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insect answers



PEA LEAF WEEVIL: ITS BIOLOGY AND CONTROL

The pea leaf weevil, *Sitona lineata* (L.), long known as a pest of legumes in Europe, was first found in North America in 1936 by W. Downes on the southern end of Vancouver Island, British Columbia. It spread down the coast of Washington and Oregon, and has been an occasional pest in the coastal area for a number of years. Several years ago the pea leaf weevil was found in young alfalfa fields in the Quincy area of Grant county. In 1970, this weevil was found in eastern Washington's Palouse pea growing area near Garfield and Tekoa, and since then has spread to most areas where peas are grown.

Life Stages

The *eggs* are small, smooth, and subspherical. They are white when laid but darken to almost black as hatching approaches.

The *larva*, or immature stage, is a light milky color, has a dark brown head, and measures about $\frac{1}{4}$ inch long when fully grown. It is curved, legless, cylindrical, soft and fleshy, with long setae or hairs protruding vertically from the bulge of each segment.

The *pupa* is white and adult-like. This stage is immobile and is spent within an earthen cell.

The *adult* is slender, about $\frac{1}{5}$ inch long, and grayish brown. Its beak is short and snubnosed. Three light, inconspicuous stripes — one central and two lateral — run lengthwise on the thorax, tending to extend onto the elytra or wing covers. The wing covers are marked lengthwise by fine, parallel lines. Their bristles lie relatively flat against the wing cover surface. Because of the flat wing cover

bristles, the pea leaf weevil is readily distinguishable from the clover root curculio, with which it is occasionally associated in clover, and which has erect bristles on the wing covers. The pea leaf weevil has large inner wings and is a strong flier.

Seasonal History

The pea leaf weevil has a single generation annually. After overwintering, adults start flying in late April and the first part of May. Those that have overwintered in alfalfa, stubble fields, and roadsides fly to preferred legume species such as peas.

Host Plants

Plants of the family Leguminosae (legumes) are the major food of the adult weevils. The larvae feed only on *Rhizobium* sp. nodules of these plants. In the Pacific Northwest, peas and vetch are the principal hosts, but at times the adults feed heavily on alfalfa and clovers. Leaf weevil has also been observed feeding on such plants as sweet pea, black locust, and prostrate knotweed in August.

Damage

In the spring adult weevils often appear in large numbers in newly emerging pea fields. Damage usually appears as scalloped leaf edges. In instances of high weevil numbers, leaves may become severely ragged and complete defoliation may result. This can include destruction of the terminal growing points and ultimate killing of the plant. The effect of larval feeding on pea root nodules has not been determined for this region,



Weevil damage

but it is probably not serious if soil nitrogen is adequate.

Pea fields in low areas, on heavy soil, or those with a considerable amount of partially incorporated debris or clods, are more likely to harbor larger weevil numbers and receive more injury than other fields.

Control

To be effective, insecticide treatments must be properly timed, based on thorough and frequent examinations of individual fields when peas are in the seedling stage, continuing through early growth.

Advisability of treatment depends on a number of variables: weevil numbers and amount of damage; stage, growth, and development of seedlings; seedbed preparation; and weather conditions at the time plants are emerging from the soil. Variables are subject to rapid change.

Economic damage to peas occurs when populations approach one pea leaf weevil per plant in the seedling stage. The economic threshold for determining the need for chemical treatment is not precisely defined. Depending on conditions, it can occur when there are as few as 0.3 weevil per seedling. Emerging seedlings are extremely susceptible to injury, and when one clamshell out of four shows feeding, they should be treated. Peas past the seedling stage—6 to 8 or more expanded



Pea leaf weevil

leaves—with intact growing points can withstand some defoliation without serious injury. Weather, insect infestation, and soil conditions determine length of the time peas remain in the seedling stage.

When weevils are present and are ragging leaves and notching the clamshell and terminal growing points of seedlings, apply chemical treatment as soon as possible. If injury is light (occasional notching) and weevils are difficult to find even on sunny, warm days, do not treat.

The insecticide must control the weevil to protect seedlings through their early growth period. It must be capable of killing weevils on nearly bare soil at cool temperatures, often under wet conditions. Therefore, insecticide persistence is required, because weevils may continue to migrate to peas from alfalfa and other perennial legumes over extended periods, especially if weather conditions are adverse.

The following materials should result in satisfactory weevil reductions in peas.

Imidan—1 pound active ingredient per acre as a spray. Buffering is important to prolong residual effects. Imidan can be used up to 7 days before harvest. Do not cut “fresh” pea forage for hay within 10 days of application.

Methoxychlor—1.5 pounds active ingredient per acre as a spray. Methoxychlor may be used up to 7 days before harvest.

Microencapsulated methyl parathion— ½ pound active ingredient per acre. Do not apply within 10 days of harvest if pods will be used. Do not cut for forage or graze within 15 days of application. Do not use if there are any crop or weed blooms in the field or on the field edges. This material is extremely hazardous to bees. They will

incorporate it with pollen and bring it back to the hive, thereby annihilating the entire colony.

Pydrin—0.2 pound active ingredient per acre. Do not apply within 21 days of harvest. Dry peas only. Do not exceed 0.8 pound active ingredient per acre per year. Do not graze or feed livestock on treated pea forage.



Field damage

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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