

insect answers



PEA LEAFMINER

The pea leafminer, *Liriomyza huidobrensis* (Blanchard), was first reported in Washington in 1918. Since then, it has occasionally become a serious crop and ornamental pest. It has also been found in western South America, California, Utah, Florida, and Virginia. It is present throughout Washington and Oregon. In 1984, an outbreak occurred on spinach in Walla Walla County. The pea leafminer's range of hosts includes pea, spinach, beet, potato, pepper, lettuce, muskmelon, onion, celery, and many weeds and ornamentals.

Life Stages

The *adults* are small, delicate flies about $\frac{1}{10}$ -inch in length. They are black and yellow. *Eggs* are round, microscopic, and vary in color from yellow to white. The *larvae*, white with yellowish coloration near the head, are about $\frac{1}{8}$ -inch in length when full grown.

Adults first appear in early spring, after over-wintering as pupae in the litter or soil beneath infested plants. Females lay their eggs singly in leaves. Larvae hatch

in two to three days and start feeding immediately. They feed and tunnel between the outer layers of the leaf, generally feeding near the lower leaf surface. Larvae pass through three instars, or stages of development. The larval feeding stage varies depending upon temperature, but usually lasts about 3 weeks. When feeding is completed, larvae emerge from the leaf and burrow into the soil, where they pupate.

Adults emerge from the pupae. The length of the cycle from egg to adult varies from 28 to 31 days, depending on weather conditions. Each female produces 55 to 100 offspring. Adults continue to emerge throughout the summer, usually until day length shortens in the fall. There may be from four to eight generations a year depending on the weather.

Damage

The pea leafminer seldom kills host plants, but feeding punctures and larval mines can make a crop unmarketable. Adult females pierce the upper or



Feeding punctures from adult flies damage spinach appearance. W.J. Gary photo



Larval mines leave white blotches on pea leaf. A.L. Antonelli photo

lower surface of leaves with their ovipositors. They then back over the hole and suck out the cell contents. Some feeding punctures also serve as egg laying sites. Punctures are about $\frac{1}{20}$ inch in diameter, and a single female may puncture plant leaves more than 1,300 times. Infested plants appear to be suffering spotting from herbicide damage. Punctures can seriously damage the appearance of crops such as spinach, reducing their fresh market value.

Larvae feed on the internal tissue of the leaves between the upper and lower leaf surfaces, creating serpentine mines. Mines primarily begin on the upper and move to the lower surface, leaving white blotches visible on the upper surface. Mines may twist and cross many times, sometimes giving a blotch-like appearance. There is often more than one larvae or mine per leaf. Larvae deposit frass in small black strings down the center of the mine. Mines vary in appearance, depending on the host plant, but they are usually narrow, winding mines, increasing in width as the larva grows.

The fly seems to attack a wide variety of host plants, although higher populations appear to develop on peas and spinach.

Control

The pea leafminer is attacked by a complex of parasites, capable of controlling its populations.

Scout crops susceptible to pea leafminer damage every three to four days for feeding punctures and mines. Chemical control, while useful to combat the pest, also may reduce the natural parasite population. Use only when warranted by high pest numbers and damage above a tolerable level.

The following active ingredients are registered for commercial use as foliage sprays: diazinon, naled* and malathion. All three are effective on both adults and larvae. Methomyl** is also registered for use on peas and spinach; however, while it will kill adults, it is not very effective in controlling larvae. Adding one to two pounds of sugar per acre to the spray mixture will increase effectiveness of the insecticide by attracting adults; it also increases the length of time the insecticides kill adults. Use methomyl at the rate of 0.45 pound active ingredient per acre.

None of these materials will remain effective for a long period of time. Applications may be needed every two to three weeks depending on the number of punctures found in fields after spraying.

Be sure to carefully read and follow directions and precautions on the insecticide label.

* (peas, beets, peppers, muskmelon, ornamentals only)

** Pea leafminer is not on the label. However, it is legal to use methomyl for this purpose, since the crops are on the label.



By Walter J. Gary, Washington State University Extension agent, (retired); Daniel F. Mayer, Extension entomologist, (retired); and Arthur L. Antonelli, Extension entomologist, WSU Puyallup Research and Extension Center.

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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