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Insect Pests

Aphids

Cabbage Looper

Colorado Potato Beetle

Corn Earworm

Cucumber Beetles: Spotted or Striped

Cutworm

European Corn Borer

Flea Beetle

Harlequin Bug

Imported

Leafminer



Leafminer on pumpkin

Leafminers:

Vegetable leafminer - *Liriomyza sativae*

Spinach leafminer

American serpentine (or Chrysanthemum) leafminer - *Liriomyza trifolii*

Appearance

Eggs: Tiny oval (*L. trifolii*) or elliptical (*L. sativae*)

Cabbageworm

Japanese Beetle

Leafminer

Mexican Bean Beetle

Potato Leafhopper

Seedcorn Maggot

Slugs

Spider Mite

Squash Bug

Squash Vine Borer

Stink Bug

Tobacco/Tomato Hornworm

Tomato Pinworm

Whiteflies

Vegetable Diseases

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white eggs inserted into tissue just below leaf surface.

Larvae: Three tiny, active maggot-like instars that change from pale to greenish to yellow with black mouthparts in all stages (*L. sativae*), or golden brown turning darker brown (*L. trifolii*).

Pupae: A tiny reddish/brown non-feeding puparium

Adults: Very small black flies with yellow markings and abdominal stripes, and transparent wings.

Life Cycle/Habits

These leafminers are frequently confused, and have similar life cycles. They overwinter in the pupal stage in soil, and adults emerge in spring. There is multiple overlapping generations each year. Female flies puncture leaf undersides and insert eggs individually, producing many small wounds. Female flies are typically most active feeding and laying eggs near mid-day. Larvae are found in mines, tunneling through and feeding in leaves or soft stems (e.g., onion scape). Mature larvae make a slit in the upper leaf surface, emerge and drop to the soil, burrow shallowly, and form brown pupal cases. Flies emerge in about 9 days.

Host Plants

Spinach leafminer feeds mostly on spinach, beet, Swiss chard. The vegetable leafminer has a wide host range, including bean, cantaloupe, celery, cucumber, eggplant, onion, pepper, potato, squash, tomato, watermelon. American Serpentine leafminer is also a significant pest of chrysanthemums and is common in greenhouses.

Signs/Symptoms

Leaf-mining mars the leaves of leaf crops, and heavy infestations can reduce crop yields. Intensive insertion of eggs may produce slight leaf stippling damage.

Monitoring

Look for pale to white leaf mining trails, meandering randomly just below the leaf or stalk surface and readily visible.

Prevention/Control

1. Pinch mined leaves to crush the larvae inside or remove and destroy them. This is the primary control.
2. Many parasitoids attack leaf miners, to the extent that leaf miner outbreaks are associated with pesticide use, which suppresses parasitoid activity.
3. Pesticides are ineffective. Leafminers are

resistant to many insecticides and difficult to spray directly.

4. Use floating row cover to prevent egg laying.
5. Till the soil in early spring to disrupt life cycle and kill over-wintering pupae.
6. Remove all host weed species around the garden, such as chickweed, lambsquarters, nightshade, and plantain.

Photo credits:

UGA1455010 (vegetable leafminer damage): Whitney Cranshaw, Colorado State University, bugwood.org

UGA0660020: (adult leafminer fly): Central Science Laboratory, Harpenden Archive, British Crown, Bugwood.org

Leafminer damage on pumpkin, Jon Traunfeld, University of Maryland Extension

Spinach leafminer on beets, HGIC, University of Maryland Extension

Serpentine leafminer damage on broccoli raab, HGIC, University of Maryland Extension

Spinach leafminer, Chuck McClurg, University of Maryland

Leafminer mines on tomato, John Davidson, University of Maryland

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