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European Pine Sawfly

Insect Pest of Pine Trees

European pine sawfly, *Neodiprion sertifer*, is an insect pest native to Europe and Asia that was introduced into the United States in 1925. European pine sawfly larvae feed on pine trees grown in landscapes, parks, and arboretums. The larvae feed on many different pine trees, including Austrian, Eastern, jack, mugo, red, ponderosa, Scotch (Scots), and white pine. This publication discusses the biology, damage, and management of the European pine sawfly.

Biology

The European pine sawfly life cycle includes an egg, larva, pupa, and adult. An adult female, which resembles a wasp (Figure 1), is approximately ¼ of an inch (6.3 millimeters) long. The female uses her saw-like ovipositor (egg-laying structure) to create slits or cuts in needles where eggs are inserted. Larvae emerge (eclose) from the eggs in early spring. Young larvae resemble caterpillars and are about ⅛ of an inch (3.1 millimeters) in length, olive green, and have a black head (Figure 2). Older larvae are between ¾ and 1.0 inches (18 to 25 millimeters) long, gray green, have a black head, and green stripes extending down the back. There are also two green or black stripes on each side of the body (Figure 3). There are five larval instars (stages between each molt).

Figure 1. European pine sawfly adult female
(Photo: Louis-Mochel Nageleisen; Department of Forest Health, Bugwood.org).

When disturbed, larvae will arch their heads and abdomens (Figure 4), which is a defensive posture to ward off predators. In late spring to early summer, larvae drop onto the soil surface and pupate in brown, leathery cocoons located at the base of pine trees. Adult females emerge (eclose) from the cocoons in the fall. Each female inserts six to eight eggs into a single needle. A female can insert up to 170 eggs into 10 to 12 of the current year's needles at the ends of branches before the onset of winter. European pine sawfly overwinters as an egg inside the needles. There is one generation per year in Kansas.

Figure 2. Young European sawfly larvae (Photo: Raymond Cloyd).

Figure 3. Older European sawfly larvae (Photo: Raymond Cloyd).

Figure 4. European sawfly larvae arching their heads and abdomens (Photo: Raymond Cloyd).

Although sawfly larvae resemble caterpillars, they are not caterpillars (Order: Lepidoptera). Instead, they are related to ants, bees, and wasps (Order: Hymenoptera). Sawfly larvae have six or more pairs of prolegs (fleshy abdominal legs) on the abdomen, distinguishing them from caterpillars, which have fewer than six prolegs on the abdomen.

Damage

Larvae feed in groups of 10 to 20 individuals for four to six weeks in the spring. The larvae feed on older needles below the new growth, leaving only the central core or sheath, which turns brown and resembles straw (Figure 5). Hence, the new needles are not damaged, and there is minimal risk of branch or tree death from larval feeding. However, the loss of second- and third-year needles will be noticeable on pines, thus ruining their aesthetic appearance. The larvae feed on needles from a single branch before moving to another branch to feed. In general, larvae stop feeding when new needles emerge.

Management

European pine sawfly management involves scouting, removing by hand, using a high-pressure water spray, and/or applying insecticides. Scout pine trees at least once per week, early in the growing season, to detect the presence of young sawfly larvae feeding on the needles. Sawfly larvae can be removed by hand and placed into a container with soapy water to kill them. In addition, a high-pressure water spray can be used to dislodge sawfly larvae feeding on the needles.

Insecticides can be applied to keep European pine sawfly larval populations below levels that could damage plants. Because sawfly larvae are not caterpillars, the microbial insecticide, *Bacillus thuringiensis* subsp. *kurstaki* (*Btk*), which is sold commercially under various trade names, will not kill sawfly larvae. Managing sawfly larval populations with any insecticide involves applying insecticides early in the growing season to kill the young sawfly larvae feeding on the needles.

Apply insecticides when sawfly larvae are first noticed to avoid problems later in the growing season. Once sawfly larvae are older and larger, you will need to apply an insecticide with broad-spectrum activity to keep larval populations below plant-damaging levels. However, most broad-spectrum insecticides labeled for sawfly are harmful to beneficial insects, including parasitoids (parasitic wasps) and pollinators (e.g., bees). Always read the label of an insecticide product to ensure that sawflies are listed.

Figure 5. Damage from European pine sawfly larval feeding (Photo: Raymond Cloyd).

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