

## 2014 Vermont Apple Season Highlights

**Persons Reporting:** Terence Bradshaw, Tree Fruit and Viticulture Specialist;  
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### 2014 Apple Bud Stage for Selected Cultivars

UVM Horticulture Research and Education Center, South Burlington, VT

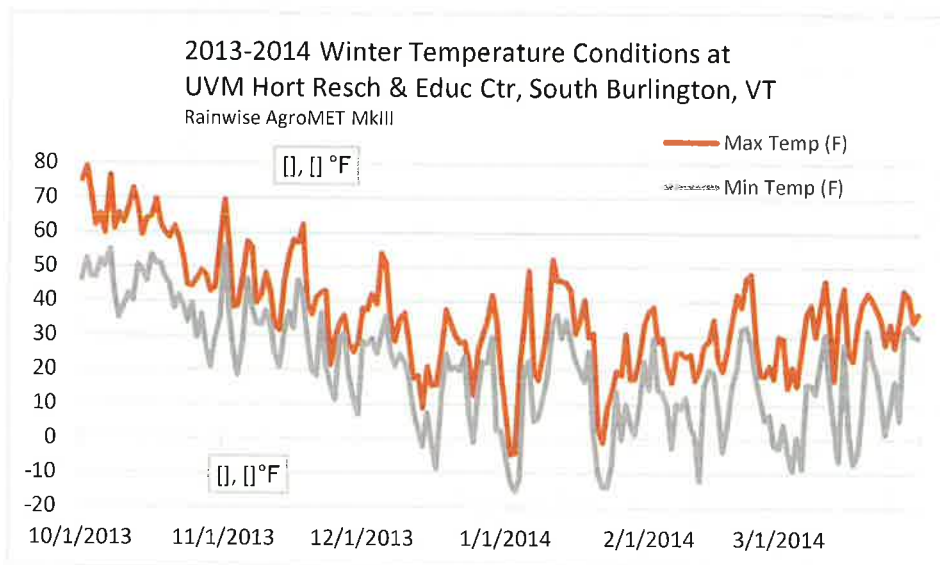
Dates posted represent timing when 50% of fruit buds on representative trees had reached the selected bud stage. Weather data are collected with an on-site automated Rainwise MK-III SP1-LR Weather Station (Bar Harbor, ME), connected to the [NEWA weather network](#).  
at UVM Horticulture Research and Education Center, South Burlington, VT

Cultivar	Orchard	Silver Tip	Green Tip	Half Inch Green	Tight Cluster	Pink	First Bloom	Full Bloom	95% Petal Fall
Ginger Gold	Org 1	4/14	4/23	5/1	5/4	5/10	5/15	5/16	5/21
Honeycrisp	Org 1	4/23	4/29	5/4	5/7	5/12	5/16	5/18	5/28
Liberty	Org 1	4/21	4/28	5/1	5/4	5/12	5/15	5/16	5/21
Macoun	Org 1	4/14	4/23	5/1	5/6	5/12	5/17	5/18	5/26
Zestar	Org 1	4/18	4/28	5/1	5/7	5/11	5/15	5/16	5/22
Crimson Crisp	Org 4	4/18	4/23	5/3	5/6	5/12	5/17	5/18	5/26
Crimson Gold	Org 4	4/18	4/23	5/1	5/5	5/11	5/17	5/19	5/24
Crimson Topaz	Org 4	4/22	4/28	5/2	5/4	5/12	5/15	5/17	5/25
Galarina	Org 4	4/18	4/27	5/3	5/6	5/11	5/17	5/19	5/25
Florina Querina	Org 4	4/18	4/28	5/4	5/7	5/12	5/17	5/18	5/23
Williams Pride	Org 4	4/17	4/28	5/2	5/5	5/12	5/15	5/16	5/22
Winecrisp	Org 4	4/21	4/23	5/1	5/4	5/12	5/16	5/18	5/26
McIntosh	IPM 20	4/18	4/23	5/1	5/5	5/12	5/16	5/17	5/22
Empire	IPM 20	4/14	4/22	5/2	5/5	5/11	5/16	5/17	5/21
Mutsu	IPM 19	4/17	4/23	5/2	5/4	5/12	5/16	5/17	5/23
Gala	IPM 19	4/18	4/21	4/29	5/2	5/12	5/16	5/17	5/24

## **General Weather Conditions** - T. Bradshaw

*weather data collected from Rainwise IP-100 weather station at UVM Horticulture Research and Education Center, South Burlington, VT*

