Shothole Borers in Peaches
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Tree health plays an important role in preventing insect infestations and infections by plant pathogens. When trees are either stressed or dying, they are often more attractive to various secondary pathogens and insect pests.

Examination of weakened peach trees will often reveal numerous small circular holes in the trunk and limbs (Figure 1). Shothole borers are very small, dark beetles. These insects take advantage of the weakened state of the trees and bore into the wood, weakening the tree further, or opening wounds into which pathogens can enter. Sometimes sap oozes from the small holes (Figure 2). Healthy trees exude this sap, or resin, to kill invading insects.

Female shothole borers lay eggs under the bark. Once they hatch, larvae feed on the cambium and create galleries under the bark.

Shothole borers and other borers are everywhere where dying and decaying wood is present (and a good thing too; if not for insects and fungi that break down wood, we’d be overwhelmed with it!), but they are not usually a problem in healthy orchards. Pruning of heavily infested limbs and removal of severely infested trees can help to reduce numbers in the orchard. If shothole borers are plentiful in or around an orchard, old wood from removed trees should not be stacked as firewood beside the orchard as that practice is likely to increase the incidence of shothole borers over time in the orchard.
When you’re scouting for aphids this year, don’t forget to look for beneficial insects. Believe it or not, in a well-managed crop, you will often find more species of beneficial insects and beneficial mites than pests. We are all familiar with common and highly visible natural enemies including the showy ladybird beetles (Figure 1) and their larvae (Figure 2) that we see munching away in aphid colonies. Many of us have also learned to recognize the eggs masses that adult ladybird beetles lay on leaves and bark (Figure 3). However, it is much easier to overlook syrphid fly larvae.

Syrphids, also called hoverflies and flowerflies, are small to large flies (to 25 mm) that are often seen hovering near flowers. Many are brightly coloured and are easily mistaken for bees or wasps. Adult syrphids do not prey on aphids, but their larvae are ferocious predators of aphids, scales and other insects. Larvae are wrinkled and slug-like in appearance, with no obvious head (Figures 4 and 5). Larvae are brown or green with whitish areas or bands. Look closely for them in aphid colonies, and you may be rewarded with the sight of a helpless aphid locked in the “jaws” of a syrphid fly larva!

Fig 1. Ladybird beetle adult
Fig 2. Larval ladybeetle on 1 year old peach.
Fig 3. Clutch of lady beetle eggs on peach branch
Fig 4. Syrphid (hover fly) larvae on peach. Note two small larvae at right of picture
Fig. 5 Two syrphid larvae at edge of peach canker
Just as there are correct and incorrect ways of applying traditional pest control products, there are right and wrong ways to put mating disruption (MD) pheromone “twist ties” in fruit trees and vineyards. Although the majority of dispensers are installed correctly, there are two mistakes that I see frequently.

- The first is placement; this is an easy problem to remedy. Most of the time, poor placement simply involves hanging the dispensers too low.
  * For Oriental fruit moth: ties should be about 1.2 m (4 ft.) or higher.
  * For peachtree borers: ties should be about 1.2 m (4 ft.) or higher.
  * For codling moth: ties must be in the top third of the tree.
  * For grape berry moth: ties should be on the top wire.

- The second mistake is in twisting technique. Over-twisting the ties can cause the tube to break and release the synthetic pheromone too quickly. The problem here is again fairly simple to remedy: make sure that the workers are twisting the dispensers only enough to keep the dispensers from falling off the branch. Nothing is gained by excessive twisting but both installation time and MD product are wasted by over-twisting.

Fig 1. Correct installation. A single twist to the dispenser is enough to keep it on the branch for the season. Varying the side of the tree where the dispensers are placed (north, south, east, west) and/or varying the style of installation (see “coiling” style in Figure 2) helps you to tell which year they were installed. This can be important during pruning time.

Fig 2. Correct installation. This style of coiling the dispenser is perfectly acceptable and ensures that girdling will not occur.

Fig 3. Poor installation. Although the loop of the dispenser gives the branch plenty of room to grow, the half dozen twists in the dispenser are a waste of time when installing and may have damaged the tube.

Fig 4. Poor installation. Twisting a dispenser so tightly compromises the dispenser performance and may girdle the branch.
OMAFRA staff have worked together this spring to build an orchard sprayer patternator. This piece of equipment should play a key role in measuring the performance of the orchard sprayers to be tested at the upcoming Sprayer Performance Workshops in late June and early July. See the announcement at the end of this newsletter.

Many remember the talk given by Dr. Andrew Landers in February at Brock University. Andrew showed a couple of versions of the patternator they have used to test the performance of orchard sprayers in New York State. These are variants of the type of equipment used in Europe to look at sprayer performance.

They all do more or less the same thing. That is to collect a sample of the wall of spray at different vertical heights, from ~1 foot up to 12 feet and higher, while the sprayer is operating in a stationary position.

The patternator we built in Ontario and to be used later this month is based on a series of collection screens positioned every 30 centi-meters or every foot up a telescoping framework. The screens will allow a certain amount of spray through without interrupting pattern set up by the sprayer itself. What is measured is the relative proportion of the total amount of spray coming from a bank of nozzles and it is collected by the screens at different heights. See Figure 1.

By comparison, in New York they have used both the screen design and a design that uses funnels and sends the collected spray liquid by gravitational forces to a rack of graduated cylinders on the ground. The idea then, is to correct or verify the symmetry of the spray profile by modifying nozzle angle/size, airflow and general set-up.

The key element of our design is the telescoping framework that holds the set of collection screens. Each screen has been fitted with a trough and downspout that sends the captured liquids down and into a rack of cylinders. Each cylinder represents a specific height on the tower.

Fig 1. Helmut Speiser, Pesticide Application Engineer with OMAFRA discusses sprayer options with apple growers at a test site in the London area. The patternator is on the right hand side of the photo.