

2019 Vermont Apple Season Highlights

**Persons Reporting: Terence Bradshaw, Tree Fruit and Viticulture Specialist;
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Year	Silver Tip	Green Tip	Half Inch Green	Tight Cluster	Pink	First Bloom	Full Bloom	95% Petal Fall
2019	4/14	4/20	4/29	5/5	5/13	5/20	5/24	5/31

General Weather Conditions - T. Bradshaw

Weather data collected from Rainwise IP-100 weather station at UVM Horticulture Research Center (HREC), South Burlington, VT

Conditions were reasonably good for acclimation to winter cold when transitioning from fall to winter 2018. Trees carried a reasonable and not too large crop in 2018, but fall weather was dry, bordering on late drought conditions. First frost came 10/24/2018, and regionally seasonable cold spells were seen through mid-November. However, early cold weather was experienced on November 21 (8°F), 22 (5°), and 23 (3°) that likely caused damaged to some trees in the state. Overall, winter was cold but not excessively so, and the state had substantial snow pack for most of the season. Early spring was cold and bud development slow to come, with green tip about 7-10 days behind normal. April and especially May were wet, with a total of 4.82” precipitation in May in South Burlington, and over 6” in other fruit-producing parts of the state. By mid-June, the weather turned dry and warm to hot, with four days over 90°F in July. Dry weather continued through September, but temperatures during ripening were below average. We accumulated 2307 degree days (base 50°F) by October 1 (fifteen-year average is 2455).

Horticulture Overview - T. Bradshaw

Crop in 2018 was relatively low and most orchards had strong to snowball bloom in 2019. As reported above, some growers reported 25-50% crop loss due to winter bud kill likely from the early cold snap that occurred in November, which was most apparent on trees that were heavily-cropped in 2018. There was no frost reported during bloom. Thinning weather was difficult: cool, cloudy, and wet. As a result, many orchards overcropped trees. Coupled with a dry summer, that has made fruit size difficult to attain in many orchards. Cool weather during ripening has been great for coloring McIntosh and its daughters, and for making high-quality Honeycrisp. Gala and other Delicious-based cultivars, however, are lacking flavor. Bitter pit seems to be relatively well under control.

Horticultural Pest – T. Bradshaw

Hemp has become the greatest pest to growers, in my opinion. Farmers, especially those that sell to wholesale markets and are under strain due to low prices for commodity fruit, are planting CBD hemp pretty extensively. As a result, many neglected their orchards and are bargaining on a risky crop with unknown market. If your growers want to diversify in to hemp, please urge caution and stress that their main business must not be ignored.

Pest Management Overview - T. Bradshaw, S. Kingsley-Richards, A. Hazelrigg

Primary Apple Scab Infection Periods:

4/23-27; 5/1-4; 5/7; 5/10-11; 5/16-17; 5/19-20; 5/23-24; 5/25-26; 5/28; 6/1-2.

***McIntosh Green Tip Date:** 4/20

Estimated date of 100% Ascospore Maturity (NEWA): 6/02

According to the NEWA apple scab model, primary apple scab season lasted for approximately six weeks in 2019. This is on the shorter side of normal than in most years, but frequent wetting led to ten discrete infection primary apple scab infection periods (IPs). Rain accumulation of one inch or more in many IPs made it difficult to maintain fungicide coverage. Many growers reported problems with driving equipment in rain-soaked, muddy soils.



In low- or no-spray orchards, cedar apple rust was substantial, and this disease is creeping across Vermont out of the Champlain and Connecticut valleys and into the cooler highlands. Other diseases of interest this season were secondary pathogens that affect weak, often cold-damaged trees- black rot, necrotia canker, and silver leaf. All of those diseases were observed in multiple orchards across the state, and are being chalked up as indicators of a challenging crop load/ acclimation / winter damage situation.

