
WALNUT HUSK FLY

Integrated Pest Management for Home Gardeners and Landscape Professionals

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 can escape infestations in most years.

IDENTIFICATION

The walnut husk fly 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 (Fig. 1). The banded wings distinguish it from other flies found in the walnut orchard.

Larvae feed in groups within the husk, but you won't see them unless you remove the skin of the damaged husk (Fig. 2). Dark, soft blotches on maturing husks are a good clue to husk fly presence (Fig. 3). 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. 4). Walnut husk flies overwinter as pupae in the soil and emerge as adults in some areas as early as May but generally around July 1. Peak emergence often occurs mid-July through mid-August.

The female fly deposits eggs in groups of about 15 below the surface of the husk (Fig. 5). Usually the first sign of an infestation is a small, stinglike mark on the husk caused by this depositing of eggs (Fig. 6). At first these areas are difficult to see, but they soon darken and appear as little, black spots on the husk,

usually 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 nutshell.

Older maggots are about 1/4 inch long and are 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 (Fig. 7), but some remain in the soil for 2 or more years.

DAMAGE

The primary damage from the husk fly is nutshell staining, which is a problem in commercial orchards where nuts are grown for in-shell sale; however, this 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) can result in shriveled, moldy kernels.

MANAGEMENT

Most home orchardists ignore the walnut husk fly, because generally it doesn't affect the nutmeats. Since the husks can be difficult to remove, home orchardists can place 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



Figure 1. Banded wings of the adult walnut husk fly.



Figure 2. Walnut husk fly larva feeding beneath the skin of a walnut husk.

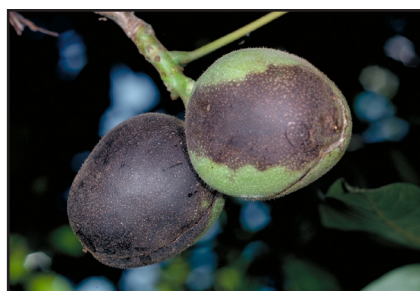


Figure 3. Husks of walnuts infested with walnut husk fly larvae turn black.

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overwintering near a tree or orchard can assist with control. These practices include removing and disposing of damaged nuts as soon as possible. It also might 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.

If gardeners feel treatment is necessary in home orchard situations for trees with early or severe infestations, they can make multiple applications of insecticide combined with bait beginning in July. These sprays are aimed at controlling adults before they can lay eggs. Spray on a 7- to 14-day interval until within 1 month of harvest. Eggs laid later than this will not have time to develop and cause damage.

Add bait to the spray as an attractant so that the flies will feed on the spray. When using bait, complete coverage of

the tree often is not required, which makes application easier for home gardeners with large trees. Commercial growers use specially prepared baits that they mix with insecticide or pre-mixed insecticide baits for walnut husk fly such as GF-120 Naturalyte Fruit Fly Bait. These products are sold only in large quantities but sometimes are available at farm chemical suppliers for home use. Their effectiveness for home use situations is unknown.

Molasses might work as a bait in backyard situations when mixed with insecticide. Add about 4 to 6 tablespoons of molasses per gallon of water applied. Currently the only home-use insecticide available for walnut husk fly is spinosad (e.g., Monterey Garden Insect Spray). It might be only partially effective.

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

registered 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 sold or distributed for human consumption.

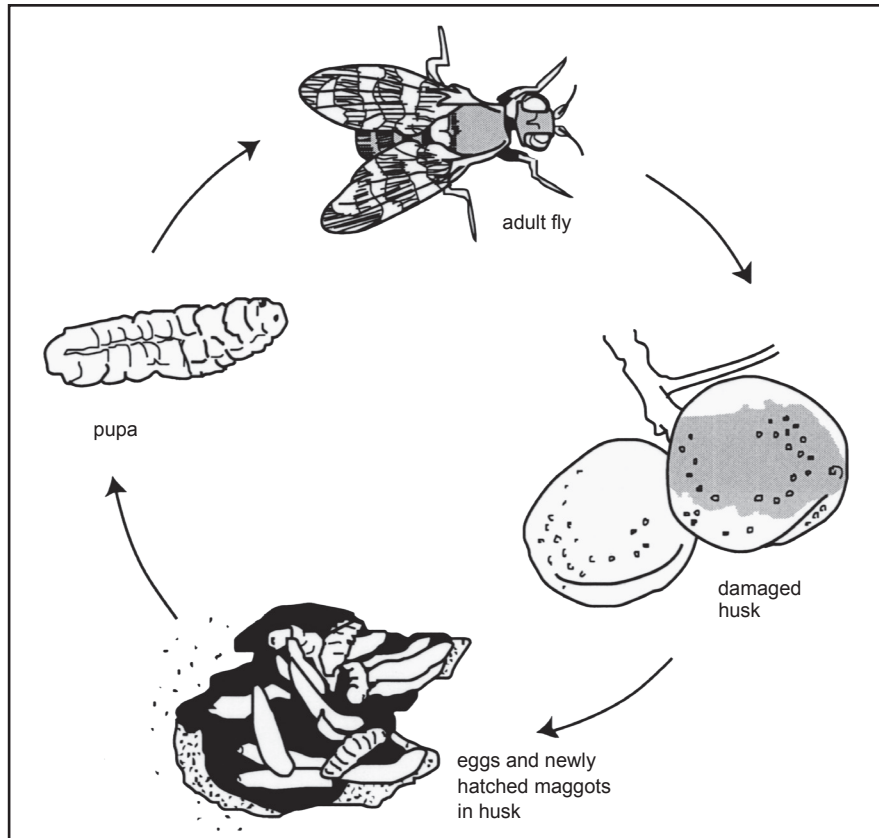


Figure 4. Walnut husk fly life cycle.



Figure 5. Walnut husk fly eggs beneath the skin of a walnut husk.



Figure 6. The dark area on this walnut husk indicates the walnut husk fly has laid eggs beneath the surface.



Figure 7. Walnut husk fly pupa on a soil surface.

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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.

Pesticides applied in your home and landscape can move and contaminate creeks, rivers, and oceans. 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 or pour pesticides down the 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 Household 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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