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BORERS THAT ATTACK LANDSCAPE PINES

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Many types of borers can attack conifers but most are not serious pests of vigorously growing landscape or ornamental plants. Several species attack pines in Kentucky, including bark beetles, weevils and sawyers. The larval stages of these insects tunnel beneath the bark and may cause enough damage to severely stunt or kill the tree before the homeowner is even aware that a problem exists. As the larvae tunnel in the conductive tissue of the tree, they interfere with sap flow and destroy the cambium. Some of the sawyers, longhorned beetles, can carry the pine wilt
nematode that compounds injury to the tree. Many pine borers carry fungi and increase the susceptibility of the host tree to these pathogens.

Unfortunately, borer infestations usually are not discovered until the most obvious symptoms appear and it is too late to apply corrective measures. These include yellowing or wilting of the needles, holes in the bark that exude sawdust or pitch, emergence holes of the beetles in the bark, or tree death. In some cases, the damage is so extensive that the tree cannot recover. Insecticides will not penetrate the bark and sapwood to kill borer larvae.

The major decisions involve:

- assessing the potential for survival of the infested tree
- determining the extent of damage to other related species in the landscape
- determining the need for cultural or chemical control measures.

Identification of the types of borers present will help to determine the best strategy to follow.

Bark Beetles

Dendroctonus borers are the most aggressive borers in pines and attack and develop in all species of yellow pine, eastern white pine, and spruces. They initially attack the mid and lower trunk but the infestation spreads up and down the tree over time. Females create S-shaped galleries and deposit eggs along the way. The larvae tunnel at right angles to the main gallery. Eventually, they move into the corky outer bark and eventually produce pupation chambers. They emerge through exit holes in the bark after transforming into the adult stage. Several overlapping generations are produced each year; this complicates the effective timing of preventive bark sprays.

Ips beetles, or engraver beetles, normally attack trees struck by lightning, or recently felled trees. However, when large numbers are present, they can attack and kill young, healthy pines and the tops of older trees. Problems in the home landscape tend to involve weakened or stressed trees that have been recently transplanted into unfavorable sites.

Engraver beetle galleries radiate in all directions but eventually tend to run parallel to the grain. They frequently appear as a “Y” or “I”. Females lay eggs along the sides of the galleries and the legless, grub-like larvae tunnel into the phloem. Mature larvae
pupate in expanded areas or cells in the inner bark. There can be several generations each year.

Weevils

White pine weevils can breed in a wide variety of spruces and pines. Adults spend the winter in litter on the ground and become active in the spring. Females lay eggs in bark cavities and the larvae tend to bore downward in the cambium. In late July they produce a pupal chamber that contains thin shreds of wood. Newly emerged adults will feed on the tree until fall.

Pitch flow on the terminal shoots is the first sign of weevil attack. This is in response to feeding by the beetles. New growth is stunted and finally the needles wilt. White pine weevil attack frequently results in the destruction of the terminal leader, leading to distorted growth of the tree.

Pine Sawyer - Pine Wood Nematode

Pine sawyer beetles have segmented antennae that are much longer than their body. The white, legless larvae are almost 2" long when full grown. They produce roughly oval galleries which contain shredded wood.

Pine sawyers carry the pine wood nematode. When these longhorned beetles emerge from nematode-infested trees and fly to healthy trees, the nematodes are carried under

the beetles' hard wing covers. As the beetles feed on needles and twig bark, the nematodes leave the insect and enter the tree through feeding wounds. In just a few months, the nematode infestation can be great enough to plug resin ducts, stress the tree and cause rapid wilting and death. Although some pine sawyers attack other conifers besides pines, the nematodes are only known to infest pines.

Trees stressed by nematodes or other causes are attractive to the beetles for breeding purposes. The beetles do not lay eggs on vigorous trees. The eggs hatch into the roundheaded wood borer stage of the beetle and the borers contribute to the decline of the already ailing tree.

Gradual fading out and browning of needles over an entire Scots pine or large parts of a tree can be caused by pine wilt nematode. This nematode also attacks Austrian pine, and occasionally white pine. Cut into affected branches and observe if there is sap or resin flow. Laboratory analysis is needed for positive nematode diagnosis. Submit a one-foot section of an affected lower branch; select the part of the branch closest to the trunk.

Chemical control of the nematodes is not available. Trunk sprays for the beetles are of little help because the beetles only go to those trees already stressed or dying from nematode infestations. Foliar sprays to kill beetles while they feed on needles would not prevent nematodes from leaving these beetles and infesting the tree. The recommended control is to immediately destroy dead or dying trees before borers can complete their development.

Cultural Controls

- Proper watering and fertilization will promote tree health and generally reduce the chances of successful borer attack. Vigorously growing trees tend to be able to fight off borer attack.
- Examine plantings regularly and prune dead or damaged limbs as feasible.
- Protect trees from physical injury as much as possible. Any injury that causes pitch flow can result in attack by borers.

- Plant white pines with hardwoods or under a hardwood canopy to reduce attack by Dendroctonus.
- Plant only on medium soils, there should be no hard pan within three feet of the soil surface. This will allow root growth and promote general tree health.
- Remove and destroy trees killed by borers. Select replacement species carefully to avoid a repeat of the problem.
- Consider site selection and avoid putting replacement trees back into poor sites that will stress trees.
- In many cases, it is best to remove and destroy heavily damaged trees because they are unlikely to recover and will serve as a source of borers to attack other trees.

Chemical Control

White pine weevil infestations may be reduced by spraying seedlings and new growth in mid-April and early May and again in August to kill adults as they feed on the needles.

The larval stages of borers, which cause the damage to the tree, are underneath the bark and are not reached by insecticides that are sprayed onto the trunk and limbs. Applications of an insecticide with residual activity may provide some reduction of re-infestation by killing adults before they lay their eggs. However, these preventive sprays must be timed properly to coincide with adult activity. Repeated applications are needed if there several generations in a season or if several species with different flight periods are involved.