PURDUE UNIVERSITY

PURDUE EXTENSION

E-33-W

LANDSCAPE & ORNAMENTALS

Department of Entomology

MANAGING INSECT PESTS OF NUT TREES

Clifford S. Sadof and Ricky E. Foster, Extension Entomologists

Insect and mite pests of nuts are best managed when sound Integrated Pest Management (IPM) principles are used. These include proper identification of the pest, selection of the appropriate management tactic, and proper timing and placement of control measures. In this bulletin, we provide information to help you implement this approach for pests of Pecans and Walnuts.

Monitoring plants for pests is critical for a successful IPM strategy. Plants can be inspected visually for pest presence and pest activity at least once every 2 weeks. Some pests such as codling moth and hickory shuckworms have traps available that can help you time your pesticide application. Several pests of these crops, such as mites, aphids, and scales can be controlled by conserving the natural enemies in your nut grove. This is best accomplished by reducing conventional pesticide use or by choosing a biorational material such as *Bacillus thuringiensis* to control caterpillars.

Do not pasture dairy animals or livestock in groves that have been treated with insecticide. Be sure to read the label and to follow all restrictions concerning pre-harvest intervals (PHI), re-entry times, and maximum seasonal dosages. Some of the materials listed are restricted use pesticides (RUP) and can only be used by licensed applicators.

Insecticide Trade Names and Common Names

Trade Name	Common Name
AgriMek	Abamectin
Ambush	permethrin
Ammo	cypermethrin
Asana	esfenvalerate
Bacillus thuringiensis	*Bacillus thuringiensis*
Cygon	dimethoate
Guthion	azinphosmethyl
Lorsban	chlorpyrifos
Malathion	malathion
Pounce	permethrin
Provado	imidacloprid
Sevin	carbaryl
Thiodan	endosulfan
Vendex	hexakis

WALNUT INSECTS		
Insect	**Treatment**	**Comments**
Codling Moth *Cydia pomonella* (L.) Pinkish-white caterpillars (1" long) with brown heads that feed in walnut husks. Feeding by first generation caterpillars on small nuts causes premature drop. Second generation feeding discolors nuts at stem end.	Cultural Practices Sanitation Monitoring Insecticides *Bacillus thuringiensis* OR Ambush 25W at 12.8-25.6 oz. per acre. OR Asana XL 9.6-19.2 oz. per acre. Guthion 2S, or 2L at 6-8 pts. per acre, or 35W at 4.25-5.68 lbs. per acre. OR Lorsban 4E at 4 pts. per acre or 50W at 4 lbs. per acre. OR Pounce 3.2EC at 8-16 oz. per acre. OR Sevin XLR Plus, or 4F at 2-5 qts. per acre or 80S at 2 lbs. per acre.	Plant later blooming varieties when available. Remove and destroy fallen nuts and debris in fall. Place pheromone traps in trees in May. Make first insecticide application 7-10 days after first moths are caught. Repeat 10 days later. Repeat as before when first moths of second generation occur in July. Do not apply after husks open. Many brands available. 0 day PHI. Apply up to 102.4 oz. per acre per season. RUP. 1 day PHI. Apply up to 38.8 oz. per acre per season. RUP. 21 day PHI. Up to 3 applications per year. RUP. 21 day PHI. Up to 3 applications per year. 14 day PHI. Apply up to 64 oz. per acre per season. RUP. 1 day PHI. Up to 4 applications per year. 14 day PHI
Walnut Husk Fly *Rhagoletis completa* (Cresson) White maggots (3/8") feed in husk which can soften, turn black and stain nut meats. Nuts can shrivel during heavy infestation.	Cultural practices Sanitation Insecticides Ambush, Asana, Guthion, or Pounce. OR Malathion 57EC at 1/2 pt. per 100 gal.	Plant later blooming varieties when available. Remove and destroy fallen nuts and debris. Apply in late July and repeat in 2 weeks. Mix with Staley's bait. Write: A.E. Staley Mfg. Co., 2200 Eldorado St., Decatur, IL 62525. Same as for codling moth. 0 day PHI.