Winter 2013-2014 in the Champlain Valley of Vermont was cold (but not extremely cold) and long. Absolute low temperature of  $-15^{\circ}\text{F}$  occurred on January 3, with below  $0^{\circ}\text{F}$  recorded on 23 days from December through March. Spring was cool to cold, with only 33 degree days (base  $50^{\circ}\text{F}$ ) by May 1. Temperature ramped up by May 7 to 'normal' levels, and the summer was pleasant without temperature extremes. Bloom weather was warm but not hot, although nighttime temperatures did not drop below  $65^{\circ}\text{F}$  for the majority of the bloom window. No temperatures above  $90^{\circ}\text{F}$  were recorded at the UVM HREC during the summer. Precipitation was adequate and close to normal if not a bit dry for the growing season, with 3.32, 3.19, 4.31, 4.45, 2.22 and 1.74 inches of rain for each month from April through September. Ripening weather has been cool and dry overall, with only 2346 degree days (base  $50^{\circ}\text{F}$ ) accumulated by October 1 (ten-year average is 2419).

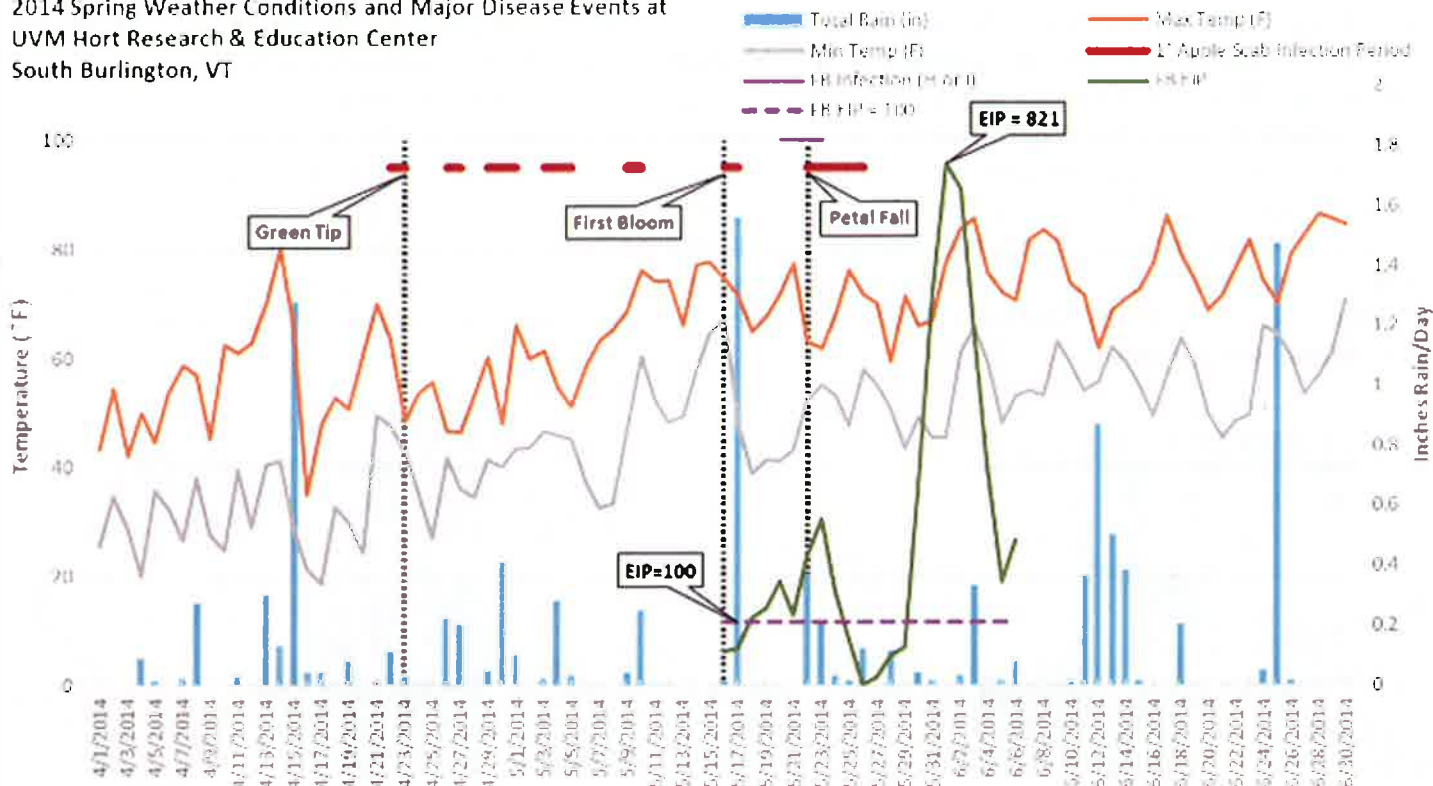


## **Horticulture Overview** - T. Bradshaw

A very heavy crop was set in most Vermont orchards in 2013, including a record crop at the UVM HREC. This heavy crop load likely slowed tree acclimation for cold hardiness such that cold temperatures ( $9^{\circ}\text{F}$ ) on November 30 may have caused damage to fruit buds and other tree tissues. Subsequent and extended cold during the winter also likely stressed trees further, which, combined with the excessive crop load from the previous year, resulted in low blossom density. Favorable weather during bloom resulted in good pollination and fertilization, but cooler weather later in May made for difficult thinning. That said, many growers did not thin in 2014, especially on McIntosh, which had the sparsest bloom of the major cultivars in most parts of the state. In the Champlain Islands, where poor weather including six-weeks of seemingly unending rain set in right at bloom in 2013 resulting in a poor crop that year, orchards are laden with a tremendous crop of apples this year. Because the island orchards bloom just a bit later than those in the mainland production region, those few days made a huge difference in setting different crop conditions between specific sites within the Champlain Valley. Growers in the main production regions (Addison, Windham, Chittenden counties are reporting light crops overall, especially on McIntosh, and surprisingly small fruit size.

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

2014 Spring Weather Conditions and Major Disease Events at  
UVM Hort Research & Education Center  
South Burlington, VT



