ON-Harrow and verification of these observations will be verified with data from 2022. Host volatiles added to acetic acid and pear ester had lower CM captures. OBLR were captured in traps baited with host volatiles paired with acetic acid (low release rate) showing no difference with the addition of pear ester. Pear ester alone captured the highest number of OBLR, however the large variation over the replicates rendered these results not significantly different from the control, where no OBLR were captured. Due to incomplete data from ON during 2021 the manuscript has been delayed until data from 2022 have been acquired and analysed.

Extension Activities (presentations to growers, articles, poster presentations, etc.):

Blatt, S. 2022. Bug-related Research Round Up. Nova Scotia Fruit Growers Association Spring Workshop, March 29, 2022..

COVID-19 Related Challenges:

There were no issues resulting from COVID impacting the research conducted during 2021-22.

Key Message(s):

This project under the Canadian Agri-Science Cluster for Horticulture 3 is funded in part by the Government of Canada through the Canadian Agricultural Partnership's AgriScience Program, a federal, provincial, territorial initiative, with support from the Fruit and Vegetable Growers of Canada (formerly the Canadian Horticultural Council) and industry contributors.

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