



UConn Home & Garden Education Center



Leafminers

Among the many leafminers that affect ornamental and vegetable plants are:

- American serpentine leafminer, *Liriomyza trifolii*
- Beet leafminer, *Pegomya betae*
- Birch leafminer, *Fenusa pusilla*
- Boxwood leafminer, *Monarthropalpus flavus*
- Columbine leafminer, *Phytomyza aquilegivora* and *P. columbinae*
- Pea leafminer, *Liriomyza huidobrensis*
- Spinach leafminer, *Pegomya hyoscyami*
- Vegetable leafminer, *Liriomyza sativae*



Leafminers are the larval form of a fly in the order Diptera that cause damage to the edible foliage vegetable crops of spinach, beets, chard, other vegetables, and some ornamental trees, shrubs, and herbaceous plants. The feeding damage appears in the form of hollowed out whitish, serpentine tunneling patterns that will coalesce into larger blotchy areas in the mesophyll tissue between the upper and lower layers of the leaves. The tunneling larvae will also leave frass behind, making vegetable leaves unfit for human consumption. Moderate damage will not affect beets which are a root crop although severe leaf damage can result in poor root development.

Swiss chard with leafminer feeding damage, UConn

Life Cycle

The adult flies of many leafminers appear in the spring from late April through mid-May after overwintering as pupae in the soil or in plant debris. The tiny, 1/4", hairy gray adult flies will mate and the female will lay tiny white eggs either singly or in clusters on the undersides of the developing leaves of the host plant. The newly hatched legless larvae will burrow into the interior of the leaves to begin feeding. When the larvae are ready to pupate they will chew through the leaf surface, drop to the ground, and pupate. The life cycle of the leafminer is 30-40 days long so there can be 3-4 overlapping generations per year. Spinach leafminer adult, eggs, feeding damage, and larvae, below, right to left.



Adult spinach leafminer
Whitney Cranshaw photo, Bugwood.org



Spinach leafminer eggs
image by Jude Boucher, UConn



Spinach LM damage and larvae
Images by Susan Pelton, UConn

The boxwood leafminer females insert their ovipositor directly into the leaf. The next two life stages happen within the leaf. The newly-hatched larva feed within the leaf through the summer and then overwinter within the leaf. In the spring the larvae pupate while still within the leaf blister. The adult moths emerge in May.



Boxwood leafminer feeding damage and larvae

Control Measures

- The larvae drop to the soil to pupate near their host plant so rotating susceptible crops will help to limit next year's damage.
- Crush or remove leaves that with eggs or mines/larva by disposing of them in sealed bags.
- Bury affected leaves deeply in a compost pile.
- Use floating row covers to exclude flying adults if leafminers were a problem the previous year.
- If a spring crop was affected plant a fall crop in a different area and use row covers.
- Foliar insecticides are ineffective once the feeding larvae are protected within the leaf surfaces.
- Spinosad may be sprayed on leaf surfaces before eggs hatch so that the emerging larvae will consume it as they enter the leaves. Spinosad is a low-toxicity insecticide but it may still affect pollinators so it should be applied in the evening when pollinators are less active.

Despite good cultural practices, pests and diseases at times may appear. Chemical control should be used only after all other methods have failed. For pesticide information please call UConn Home and Garden Education Center weekdays, in Connecticut call toll free 877-486-6271. Out of state call 860-486-6271.

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