



## Birch Leafminer

The birch leafminer is a small sawfly native of Europe that was first detected in Connecticut in 1923. It has since spread throughout northeastern North America.

The larvae of the sawfly make blotch mines in the leaves of most birches. Severe damage may occur to paper birch, gray birch, and European white birch. Black birch, yellow birch, river birch and monarch birch are less susceptible. The adult sawfly is a small, 1/4 inch long, black, fly-like wasp. The larva is very flat, lives within birch leaves and is white with three black spots on the lower surface.

### Type of Damage

Damage to birch trees is done by the larval stage as it feeds between the upper and lower layers of the leaves. This feeding produces large blotch mines in the leaves. Often, several larvae will completely mine a single leaf. Multiple generations and high populations can cause damage to almost every leaf by mid-summer. The mines turn brown and will cause the tree to look dead with wilted brown leaves. This forces the tree to re-leaf and reduces its ability to produce food for growth. This damage may also make the trees more susceptible to bronze birch borer attack. Though the adult birch leafminers are related to wasps, they do not have a sting.

**Figure 1. Birch leaf damage. Early mines on left and late mines on right.**



### Life Cycle and Habits

Mature larvae over winter in the soil under host trees. When the soil warms in the spring these prepupae pupate, usually in April, to transform into the adult stage. Within a few weeks the adult sawflies dig out from their earthen cells and fly to the newly expanding foliage of birches. The small black adults prefer to mate and oviposit on the upper leaves, especially in sunny areas. Mated females use their needle-like ovipositor to punch a hole in the leaf and lay eggs. Often the female withdraws the ovipositor without laying an egg. The damaged spot may turn brown as the leaf expands and hardens. The eggs are often visible in the tissues between the major leaf veins. They may appear as small raised spots on the leaf surface. Within 7 to 10 days the eggs hatch into tiny flattened larvae with wide front segments. These larvae produce a blotch mine that may join with others. The old mines may contain considerable amounts of dark fecal pellets. The larvae mature in 14 to 20 days and are about 1/4 inch long. By this time the larva have the diagnostic small black square marks on their lower surface. Mature larvae cut a hole in the leaf epidermis and drop to the ground. Here they dig one to two inches into the soil to form a pupation chamber. Birch leafminers usually produce two to three generations a summer.

**Figure 2. Adult Birch Leafminer (X5)**



**Figure 3. Birch Leafminer Larva. Underside View (X5)**



## Control Strategies

Birch leafminers prefer sunny areas but will attack susceptible trees almost anywhere. Birches tolerate leafminers best when they are planted in shady, cool, moist areas. Since birch leafminer attacks may weaken the trees, making them more susceptible to borer attack, good fertility and horticultural care are needed.

**Option 1: Cultural Control - Pupation Barrier** Since the larvae must find soil for pupation, place a black plastic or tightly woven fiber mulch under the tree drip line. Lightly mulch with organic material so that drying can occur rapidly.

**Option 2: Cultural Control - Resistant Birches** Unfortunately, the birches with the finest white bark seem to be more susceptible to the birch leafminer. The river birch and Dahurian birch have bark with curly flakes and seem to be resistant to bronze birch borers as well as the leafminers. Other birches resistant to leafminer attack are Schmidt birch, Monarch birch, black birch and yellow birch.

**Option 3: Chemical Control - Insecticides for Adult Control** Several insecticides have activity that kills adults. Although the first generation adults are active when the new leaves are about half expanded, emergence may take place over several days. In Ohio, birch trees are usually attacked by the first generation of leafminers during the first two weeks of May. Contact insecticides may need to be re-applied every 5 to 10 days depending on their residual activity.

**Option 4: Chemical Control- Systemic Insecticides for Larval Control** Systemic insecticides, especially easily translocated materials, can be applied to the foliage, by soil injection or injected into the tree. Stem or trunk injection is not recommended on a regular basis because of the tissue damage caused by the hole drilling. Attempt to control the first generation of larvae when the mines or eggs are first apparent.

Information obtained through the Ohio State Extension Factsheet HYG-2035\_91



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