**Primary Apple Scab Infection Periods:** 4/22-23, 4/26-27, 4/29-5/1, 5/3-5, 5/9-10, 5/16-17, 5/22-26.

**\*McIntosh Green Tip Date:** 4/18

**Estimated date of 100% Ascospore Maturity (NEWA):** 5/26

Primary apple scab season was extended for five weeks in 2014. Disease management was good overall, with some scab evident in commercial orchards where extended spray schedules were used.

### **Fire Blight Infection Periods at UVM HREC:**

Based on NEWA (Cougarblight model) and using the weather data from the RainWise weather station on site at UVM HREC. "High" risk dates in parentheses (). Extreme risk dates in **bold**.

(5/17-19), (5/27), (6/1), **6/2-6/12**, (6/13)

Petal fall occurred on most cultivars by 5/28, but continued heat through June exacerbated shoot blight infections. No protective antibiotic applications were made against fire blight in UVM HREC orchards in 2014. Copper was applied at silver tip, but the material used, Badge X<sub>2</sub> (compatible with organic orchards on-site) at full label rate provided low total copper ion content of 1.96 lb per acre. Extensive fire blight strikes were observed in traditional problem blocks on Gala, Cortland, Ginger Gold, Honeycrisp, and Mutsu, as well as on traditionally less-susceptible cultivars (McIntosh, Empire). In a disease-resistant organic orchard, strikes were observed on several cultivars. Galarina and



Crimson Crisp appear to be highly susceptible to the disease, and Crimson Gold, Crimson Topaz, and Florina Querina susceptible.

In a new 2<sup>nd</sup>-leaf commercial orchard in East Montpelier, VT fire blight caused significant damage. Trees were infected soon after planting in an old alfalfa field in a non-traditional production region with little if any FB inoculum in the surrounding area. FB was likely introduced to trees from a nursery, since infection was most evident within single cultivars but spread from infected rows. In early spring, 2014, trees exhibited significant oozing from wounds on trunks and shoots while trees were in silver tip bud stage. The infective organism *Erwinia amylovera* was isolated and confirmed by Kox lab at Cornell. We are unclear of why the disease was active so early in the season on these trees. Affected trees were stressed by cold temperature damage, bark damage on some trees that may have been a result of the use of oil-based truck paint, and damage from **black stem borer** (*Xylosandrus germanus*, see below).



**Codling moth** continues to be a significant pest in many orchards. Mating disruption efficacy in organic and IPM orchards with poor site optimization (scattered plantings across landscape, unmanaged hosts in area) appears to be less than in 2013, but supplemental applications of materials (granulosis virus and/or synthetic insecticides) was reduced in 2014.

**European Apple Sawfly** damage was common in organic orchards during hand thinning, but scars were rare on harvested fruit.

