

EXTENSION/FIELD REPORTS

State (area of State) or Province: Eastern New York

Person(s) Reporting: Peter Jentsch

Rainfall accumulations: The start of the 2018 season began very dry in March increasing to exceed the average through April with rainfall accumulations of 2.73" in March (3.6" avg.), 5.08" in April (3.8" avg.), and 3.48" in May (4.4" avg.). The month of June saw a significant increase in rain events totaling 3.18" (4.4" avg.), with ample rain to produce moderate levels of apple scab and fire blight infection, especially in newly planted blocks. The first two weeks in July had less than 0.2" of rain with 6 days above 90°F requiring weekly irrigation. The latter days in July had significant rain with 4.48" of accumulated rain over the entire month (4.7" avg.). August experienced above average rainfall with accumulations of 7.79" (4.2" avg.). Total rainfall for the March 1st through September 1st growing season totaled 26.74" of rain, above the seasonal average of 25.1". Rain events over the region were dramatic with high winds in small cell tornadoes ravaging farms in lower Ulster and Dutchess County, suffering heavy losses with thousands of young trees toppled and dozens snapped at the scion rootstock union.

Tree phenology: Bud development was hampered in 2018 by lingering cold temperatures. The season began as one of the latest seasons on record. However, by petal-fall, the season was one-week later than the latest day of the 38-year phenology mean, 10 days earlier than the latest recorded date.

McIntosh green tip (18 April) occurred 19 days later than the 38-year historical mean (see McIntosh phenology), the earliest recorded day at the HVRL. King bloom on McIntosh began on the 9th of May. Day length and predominately mild temperatures prevailed ranging between 49.9°F and 79.2°F, setting the stage for a short bloom period lasting 5 days, 4 days shorter than the mean of 9.4 days with ≥80% PF in McIntosh occurred on 14th May. Degree-day accumulations of 514.143 and 274.650 were midrange relative to the 38-year average up to PF. A moderate temperature range of 49°F to 88°F followed PF. There was ample sunlight and temperature for pollinators yielding strong pollination and strong fruit set requiring significant thinning for a marketable crop. Early water stress was a concern for tree fruit growers during early June and early July with ample rain fall moisture available during most the season. By the 21st of May, 100% of McIntosh fruit had set with king fruit sized ≥5 mm, with 5% plum curculio injury noted in the untreated Ginger Gold control plots on that date.

Pest Type (insects, mites, diseases, vertebrates, etc.)

Tarnished plant bug (TPB) presence and fruit injury was slightly above average this season, requiring timely applications for management in orchards with historical fruit damage. Significant injury occurred during the post bloom period this season as cool temperatures prior to bloom were not conducive for TPB activity. Injury from this pest at fruit set was recorded to

be below 0.5%, yet injury one week later was observed to be at 8.0% by the 21st of May in the UTC Ginger Gold this season. Relatively dry conditions during the pre-bloom period favor TPB activity, often requiring insecticide applications at both TC and P that, in many years, show numeric reduction in fruit injury. Low levels of injury in higher valued fruit such as Sweetango, Honeycrisp, Gala, and Fuji typically require TPB management if culls from this insect exceed economic threshold. We observed TPB injury at 39.0% in Ginger Gold on 4 June in untreated plots with similar damage noted in these plots at harvest.

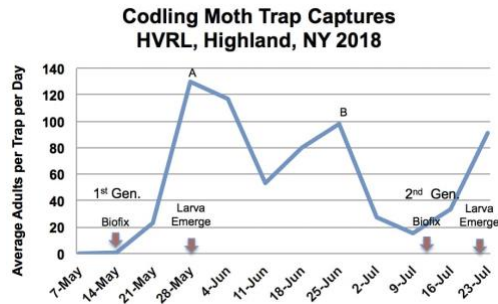
Plum curculio (PC) damage levels were initially low with slow development with first observation of ovipositional injury on 14th May (0.5% at PF in Ginger Gold) in early varieties and moderate later into the season (34% by the 29th May and 77% by the 4th of June). *The predictive model using 308DD₅₀ calculated the completion of PC migration and need for residual insecticide until the 3rd of June using the HVRL NEWA station.*

This season required three applications in most orchards beginning at 80% PF to control PC based on early reapplications following significant rain events during 1st and 2nd cover for most mid to late varieties. Rains after PF on the 15th, 19th May and 4th of June prompted a 1st and 2nd cover re-application within shorter spray intervals. PC damage began shortly after fruit set with temperatures exceeding 70°F. Overall high pressure was observed this season with PC injury observations prior to June Drop exceeding 75% in Red Delicious. In early harvest assessments after June Drop damage was assessed at 52.6% in untreated Ginger Gold.

European apple sawfly (EAS) activity occurred in very low numbers again this season with early varieties showing a range from 1.8% to 10% injury in Ginger Gold and McIntosh cluster fruit evaluations with early harvest assessments at <1.0%. This was the fourth year in which EAS populations were at very low fruit damage levels.

Spotted tentiform leafminer (STLM) populations remain at very high levels in seasonal pheromone trapping with two distinct flights. Since the planting of our semi-dwarf test plots that correlate with the onset and use of the neonicotinoid class of insecticides employed in apple and reduced broad spectrum OP use, the STLM has not been observed to cause injury to foliage to a degree requiring insecticide management. Parasitism of early larval stages continue to be observed during the season.

San Jose scale (SJS) crawler emergence was predicted to occur during the first week of June (4th June) based on the 1st adult capture on the 18th of May using 400 DD₅₁ model. Nymphs were observed on fruit on the 16th of June, 12 days after the predicted emergence date. In general, SJS scale levels were high in infested trees. The infestation means ranged from 22.3% to 64.0% injury observed in HVRL research plots on 28th August. In conventionally treated orchards, the SJS has become a major insect pest to manage in apple, requiring targeted applications for multiple generations. In 2015 we observed a 3rd generation in late September.



