

# Insects

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## Holly Leafminers

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Holly leafminers are the most injurious pests of holly in the eastern United States. The holly leafminer was introduced from Europe. This insect is a primary pest of American or Christmas holly. Injury results from the larval mining activity just under the upper leaf surface. Additional damage is caused when females repeatedly puncture the leaves with their ovipositor (egg-laying structure). Punctured leaves become deformed.

### Description and Life Cycle

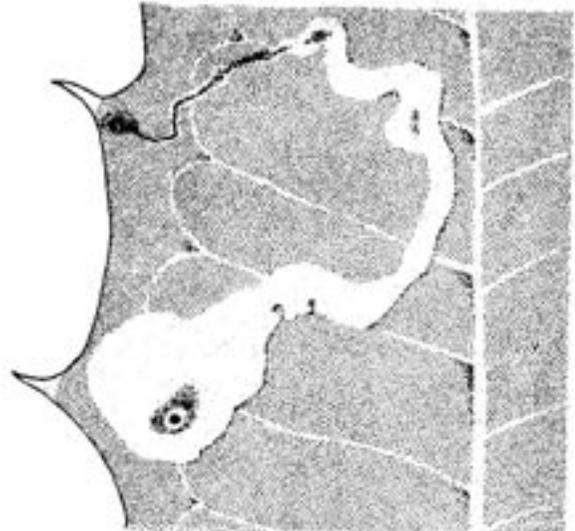
The European species of leafminer, *Phytomyza ilicis* Curtis, overwinters as a larva in the mines. Larvae are about 1/8 inch long and yellow to white. Pupation occurs in March and April. Small, black, adult flies, 1/8 inch long, begin to emerge in May or about the time holly twigs have three to four new leaves. Adults feed for about 10 days before laying eggs. During this period, females make feeding punctures on the undersides of new leaves. Both males and females then feed on the sap exuding from these punctures. These punctures resemble pinpricks and may be quite numerous (up to 50 on a single leaf). Such injury results in distortion of the leaves. Eggs are laid in the punctures.

After hatching, larvae mine under the upper leaf surface. Mines are threadlike and inconspicuous at first, but by late autumn they widen into blotches or blisters. Another species, the native holly leafminer, *Phytomyza ilicicola* Loew, produces very slender mines packed with frass (excrement) and may be found on the same tree with

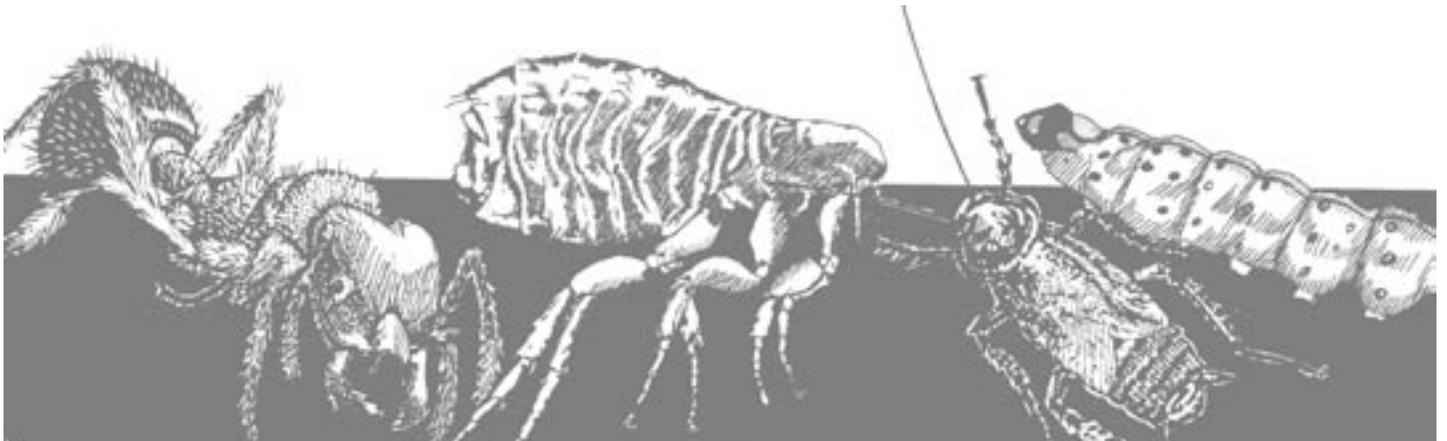
*P. ilicis*. Larvae remain in the mines for nine to 10 months before pupating in the spring.

### Control

Apply trichlorfon, chlorpyrifos, carbaryl or diazinon for adult fly control in early May when the black flies are seen around new growth. Use acephate, imidacloprid, dimethoate or oxydemeton-methyl for control of mining larvae. Dimethoate can be used on English and American holly, but should not be used on the Burford holly variety.



A. Native holly leafminer mine in leaf.



Insecticide	Formulation/100gal	Formulation/gal
acephate (Orthene)9.4% EC (Orthene Turf, Tree & Ornamental Spray) 75% WP (Address T/O) 75% WP	4.69 qt. 1/3 lb. 1/3 lb.	3 Tbsp. 1/2 tsp. 1/2 tsp.
trichlorfon (Dylox 80 Turf and Ornamental Insecticide) 80% SP	20-30 oz.	0.1-0.3 oz.
carbaryl (Sevin SL) 4 lb./gal. SL	1 qt.	2 tsp.
chlorpyrifos (Dursban 50W)** 50% WSP	2 lb.	--
dimethoate (Dimethoate 2.67 EC)* 2.67 lb./gal. EC (Dygon 400)* 4 lb./gal. EC	25 fl. oz. 1 pt.	0.25 fl. oz. (1.5 tsp.) 1 tsp.
diazinon (Diazinon 500)** 4 lb./gal. EC	1 pt.	1 tsp.
oxydemeton-methyl (Metasystox-R 2)** 2 lb./ gal. EC	1-1.5 fl. oz. per inch of trunk diameter (see label)	
imidacloprid (Merit 75WP) 75% WP  (Merit 2) 2 lb./gal. F  (Marathon 60WP) 60% WP** (Advanced Garden Tree and Shrub Insect Control)	0.7 to 1.4 level teaspoons per inch of trunk diameter for trees or per foot of shrub height for shrubs, or 1 to 2 ounces per 30 cumulative inches of trunk diameter for trees or per 30 cumulative feet of shrub height for shrubs. Trees - 0.1 - 0.2 fl. oz. per inch of trunk diameter Shrubs - 0.1 - 0.2 fl. oz. per foot of shrub height (See label) 1 oz. per inch of tree circumference as a drench.	
*Do not use on Burford Holly **Not for use in residential landscapes		



*B. Adult*



*C. Larva*



*D. Puparium*



*E. Ovipositor punctures*

#### Disclaimer Statement

Insecticides recommended in this publication were registered for the prescribed uses when this publication was printed. Registrations of insecticides are continually being reviewed. In the event registration is canceled on an insecticide recommended in this publication, it would no longer be recommended by The University of Tennessee. Use of trade or brand names in this publication is for clarity and information. The University of Tennessee does not imply approval of that product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.

#### Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

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