

## Canadian Agri-Science Cluster for Horticulture 3



### Update to Industry

**2018-2019**

<p><b>Activity title:</b> Sustainable Control Practices for Apple Pests in Canada</p>
<p><b>Name of Lead Researcher:</b> Suzanne Blatt, AAFC</p>
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<p><b>Activity Objectives (as per approved workplan):</b></p> <p>The activity has 3 objectives:</p> <ol style="list-style-type: none"> <li>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,</li> <li>2. to provide producers a model specific to their region to predict when apple leaf curling midge will be flying in their orchards and</li> <li>3. Evaluate the efficacy of host volatiles to capture both males and females of various leafroller species across apple growing regions in Canada.</li> </ol>
<p><b>Research Progress to Date:</b></p> <p>For Objective 1: A Honeycrisp orchard block located at KRDC was used for these trials in 2018. Four commercially available products: Exirel, Imidan 70 WP, Assail 70 WP and Calypso 480 SC plus a water (no product) control were applied to 3 tree plots 2, 3 or 4 times once apple maggot was captured in the orchard block. Each product was used at label rate: Imidan -2.68 kg/ha, Assail - 240 g/ha, Calypso – 440 mL/ha and Exirel – 1.50 L/ha. Four replications of each treatments and control were applied with treatments randomized within each of the four blocks. At harvest, up to 100 apples from each plot were sampled and assessed in the lab. Number of stings, and number of tunnels were recorded for each apple.</p>

Percentage of apples with stings, percentage of apples with tunnels and average number of tunnels per apple were analysed using ANOVA methods in R. Results from this trial were hampered by the freeze event which occurred in early June, effectively reducing the number of apples and thus increasing the pressure (many adult flies and few apples). Under such pressure, only Imidan showed some control. The application of the 4<sup>th</sup> spray did not further reduce the number of stings or tunnels and a decision was made to drop this 4<sup>th</sup> spray during the 2019 trials. Trials in 2019 will occur in PEI, NB and NS.

For Objective 2: ALCM capture data were collected in 4 provinces: British Columbia, Ontario, Quebec and Nova Scotia. In British Columbia, 13 orchards were surveyed and data from 5 weather stations were used. In Ontario, 16 orchards and 16 weather stations supplied data, while in Quebec 3 orchards were scouted, each with a corresponding weather station. In Nova Scotia, 6 orchards were sampled, represented by 4 weather stations. Therefore, we have a total of 36 different sites for the 2018 season covering 4 provinces. All these data were compiled to verify their quality. The resulting population curves showed that there are 3 generations of ALCM in all the regions sampled. Data sets were then analyzed using the DJPheno software to determine the number of degree-days required to reach the 5, 50 and 95% thresholds for each of the 3 generations. These results were compared with those of a model already implemented in CIPRA, developed from Quebec data collected over 3 growing seasons, namely 2014 to 2016. Furthermore, we wanted to determine whether the number of degree-days for reaching each stage was comparable from one province to another or whether the differences justify the development of regional models, i.e. one model per province.

For Objective 3: This activity was not initiated in 2018-2019. Discussions with collaborators did occur and protocols were shared in early 2018 in preparation for the 2019 field season. Field sites have been identified in British Columbia, Quebec, Ontario and NS for trials to occur.

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

Results to date were presented at the Nova Scotia Fruit Growers Association (NSFGA) Annual Convention in January 2019.

**Early Outcomes (if any) or Challenges:**

The last spray (4<sup>th</sup>) was removed from the trial as it did not show any increased reduction in number of stings or tunnels when compared with applying the products 3 times.

**Key Message(s):**

All products reduced the incidence of apple maggot tunnels by 30% compared to a control. High pressure due to low availability of apples affected the results during the 2018 season.

This project is generously funded through the Canadian Agri-Science Cluster for Horticulture 3, in cooperation with Agriculture and Agri-Food Canada's AgriScience Program, a Canadian Agricultural Partnership initiative, the Canadian Horticultural Council, and industry contributors.



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