

Managing Western Cherry Fruit Fly in the Home Garden

Bob Hammon & Melissa Foley

Tri River Area Cooperative Extension, Grand Junction CO

Western cherry fruit fly, *Rhagoletis indifferens* Curran, was first discovered in western Colorado in the late 1990's. It is now present in most areas where backyard cherries are grown in western Colorado. Western cherry fruit fly larvae feed within the developing and ripening cherries, and make them unusable. Several sprays must be applied to control this pest, making a once easily grown crop much more difficult to grow.

Western cherry fruit flies are native to northwestern North America, and probably evolved on native cherry species. They feed exclusively on cherries, and almost all cherry types and varieties are attacked, although some types are preferred



Figure 1. Western cherry fruit fly adults are seldom seen, but can be identified by dark patterns on the wings.

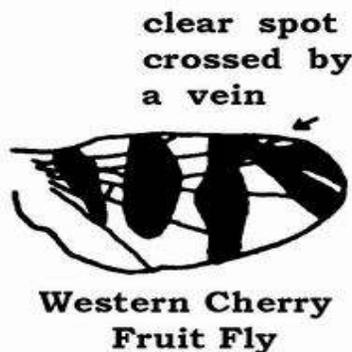


Figure 2. Wing patterns are used for identification of fruit fly species. Several fruit fly species could potentially attack cherries.

over others. These fruit flies (Diptera: Tephritidae) are closely related to two species of eastern US cherry fruit flies, apple maggots, walnut husk flies and Mediterranean fruit flies. Other species of fruit flies can occasionally cross over from their typical host plants onto cherries. Cherries grown near hawthorn thickets at higher elevations in western Colorado may become infested with hawthorn maggots. If you are located in an area in which western cherry fruit flies have not been recorded, it is



Figure 3. Larvae of cherry fruit flies feed within the cherry, making them unusable.

important to trap or rear adult flies from infested cherries to confirm their identity.

As of 2004, western cherry fruit flies have been recorded from Mesa (Grand Junction & Palisade), Delta (Paonia), and La Plata (Durango) Counties. They can be expected in the future in other areas where cherries are grown. There are many regulatory restrictions limiting movement of cherries from infested areas to uninfested areas. There is a zero tolerance for western cherry fruit fly in commercial cherry orchards, meaning that control efforts must be perfect. It is very important that backyard cherry growers take efforts to control cherry fruit flies to minimize chances of them moving into commercial cherry trees.

LIFE HISTORY

Western cherry fruit fly has a single generation per year. It spends the winter as a pupa in the soil, and then emerges as an adult fly over an extended period of up to two months during the late spring/early summer. The first flies typically emerge in mid May in the warmest areas of western Colorado. Some pupae may remain dormant in the soil for several years before emerging.

Adult flies are smaller than a house

fly, have black bodies with thin white stripes across the abdomen and yellow markings on the thorax (Figure 1). Adult fruit flies are identified by the unique pattern of black markings on the wings (Figure 2). They are not strong fliers, and therefore tend to inhabit the first cherry tree they encounter. The female is mature enough to lay eggs seven to ten days after emerging. They will feed on pollen or aphid honeydew during the pre oviposition period. The female punctures the skin of the developing cherry with her ovipositor, and lays an egg. She may feed on juices that seep out of the oviposition puncture. The life span of an adult fly is about 16-35 days

The eggs are laid over a period of three weeks during optimal temperatures of 75-85°F. About 50-200 eggs can be laid by one female with each egg being deposited singly in a cherry. It takes 5-8 days for the eggs to hatch. The larvae are white and maggot-like and bore into the cherry where they feed and mature (Figure 3). They spend 10-12 days inside the cherry, before boring out, falling to the ground, and burrowing into the soil beneath the tree to pupate. The pupae remain in the soil until the following spring. At maturity they are about 5-6 millimeters long. The pupae measure about 4-5 millimeter in length.

MANAGEMENT

Control of fruit flies with insecticides must be preventative in nature. Once eggs hatch and larvae bore into the cherry, the damage is irreversible. Spray residual must cover the entire cherry, and be at a concentration high enough to kill adult flies before they have a chance to lay eggs. Western cherry fruit flies are capable of laying eggs about 7-10 days after the first flies emerge in the late spring. Fly emergence extends over a minimum of 6-8

weeks in most areas. Because of the extended flight, most cherries have to be protected with numerous sprays.

Yellow sticky traps can be used to evaluate western cherry fruit fly presence and emergence. Traps should be in place by mid-May, or when developing cherries are light green in color. It is best to place them in sunny, exposed areas at eye-level. Traps should be monitored daily until first fly is caught. The spray program should begin about one week after the first fly is caught. The insecticide residual activity is dependent on the chemical properties of the particular material that is used, and the growth rate of the cherries. A fast growing cherry will “outgrow” insecticide coverage, so sprays need to be applied more often as the cherries expand in size.

There are four primary insecticide active ingredients available for western cherry fruit fly control for the home gardener. Label instructions vary with different products, so always read and follow label directions for whatever product you use.

- A relatively new insecticide, spinosad, is available as Fertilome Borer, Bagworm, Leaf Miner and Tent Caterpillar spray. This insecticide is derived from a bacterial fermentation, and is the least toxic to mammals of the available materials. It has a residual of about 5-7 days when applied at the highest allowed rate. It should be used on a seven day schedule once adult flies are active. Spinosad cannot be applied within seven days of harvest. A bait formulation of spinosad, GF-120 Naturalite Fruit Fly Bait (Dow AgroSciences is now available, but unfortunately only in commercially sized packaging.



Figure 4. Yellow sticky traps are used to determine the timing of the spray program.

- Carbaryl based insecticides are sold under several trade names, often as Sevin. This insecticide is effective against fruit flies, but repeated use can cause outbreaks of spider mites. Repeated use is not encouraged, but it can be useful if rotated with other labeled insecticides. The pre harvest interval varies with carbaryl products, so it is important to read and follow label directions.
- Several products with malathion as active ingredient are available for use on cherries. These materials are not generally recommended, except for use in the week before harvest. Malathion does not have more than a few days residual, so repeated use on a short schedule would be necessary

for good control. Most malathion formulations have a 3 day pre harvest interval, so they would be a good choice if sprays are needed within the last week before harvest.

- Two pyrethroid insecticides, permethrin and esfenvalerate, are available for cherry fruit fly control. There are many commercial products available with these insecticides as active ingredient, but only a few are labeled for use on cherries, so it is important to read the label carefully before buying any pesticide. Pyrethroid insecticides will give a week or more of residual activity, but it is limited by the growth rate of cherries. Trees should be sprayed on a weekly basis while the fruit is expanding.