Lepidopteran complex: Overwintering larvae of the spotted green fruit worm (SGFW), red banded leafroller (RBLR) and OBLR larva during the pre-bloom period through fruit set remain a concern for most Hudson Valley and Lake Champlain pome fruit growers. The tools for use against the Lepidoptera complex are diverse in mode of action, very effective with excellent residual activity. Relatively low levels of infestation were observed in the pre-bloom and early season leafroller complex.

Codling moth (CM) 1st generation sustained adult flight occurred on 14th May with larval emergence predicted for 29th May using 220 DD₅₀ from CM biofix. The internal lepidopteran complex, lesser apple worm (LAW), oriental fruit moth (OFM) and CM showed moderate levels of damage to apple, with frass produced by the internal lep. complex appearing during mid-late June through early July. Moderate levels of damage from the internal lepidopteran complex was observed from 1st generation evaluated on 29th June on Ginger Gold and Red Delicious. The 2nd generation adult sustained catch for the CM biofix occurred on 12th July with management for larval emergence prediction using 250 DD₅₀ to occur on 24th July.

Obliquebanded leafroller (OBLR) monitoring and management by tree fruit growers continues to be a high priority. Targeting up to three seasonal application windows while employing a single mode of action for each period, growers can achieve successful management of the OBLR larva. These include the pre-bloom through Petal Fall period for the overwintering generation, often using IGR's such as Proclaim and Intrepid, the Summer generation using either Altacor or Delegate, and later in August applying either Altacor or Delegate. Recommendations for applications were made using insect phenology predictions for early emergence, using 340 DD₅₀ from biofix to manage emergence of larvae, predicted to occur on mid June. In general, low-levels of leafroller feeding was observed on developing foliage and fruitlets this spring. Trap captures began on 4th June were moderate for 1st generation OBLR averaging 7.6 / day during the peak periods (25th June). The 2nd generation flight of OBLR biofix was low during August. We are seeing a trend of increasingly high levels of RBLR with mixed populations of **tufted apple bud moth (TABM)** and **sparganothis fruitworm (SFW)** during the season, contributed to the overall leafroller damage each year.

Apple maggot (AM) emergence was late this season with first emergence on 2nd July. Threshold of 5 flies per trap per block was observed on the 9th of July. AM density was low to moderate throughout the region with reduced emergence due to the lack of late season rainfall in July and early August. Highest populations occurred late in the season as rainfall in August providing more ideal emergence conditions for the adult fly.

The **brown marmorated stink bug (BMSB)**, *Halyomorpha halys*, has been observed throughout the southern Hudson Valley for the past 7 years with the first BMSB confirmation in December 2008. Since that time increasing populations have been documented in urban environments

and present on many farms throughout the season in the lower to mid-Hudson Valley region. We have observed a second generation over the past two years, developing in mid-late August in HVRL voltinism studies. In 2018 we again found adult egg laying from mid-August through September.

Although there appears to be stink bug feeding in apple this season, both BMSB and the **green stink bug**, *Acrosternum hilare*, were found from mid-season through harvest on pome fruit in lower to mid-Hudson Valley with increasing northern observations and fruit injury occurring in Columbia County in 2013. It has been found reproducing in deciduous trees such as sugar maple, *Acer saccharum*, white ash, *Fraxinus americana*, tree of heaven, *Ailanthus altissima*, and eastern black walnut, *Juglans nigra*, in high numbers with lower numbers observed in staghorn sumac, *Rhus typhina*, and wild grape, *V. vinifera*. Late season nymphs and adult trap captures of BMSB using Tedders traps employing traditional black light traps, the USDA #10 lure and the *Plaudi stali* aggregation pheromone lure, methyl (*E,E,Z*)-2,4,6-decatrienoate, was observed along the orchard edges in Orange, Ulster, Dutchess, and Columbia Counties throughout the season. In 2018 we monitored the population throughout NYS in 44 tree fruit orchard sites, employing a trap threshold of 10 total BMSB adults per trap to recommend management timing for tree fruit production. We are presently recommending that growers access <https://www.eddmaps.org/bmsbny/> for weekly updates on BMSB monitoring of adults and fruit injury requiring management.

Spotted wing drosophila (SWD), *Drosophila suzukii* (Matsumura) (Diptera: Drosophilae), were first observed in NY late August of 2011. EDDMaps was used to record trapping data with Erie County finding the first SWD on 22nd of May, which is the earliest recorded capture date in NYS. In 2018 SWD were monitored in four counties throughout the lower to mid-Hudson Valley this season using baited Trece traps across small fruit, grape and tree fruit. SWD trap captures were found in Columbia County on the 18th of June, 21st of June in Ulster County, on the 27th June in Suffolk County and at the HVRL on the week of the 5th of July. Populations were generally slow to build in commercial berry crops. Growers who harvested frequently and kept to a 3–7 day spray program were able to maintain low infestations levels (<15%) this season. We are presently recommending that growers access <http://www.eddmaps.org/project/project.cfm?proj=9> for weekly updates on BMSB monitoring of adults and fruit injury for early season management.

Major problems/successes this year: Codling moth fruit infestation continues to be a severe problem in orchards.

Contributing factors: include rain events reducing insecticide efficacy, lax re-application spray schedules, delayed timing during the early emergence, reduced rates or use of less effective insecticides.

Unusual: Fall Webworm, (Lepidoptera: Erebidae) *Hyphantria cunea* Drury, was observed in both research and commercial orchards this season.