2018 Northern New Jersey Fruit IPM Report

Win Cowgill
Professor Emeritus Rutgers University and Win Enterprises International, LLC

Megan Muelhbauer and Dean Polk
Rutgers University

Horticulture

Thinning- we have been advocating for several years that growers use split multiple applications of PGR's for chemical thinning (the "nibble" approach), starting at bloom. This season, most growers in NJ and PA had a hard time with weather conditions at thinning time. At least one timing and sometimes multiple applications were problematic.

Across the board, growers that began thinning applications at bloom and got a petal-fall spray on, had better thinning results over all and less hand thinning to do than growers who waited for 'good' weather and missed some later applications. Sometimes the later applications did not fall within a good carbohydrate-deficit window based on the Cornell Model and thus did not work.

Excessive Rainfall

Growers in North Jersey and eastern Pennsylvania experienced 35-40 inches of rainfall in July, August, and September. Our annual rainfall is normally only 43 inches. Most peaches and August and September (early) apples had poor flavor, as the sugars were diluted.

Sunburn

We had many days of 90°F or higher temperatures. Growers who did not apply sunburn materials prior to the heat had sunburn. With excessive rainfall in August and September, we had rapidly sizing fruit that were exposed as we continued to have 90°F days. Growers who did not appy sunburn material had excessive sunburn on many varieties, especially if the fruit was exposed on well-pruned tall-spindle trees.

Bitter Rot

Bitter rot was severe in northern New Jersey orchards that did not reapply fungicide after 2 inches of rainfall. Growers who reapplied were in good shape, but several indicated that their spray bill was almost double a normal year. Of note, bitter rot was not just a problem on Honeycrisp but appeared on cultivars across the board.

Glomerella

Glomerella was diagnosed by our Rutgers Diag-

Bitter Rot- Photo Credit Jon Clements-Fruitadvisor.info.

Bitter Rot- Photo Credit Good Fruit Grower.

nostic lab, from samples from one grower in northen New Jersey on Crips Pink. I suspect it was present in other orchards as well. It appeared in clusters of tress and seemed to spread from there. On trees that lost significant foliage, the fruit ripened prematurely and was discarded.

For diagnosing Glomerella, I received much assistance from the Rutgers Diagnostic Lab, Dr. Kieth Yoder, VPI, and Dr. Srdjan Acimovic, Cornell- see the links below.
https://blogs.cornell.edu/fruit/2012/08/31/glomerella-leaf-spot-a-new-disease-affecting-golden-delicious-apples-in-ny/
https://treefruitdisease.blogspot.com/search?q=glomerella

Dr. Sara Villani, NC State University, has the most recent disease-control trial data for Glomerella and published an excellent fact sheet *Preparing for Glomerella Leaf Spot and Fruit Rot in 2018* with data and fungicide recommendations.
https://apples.ces.ncsu.edu/2018/04/preparing-for-glomerella-leaf-

Spotted Lanternfly

Spotted lanternfly was first found in NJ in early July in Phillipsburg, Warren County at a homeowner location. Then on Friday, August 10, on a commercial Hunterdon County fruit and vegetable farm by Rutgers IPM personnel. The insect was found in a Tree of Heaven being used as a trap tree with a plastic catch basin placed around the base of the tree, and the first 5-6 feet of the trunk sprayed with dinotefuran to kill any insects that land on the tree. The dead insects were supposed to fall into the catch basin. They did not. The find was made by looking up into the foliage and seeing the adult stage. To our knowledge this is the first sighting of this insect on a commercial farm in NJ. Growers should be particularly aware of any possible activity in trees of heaven that border cultivated plantings. These trees are common in poor and disturbed soil. This capture was made from trees on a hillside that line the border of a power line which runs through the farm. With the amount of spraying that normally

Glomerella from the same Northwest Jersey Crips Pink Orchard. Photo Credit- Win Cowgill.

Three-year-old Crips Pink/M.9 Severely defoliated.

Same Crimps Pink in row view- adjacent trees start to defoliate.

Same Crips Pink/M.9 just starting to defoliate.

goes on in tree fruit, it is not likely that this insect will cause a major problem at this time of the season. However, if these insects are found on trees in close proximity to grapes, it can be more problematic. See the July 18 Plant and Pest for an article by Anne Nielsen here https://plant-pest- advisory.rutgers.edu/?s=spotted+lanternfly

In Northern New Jersey, we have found Spotted Lanternfly on 10 commercial farms in Hunterdon County New Jersey (Muelhbauer). They include several vineyards, two grain farms, several orchards and a nursery of ornamentals. Most sightings have been of one or two lanternflies, however one grower of ornamental trees in Hunterdon County reported his *Acer rubrum* was loaded with Spotted Lanternflies. In addition, one orchard has shown significant infestation of the lanternfly on his tree fruit and brambles.

