

Cherry Fruitworm (*Grapholita packardi*) in Blueberry

January, 2016

Cherry Fruitworm (*Grapholita packardi*) is a sporadic pest of blueberry crops in British Columbia. It was first reported causing blueberry fruit infestation in one location in 2010. Larvae feed inside developing fruit, contaminating it with frass and webbing (Figure 1). Cherry fruitworm is native to North America and is a major fruit pest in eastern blueberry growing areas such as Michigan. Its biology makes it difficult to control.

Hosts

Primary hosts are sweet and sour cherries and blueberry; wild hosts include bitter cherry/wild cherry (*Prunus emarginata*), chokecherry (*P. virginiana*); other reported hosts include apple, hawthorn, plums, peaches, pears, *Pyracantha* (firethorn), roses and quince.

Damage

All blueberry varieties in British Columbia are at risk. Larvae burrow into green fruit, infesting it with frass, and leaving an entrance and/or exit hole in the cheek of the berry (Figure 2.) Infested fruit cannot be adequately sorted out on the processing line or when picking, as there is limited shriveling or softness.



Figure 1. Frass inside blueberry where cherry fruitworm larva has fed.



Figure 2. Larvae cut small round holes in fruit (1 mm diameter).

Pest Identification

Larva - Larvae have a light brown head, and the body gets pinker as it grows (Figure 3.).

Adult - Moths are small (9-11 mm wingspan) and dark brown with mottled wing patterns on forewings. Hindwings are two-tone; dark close to body, and light away from body (Figure 4).



Figure 3. Pink cherry fruitworm larvae, up to 7 mm long, can be found in fruit, or crawling on picking flats in early August.



Figure 4. Adult cherry fruitworm moth, caught in a sticky trap.

Eggs - Eggs are very small (~1 mm), flat, yellowish, and singly laid on the calyx of green fruit (Figure 5); either on the inside or outside of calyx. Eggs are very difficult to see, requiring a microscope to verify presence.



Figure 5. Flat, green, cherry fruitworm egg laid on blueberry fruit calyx.

Life History

Cherry fruitworm has one generation per year. Moths emerge in spring (late May-June), mate, and lay eggs on green fruit. Larvae hatch and burrow into developing fruit. Young larvae enter the calyx end of the fruit and feed within. Frass pellets remain within the fruit, and are not evident outside the fruit. Larvae will infest about 2 fruit before exiting and searching for an overwintering site in early to mid August. The pink larvae can be found crawling on picking flats at this time. When larvae exit the fruit in early August, the frass remains within the fruit. Larvae build a silken structure and over-winter resting as pre-pupae in pruning stubs, wounds or under bark on tree trunks. In the spring, larvae pupate (April-May).

Monitoring

Cherry fruitworm can be managed with careful monitoring and well-timed insecticides. Use of pheromone trapping for adult moths, egg search information, and field history of damage are tools to determine if and when to spray for cherry fruitworm. Searching for eggs during blueberry fruit development is the most precise way to determine timing of sprays.

In the 2012 monitoring project for cherry fruitworm in the Fraser Valley, eggs were first detected during weekly fruit collections on June 8, shortly after moth flight began in late May. Green and ripening fruit were collected weekly and checked under the microscope for presence of new yellow eggs. By July 20, no more new eggs were found.

Control

Chemical control - Well-timed insecticides are critical for prevention of fruit damage. The goal is to spray eggs and very small larvae before they bore into the fruit. Based on 2012 monitoring data, the first spray should be applied around June 10, followed by 1-3 additional sprays at 10-14 day intervals, until no new yellow eggs are found.

Insecticides registered in Canada for fruitworm in blueberries include Rimon (novaluron), Altacor (chloranthraniliprole), Assail (acetamiprid), and Malathion. Malathion will also control Spotted Wing Drosophila (SWD), but **Altacor, Rimon, and Assail will not kill SWD**.

For organic growers, DiPel (*Bacillus thuringiensis* var. *kurstaki*) is registered for suppression of fruitworm; apply every 7 days once eggs are present and hatching (through June in coastal B.C.).

Caution: Rimon may cause some red and yellow leaf mottling, which looks similar to a viral infection (Figure 6). This mottling apparently does not impact the plant, and new growth is unaffected.



Figure 6. Rimon phytotoxicity to 'Brigitta' (left) and 'Bluecrop' (right) varieties. 'Duke' and 'Bluecrop' show much less mottling than 'Brigitta'. Other varieties show varying levels of injury.

More information on cherry fruitworm in blueberries

- [Berries Production Guide](#)
- [Cherry Fruitworm \(tree fruit\)](#) - B.C. Ministry of Agriculture
- [Control of Cranberry and Cherry Fruitworm in Highbush Blueberries](#) - Ontario Ministry of Agriculture and Food
- [Fruitworm Factsheet](#) - Michigan State University
- [Time to prepare for fruitworm management in blueberries](#) - Michigan State University