Jack-Pine Sawfly

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The jack-pine sawfly, *Neodiprion pratti banksianae* Rohwer, is a serious defoliator of jack pine in the Lake States and Canada. Infestations develop periodically in natural stands and plantations in Minnesota, Wisconsin, and Michigan and in southern Canada from Manitoba to New Brunswick. This pest, though native to North America, was not considered destructive until a few decades ago, when large, even-aged stands of jack pine were established, either through planting or natural seeding following fire. Such stands offer ideal conditions for the development of epidemic populations of the jack-pine sawfly.

Hosts

Jack pine is the only host that suffers damage on a large scale. However, red and Scotch pines may be damaged occasionally, especially if growing with heavily infested jack pine.

Damage

Trees of all sizes are damaged by the jack-pine sawfly. The larvae, or caterpillars, consume only needles of the previous year's growth, leaving new needles on the elongating shoots untouched. During the last half of the feeding period, the larvae also consume a small amount of bark. This results in cup-shaped notches on the older branches.

In a heavy infestation of 2 or more years duration, the old foliage on some trees may be completely consumed (fig. 1). Heavily infested trees have a striking appearance because of their bare branches tipped with tufts of new needles. When defoliation continues for several years, the trees grow slower and such tufts of needles are on very short shoots.

This sawfly seldom causes any widespread tree mortality, principally because it never completely defoliates trees. The new needles are almost fully developed by the time the insect's feeding period is over. However, the insect can kill trees, especially when infestations continue for 4 or more years. A more insidious aspect of sawfly damage is the gradual reduction in tree growth and vigor. This can result in serious losses, especially when the larvae feed in concert with other damaging insects or during periods when conditions for the growth are poor.

Description

The egg of the jack-pine sawfly is approximately 1 millimeter long, ovoid, and nearly white. From three

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Figure 1.—Feeding injury on jack pine. Note that only old foliage has been consumed. (Courtesy of Ontario Region, Canadian Forestry Service.)

to six eggs may be found in slits in a single needle, (fig. 2) and about 20 to 30 egg-bearing needles may be found in a cluster on a shoot tip.

The larva, when fully grown, averages 2.2 centimeters long. It has a shiny black head and a yellowish-green body that is marked with three horizontal stripes, the lower one sometimes partially broken in spots (fig. 3).

The cocoon is dark brown, papery, ovoid, and about 1 centimeter long. The adult is black and brown, about 1 centimeter long, and flylike; it has four shiny wings.

Figure 2.—Eggs of the jack pine sawfly in jack pine needles. (Courtesy of Ontario Region, Canadian Forestry Service.)

Life History and Habits

The jack-pine sawfly completes one life cycle per year. It overwinters as an egg in a pocket sawed in a needle by the female. Depending upon locality and climate, hatching begins in late April or early May. The larvae feed gregariously and remain in colonies of 50 or more throughout their development. The feeding period ends in late June or early July.

Mature larvae drop to the ground and spin their cocoons in the duff or topsoil. There they remain as prepupae until about mid-August, when pupation occurs. The adults emerge in late August or early September, and the females begin laying soon afterward.

Natural Control

The jack-pine sawfly is generally controlled naturally by biotic enemies before widespread tree damage occurs. The most important natural enemies are several species of wasp and fly parasites of the larvae. The larvae are also subject to an epidemic disease caused by a virus. Adverse climatic conditions, especially late spring frosts, reduce populations of the sawfly.

Direct Control

Direct chemical control measures against the jack-pine sawfly are usually unnecessary because of the effectiveness of natural controls and because trees are seldom killed by the sawfly alone unless they are defoliated in several consecutive years.

Figure 3.—Mature larva of the jack-pine sawfly. (Courtesy of Ontario Region, Canadian Forestry Service.)

However, when sawfly infestations threaten the survival of trees, use of an insecticide may be necessary. As this publication goes to press, no insecticides are registered for use against this insect. Check with your county agricultural agent, State agricultural experiment station, or local forester to learn whether direct control measures have been developed.

References

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