

Leafminers (Order: Diptera, Family: Agromyzidae)
Vegetable leafminer (*Liriomyza sativae* (Blanchard))
Liriomyza trifolii (*Liriomyza trifolii* (Burgess))

Description: (trifolii)

Adult: Leafminer adults are tiny yellow and black flies. The yellow markings on the head, thorax, and legs are useful in identifying species. The abdomen is mostly gray and black. Adults are less than 2 mm long with a wing span of less than 2 mm. Wings are transparent.

Immature stages: Eggs are oval, small, and change color from clear to creamy white as they age. They are laid singly into leaf tissue just below the epidermis. The larvae appear as small maggots within the leaf, starting at about 1.0 mm in length and reaching a length of about 1.9 mm. The pupa is initially golden brown and turns darker.



Liriomyza adult.

Biology:

Life cycle: Leafminers complete a generation in 21 to 28 days in a favorable climate. Eggs are placed into leaf tissue and hatch in about 3 days. Larvae feed and grow between the upper and lower surface of the leaf and develop through three instars in about 4-6 days. As the larvae grow, the ‘tunnels’ created by their feeding increase in diameter, creating the characteristic winding mines in the leaf. Larvae emerge from the leaf and fall to the ground to pupate. The pupal stage lasts about 9 days. The adult has a preoviposition period of about 1 day. Adult longevity is about 2 weeks, with estimated oviposition of 35 to 39 eggs per day on a favorable host. Females make numerous punctures of the leaf with their ovipositor and use these sites for both feeding and oviposition, with 10 to 25 percent of punctures used for oviposition, dependent on host quality.



Serpentine leafminer larva.

Seasonal distribution: Leafminers are generally considered secondary pests. Natural enemies generally maintain populations at non-damaging levels, but populations can increase rapidly following multiple insecticide applications.

Damage to Crop: The numerous punctures caused by females can result in a stippled appearance on foliage but is of little consequence. The primary damage is the mining of leaves by larvae. Mining results in destruction of leaf mesophyll. Mining can greatly depress photosynthesis, but generally does not lead to direct yield loss as most fruiting vegetables can withstand considerable leaf damage. Extensive mining can result in premature leaf drop, leading to lack of shading and sun scalding of fruit.

Management:

Leafminer densities can be monitored in a variety of ways including counting mines in leaves, counting live larvae in mines, sticky traps for adults, or pan traps to catch larvae as they fall to the ground to pupate. Counting mines in leaves may overestimate leafminer activity as many mines may be empty, but this is the easiest and probably most frequently used method for monitoring. Insecticidal control of leafminers



Leafminer damage to pepper.

is difficult because of the protected environment of the larvae and severe insecticide resistance. Use of broad spectrum insecticides against other pests frequently contributes to leafminer problems through disruption of natural biological control.