Integrated Pest Management has just begun to be planned/implemented by Rutgers Cooperative Extension through the deployment of pheromone traps. Several farms have been chosen to have sticky bands stapled around vineyard poles and/or the host (Tree of Heaven), and small packs of pheromones were attached. This was just begun in late August, and was not found to be effective in luring/trapping the flies. Our preliminary hypothesis is that these traps might show greater efficacy if they were put out in the spring when the insects are mating instead of the late summer. Other early observations we have made are that they seem to be looking to lay their eggs on other trees in the fall (i.e. *Acer rubrum*) and not the Tree of Heaven as one might suspect.

Brown Marmorated Stink Bug

BMSB presence was spotty all summer in northern Jersey. In September the trap numbers began to increase (See Table 1 Below). In September, October, and Early November (Crimps Pink/GoldRush) apples (and pears) are the only fruit present for BMSB to feed on, growers must have a program to address this pressure. Growers need to protect the fruit with short-PHI insecticides at that time of year, especially with increased activity. BMSB effective materials that have a 7 day or less PHI include Baythroid (Apple, Pear and Peach), and Belay (Apple, Pear only). Dinotefuran, Venom and Scorpion, can be used under section 18 labels for the high rates effective for BMSB. These labels state a 3-day PHI for both pome fruit and stone fruit. Both products are toxic to bees and should be used when there are no flowering weeds in the orchard to attract bees. The Venom rate is 4-6.75 oz/A, and the Scorpion rate is 8-12 oz/A (both have a 2 application maximum). Make sure to apply thorough coverage, make frequent applications, and rotate chemistries as much as possible. Trap numbers are unreliable for making a determination of to spray or not spray a particular block. Since BMSB are so mobile it makes it hard to predict. See below the table for Treatment guidance:

On October 8, 2018 Peter Jenstch, Hudson Valley Lab, Cornell University, wrote: "Over the past 8 weeks we have been seeing a steady increase in populations of the invasive brown marmorated stink bug (BMSB) in our pheromone baited Tedders traps placed along the woodland orchard edges. It's no surprise that we also seeing an increase in feeding injury BMSB on red and yellow colored varieties, especially along the orchard perimeter.

"It is very important to note that stink bug injury does not express itself immediately on the fruit. Apple recently fed upon by the SB complex will likely be harvested and stored without blemish, only to find the same fruit with very high levels of fruit damage after its removal from cold storage. Efforts should be made to manage this insect complex prior to harvest.

"Management for this insect pest should continue until the last fruit is off the tree. Use of a 10 BMSB per baited BMSB Tedders trap threshold, followed by scouting along the orchard perimeter and use of a single adult stink bug as a threshold within 100′ of perimeter row, then followed by border row, alternate row and whole orchard applications if these thresholds are met should be strongly considered as movement of native and BMSB populations begin to migrate to and from orchards to feed, preparing for overwintering. (In NJ the Rutgers IPM Program was using yellow sticky traps and scouting stopped in Mid September)

"The BMSB has recently begun movement into orchards to intensively feed, stocking up on reserves needed to successfully overwinter. In orchards throughout the Hudson Valley we've captured what we would consider the 'Provisional Threshold' numbers of adult BMSB in pheromone trap captures. Much confusion about injury can arise at harvest given the four types of late season injury that can occur to fruit."

1. Stink bug injury for three different species
2. Hail injury during the season

Table 1. Brown Marmorated Stink Bug Trap Counts – Northern Counties Late Summer to Fall 2018.

Week Ending	Average of Adults	Average of Nymphs	Max of Adults	Max of Nymphs
6/23	2.3	0	4	0
6/30	1	0	4	0
7/7	2	0.2	5	2
7/14	1	4	3	28
7/21	1	3	6	13
7/28	0.8	2.4	2	5
8/4	0.7	2.3	5	13
8/11	1.9	5.3	7	17
8/18	2.3	9.3	7	28
8/25	2.6	16.7	9	60
9/1	3.9	11.3	15	74
9/8	7.3	3.7	24	22
9/15	7.9	1.7	19	7

3. Bitter pit from calcium deficiency
4. Bitter pit from calcium deficiency

See Peter's Blog for the descriptions of other injury that is similar: https://blogs.cornell.edu/jentsch/2018/10/08/bmsb-update-stink-bug-feeding-continues-on-apple-assessing-fruit-damage-at-harvest-for-stink-bug/

Management of BMSB in apples should continue until the last fruit is off the tree. If the trap catch indicates of if scouting finds one BMSB in an orchard block, at least perimeter sprays should be applied up to harvest, which can be November for Crimps Pink and Goldrush.