

Don't Get Bored

Two closely related wood borers of crabapple and hawthorn can put your inventory at risk. Ignore the trees and the pests, and you may threaten your bottom line.

BY WILLIAM McADAMS

The current economic crisis has severely affected the nursery industry. With market demand having pushed tree prices lower and lower, the premium wholesale nursery grower has been forced to cut back in many areas. As growers are forced to cut production costs, the quality of their nursery stock is being affected. Some production cuts are not that severe, and when the market returns to a more normal level, adjustments may be made fairly easily. However, there are some production cuts that have more dramatic consequences, and when the market revives, adjustments will not be that easy to make. In fact, some of the corrective costs may far outweigh the original amounts that the grower thought was saved. One particular example of this concerns crabapple and hawthorn inventories.

The crabapple and hawthorn markets have been weak for a number of years, and in the minds of many production growers, this is a good area to cut costs. Why spend money on a plant inventory that just sits in the field?

Tandem threats

Crabapples and hawthorns can be affected by a number of insect and disease problems. Many of these problems can be adjusted to in a fairly short time frame, and yet some problems, such as the roundheaded appletree borer (*Saperda candada* Fabricius) and the

spotted appletree borer (*Saperda cretata* Newman), will take as many as three to four years to “begin” to see control results. This will not only require a lot of insecticide treatments, but also will require that many of the infested trees be removed and burned.

Losses can be quite substantial, and it is not uncommon to see a nursery lose as much as 50 to 75 percent of its crabapple and hawthorn field inventory in trying to control these borers.

Both the roundheaded appletree borer and the spotted appletree borer are in the insect order of Coleoptera (the order of beetles) and in the beetle family of Cerambycidae. Members of the Cerambycidae are collectively distinguished by the adult beetles having long antennae (common name = long-horned beetles) and the larvae having rounded heads (common name = roundheaded borers). Entomologists will often use both of these common names when referring to members of the Cerambycidae.

Roundheaded appletree borer

Roundheaded borer larvae usually become quite large as they mature, and the damage to the wood becomes progressively worse as they increase in size. Since a single tree can be infested with a number of larvae of a single roundhead-



The roundheaded appletree borer (left) is easily distinguished by its prominent white stripes; the spotted appletree borer by its white splotches. Top of page, significant damage can be caused by the larvae of roundheaded appletree borers.

WILLIAM McADAMS

ed borer species, infestations of both the roundheaded appletree borer and the spotted appletree borer can quickly compromise the structure of infested wood. Often, trees heavily infested will have severely weakened wood that can break quite easily with a push of the hand, or with a strong gust of wind. When adult long-horned beetles emerge from infested trees, they chew large, round exit holes through the bark; these distinctive holes are easily seen. Infested trees will sometimes exhibit numerous adult exit holes, which give the appearance of the trees having been shot by bullets.

However, another hallmark of the members of the Cerambycidae is the fact that these beetles typically require a multiple number of years to complete their life cycles. This, in combination with the large size of the larvae that are capable of significant wood damage, make this wood borer group very difficult for nursery growers to control.



Clear evidence of the presence of roundheaded appletree borer can be seen in the sawdust accumulation at the base of a crabapple.

The roundheaded appletree borer is a common pest of Rosaceae plants, which include: apple, chokecherry, cotoneaster, hawthorn, mountain-ash, pear and serviceberry. In the upper Midwest, common hosts of nursery production inventory primarily include crabapple, cotoneaster, hawthorn and mountain-ash. The known distribution of this borer extends throughout the eastern United States and southeastern Canada and extends westward to the Dakotas and Texas.

Damage from the roundheaded appletree borer is caused by the larvae,



Spotted appletree borer larvae leave a trail of destruction that eventually can prove fatal to infested trees.

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which attack, primarily, at and around the bud graft union on the tree base. Eggs are deposited into the tree's bark, and when the young larvae hatch, they burrow into the wood and begin to feed. As the larvae mature in size, the damage to the lower trunk becomes gradually worse. Infested trees will typically appear weakened, having a thinner foliage canopy and exhibiting premature leaf coloration during the mid- to late-summer months. Once a tree is infested, structural damage compromises wood integrity and strength, which renders the tree unfit for movement or sale. An obvious sign of active wood-borer larvae is the presence of wood frass (sawdust) around the tree bases. Wood frass is lightly visible during early summer and becomes much more obvious during the fall.

The adult roundheaded appletree borer is easily identified by characteristic white stripes that run horizontally along the elytra (chitinous forewings). The adult emergence begins during the spring and can range from April (south) to June (north).

