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insect answers



WALNUT HUSK FLY

The walnut husk fly is a serious pest of walnuts in the Pacific Northwest and has caused considerable damage to walnuts in south central and southwestern Washington. It has also been a pest of late peach varieties in the Maryhill area of south central Washington in recent years.

Life History

The walnut husk fly spends the winter in the soil under the host tree, usually walnuts, in the quiet resting stage called puparia. The adult flies emerge in midsummer, usually July and August, but may continue to emerge as late as October. Adult flies are about the size of a small housefly, brown with a yellow semicircle on the back. The eyes are blue-green and the wings are marked with brownish bars. Mating and egg laying begin soon after adult emergence and may continue into the fall. The female lays several tiny, pearly colored eggs on the walnut husk or nearly mature peach. Eggs require about 5 to 7 days to hatch. The tiny white maggots feed in the walnut husk and under the skin of the peach until they reach maturity several days later. The mature larvae drop to the ground and change to resting puparia where they spend the winter waiting to change to adult flies the following season.

Injury

Injury is caused by the larvae which feed on the walnut husks and release a dark liquid that stains the shells and at times darkens the kernels. The larvae may also injure the conductive tissues of

the nut, which results in shriveling of the kernel. Heavily infested husks show blackened areas on the outside. These areas are soft and, when broken into, the larvae are visible. Larvae may also attack and destroy peaches by feeding under the skin.

The only condition that might be confused with walnut husk fly injury in walnuts is walnut blight. Walnut blight can be distinguished from husk fly damage by the fact that the area affected by blight is usually roughened, sunken, and cracked. These areas are usually hard, as compared with the soft husks infested by the walnut husk fly larvae. The Franquette and Mayette varieties and seedlings of Manregin and Carpathian are considered to be very susceptible to husk fly damage.

Detection of Husk Flies

Traps are used to determine when sprays should be applied. The date of spray application will vary from one area to another. If the fly becomes established in commercial orchards, this date may vary from one orchard to another in the same district.

Trapping Methods. The dry ammonium carbonate trap, commonly referred to as the Frick trap for the man who designed it, is the most widely used trap and is simple to prepare. The trap is made from the type of cardboard ice cream container that has been treated on the inside to prevent absorption by the cardboard. The inside is coated with a sticky material to

trap the flies. The bottom on the container is perforated with small holes to allow ammonia fumes to pass into the container. Three level tablespoons of ammonium carbonate are put into the lid and placed over the perforated bottom. A wire collar is placed around the carton and bent into a hook for hanging on small limbs.

The cartons should be placed in such a way that they tilt to prevent rain from entering the cartons. To place the trap in the tree, use a small pole 8 to 10 feet in length with a hook or bent nail on the end. Traps should be placed on the north side of the tree in an area of dense foliage and high enough to have some leaves below. Hang the trap so that it can rotate freely. In selecting trees in which to place the traps, choose trees that have dense foliage where heaviest damage to nuts was noticed the previous season and where moisture is abundant. Five traps for the average-size orchard are sufficient. Place traps several trees apart. Examine three times a week and record number of flies trapped on the sticky surface on the inside of the container. When the fly population shows a continuous rise for two or three consecutive days, sprays should be applied within ten days.

The sticky material used to coat the inside of the ammonium carbonate trap is similar to the material used on old-fashioned flypaper. This material may be found listed as various trade names. Special sticky compounds called "Stickum," manufactured by Michel & Pelton Company, Manufacturing Chemists, Landregan & Powell Streets, Emeryville, California; and "Senco Bird Repellent," manufactured by Sennewald Drug Company, Inc., 2723 Chateau Avenue, St. Louis, Missouri, are satisfactory in making this trap. Ammonium carbonate crystals may be purchased from local druggists or drug supply houses.

Bait Pan Method. Bait in pans is very effective and can be used where there is no fear that the bait pan might be hazardous to children because of the possibility of spilling the caustic fluid. A two-quart capacity galvanized pan is recommended. The bait consists of 3 ounces of Glycine (amino acetic acid) plus 4 ounces of household lye, to one gallon of water. The pans are wired with 16-gauge wire. Sash cord or cotton rope $3/16$ inches in diameter, approximately 30 to 40 feet long, is tied to the wire. The rope is threaded through a small pulley which is wired to a limb in the upper north side of the tree. The pan containing the bait is raised to the desired height in the tree, preferably in dense foliage. This type of trap has been very satisfactory, and the bait improves with age.

Control

Insecticides should be applied within 10 days after catches in fly traps show a sharp or steady increase over a 30-day period. In most areas this will probably be from early- to mid-August. A second application may be necessary 3 to 4 weeks later. Homeowners will have difficulty spraying large walnut trees unless they have access to power spray equipment.

