
WALNUT HUSK FLY

Integrated Pest Management in the Home Garden

The walnut husk fly, *Rhagoletis completa*, infests walnuts in most California walnut-growing areas. It feeds on black walnut and on all varieties of English walnut, but some early maturing varieties may escape infestations in most years.

IDENTIFICATION

The walnut husk fly (Fig. 1) is about the size of a housefly and very colorful. It has a yellow spot just below the areas where the wings are attached and iridescent, greenish eyes. The wings have three prominent dark bands, one of which extends around the wing to

form a V-shape. The banded wings distinguish it from other flies found in the walnut orchard. Larvae feed in groups within the husk and are not seen unless the skin of the damaged husk is removed. Dark, soft blotches on maturing husks are a good clue to husk fly presence. Blotches that are hard and dry are caused by blight disease and should not be confused with husk fly damage.

LIFE CYCLE

This fly has one generation per year (Fig. 2). Walnut husk flies overwinter as pupae in the soil and emerge as

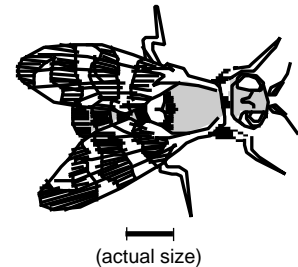


Figure 1. Walnut husk fly.

adults in some areas as early as May, but generally around July 1. Peak emergence can be from mid-July to mid-August. The female fly deposits eggs in groups of about 15 below the surface of the husk. Usually the first sign of an infestation is a small, stinglike mark on the husk caused by the depositing of eggs. At first these areas are difficult to see, but they soon darken and appear as little black spots on the husk, usually located near the stem end of the husk and often on the shaded side of the nut. Eggs hatch into white maggots within 5 days. The maggots feed inside the husk, enlarging the black area, which remains soft, unsunken, and smooth. The outer skin of the husk usually remains intact, but its fleshy parts decay and stain the nut-shell. Older maggots are about ¼ inch in length and yellow with black mouthparts. After feeding on the husk for 3 to 5 weeks, mature maggots drop to the ground and burrow several inches into the soil to pupate. Most emerge as adults the following summer but some remain in the soil for 2 years or longer.

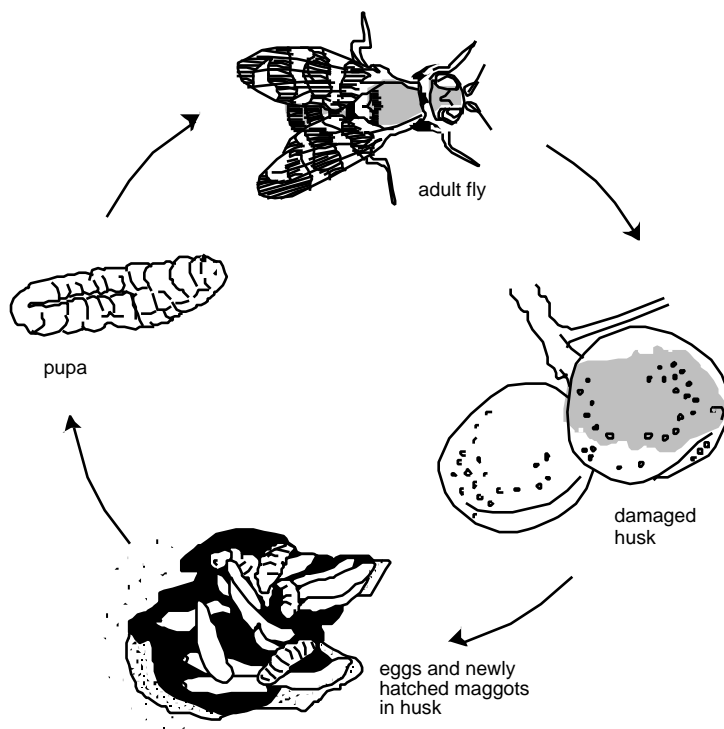


Figure 2. Walnut husk fly life cycle.

PEST NOTES

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DAMAGE

The primary damage from the husk fly is staining of the nutshell, which is a problem in commercial orchards where nuts are grown for in-shell sale, but can be tolerated in backyard situations. Feeding by the husk fly maggots also causes the damaged husks to stick to the shell, making them difficult to remove. An early-season husk fly infestation (June to mid-August) may result in shriveled, moldy kernels.

MANAGEMENT

Most home orchardists ignore the walnut husk fly because generally it does not affect the nutmeats. It can make the husks difficult to remove; however, this problem can be remedied by placing the damaged nuts in a damp burlap bag for a few days before attempting to remove the hull. Be sure to dispose of infested husks in a tightly sealed bag.

Certain general sanitation practices that reduce the number of husk flies overwintering near your tree or orchard may contribute to control. These practices include removing and disposing of damaged nuts as soon as possible. It may also be possible to reduce next year's population by spreading a tarp

under the tree from July through August to prevent the maggots from entering the soil to pupate.

Commercial growers time insecticide treatments using traps and watching for the beginning of egg laying. If gardeners feel a treatment is necessary in home orchard situations for trees with early or severe infestations, multiple applications of malathion and bait can be made beginning in July. Spray on a 21-day interval until within 1 month of harvest—eggs laid later than this will not have time to develop and cause damage.

Bait is added to the spray as an attractant so that the flies feed on the spray. When bait is used, the entire tree does not need to be sprayed; spraying the lower half of the tree is adequate. Commercial growers use baits (Nu-Lure or Mobait) that are sold only in large quantities. Although research is lacking, molasses may work as a bait in backyard situations when added at 1 to 1.5 times the amount of malathion. For example, if you use 2 teaspoons of malathion per gallon of water, then add 3 teaspoons of molasses to the mixture. Follow label directions to determine spray rates for malathion.

According to state regulations, a home gardener can personally use a nonreg-

istered substance such as molasses for the purpose of controlling home or garden pests on residential property that they own, lease, or rent, provided no food or feed commodities treated with the substance are sold, distributed, or fed to animals that are sold or distributed for human consumption.

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UC Statewide IPM Project. 1993. *Integrated Pest Management for Walnuts*, 2nd ed. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 3270.

REFERENCES

Flint, M. L. 1998. *Pests of the Garden and Small Farm: A Grower's Guide to Using Less Pesticide*, 2nd ed. Oakland: Univ. Calif. Div. Agric. Nat. Res. Publ. 3332.

UC DANR. 1996. *Walnut Husk Fly: Biology, Monitoring, and Control Strategies*. Oakland: Univ. Calif. Div. Agric. Nat. Res. Video V96-C. (Available for viewing at most UCCE offices.)

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

EDITOR: B. Ohlendorf
TECHNICAL EDITOR: M. L. Flint
DESIGN AND PRODUCTION: M. Brush
ILLUSTRATIONS: V. Winemiller

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WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash nor pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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