Time to treat

Although timing may vary as to when to begin treatments, a good indicator plant—bridal wreath (*Spiraea vanhouttei*)—is in bloom when the adult emergence begins. The adults

then begin to emerge in earnest when the black locust (*Robinia pseudoacacia*) is in bloom. It has been my experience that both of these indicators work very well from both north and south geographic locations. The length of time that the borer adults are active may vary from 60 days at northern locations to over 90 days in southern locations. Insecticides found to be the most effective for nursery use are those recommended for wood-borer treatments that have a long residual activity. When treating, it is important to cover the bark surfaces of the tree, particularly the lower trunk region. It is very important that sucker growth be removed and weeds controlled around the tree bases to allow for adequate insecticide coverage. Irrigation heads should not be positioned where water squirts on the bases of the trees, thus washing off treatment applications.



Adult spotted appletree borers chew through the bark of infested trees, leaving telltale exit holes.

Spotted appletree borer

The spotted appletree borer is a pest that attacks apple, crabapple, hawthorn and serviceberry. In the upper Midwest, common hosts of nursery production inventory primarily include crabapple and hawthorn. The known distribution of this borer extends from Ontario, Canada, throughout the northeastern United States and extends westward to Wisconsin, Iowa and Texas.

For many years, damage caused by the spotted appletree borer was misidentified as damage caused by the flatheaded appletree borer (*Chrysobothris femorata* Olivier). This confusion continued until a few years ago, when infested logs were broken apart and the larvae within were examined. Larvae did not have the enlarged, flattened heads characteristic of the Buprestidae (flatheaded borers); rather, the larvae recovered had rounded heads characteristic of Cerambycidae.

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Flecks of sawdust on a crabtree indicate the presence of spotted appletree borers.

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Infested logs were placed into rearing cages, and emerging adults were then collected and identified as the spotted appletree borer.

Damage from the spotted appletree borer primarily affects, but is not limited to, the mid-section of the trunk region among the branch junctions. At first, the damage will appear very subtle, with regions of trunk bark that appear darkened. These darkened areas often resemble fungus infections common to trunk cankers. However, digging into the darkened areas of bark will reveal the tunneling of wood borer larvae packed with large amounts of frass. During the months of June and early July, wood frass will exude from central trunk region. This borer causes considerable structural damage to the upper half of the tree, and as infestations progress, this may result in the tops of the infested trees to be blown out by the wind.

Identify and conquer

The adult spotted appletree borer is easily identified by characteristic white patches that are visible on the elytra. The adult emergence begins during the spring and can range from May to mid-August. As with the round-headed appletree borer, the indicator

plant, bridal wreath, is in bloom when the adult emergence begins. The length of time the borer adults are active may vary from 60 to 90 days. Insecticides found to be the most effective for nursery use are wood-borer products that have long residual activity. When treating, it is important to cover the bark surfaces of the tree, particularly the mid-trunk regions.

Both the roundheaded appletree borer and the spotted appletree borer are very serious problems of production nurseries. Infestations can quickly spread from one planting to another. If not controlled in a timely manner, these borers are capable of spreading throughout virtually all of the host plantings within the production fields of a nursery. It is also important to recognize that nursery locations that are surrounded by urban development may have to contend with these borers filtering into their production fields from the surrounding private properties.

Growers are often frustrated with the results of their control efforts, particularly in the early stages. Even though they removed the infested trees and have completed an entire season's worth of spraying, the following year often reveals more borer activity. And, this borer activity often continues the

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year after that. It is important that growers recognize that these Cerambycidae borers take a number of years to complete their life cycles. So even if you controlled one group of adult borers that emerged during the current year, those treatments did not affect the other groups of younger larvae still embedded in the tree wood of the planting.

Open wounds on this crab are a sure sign of infestation by the spotted appletree borer.



There is hope

Roundheaded appletree and spotted appletree borers can be controlled, and prevention is by far the most cost-effective way. The presence of these Cerambycidae borers can be detected early by regularly monitoring crabapple and hawthorn plantings. Removing and destroying infested trees promptly is critical in the success of the control effort. If detected early enough, control of these borers is much easier achieved. Growers need to recognize the risk of current infestations in their present inventories and realize that the longer that these borers exist in their plantings, the more it will cost them.

There is one certainty in the wholesale tree market that everyone can depend on: It will change. Sometimes the changes are gradual, and yet sometimes the changes occur in a very short time. It is not wise to dismiss crabapple and hawthorn inventories as a lost cause. Prevention and sanitation are the keys to the maintenance of production fields. Future control successes will depend upon a grower's vigilance to maintain a clean inventory. Please do not ignore your crabapple and hawthorn plantings.

William R McAdams has a bachelor's degree in entomology and is the owner of McAdams Consulting Inc. - Insect and Disease Problems of Landscape Plants (www.mcadamsconsultinginc.com). He resides in Swisher, Iowa, and can be reached at bill@mcadamsconsultinginc.com.