

Management Strategies for Control of the Rosy Apple Aphid, *Dysaphis plantaginaea* (Passerini) (Homoptera: Aphididae) in Organic Apple Orchards in British Columbia.

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Background:

The rosy apple aphid *Dysaphis plantaginaea* (Passerini) (Homoptera: Aphididae) is an important economic pest in organic apple orchards worldwide. Aphid damage not only affects the current year's crop but also reduces the number of blossom clusters in the subsequent year. Consequently an economic loss is incurred in both years. Economic damage in high-density plantings of certain cultivars of apples e.g. 'Ambrosia', can reach up to \$10,000 per acre over two years in a year with high aphid population density. Viable control methods for *D. plantaginaea* will have a significant positive impact on the livelihood of organic apple growers.

Project Overview:

This study had three main objectives. The first was to determine if oil sprays could be effective at reducing *D. plantaginaea* populations. Day length and a degree-day model were explored as tools to effectively time sprays. The second objective was to test if the removal of a major summer host of *D. plantaginaea*, broad leaf plantain, *Plantago major* (Lathrop) (Lamiales: Plantaginaceae) from orchards reduced aphid infestation the following year. The release of biological controls was also investigated as a method for reducing populations of *D. plantaginaea* in organic apple orchards.

Conclusions:

We currently have results from the first two years of data from the oil spray experiments. We have found that oil sprays in the fall applied between a day length of 12:05 and 11:15 and spring oil sprays applied between 170-258 degree days to be the most effective at reducing the mean percent of *D. plantaginaea* infested clusters per tree.

The mean percent of *D. plantaginaea* infested clusters per tree was significantly reduced following mechanical removal of *P. major* from orchard blocks. While results were statistically significant, the difference between control and treatment blocks is quite small. We will continue to remove plantain and will monitor these blocks in a high outbreak year to assess the efficacy of this method of control.

Early season releases of the biological control agents *Aphidoletes aphidimyza* (Rondani) (Diptera: Cecidomyiidae) and *Aphidius colemani* (Vierick) (Hymenoptera: Aphididae) did not reduce the mean percent of *D. plantaginaea* infested clusters per tree.

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