

Cherry Fruit Fly

(Western and Black cherry)

March, 2016

Hosts

Sweet and sour cherry, bitter cherry (*Prunus emarginata*), Pin cherry (*P. pensylvanica*), Mahaleb cherry (*P. mahaleb*)

Damage

Larvae (maggots) feed in the flesh near the pit of cherries rendering them unmarketable.

Identification

Adult - Slightly smaller than house fly, black body with yellow markings near base of wings and white stripes across abdomen. Wings have black markings, which are used to identify this pest from related fruit flies (see wing pattern pictures on next page).

Larva - White, legless maggot-like with no distinct head; about 5-6 mm long when mature.

Pupa - About 4-5 mm long, gold to brown colour, elongate-oval shape.

Life History

Cherry fruit flies overwinter as pupae in the top 2-5 cm of soil under cherry trees. Adults are present from late May into August, generally peaking from early to mid-July, depending upon location. Black cherry fruit fly adults begin emerging 1-2 weeks before western cherry fruit flies. Five to 9 days after emerging, female flies lay eggs singly in cherries and larvae feed for 1-2 weeks around the pit before cutting exit holes and dropping to the ground to pupate. There is only one generation each year; 3-4% can have a second generation in August and a similar proportion can overwinter for 2 or more years.



Western cherry fruit fly adult, Photo courtesy Agriculture & Agri-Food Canada



Cherry fruit fly larva



Western cherry fruit fly egg, Photo courtesy Agriculture & Agri-Food Canada

Fruit Fly Wing Band Patterns



Western cherry fruit fly, common wing pattern (*Rhagoletis indifferens*)



Western cherry fruit fly, rare wing pattern



Black cherry fruit fly (*Rhagoletis fausta*)



Walnut husk fly (*Rhagoletis completa*)



Apple maggot/snowberry fruit fly (*Rhagoletis pomonella*/*Rhagoletis zephyria*)



Currant fruit fly (*Rhagoletis ribicola*)



Rhagoletis berberis

Photo Credits: Agriculture & Agri-Food Canada, Pacific Agri-Food Research Centre, Summerland.

Monitoring

Traps are useful in determining first emergence of cherry fruit fly, particularly on a regional basis (see table below). Trapping results should not be relied on to determine whether control sprays are needed. Yellow sticky traps are not very efficient for detecting fruit flies, especially when numbers are low, such as in well-managed commercial blocks. Hang traps in an area where flies are most likely to be caught; local neglected or abandoned trees within a kilometer of commercial orchards, or in difficult to spray areas of cherry blocks. Placing traps where there is a known high population of fruit flies, or on the side of the block nearest possible unsprayed hosts, is more important than the number of traps.

Use commercially available yellow sticky traps baited with ammonium carbonate to increase attractiveness. Rebell™ traps are more attractive than other types of yellow sticky traps. Hang traps by mid-May at eye-level in exposed sunny parts of the trees. Clear all the leaves and twigs for 40 cm around each trap to make it visible to flies and to prevent debris from collecting in the trap. Check traps daily until the first flies are caught.

Outside unmanaged sources are a common threat to most growers, it is therefore important to monitor borders nearest these sources. This will ensure early detection of flies entering the block and timely application of protective sprays to prevent establishment and spread. In the presence of cherries, 90% of adults will not travel beyond a short distance, but some can fly up to 500 m or more.

Control

Cultural - Destroy infested cherries before the larvae emerge. At the time of cherry bloom, search out and destroy any unmanaged hosts within a distance of at least 250 m.

Chemical - The low efficiency of yellow sticky traps and zero tolerance for fruit flies in fruit requires protection of the fruit throughout the summer when fruit flies are active, regardless of whether flies are caught or not. Apply a control product within 5 days of first fly capture in a given region; usually early to mid-June. If using GF-120 bait sprays, begin applications as soon as the first adult is detected. Maintain control until all fruit is removed or completely shriveled on the trees, usually with a post-harvest spray. The following table presents information on recommended control products.

Date of First Capture since 2003

Year	First catch
2003	June 2
2004	May 25
2005	May 27
2006	May 24
2007	May 23
2008	May 28
2009	June 1
2011	June 6
2012	May 31

Date of first catch of western cherry fruit fly in Southern Interior B.C. Flies were monitored with yellow sticky cards (Pherotech) or plastic (Rebell) traps with ammonium carbonate lure. Courtesy of Dr. Howard Thistlewood, Agriculture & Agri-Food Canada, Summerland.



Cherry fruit fly sticky trap

NOTE: If your cherries are destined for foreign markets, check with your packinghouse, crop certifier or broker to confirm which spray products can be applied to cherries entering the country (MRL present) or allowed by the buyers. Do not risk fruit infestations by exceeding the spray intervals. Re-apply the products if measurable rain occurs within 24-48 hours of application to ensure fruit flies are exposed to lethal residues.

