

Early Defoliation and Injury by Buffalo Tree Hopper Observed in Fuji

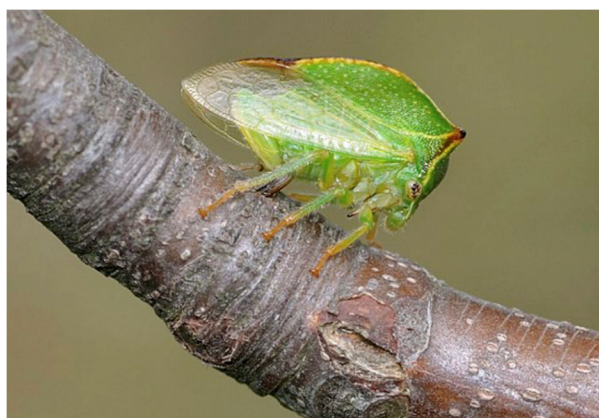
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During harvest of Fuji in its fourth leaf, discoloration and early defoliation became apparent in a Orange County, NY orchard this season. A closer look found injury to tree shoots arising from egg-laying slits made by the Buffalo treehopper (BTH), a species of treehopper (Hemipteran) native to North America.

As the insect was likely foraging in the nearby open range of broadleaf plants, dandelion and dock, found along the orchard headlands, buffalo treehopper populations migrated over to the woody tissue of apple to begin reproduction. During the spring the adult insect, relatively indiscrete when in the tree, is only ¼” in size, was not observed this season during scouting sessions. The triangular shape and humped back from which it gets its name, resembles plant thorns, likely blended in quite well within the tree canopy.



Buffalo treehopper, *Stictocephala bisonia*

This insect is only an occasional pest of fruit trees, yet can cause significant injury to 1-2 year wood, known to also infest quince, pear, cherry and prune trees. This season the insect may have been prompted to move into irrigated orchards for moisture, as a season long

drought across the mid-Hudson Valley placed extreme pressure on food resources from June through early September.

Biology

Upon mating, the female will lay eggs from July to October creating a slit in the underside of apple twigs inserting up to 12 eggs in each oviposition site. The nymphs emerge from eggs the following year, from mid-May into June, depending on degree-days. Nymphs are wingless, crawling out of the orchard canopy to infest grasses and broad-leaf non-woody plants. The slits in the branches caused by egg-laying provide harborage and establishment of [Woolly Apple Aphid \(WAA\)](#), feeding on the sap of the tree from mid to late season through harvest of late season fruit. WAA infestations can lead to honeydew deposits on the



4th leaf Fuji shoots with egg-laying slits created by the Buffalo Tree Hopper, Orange County, NY. Image: Win Cowgill.

foliage and fruit, causing the growth of sooty mold and subsequent downgrading of fruit quality and loss of foliage from scorch. WAA colonies can also serve as a nuisance to pickers during harvest.



Aerial Colony of WAA.

Scouting

Adults migrate to tree fruit to begin egg-laying in mid-late May and should be included in observational scouting assessments. Upon first find of adults and or early spring egg-laying sites, management should be strongly considered using contact insecticides. Presence of the insect may be seen throughout the season if left unmanaged.

Management

Pruning in the winter and likely again in the spring when dying buds and lack of foliage become obvious should be conducted to remove damaged wood. This would best be done prior to nymph emergence in late May. If left unmanaged, limb breakage from damaged fruiting branches will likely occur during the season as fruit load develops. Limbs having been attacked by the plant hopper should be pruned to the nearest healthy bud to restart growing shoots. Since the egg-laying period is a summer event, the presence of the adult may linger into the end of the season, with insecticide spray timing becoming somewhat elusive.

Removing injured branches will also reduce harbor sites for early establishment of WAA. When bark split caused by BTH or cicada go unnoticed, considerations for WAA management should then be considered at the onset of aphid presence. Basically Red Delicious and varieties with Red Delicious in the parentage are susceptible to WAA (Empire, Fuji).



Advanced Woolly Apple Aphid Infestation on SunCrisp Apple, Rutgers Synder Farm, 2014. Image: Win Cowgill

To manage WAA, the use of the systemic insecticide **Movento SC** (Spirotetramat) at 6 oz./A in combination with a penetrant / adjuvant such as LI-700 or horticultural oil such as Damoil / at 32.0 oz./100 gal. is required and will be very effective. Two applications would be recommended for full season control, the first in May (1st cover) and then approximately one month later. Remember it takes 2 weeks for the Movento to get into the tree. Movento applied later in the season (August) **is not** as effective as the leaf cuticle is thicker and the Movento cannot penetrate efficiently.

Note, do not apply a penetrating surfactant/oil with Movento SC with any PGR or Captan. It can enhance the uptake of the pgr and overthin. Combined with Captan the surfactant/oil can cause russetting. You can follow at Mancozeb program until 2nd cover or 77 day phi and also Switch the Captan to Ziram as well.

Senstar (Pyriproxyfen/Spirotetramat) is a combination of the a.i.s in Movento and Esteem, and is registered for use against a range of foliar pests in pome and stone fruit in NYS. Its label includes aphids (including WAA),

mealybugs, San Jose scale, with suppression effects on several additional species such as mite. Non-toxic to honeybee adults, but potentially toxic to honeybee larvae through residues can be found in pollen and nectar. The use of a penetrant / adjuvant or oil will also be necessary to obtain the benefit of the systemic component of the Spirotetramat. **Note, do not apply** a penetrating surfactant/oil with Movento SC with any PGR or Captan. It can enhance the uptake of the pgr and overthin. Combined with Captan the surfactant/oil can cause russetting. You can follow at Mancozeb program until 2nd cover or 77 day phi and also Switch the Captan to Ziram as well.

Controlling weeds within the orchard should help to reduce the alternate feeding sites of BTH populations. Managing Sod Middles and Grass Headlands. Treat every year, one time.

Late fall after harvest is one of the best times to control broad leaf weeds and white clover. There are multiple reasons why it is essential to control broad leaf weeds and clover.

1) Broad leaf weeds host multiple viruses that can be

transmitted to fruit trees via nematodes

- 2) Dandelion bloom competes with apple bloom, bees prefer dandelion.
- 3) White clover blooms all season and therefore makes most insecticides applied to apple & peach off label if white clover blooms are present!
- 4) Broad leaf weeds are host to many insect pests; Tarnished Plant Bug, Buffalo Tree Hoppers, Native and invasive Stink Bugs, Two Spotted Spider Mites..

Treatment options: 2,4-D amine formulation (Weedar 64) @ 1.0 quart /Acre or the new 2,4-D choline formulation (Embed 3.8SL) or OLF Plus Copyralid @ 3.0=4.0 ounces/ 64 acre (Spur or Stinger).

References

Poma Tech Blog- Peter Jentsch <https://pomalab.org/>

Tree Fruit Insect Pest - Buffalo Treehopper-[Grzegorz \(Greg\) Krawczyk, Ph.D.](https://extension.psu.edu/tree-fruit-insect-pest-buffalo-treehopper)
<https://extension.psu.edu/tree-fruit-insect-pest-buffalo-treehopper>

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