WALNUT INSECTS (Con't)		
Insect	**Treatment**	**Comments**
Weevils, Curculio *Conotrachelus spp.* Reddish-brown snout nosed beetles (1/2") leave crescent shaped scars in husks when females drill holes and lay eggs. Creamy-white grubs feed in kernels. Two species are present in Indiana.	Sanitation Insecticides	Remove and destroy fallen nuts and debris in fall. No insecticides are labeled at this time.
Caterpillars: Walnut Caterpillar *Datana integerrima* (G&R) Hairy reddish-brown caterpillars with fine yellow stripes running along body, which feed in groups and defoliate branches. One generation per year.	Monitoring Insecticides *Bacillus thuringiensis*	Inspect trees for white egg masses on leaf undersides in July, and for groups of caterpillars in late July and August. Spray when and where caterpillars are found. Do not apply after husks open. Many brands are available. Most effective when caterpillars are small.
Caterpillars: Fall Webworm *Hyphantria cunea* (Drury) White haired caterpillars feed in webbed masses on branch tips and remove foliage. Two generations per year, one starting in mid-May, and the second in late July.	Monitoring Insecticides	Inspect trees in May and June for webs of the first generation on branch tips. Repeat in late July and August. Same as for walnut caterpillar.
Aphids Black margined, dusky veined walnut aphid, giant bark aphid, and walnut aphids. During heavy infestations, leaves become sticky from aphid excrement. Black sooty mold grows on fungus to shade leaves. This reduces quality of nut meats.	Biological control OR Ambush, Asana, Malathion, or Lorsban. OR Thiodan 3EC at 2-2.5 qts. per acre.	Aphids are attacked by a number of parasites and predators. Reducing the number of insecticide applications will help conserve these natural enemies (See E-92 "*Common Natural Enemies*"). Same as for codling moth. Do not apply after husk spilt. General use insecticide. 0 day PHI.

WALNUT INSECTS (Con't)		
Insect	**Treatment**	**Comments**
Mites European red mites (ERM) Twospotted spider mites (TSSM) ERM=*Panonychus elmi* (Koch) TSSM=*Tetranychus urticae* (Koch) Spider mites feed on leaf undersides and cause them to appear bronzed and webbed. ERM overwintrs on tree and TSSM overwinters on weeds. See E-42 "*Spider Mites on Ornamentals*" for more information.	*Dormant application* of 3% superior oil (NOT for TSSM). Monitoring Late spring, summer application of 1% superior oil. OR Vendex 50WP at 1-2.5 lbs. per acre. OR AgriMek 0.15EC at 2.5-5 oz. per 100 gal. with a horticultural spray oil.	Apply when trees are dormant, temperatures are above 40°, and there is no danger of freezing. For 30 days, do not follow with application of Morestan, Sevin, Cygon, Captan, Folpet, Pyrene, or sulfur compounds. Inspect plant leaves for mites and webs. Be sure leaves have fully expanded. Follow precautions for dormant application. 0 day PHI. Do not apply after husk split. Up to 2 applications per season. 14 day PHI. Up to 2 applications per year, RUP. 21 ay PHI.
Scale Insects There are several species of scale that attack walnuts. Most important is the oystershell scale *Lepidosaphes ulmi* (L.). Crawlers, the mobile (1/16") stage of oystershell scale are present from mid-May to June and again during the 3rd week of July. See E-29 "*Scale Insects on Shade Trees and Shrubs*" for more information on scale insects and their control.	Biological control Apply 3% concentration of superior oil in dormant season. OR 1% application of superior oil.	Scale insects are attacked by several predators and parasites. Reducing insecticide applications can help conserve these beneficial insects. See Mites. When crawlers are active. Follow restrictions outlined for dormant applications.
PECAN INSECTS		
Insect	**Treatment**	**Comments**
Pecan Weevil *Curculio caryae* (Horn) Reddish-brown snout-nosed beetles (1/2" long) feed on immature pecans. Females drill holes in shucks and shells and lay eggs in kernels. Creamy-white grubs feed in kernels.	Sampling Insecticides Ammo 2.5EC at 3-5 oz. per acre. OR Asana XL at 4.8-14.5 oz. per acre. OR Sevin 80S at 2-5 lbs. per acre or 4F at 1-2.5 qts per 100 gal.	Beginning in late July, sample weekly by spreading a sheet under the tree and shaking branches to dislodge weevils, which will fall on the sheet. Spray when 6 or more weevils are jarred from a tree. Do not apply after shuck split. Apply up to 30 oz. per acre per season. RUP. 21 day PHI. Apply up to 57.6 oz. per acre per season. RUP. 21 day PHI. Up to 4 applications per year. 14 day PHI.

