



## Peppers Leafminer

Scientific name: *Liriomyza trifolii*  
(Reviewed 8/07, updated 8/07)

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### DESCRIPTION OF THE PEST

Liriomyzid leafminer [adults](#) are small, shiny, black flies with a bright yellow, triangular spot on the upper thorax. Eggs are white and oval and laid within the leaf. Larvae feed between leaf surfaces, creating meandering tracks or mines. Mature larvae leave the mine and drop to the ground to pupate. The life cycle takes only 2 weeks in warm weather; there can be many generations a year.

### DAMAGE

Larvae mine between upper and lower leaf surfaces, creating winding, whitish [tunnels](#) that are initially narrow, but then widen as the larvae grow. Leaves injured by leafminers drop prematurely; heavily infested plants may lose most of their leaves.

### MANAGEMENT

Regular monitoring for leaf mines is important in detecting damaging populations of this pest. Avoid the use of early season applications of broad-spectrum insecticides (dimethoate, endosulfan, esfenvalerate, methomyl) for control of other pests in order to conserve natural enemies of the leafminer.

#### Biological Control

Natural enemies, primarily parasitic wasps in the [Diglyphus](#) genus, often control leafminers. When parasites are killed by pesticides, leafminer outbreaks are common.

#### Organically Acceptable Methods

Biological control and sprays of azadirachtin and the Entrust formulation of spinosad are acceptable for use on organically certified produce.

#### Monitoring and Treatment Decisions

Regularly check peppers approaching maturity for leafmines. Most mines occur on older bottom leaves. Some mines are most obvious from the underside of the leaf. If leafminer populations build to high levels, a chemical treatment may be necessary. Avoid early season applications for other insects.

Common name	Amount/Acre**	R.E.I.+	P.H.I.+
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(trade name)		(hours)	(days)
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When choosing a pesticide, consider information relating to [impact on natural enemies and honey bees](#) and environmental impact.

A.	ABAMECTIN*			
	(Agri-Mek) 0.15EC	8–16 oz	12	7
	MODE OF ACTION GROUP NUMBER <sup>1</sup> :	6		
	COMMENTS:	Do not apply at less than 7-day interval. Do not exceed 48 fl oz/acre/growing season. Do not apply in less than 20 gal water/acre. Do not make more than 2 sequential applications.		
B.	SPINOSAD			
	(Entrust) #	2–2.5 oz	4	1
	(Success)	6–10 oz	4	1
	MODE OF ACTION GROUP NUMBER <sup>1</sup> :	5		
	COMMENTS:	Use higher rate for later instars and heavy infestations. Best control is achieved when aimed at newly hatched larvae and coverage is thorough. More broad-spectrum than Bt but has very low toxicity to humans, vertebrates, and the adults of many natural enemies. Can remain toxic to larval stages (especially syrphid fly) for 5–7 days after treatment. Do not exceed 29 fl oz of Success or 9 oz of Entrust/acre/crop.		
C.	CYROMAZINE			
	(Trigard) WP	2.66 oz	12	0
	MODE OF ACTION GROUP NUMBER <sup>1</sup> :	17		
	COMMENTS:	Do not make more than 2 sequential applications.		
D.	AZADIRACHTIN#			
	(Neemix) 4.5	4–7 fl oz	12	0
	MODE OF ACTION GROUP NUMBER <sup>1</sup> :	18B		
	COMMENTS:	Must be consumed by larvae; kills leafminer after pupation. A regulated product in an organically certified crop.		

\*\* See label for dilution rates.

+ Restricted entry interval (R.E.I.) is the number of hours (unless otherwise noted) from treatment until the treated area can be safely entered without protective clothing. Preharvest interval (P.H.I.) is the number of days from treatment to harvest. In some cases the REI exceeds the PHI. The longer of two intervals is the minimum time that must elapse before harvest.

\* Permit required from county agricultural commissioner for purchase or use.

# Acceptable for use on organically grown produce.

<sup>1</sup> Rotate chemicals with a different mode-of-action Group number, and do not use products with the same mode-of-action Group number more than twice per season to help prevent the development of resistance. For example, the organophosphates have a Group number of 1B; chemicals with a 1B Group number should be alternated with chemicals that have a Group number other than 1B. Mode of action Group numbers are assigned by IRAC (Insecticide Resistance Action Committee). For additional information, see their Web site at <http://www.irac-online.org/>.

## **PRECAUTIONS**

### **PUBLICATION**



*UC IPM Pest Management Guidelines: Peppers*

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