



PROTECTING BACKYARD WALNUT TREES FROM WALNUT HUSK FLY

Home Garden Series

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Introduction

In the Pacific Northwest, walnuts are popular backyard trees that provide more than just shade. Homeowners like them as ornamentals, and for their valuable wood and edible nuts. Mature walnut trees tend to be quite large. Heights of 40 feet are average; heights of 120 feet are common. As such, they provide quite a lot of habitat for pests.

The most frequent pest problem encountered in growing walnuts in the backyard is the walnut husk fly, *Rhagoletis completa* Cresson. It is a pest of walnut species (*Juglans* spp., including Persian or English walnut, eastern black walnut, and butternut), all grown in Washington State.

Actually, it is not the adult fly that we consider a pest but the immature maggot that feeds directly on the walnut husks. This feeding damage makes the nuts messy and unpleasant to harvest, hard to store, and degrades the flavor of the walnut kernel itself.

This fact sheet helps homeowners recognize the walnut husk fly (adult and immature), and the damage this pest causes to walnut kernels themselves. This publication focuses on cultural strategies to minimize damage from walnut husk flies infesting backyard trees, and discusses chemical strategies and provides links to the most up-to-date list of recommended products.

Adult fly

These flies are about 1/4 inch long (house fly size), brown in color, and have a yellow semicircle on their backs (Figure 1). The translucent wings have brownish-black bands in a unique pattern that distinguish them from other flies. Adults emerge from the soil from July through September. Within one to two weeks of emerging, adults mate and females lay eggs just beneath the surface of the walnut husk.

Fly eggs

Eggs are pearl colored, about 1/25 inch long, and located just beneath the surface of the walnut husk (Figure 2). Within five to seven days of deposition, larvae will hatch from these eggs.

Immature flies

Immature forms are creamy-white, headless maggots, approximately 1/2 inch long (Figure 3). This stage is the most damaging. Fly maggots feed directly on the husk's flesh, not the walnut shell.



Figure 1. Adult fly resting on walnut leaf. (Photo by Mike Bush, WSU Extension.)



Figure 2. Walnut Husk fly eggs. (Photo from the Ken Gray Collection, Oregon State University.)



Figure 3. Walnut Husk fly maggot. (Whitney Cranshaw, Bugwood.org.)

The feeding activity releases the same pigment used in commercial stains (e.g. walnut color). This pigment discolors the shell and changes the flavor of the walnut kernel. In some situations, the damaged husks stick to the shells (Figure 4), making them difficult to remove and leading to shriveled, moldy kernels.

Staining is not limited to walnut shells. It also rubs off on hands and surfaces on which the nuts are dried (Figure 5).

When infested walnuts drop to the ground, the maggot inside will burrow into nearby soil and pupate for as little as one year and as many as two. In this way maggots are protected from the elements and also from predation.



Figure 4. Infested walnut husk. (Photo by Mike Bush, WSU Extension.)



Figure 5. Staining caused by damaged husks. (Photo by Wolfmankurd, via Wikimedia Commons.)

Pest Management Strategies

Early June

Insecticidal control of the walnut husk fly in a mature walnut tree is nearly impossible for homeowners to achieve because of the size of the tree. Setting up sticky traps, monitoring traps, and using specialized spray equipment are extremely difficult in such large trees. Spray drift is also a concern when using home application equipment.

Take time to shop around for a certified arborist, yard care specialist, or licensed spray applicator. These professionals can more effectively scout and monitor the appearance of adult walnut husk flies and spray the tree only if flies are detected. The scouting, monitoring, and pesticide application period will run from June to October.

Late June

If your tree is less than 10 feet tall, you can scout for adult walnut husk flies yourself by using yellow sticky traps from agricultural supply companies (Figure 6). Place one trap in the tree by late June, at least 6 feet off the ground and preferably in the upper half of the canopy.



Figure 6. Sticky trap. (Photo by Mike Bush, WSU Extension.)

After capturing an adult walnut husk fly (Figure 7), consider using insecticide products that target the adult fly.

A listing of effective insecticides is available at Washington State University's Hortsense website, <http://hortsense.cahnrs.wsu.edu/Home/HortsenseHome.aspx>, or call your local WSU Extension Master Gardener Program representative. *Caution: homeowners should consult a commercial pesticide applicator for treatment of trees over 10 feet tall because spray drift becomes an issue when making applications to tall trees.*

Apply insecticides within 10 days of trapping the first walnut husk fly and reapply at periodic intervals as directed by the label.



Figure 7. Adult walnut husk fly on a sticky trap. (Photo by Mike Bush, WSU Extension.)

Late September through October

At shuck-split (Figure 8), as walnuts drop to the ground, the mature larvae leave infested husks and bore into the soil where they pupate until the next summer. Spread a tarp or plastic cover under the tree to help collect the dropped walnuts and to prevent maggots from entering the soil.

For a quality eating experience, be selective when harvesting these walnuts; just gather the fresher-looking, green-husked walnuts (not darker-colored, possibly infested walnuts). Also, try to de-husk your walnuts as soon as possible.

Scout for walnuts with a soft brown spot on the husk. Crack open with a knife or fingernail to check for eggs or larvae. Monitor all fallen walnuts this way. Put infested husk material, larvae, or eggs in a plastic bag and place in the trash. Do not compost infested walnuts.



Figure 8. Walnuts at shuck-split. (Photo by Thesupermat, via Wikimedia Commons.)

Ground cover sanitation is important after harvest. Rake up and dispose of any fallen (un-harvested) nuts to prevent mature maggots from entering the soil to pupate.

November

Mark calendars for scouting efforts next year. Because larvae can live up to two years in the soil, continue monitoring even if the fly has not appeared this year. Remember: aim the current year's chemical control efforts at the adult fly (before it can lay eggs) and the current year's sanitation efforts at the larval stage (before it escapes to the soil for possible emergence next year). Homeowners are not likely to control walnut husk flies in large backyard trees, but by following these cultural strategies they can minimize crop loss to unsightly, maggot-infested walnuts.

Further Reading

Black, C.A. and C. R. Foss. 2009. [Pesticides: Learning About Labels](#). *Washington State University Extension Publication* FSIPM001.

Black, C.A. and C. R. Foss. 2010. [Pesticides: Safe Handling](#). *Washington State University Extension Publication* FSIPM002E.

Bush, M., J. Olsen, and A. Antonelli. 2014. [Walnut Husk Fly](#). *Washington State University Extension Publication* FS039E. (This is a similar fact sheet, available for commercial orchardists.)

Hollingsworth, C.S., ed. 2015. [Pacific Northwest Insect Management Handbook](#).

WSU Extension Hortsense. 2016. [Walnut: Walnut Husk Fly](#).



Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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