**Apple maggot** damage increased in both IPM and organic orchards in 2014 over previous years. Reduced sprays targeting this pest in IPM orchards at UVM HREC (Avaunt, 7/16; Delegate, 8/1) likely contributed to increased damage. Growers are reporting increased AM damage in their orchards. Reduction in OP insecticides and use of new alternatives appears to be an issue with AM management.

**Plum curculio** and **tarnished plant bug**, did not cause significant damage to fruit as observed at harvest.

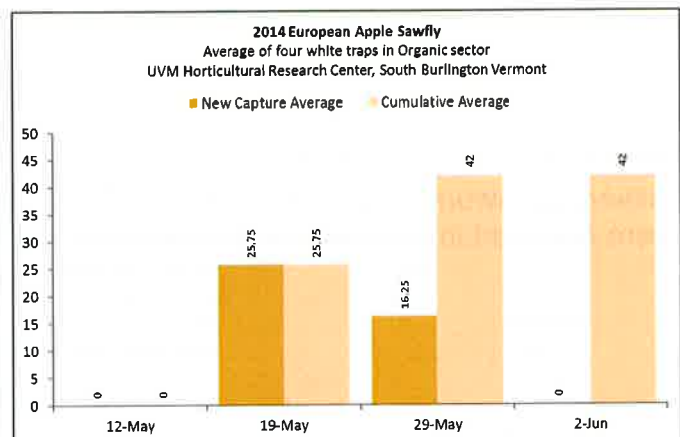
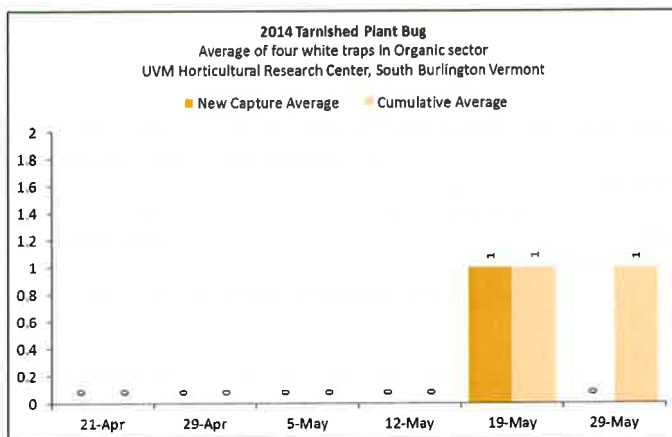
**Brown marmorated stink bug** was not observed in the orchards, but **spotted wing drosophila** was identified in the UVM vineyard and in an adjacent row of crabapples. Potential BMSB damage was noted in a commercial fruit sample from Addison county, fruit will be presented for help with ID.

**Black stem borer** (*Xylosandrus germanus*) damage may have been observed in one orchard in Vermont in 2014. Affected 2<sup>nd</sup>-leaf trees showed fire blight symptoms in April, and upon observation,

boring wounds were observed on a few trees. All FB affected trees were removed and burned by the grower before follow up examination could take place.