Several insecticides have been useful in the control of walnut husk flies. Malathion is the only insecticide that should be used in towns and around dwellings. The other materials should be used only in commercial orchards by individuals experienced in the use of insecticides.

Before using any insecticide, read and follow the precautions on the manufacturer's label.

To avoid excess insecticide residues at time of harvest, observe the restrictions shown in the table.

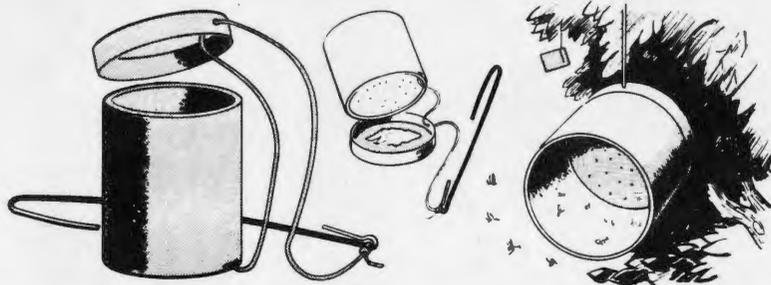


Figure 1. The walnut husk fly, *Rhagoletis completa*, male, showing wing markings, and characteristic position of wings. Figure 2. The Frick trap, showing where to place chemical and how to hang trap.

Insecticides and Restrictions

Insecticide and Amount to Use Per 100 Gallons of Water

Malathion—2 lbs. 25% W.P.*
 Parathion—2 lbs. 25% W.P.*
 Ethion—1.5 lbs. 25% W.P.*

Trithion—1.5 lbs. 25% W.P.*
 Phosphamidon—0.25 pt. 8 lb./gal. E.C.*
 Bait spray—Use 4 lbs. 25% malathion W.P. plus 2 qts. Staley's Bait No. 7 in 100 gals. water/acre. If aircraft is used to make the application, apply the same amount of insecticide and bait in 10 gals. water/acre.**

*For mature orchards, use 8 lbs. 25% malathion W.P. or 8 lbs. 25% parathion W.P. or 6 lbs. 25% Ethion W.P. or 6 lbs. 25% Trithion W.P. or 1 pt. Phosphamidon 8 lbs./gal. E.C./acre.

**A. E. Staley Manufacturing Company is the source of Staley's Bait. Local dealers are unlikely to stock this material until there is a demand for it; check with your spray dealer.

W.P. = wettable powder E.C. = emulsifiable concentrate

Our thanks to the entomology specialist of Oregon State University and University of California for much of the material shown in this publication.

Prepared by A. H. Retan, Extension entomologist, Washington State University, Pullman.



Use pesticides with care. Read the label on the container and follow the directions carefully.

Never smoke while applying insecticides and avoid breathing the spray or dust. Wear natural rubber gloves when handling pesticides. Wash hands and face carefully with soap and water after applying. If insecticides are spilled on the skin or clothing, remove contaminated clothing and wash exposed skin areas thoroughly.

Always store pesticides in their original containers, never in fruit jars or soft drink bottles, and be sure that labels remain on the original containers. Keep containers away from food or animal feed and out of the reach of children or irresponsible persons.



Figure 1. The walnut husk fly, *Rhagoletis completa*, male, showing wing markings, and characteristic position of wings. Figure 2. The Fick trap, showing where to place chemical and how to hang trap.

Insecticides and Restrictions

Insecticide and Amount to Use Per 100 Gallons of Water	Restrictions: Interval between Last Application and Harvest
Ethion-1.5 lbs. 25% W.P.* Parathion-2 lbs. 25% W.P.* Malathion-3 lbs. 25% W.P.*	No time limitations. Do not apply after husks open. Do not apply after husks split. Do not apply more than twice during the fruiting season. Do not apply after husks split. Seven days
Ythion-1.5 lbs. 25% W.P.* Propoximidon-0.75 pt. 8 lb. gal. E.C.* Bait spray-Use 4 lbs. 25% malathion W.P. plus 2 pts. Staley's Bait No. 7 in 100 gals. water/acre. If insects is used to make the application, apply the same amount of insecticide and bait in 10 gals. water/acre.**	

*For various brands, use 8 lbs. 25% malathion W.P. or 2 lbs. 25% parathion W.P. or 6 lbs. 25% Ythion W.P. or 1 pt. Propoximidon 8 lb./gal. E.C./acre.
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Always store pesticides in their original containers, never in milk cans or soft drink bottles, and be sure that labels remain on the original containers. Keep containers away from food or animal feed and out of the reach of children or irresponsible persons.

