

# Managing Insect Pests of Nut Trees

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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 article, 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.

<b>WALNUT INSECTS</b>		
<b>Insect</b>	<b>Treatment</b>	<b>Comments</b>
<b>CODLING MOTH</b> <i>Cydia pomonella</i> (L.)  Pinkish-white caterpillars (1" long) with brown heads feed in walnut husks. Feeding by first generation caterpillars on small nuts causes premature drop. Second generation feeding discolors nuts as stem end.	Cultural Practices	Plant later blooming varieties when available.
	Sanitation	Remove and destroy fallen nuts and debris in fall.
	Monitoring	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.
	Insecticides	Do not apply after husks open
	<i>Bacillus thuringiensis</i> OR Ambush 25W at 12.8-25.6 oz. per acre. OR Asana XL 9.6-19.2 oz. per acre.	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.

<b>Walnut Insects (continued)</b>		
<b>INSECT</b>	<b>TREATMENT</b>	<b>COMMENTS</b>
CODLING MOTH (cont.)	<p>OR</p> <p>Diazinon 50W or 50WP at 6 lbs per acre, or Diazinon AG500 at 3 qts per acre.</p> <p>Guthion 2S, or 2L at 6-8 pts per acre, or 35W at 4.25-5.68 lbs. per acre.</p> <p>OR</p> <p>Lorsban 4E at 4 pts per acre, or 50W at 4 lbs per acre.</p> <p>OR</p> <p>Pounce 3.2EC at 8-16 oz per acre.</p> <p>OR</p> <p>Sevin XLR, or 4F at ½ qt per 100 gal or 80S at 2 lbs per acre.</p> <p>OR</p> <p>Supracide 2E 2 pts per 100 gal</p>	<p>Do not apply after husks open.</p> <p>Up to 3 applications per year. RUP. 30 day PHI.</p> <p>Up to 3 applications per year. 14 day PHI.</p> <p>Apply up to 64 oz per acre per season. RUP. 1 day PHI.</p> <p>General use insecticide. 0 day PHI.</p> <p>Up to 3 applications per year. RUP. 7 day PHI.</p>
<p>WALNUT HUSK FLY <i>Rhagoletis completa</i> (Cresson)</p> <p>White maggots (3/8") feed in husk which can soften, turn black and stain nut meats. Nuts can shrivel during heavy infestation.</p>	<p>Cultural practices</p> <p>Sanitation</p> <p>Insecticides</p> <p>Ambush, Asana, Guthion, or Pounce.</p> <p>OR</p> <p>Malathion 57EC at ½ pt per gal.</p>	<p>Plant later blooming varieties when available.</p> <p>Remove and destroy fallen nuts and debris.</p> <p>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</p> <p>Same as for coding moth.</p> <p>0 day PHI.</p>
<p>WEEVILS, CURCULIO <i>Conotrachelus spp.</i></p> <p>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.</p>	<p>Sanitation</p> <p>Insecticides</p>	<p>Remove and destroy fallen nuts and debris in fall.</p> <p>No insecticides are labeled at this time.</p>

<b>Walnut Insects (continued)</b>		
<b>INSECT</b>	<b>TREATMENT</b>	<b>COMMENTS</b>
<p><b>CATERPILLARS:</b> Walnut Caterpillar <i>Datana integerrima</i> (G &amp; R)</p> <p>Hairy reddish-brown caterpillars with fine yellow stripes running along body, which feed in groups and defoliate branches. One generation per year.</p>	<p>Monitoring</p> <p>Insecticides</p> <p><i>Bacillus thuringiensis</i></p> <p>OR</p> <p>Diazinon</p>	<p>Inspect trees for white egg masses on leaf undersides in July and for groups of caterpillars in late July and August.</p> <p>Spray when and where caterpillars are found. Do not apply after husks open.</p> <p>Many brands are available. Most effective when caterpillars are small.</p> <p>Same as for codling moth.</p>
<p><b>CATERPILLARS:</b> Fall Webworm <i>Hyphantria cunea</i> (Drury)</p> <p>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.</p>	<p>Monitoring</p> <p>Insecticides</p>	<p>Inspect trees in May and June for webs of the first generation on branch tips. Repeat in late July and August.</p> <p>Same as for walnut caterpillar.</p>
<p><b>APHIDS:</b> Black margined, dusky veined walnut aphid, giant bark aphid, and walnut aphids.</p> <p>During heavy infestations, leaves become sticky from aphid excrement. Black sooty mold grows on fungus to shade leaves. This reduces quality of nut meats.</p>	<p>Biological control</p> <p>OR</p> <p>Ambush, Asana, Malathion, Diazinon, or Lorsban</p> <p>OR</p> <p>Thiodan 2 C.O EC at 3-4 qts per acre..</p>	<p>Aphids are attacked by a number of parasites and predators. Reducing the number of insecticide applications will help conserve these natural enemies</p> <p>Same as for codling moth.</p> <p>Do not apply after husk split. General use insecticide. 0 day PHI.</p>
<p><b>MITES:</b> European red mites (ERM), two spotted spider mites (TSSM) ERM=<i>Panonychus ulmi</i> (Koch) TSSM=<i>Tetranychus urticae</i> (Koch)</p> <p>Spider mites feed on leaf undersides and cause them to appear bronzed and webbed. ERM overwinters on tree and TSSM overwinters on weeds. See E-42 "Spider Mites on Ornamentals" for more information.</p>	<p><u>Dormant application</u> of 3% superior oil (not for TSSM).</p> <p>Monitoring</p>	<p>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.</p> <p>Inspect plant leaves for mites and webs.</p>

<b>Walnut Insects continued</b>		
<b>INSECT</b>	<b>TREATMENT</b>	<b>COMMENTS</b>
Continued Mites:	Late spring, summer application of 1% superior oil.  OR Vendex 50WP, or 4L at 4-8 oz per 100 gal.  OR Morestan 25WP at 1-1.5 lbs per acre.	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. Do not apply after husk split.  Kills adults and eggs. 30 day PHI. Do not apply after husk split.
SCALE INSECTS: There are several species of scale that attack walnuts. Most important is the oystershell scale. <i>Lepidosaphes ulmi</i> (L.)  Crawlers, the mobile (1/16") stage of oystershell scale are present from mid-May to June and again during the 3 <sup>rd</sup> week of July.	Apply 3% concentration of superior oil in dormant season.  OR 1% application of superior oil.    OR Biological control	See Mites.  When crawlers are active. Follow restrictions outlined for dormant applications.  Scale insects are attacked by several predators and parasites. Reducing insecticide applications can help conserve these beneficial insects.

<b>INSECTICIDE TRADE NAMES AND COMMON NAMES</b>	
<b>Trade Name</b>	<b>Common Name</b>
Ambush	permethrin
Ammo	cypermethrin
Asana	esfenvalerate
Bacillus thuringiensis	Bacillus thuringiensis
Cygon	dimethoate
Cymbush	cypermethrin
Diazinon	diazinon
Guthion	azinphosmethyl
Lorsban	chlorpyrifos
Malathion	malathion
Morestan	oxythioquinox
Pounce	Permethrin
Sevin	Carbaryl
Supracide	Methidathion
Thiodan	Endosulfan
Vendex	Hexakis

**\*Read and follow all label instructions. This includes directions for use, precautionary statement (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.**