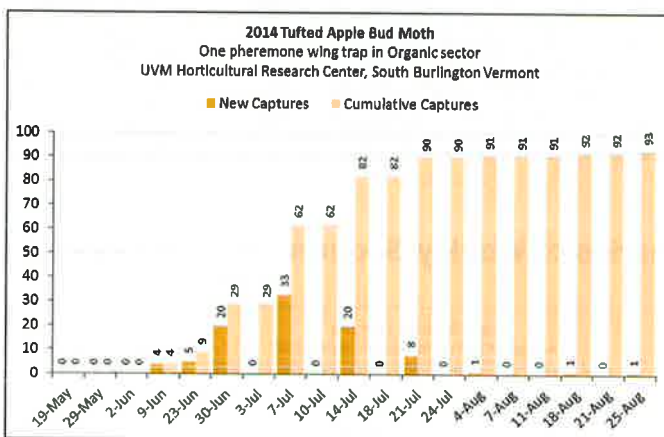
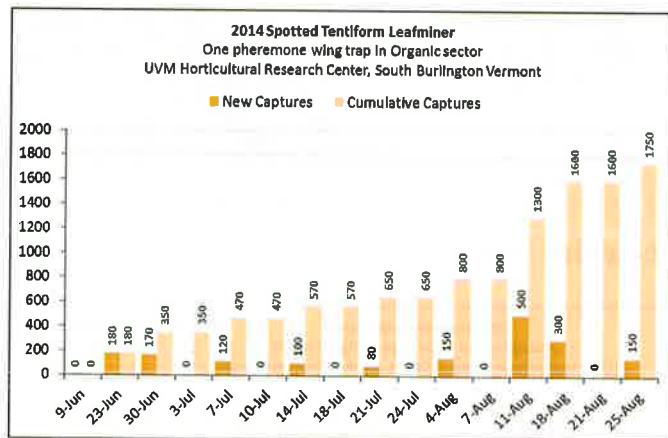
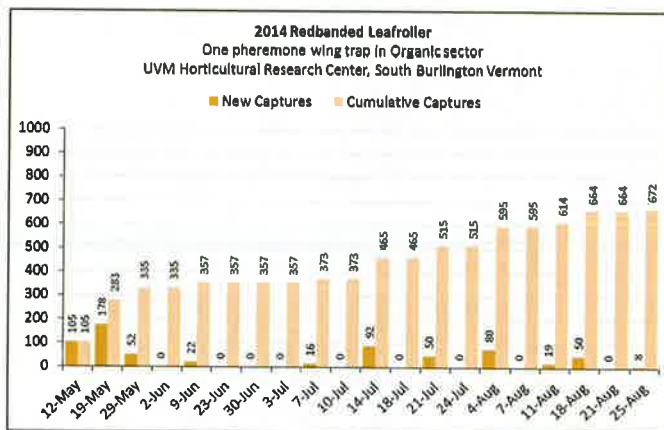
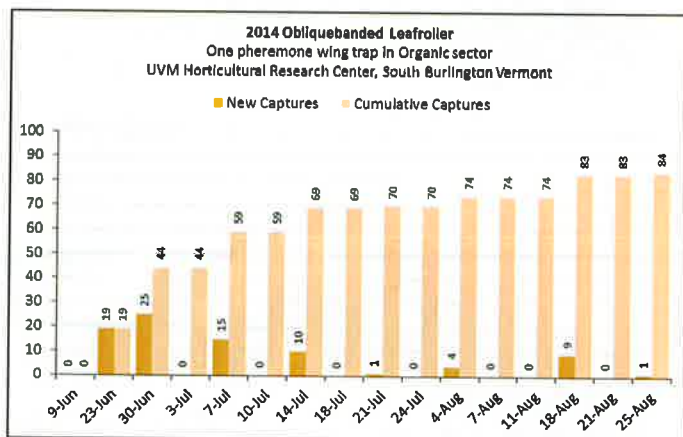
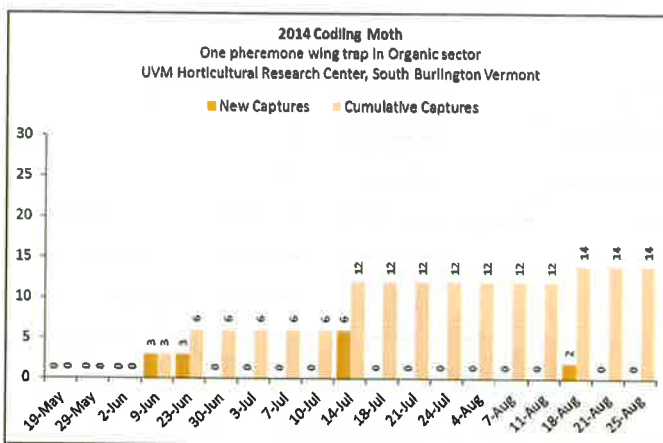
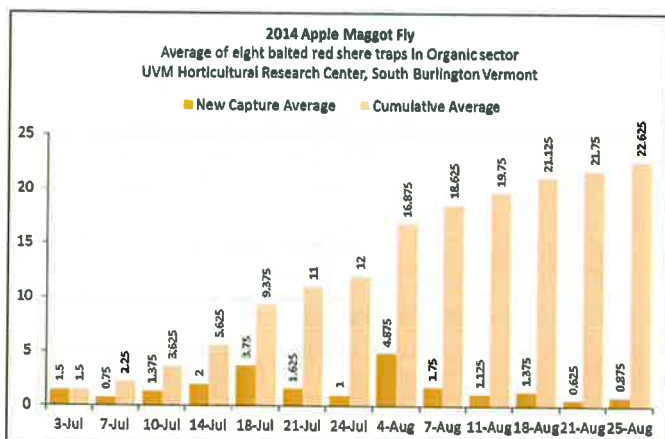


## Summaries of Weekly Scouting in HRC Organic Orchards:





## Summaries of Weekly Scouting in HRC Organic Orchards (cont.):



Note: Lesser Appleworm trap captures were minimal (1 on 8/18, 2 on 8/25). No Oriental Fruit Moth adults were captured in traps in Organic orchards in 2014.