PMTP Newsletter – Stink Bugs

Common Species

There are several species of stink bugs that impact tree fruit crops in Washington. These include: Consperse stink bug, *Euschistus conspersus* (Fig. 1); *Chlorochroa sp.* (Fig.2); Green soldier bug, *Acrosternum sp.* (Fig 3); and Red-shouldered stink bug, *Thyanta sp.* (Fig. 4).

Figure 1. Consperse stink bug, *Euschistus conspersus*.

No spot - checkered margin –
Historically most common

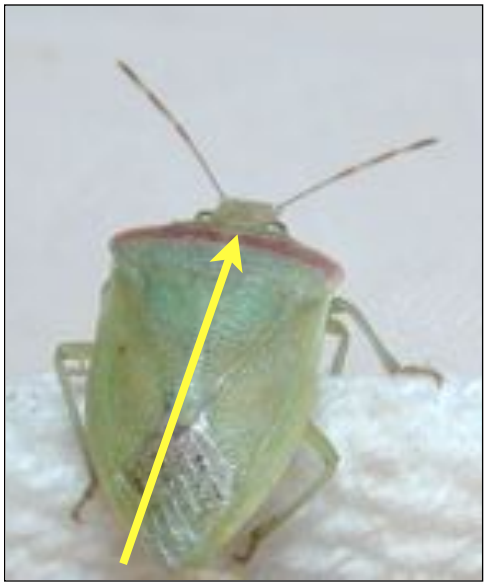
Figure 2. *Chlorochroa sp.*

Central spot - same color as margin -
Locally abundant

Figure 3. Green soldier bug, *Acrosternum sp.*

No red band, 3/4" long –
Riparian areas

Figure 4. Red-shouldered stink bug, *Thyanta sp.*



Red 'shoulder' band, 3/8" long
Infrequent orchard pest

Stink Bug Injury

Adult stink bugs puncture fruit with their beaks to feed on the fruit flesh. Stink bug damage in apples can occur beginning in mid-summer and accumulate through the harvest period when new adults move into the orchard from outside habitats. Succulent weeds (mullein plant) or those with fruits (blackberries, wild rose) or seeds (bitterbrush) support large populations of stink bug in the spring. As these plants dry out during the summer, stink bugs move into irrigated orchard borders and then into the trees to feed on maturing fruit. This year the movement of stink bugs into orchards has been delayed about a month but as of the first of August an increase of captures in traps indicates they are on the move.

Stink Bug vs. Bitter Pit Damage

Damage caused by stink bugs can be confused with bitter pit damage. Stink bug damage is usually located higher on the fruit, is conical or rectangular in shape, and ranges from very light tan to dark brown in color (Figs. 5-6). Bitter pit damage, on the other hand, is distributed on the sides of the apple and near the calyx, is spherical in shape, and usually dark brown to black in color (Fig. 7). Cutting a cross section through the damage is the best way to differentiate between stink bug damage and bitter pit. Stink bug damage is caused by a long, slender proboscis piercing into the apple. The damage is conical shaped and starts right at the surface (Fig. 6). Bitter pit damage is slightly below the surface, and tends to be more round than conical (Fig. 8).

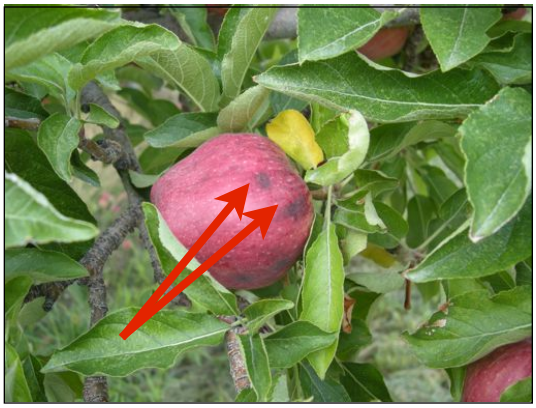


Figure 5. Stink bug damage is usually located high on the fruit.

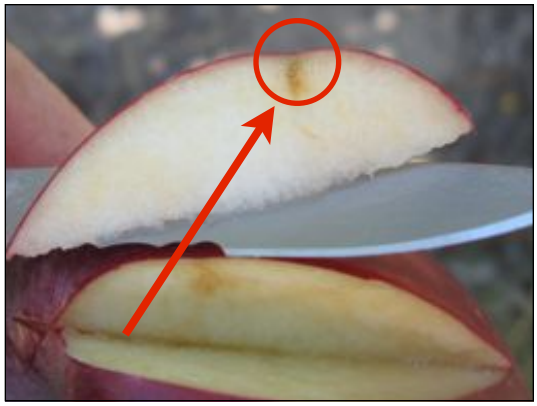


Figure 6. Stink bug damage is conical shaped and starts right at the surface.