Products Recommended for Cherry Fruit Fly Control

Insecticide (active ingredient)	Group	Target Stages	Number of Applications	Spray Interval ¹ (days)	Pre-harvest Interval (days)
Admire 240F ² or Alias 240 SC ² (imidacloprid)	4	Larvae, adults	2	10	10
Assail 70 WP ^{2,3} (acetamiprid)	4	Adults	2	12	7
Sevin XLR ² (carbaryl)	1A	Adults	No limit	5 - 7	2
Cygon 480 or Lagon 480 EC (dimethoate)	1B	Larvae, adults	1	14	21
Diazinon 50W (diazinon)	1B	Adults	3	7	10
Entrust SC (spinosad)	5	Adults	4	5 - 7	7
GF-120 (spinosad)	5	Adults	10	7	0
Delegate ³ (spinetoram)	5	Adults	3	7	7
Exirel (cyantraniliprole)	28	Adults	4	7	3

¹ Minimum days between sprays when applied at recommended rates in absence of rainfall/overhead irrigation

² Minimize use to avoid mite problems

³ Suppression only

Sevin XLR, Assail 70 WP, Diazinon, Entrust SC, Delegate, Exirel and GF-120 sprays will only control adult fruit flies. Apply the first spray not later than 5 days after capture of the first fly followed by sprays at recommended intervals to maintain protection of fruit to harvest.

Entrust 80W and GF-120 NF are approved for use in organic cherry blocks. Both products contain spinosad. Entrust will also control leafroller and bud moth larvae present at the time of application. GF-120 requires a special sprayer which can be purchased or fabricated - do not use an air-blast sprayer. Carefully read the label instructions before mixing and applying GF-120. Because GF-120 does not control other insect pests (such as cherry fruitworm, leafrollers, aphids, spotted wing drosophila), growers should monitor for the presence of other pests to determine the need for control. To prevent damage by other insect pests, consider applying fruit fly control products that also provide protection against other major pests present (for example, Admire, Alias, Cygon or Exirel for aphids; Sevin, or Diazinon for cherry fruitworm, leafrollers; Diazinon, Exirel, Entrust, or Cygon for spotted wing drosophila).



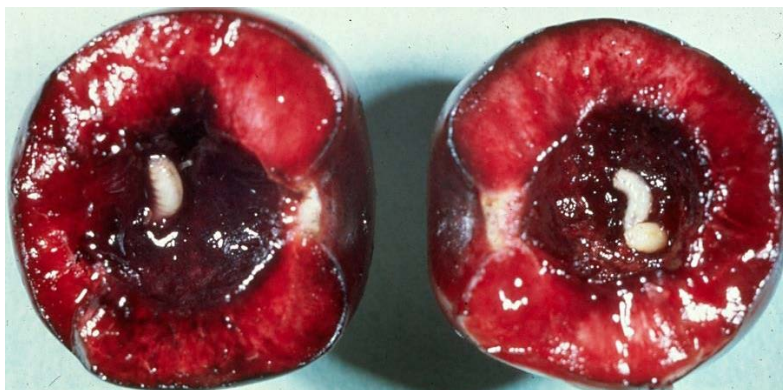
*Western cherry fruit fly pupae.
Photo courtesy Agriculture & Agri-Food Canada*

Admire and Alias have some residual contact activity against adult flies (2-3 days) but will kill young larvae hatching in the egg for 10 to 12 days post treatment because it is absorbed into the fruit. These products will also move into the branches and out to the growing tips where it will control any black cherry aphids present. Some research shows mite populations increase after neonicotinoid products such as Admire, Alias, or Assail are applied. Therefore do not use Admire, Alias or Assail more than twice per season. Avoid use of any chemicals harmful to predatory mites in blocks treated with Admire, Alias, and Assail to avoid possible mite flare-up. Monitor mites the following spring to assess the risk of mite problems.

Because Cygon and Lagon may not protect the fruit up to harvest, an additional application of another product may be required. Be aware of the pre-harvest intervals. For sour cherries, do not apply Cygon or Lagon more than twice per season. Apply the second spray 21 days after the first.

Field reports indicate control products formulated as emulsifiable concentrates (EC) may cause severe leaf burn and possible drop in Lapin, Sam, Stella, and Sweetheart cherry varieties. Lapins and any variety with Lapins in the parentage can be sensitive to leaf drop from dimethoate. Also, some leaf burn and drop may occur if GF-120 is applied to undersides of leaves.

A very important application is a post-harvest spray of Admire, Alias (if either only used once before), Cygon or Lagon to prevent late-emerging fruit flies breeding in unharvested whole or split cherries.



*Western cherry fruit fly larvae in cherry
Photo courtesy Agriculture & Agri-Food Canada*