

Leaf-feeding Sawflies in Wheat

The larvae, or “worms,” of sawflies resemble small, green caterpillars that feed on the leaves of various plants (Figure 1). Although sawflies are rarely an economically important problem in Oregon cereal crops, unusually large populations (300 larvae/10 sweeps) of one species, probably *Pachynematus* sp., were found in Umatilla County in 2003. The larvae were first noticed in May feeding vigorously on leaves, including flag leaves, of winter wheat near Adams, Oregon. Approximately 25,000 acres were treated for sawfly control in 2003. Additional acres had populations that did not warrant treatment. Population levels generally declined quickly beyond the locally affected area.



Figure 1.—Larvae of *Pachynematus* sp., feeding on wheat.

History of the pest

This has been a rare pest in the wheat-producing areas of Oregon. The last significant outbreak of sawflies in an Oregon field crop (300 larvae/25 sweeps) was in fine fescue grown for seed in the Willamette Valley in 1971 and 1972. This pest was *Pachynematus setator*. It is probably the sawfly that infested Umatilla County wheat in 2003. Economically important infestations on West Coast wheat are relatively rare. For instance, the only previously significant outbreak of a sawfly on wheat was in California, in 1953. The larvae destroyed 200 acres. The following year 12,000 acres were sprayed. For whatever reason, significant outbreaks of this pest have not been reported since.

Life cycle

The sawfly invading Umatilla County appears to have a life cycle similar to the one found in the Willamette Valley. There is only one generation a year. The wasps emerge from pupae in the soil during April

and May. The female mates immediately and will deposit as many as 80 eggs in her few weeks of life. Usually, the eggs are laid singly on leaves of cereals and grasses and hatch within 10 days. Larvae feed on the leaves during the day for 3 to 4 weeks, longer in cool (50–60°F) temperatures. When mature, a larva drops to the soil and forms a cell in which it will remain until the following spring when it pupates and emerges as a wasp to begin the cycle again.

During the 2003 Umatilla County infestation, most larvae had completed development and ceased feeding on leaves by early June.

Identification

The larvae look like caterpillars or foliage-feeding cutworms at first glance. However, sawfly larvae have three pairs of true legs followed by eight pairs of short stubby prolegs; caterpillars have no more than four such pairs of prolegs.

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Larvae are green to green-yellow. The prominent head is light green or tan. Larvae feed during the day, usually migrating to the crowns of plants at night.

Management

Factors significant to an outbreak

Weather and tillage appear to be significant factors. Accumulated surface residue on fields serves to shelter overwintering larvae through the winter. Cool, wet weather can delay or prevent spring cultivation, which usually would kill many of the larvae that overwinter in the soil. Biological controls, also, have population cycles that allow pest populations to increase for short periods.

Scouting the fields is an essential first step in designing a management strategy. Begin scouting in early May to determine whether the sawfly population is or will be large enough to do economic damage. Using a heavy-duty sweep net, take 10 straight-line sweeps in 10–15 locations throughout a field. Do this after mid-morning or when larvae have climbed back up on plants to resume feeding. See the section on chemical control, below, for how to interpret sweep net results and determine the need to apply insecticide.

Nonchemical control

Biological control and postharvest tillage normally keep sawfly populations well below damaging levels.

Cultural control When sawfly larvae are mature (usually by July) they crawl to the soil and pupate among plant residues and below the soil surface. Postharvest cultivation effectively crushes and/or buries the overwintering pupal stage, thus drastically reducing populations the next spring. Plowed and/or disked fields seldom have problems with this pest.

Biological control Parasitic wasps are important biological agents that help to keep wheat sawflies below economically damaging population levels. Signs of parasitic wasp activity are black marks and discoloration on what is normally the uniformly light green skin of the sawfly larva. These marks result when the parasitic wasp deposits an egg into the sawfly larva. The parasitized sawfly larva usually dies before it reaches maturity.

Chemical control

Occasionally an insecticide is recommended if cultural or biological controls are inadequate. Two insecticides, Warrior and Mustang, specifically mention sawflies on the label. Most organophosphate and pyrethroid insecticides labeled for use on wheat to control armyworms or cutworms will effectively control sawflies, too.

You may need to apply an insecticide if larval populations exceed 20/sweep and there's no indication of a natural decline (that is, no evidence of parasitism, and/or mature larvae remain in the soil to spin cocoons).

You may want to treat at lower populations (10/sweep or fewer) if:

- (1) The larval population is increasing over that of the previous week,
- (2) Adult sawflies still are laying eggs on the wheat,
- (3) Wheat is under other stress, and
- (4) Larvae are quite small and/or they are beginning to defoliate flag leaves.

Your product representative, local Extension agent, or Extension entomologist should be able to provide additional information.