Figure 7. Typical bitter pit damage.

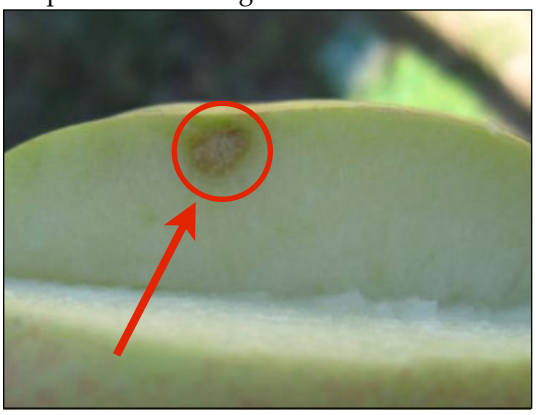


Figure 8. Bitter pit damage is slightly below the surface and more round.

Monitoring

It can be difficult to determine when stink bugs begin moving into orchards because they are primarily active at night and hide during the day when they detect movement. Pyramid traps (Fig. 9) and commercial lures can be used to monitor the consperse stink bug. Traps may also be effective in detecting adult Chlorochroa. However, there are currently no commercially available lures for this species. While research is focused on developing a pheromone lure for Chlorochroa the expense of making the pheromone may make it impractical.

Figure 9. Pyramid Trap

Traps

Effective stink bug traps utilize a pheromone lure placed in a collection funnel atop a pyramid shaped platform. Stink bugs are attracted to the pheromone as well as the shape and color of the pyramid. Adults and nymphs will climb the pyramid and into the collection funnel in search of the pheromone source. Pyramid traps made of extruded polyethylene with a gallon plastic jug at the top provide a consistent and durable monitoring tool (Fig. 9). The trap could be made cheaply, by growers and consultants, out of plywood or other composite materials. Anchoring traps with a central rod is necessary to keep them stable under high wind conditions.

Control

Managing stink bug populations can be difficult because they spend much of the year living on host plants outside of the orchard. Adult stink bugs may move into the orchard in late summer and feed on fruit, both apples and cherries. When stink bugs are detected within the orchard, the only effective means of protecting a crop is to apply contact insecticides. Pyrethroid insecticides have proven to be the most effective insecticide options for control of stink bugs, but even a single application can be highly disruptive to biological control of spider mites and other insects. To limit the disruptive effects, targeted sprays of orchard borders are recommended. Repeated applications of a pyrethroid insecticide to orchard borders, 4 to 5 rows, has worked well to reduce fruit injury in the entire orchard. Sprays are most effective when applied at, or shortly after, dusk - the period of highest stink bug activity. Some pyrethroid insecticides have labels for non-crop lands and can be used to treat areas directly adjacent to the orchard that have been determined to harbor high stink bug populations.

Figure 10.
Attract & Kill

Attract-And-Kill

Current research is looking at the potential for an attract-and-kill method of control. One method being tested is to treat the inside of the jug (the part of the trap that sits on top of the pyramid – Fig. 10) with an insecticide so that bugs that enter the jug would be exposed to the insecticide and die. Many questions still remain with the attract-and-kill method and research will continue.

Brown Marmorated Stink Bug

Brown Marmorated Stink bug is an exotic stink bug species first discovered in the US in the mid-1990s in Pennsylvania (Allentown). In 2010 in the eastern US many soft fruit and apple orchards reported extremely high levels of damage (Fig. 11) and researchers in the mid-Atlantic region report high captures in traps. In 2004 it was reported from OR, and by 2009 it was well established in the Portland, OR area.

Figure 11. BMSB Fruit Injury

If there can be good news about a new pest it is that so far we have not identified any BMSB from our trapping for stink bugs in eastern WA, at least based on our preliminary evaluation of specimens collected. These data should not be viewed as conclusive however, because we were not using a pheromone known to be attractive to BMSB.

Table 1. Common brown stink bugs easily confused with Brown Marmorated.

Figure 12. BMSB	Figure 13. Rough	Figure 14. Consperse	Figure 15. Chlorochroa
			
1. Last two antennal segments have white bands. 2. Shoulders (edges of thorax) are smooth. Yellowish-brown color with mottling and cream colored spots on thorax and shield; margins of abdomen have an alternating light-dark banded pattern.	The best way to distinguish this stink bug from BMSB is by: (1) Looking at the last two antennal segments which are not banded; and (2) From the appearance of the 'shoulders' which have teeth-like projections.	This is a very common stink bug. Compared to BMSB it is smaller; the body is less mottled and lacks the cream colored spots; the wing membranes darker; and the antennae are tan to reddish with the end segments dark or black.	The coloration of this stink bug can be highly variable from dark brown to light olive green. The most notable features are the black antennae, light colored body margin and a light spot at the end of the shield.