

WALNUT CATERPILLAR

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The walnut caterpillar feeds on a wide range of woody shrubs and deciduous trees in the walnut family (Juglandaceae). Its primary hosts include pecan, black walnut, English walnut, Japanese walnut, Persian walnut, butternut, and hickory.

The walnut caterpillar, *Datana integerrima* (Grote and Robinson), is native to North America and ranges from the eastern United States to as far west as Minnesota, Oklahoma, Kansas and Texas.

Biology

The walnut caterpillar overwinters as pupa in the soil under and around the host plants. Adult moths emerge during the late spring and females deposit a mass of 600 or more eggs on the undersides of leaflets (Fig. 1). These egg masses are laid in a single layer and have no scales or hairs. Each female moth will deposit eggs only once during her lifetime.

After approximately 9 days, larvae emerge from the eggs and begin feeding on the foliage. Young larvae skeletonize the leaf by feeding only on the leaf surface—older larvae consume the entire leaf, leaving only the leaf stalk or petiole (Fig. 2). Larvae feed for approximately 23 days, during which they go through five stages (instars).



Figure 1. Walnut caterpillar egg mass



Figure 2. Branch terminals defoliated by walnut caterpillar

Unlike the larvae of some leaf-feeding caterpillars, walnut caterpillar larvae do not build webs. During the first four larval stages, the reddish-brown larvae feed as a colony so damage will likely be localized on a few branches. It is common to find several hundred larvae feeding on a single terminal (Fig. 3). When the larvae



Figure 3. Colony of late instar larvae



Figure 4. Cast skins from colony molt on side of tree trunk

are ready for the fifth instar, they move to a main limb or the tree trunk to molt as a group. This molt leaves a patch of cast skins on the tree trunk or limb (Fig. 4).

The fifth instar larvae are black with long white hairs (Fig. 5), and after molting they return to the canopy to feed as individuals rather than as a colony. During this 3- to 5-day feeding period, 5th instar larvae consume about 80 percent of all the foliage they will eat in their lifetime. The larvae then leave the host plant to pupate in the soil.

In Texas, the walnut caterpillar can produce two or three generations per year depending on the number of frost-free days. Two generations are possible when there are fewer than 245 frost-free days—three generations are possible when there are more than 245 frost-free days.



Figure 5. 5th instar larvae

Signs and symptoms of damage

Unlike early season caterpillars that feed on new growth, walnut caterpillar larvae prefer mature foliage. Consequently, infestations will not appear until late spring or after foliage has matured. Trees or branches that were defoliated will initiate new growth, which should not be damaged by the next generation. To help prevent significant defoliation, homeowners and commercial operators should know the following symptoms. Early detection is important so control measures can be applied before significant damage occurs.

Signs of activity:

- Localized areas of skeletonized leaves
- Colonies of reddish-brown larvae
- Foliage loss from larvae feeding
- Masses of cast skins on the tree trunk or main scaffold limbs
- Fecal material (frass) on sidewalks, driveways, equipment, and ground (Fig. 6)



Figure 6. Frass on driveway

Control

During most years, natural predators and parasites keep walnut caterpillar populations in check. Several species of wasps and flies consume egg masses and larvae, and many other insects and spiders prey upon larvae.

On small trees, homeowners can achieve some control by removing egg masses from leaves and larvae from the branches. For large trees or for large acreage, an insecticide application is the most practical way to prevent damage.

Insecticides that are recommended for homeowners will contain spinosad or *Bacillus thuringiensis* as their active ingredient. These insecticides are selective for caterpillars (Lepidoptera larvae) and very safe to humans. To increase the effectiveness of insecticides, apply them when the larvae are small and ensure that the spray covers the entire canopy. Broad-spectrum insecticides can be effective but carry some risk for the applicator and may cause secondary insect outbreaks.

Insecticide labeling is subject to change, so always consult the label for target sites and pests, application rates, and safety precautions. The user is responsible for the effects on his or her plants, as well as problems caused by drift onto adjacent properties.

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