



Toronto Master Gardeners

Toronto Master Gardeners are trained volunteers dedicated to providing horticultural information to the public.

For answers to horticultural questions contact the Toronto Master Gardeners' Info Line at the Toronto Botanical Garden (416) 397-1345 (Mon. to Fri. 10 a.m. to 1 p.m. and Sat., Sun. and Holidays noon to 3 p.m.) or our website, www.questions.torontomastergardeners.ca.

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Toronto Botanical Garden

Toronto Botanical Garden is a volunteer-based, charitable organization whose purpose is to inspire passion, respect and understanding of gardening, horticulture, the natural landscape and a healthy environment.

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Birch leafminer (Fenusa pusilla)

Description:

Birch leafminer is the most common of several larval insects that mine birch leaves. This small sawfly is native to Europe but has become a major pest of birches in North America.

The adult sawfly is a small (3 mm or 3/16 inch), black, 4-winged insect. The larvae look like somewhat flattened, creamy white caterpillars when mature, about $\frac{1}{2}$ inch in length. Immature larvae have darkened spots on the lower surface of the thorax. Larvae can be easily seen (together with their fecal matter) living within birch leaves, if the leaves are held up to the light.

Plants Affected:

This insect can attack all birches, but the white or paper birch (*Betula papyrifera*), grey birch (*B. populifolia*), and the European white birch (*B. pendula*) seem to be most susceptible.

Symptoms of Birch Leafminer:

Damage is done primarily at the larval stage. The leaves are 'mined' causing blotched areas on the leaves that eventually turn brown. This damage, repeated through successive generations in one growing season, can cause a tree to appear dead with brown wilted leaves. Severe cases may result in defoliation of the tree. Mature insects can also cut holes into the top of the leaves.

Life Cycle and Habits:

The insect overwinters in a cocoon in the soil. The adult sawfly emerges in May and flies to the newly expanding birch leaves, where the

female deposits her eggs on newly developing or developed leaves. The small larvae hatch 5 to 8 days later. The larvae mine through the leaves and, when mature (7 mm), cut a hole in the leaf. They then drop to the ground, where they pupate and remain in the soil until maturing into the adult sawfly 2 to 3 weeks later, ready to start the cycle again. This cycle can occur 2 to 4 times a season.

Infestations do not usually kill the affected birch trees but may put the tree under stress and leave it more susceptible to other insects and disease organisms. If a tree is already under stress and unhealthy (e.g. under drought conditions), Birch leafminer damage can reduce the tree's vitality and contribute to its death.

Organic Management /Control Strategies:

The City of Toronto adopted a new municipal by-law (spring 2004) that restricts the use of pesticides. For details about the by-law visit the Pesticide by-law page on Toronto Public Health's Web site at www.city.toronto.on.ca/pesticides or www.toronto.ca/health. Questions may be e-mailed to pesticide@toronto.ca.

Natural control

The focus of population control attempts to ensure that eggs laid in mature leaves are not allowed to survive. The city of Edmonton reports some success with parasitic ichneumon wasps that attack birch leaf mining pests, including *Fenusa pusilla*. (See <http://www.edmonton.ca/portal/server.pt> > Household > Pest Management > Birch Leafminers).

Mechanical control

If the infestation is a light one, try removing the infested leaves before the larvae mature. Adults may be sprayed with horticultural soap when they are at the egg-laying stage.

Cautions/Considerations:

Birch leafminers prefer sunny areas but will attack susceptible trees almost anywhere. Birches tolerate leafminers best when they are planted in fertile soil with good drainage and adequate moisture. Birch tree roots do not compete with lawn grasses. Remove any sod from around the trunk and provide a thick layer of mulch and enough water to provide healthy growth.

Some types of birches seem less susceptible to Birch leafminer. It may be advantageous to plant these trees - River birch (*B.nigra*), Black birch (*B. lenta*), or Yellow birch (*B. alleghaniensis*) - rather than the white-barked types listed above.

Following are tips for maintaining healthy birch trees:

- Roots of birch trees need a cool, moist, shady location. Proper site selection contributes to a long, healthy existence.
- Fertilizing is best done in early spring at the onset of the growing season. Lawn fertilizer applications around the tree may be sufficient.
- Prune any dead wood and remove the smaller of any branches that rub together. Birch tree pruning is best done after the leaves are fully developed (June to July).
- During the growing season, provide water during any drought conditions, thoroughly soaking the area around the tree at least once a week.

- To reduce the risk of mechanical damage from lawnmowers, weed eaters, etc. remove sod from around the base of the tree trunk and replace with a layer of mulch.

References:

The Toronto Botanical Garden Weston Family Library is an excellent source for horticultural information.

Yepson, Roger B.Jr.ed. *The Encyclopedia Of Natural Insect and Disease Control*. Pennsylvania, U.S.A.: Rodale Press, 1984.

Cranshaw, Whitney. *The Ultimate Guide to Backyard Bugs*. Princeton, U.S.A.: Princeton University Press, 2004.

Alford, David V. *A Colour Atlas of Pests of Ornamental Trees, Shrubs and Flowers*. Portland, Oregon: Timber Press, 2003.

The Gardener's Handbook - An Integrated Approach to Insect and Disease Control, Toronto, Canada: Publication 64. Ontario Ministry of Agriculture, Food and Rural Affairs, Queen's Printer for Ontario, 1998.

Factsheets are produced by the Toronto Master Gardeners in association with the Toronto Botanical Garden. They provide introductory information about a broad range of horticultural topics and are intended for personal use and study purposes. Should your gardening group or organization wish to use multiple copies we ask that you inform the Toronto Botanical Garden at info@torontobotanicalgarden.ca.

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