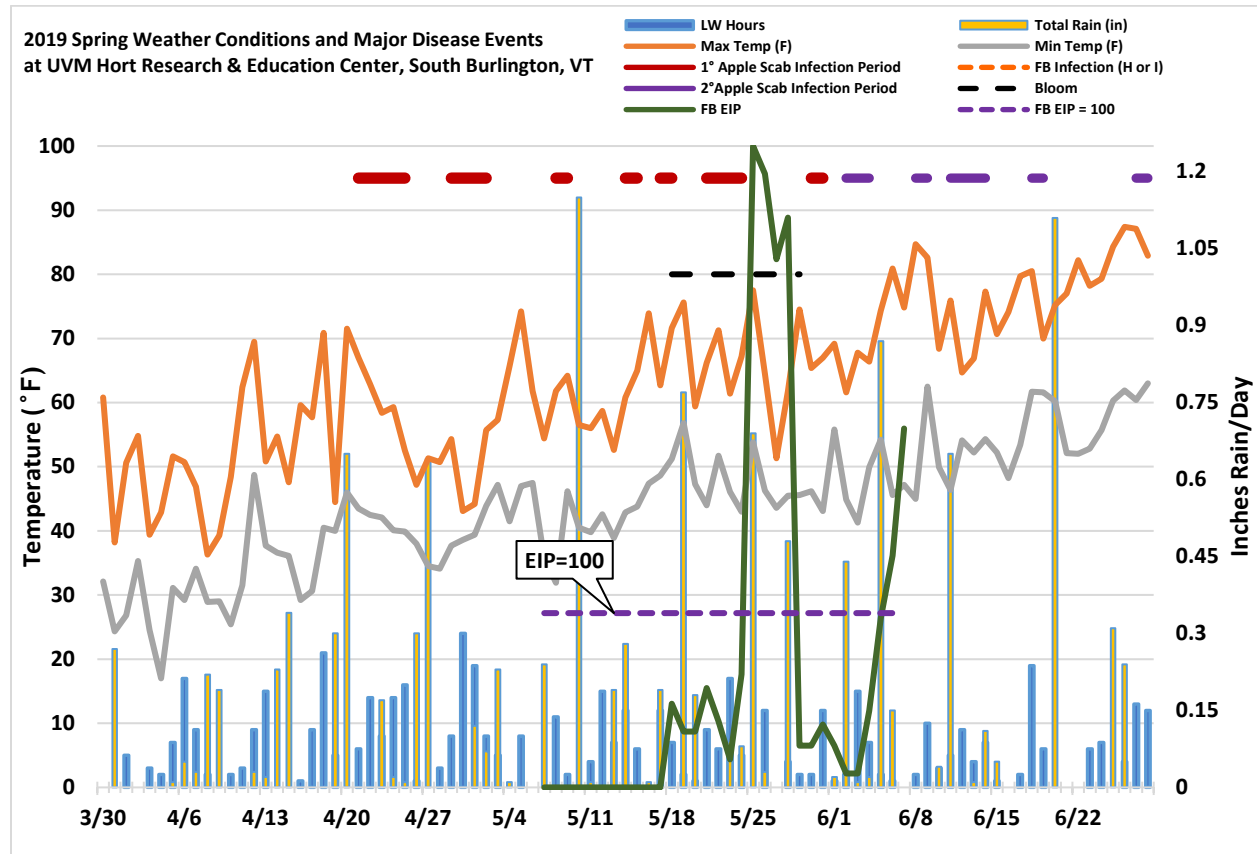
Fire Blight Blossom Blight Infection Periods at UVM HREC:

Based on MaryBlyt and using the weather data from the RainWise weather station on site at UVM HREC. “High” risk dates in parentheses (). There were no extreme risk dates events in 2019.

(5/19), (5/23), (5/26-30), (6/2)

Mac Bloom finished, late blooming cultivar FB infection events: (5/29), (5/30), (5/31), **6/1 5** (stopped on 6/1).

Cool weather during bloom did not allow for development of infective populations of *E. amylovera* bacteria, but a warm spell right at the end of bloom on May 25-28 pushed the epiphytic infection potential calculated by Maryblyt model into the range to cause infection, but EIP was generally below 200 most days. Most trees were dropping petals rapidly during that spell, and relatively little fire blight infection was observed in Vermont orchards.



Arthropod Pests

We continued our partnership with a local Nutrien / CPS consultant to scout orchards across the state. Formal sampling continued statewide in 2019 at the same ten orchard sites that were scouted in 2018: four sites in Addison county, three sites in Chittenden county (including UVM), one site in Grand Isle county, one site in Orange county, one site in Washington county, and two sites in Bennington county. This year, we used the Nutrien / Agrian Echelon platform to collect scouting data. While integration with GPS and ability to easily record data on an iPhone (no Android app) was welcome, there were problems with server access and some orchard data just disappeared. We continue to recommend paper dsata collection for backup or just basic security.

For most arthropod pests, this was a relatively low year for trap captures and fruit damage.

Except for two traditionally low-spray orchards, early-season **European apple sawfly** and **tarnished plant bug** pests were trapped in very low numbers statewide. **Redbanded leafroller** are all over traps, like hundreds per week- do we worry particularly about them, or manage them along with the other lepidopteran pests? **Oriental fruit moth** has been largely off the radar for most growers over the years, but was trapped in most orchards with a bell-shaped population curve that peaked around mid-late June.

Codling moth were trapped in every orchard, some at high (~40 moths/week) numbers. **Obliquebanded leafroller** typically peaked in late-June to mid-July, and are commonly targeted as a primary pest using degree-day models. **Lesser appleworm** and **tufted apple budmoth** were trapped in all orchards, sometimes as high as 40 moths/week. Traps for **dogwood borer** indicated that this pest is present in all monitored orchards, except in those where mating disruption is being used.

Mites, especially **European red mite**, were a problem in several orchards by late July to early August. **San Jose scale** continues to be problematic as growers are using less prebloom oil.

Apple maggot fly was nothing like 2019, when we were catching hundreds of flies per week in some orchards. Farms with endemic populations saw them again, but at more reasonable population levels and management appears to have been successful overall.