PECAN INSECTS (Con't)		
Insect	**Treatment**	**Comments**
Hickory Shuckworm *Cydia caryana* (Fitch) Cream colored worms (up to 3/8" long) feed in immature nuts. Overwinter as larvae in shucks on ground or in tree.	Sanitation Monitoring Ammo, Asana, Cymbush, or Sevin. OR Guthion 2S or 2L at 6-8 pts. per acre or 35 WP at 4.25-5.68 lbs. per acre. OR Lorsban 4E at 2-4 pts. per acre or 50W at 2 lbs. per 100 gal.	Clean up and destroy all dropped nuts and shucks to reduce overwintering population. Place pheromone traps in trees in mid-July. Make first insecticide application 7-10 days after first moths are caught. Repeat in 2-3 weeks. See previous pecan insects. Up to 3 applications per year. Allow 7 days between sprays. RUP. 45 day PHI. Up to 5 applications per year. 28 day PHI. General use pesticide.
Pecan Nut Casebearer *Acrobasis nuxvorella* (Neunzig) Olive green worms (up to 1/2" long) with yellow-brown heads. Overwintering larvae become active when buds open in spring, feeding on buds and tunneling into new shoots. Second generation larvae web clusters of nuts together, then bore into them to feed. Each worm eats 3-4 nuts.	Sanitation Insecticides Ammo, Asana, Cymubsh, Guthion, Lorsban, or Sevin. OR Malathion 57%EC at 6.25 pts. per acre.	Pick up and destroy all infested nuts that fall to the ground. Make first application when nuts first begin to form and repeat 6 weeks later. See previous pecan insects. 0 day PHI. General use insecticide.
Pecan Phylloxera *Phylloxera devastatrix* (Pergande) Green to yellowish swellings (galls) on leaves, shoots, and nuts. Galls are 1/8" to 1" in diameter. Inside are tiny, aphid-like insects.	3% concentration of superior oil in dormant season. OR Malathion 57% at 6.25 pts. per acre. OR Lorsban, Sevin, or Asana. OR Provado 1.6 F at 3.5-7 oz. per acre.	See walnut, mite control comments. Apply when buds start to open. General use insecticide. See previous pecan insects. Up to 28 oz. per acre per year. 0 day PHI.
Mites European red mite Twospotted spider mite (See walnuts)	See walnuts. Cygon 400 at 2/3 pts. per acre.	 General use insecticide. 21 day PHI.
Fall Webworm	See walnuts.	
Walnut caterpillar	See walnuts.	

PECAN INSECTS (Con't)		
Insect	**Treatment**	**Comments**
Aphids Black pecan aphid Yellow pecan aphid	Biological control	Aphids are attacked by a number of parasites and predators. Reducing the number of insecticide applications will help conserve these natural enemies.
	Ammo, Asana, Cygon, Cymbush, Malathion, Guthion, or Lorsban.	See previous pecan insects.
	OR	
	Thiodan 3EC at 1 qt. per 100 gal.	Do not apply after shuck split. General use insecticide. 0 day PHI.
	OR	
	Provado 16F at 3.5-14 oz. per acre.	Up to 28 oz. per acre per year. 0 day PHI.
Scale Insects There are several species of scales that attack pecans. Most important is the obscure scale *Melanaspis obscura* (Comstock). Crawlers, the mobile (1/16") stage of obscure scale are present from late June to early July. See E-29 "*Scale Insects on Shade Trees and Shrubs*" for more information on scale insects and their control.	Biological control	See walnuts.
	Apply 3% concentrate of superior oil in dormant season.	See walnuts.
	OR	
	1% application of oil.	Crawler spray (see walnuts).
Twig Girdler *Oncideres cingulata* (Say) Adult is 1/2" long brown beetle. It girdles (cuts a ring of bark) around twigs and kills them. The female lays eggs in the dead portion of the twig and the white, legless grub feeds there.	Sanitation	Gather and destroy all severed branches in late fall, winter, or early spring.
	Site Selection	Avoid planting near wood lots.
	Scouting	Look for damage to twigs in late August and early September. Apply insecticides only if damage is observed.
	Guthion or Sevin	See previous pecan insects.

READ AND FOLLOW ALL LABEL INSTRUCTIONS. THIS INCLUDES DIRECTIONS FOR USE, PRECAUTIONARY STATEMENTS (HAZARDS TO HUMANS, DOMESTIC ANIMALS, AND ENDANGERED SPECIES), ENVIRONMENTAL HAZARDS, RATES OF APPLICATION, NUMBER OF APPLICATIONS, REENTRY INTERVALS, HARVEST RESTRICTIONS, STORAGE AND DISPOSAL, AND ANY SPECIFIC WARNINGS AND/OR PRECAUTIONS FOR SAFE HANDLING OF THE PESTICIDE.

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