

2015 Vermont Apple Season Highlights

**Persons Reporting: Terence Bradshaw, Tree Fruit and Viticulture Specialist;
Ann Hazelrigg, Director, UVM Plant Diagnostic Clinic; Sarah Kingsley-Richards, Jessica Foster**

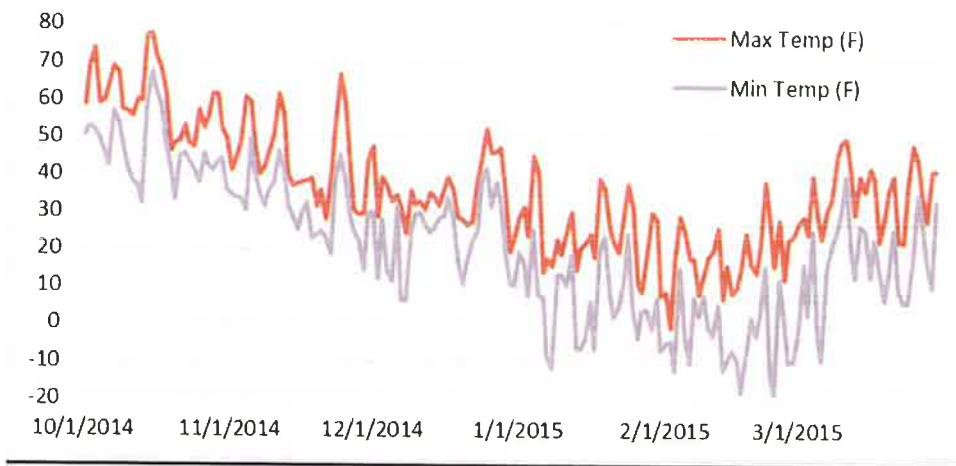
2015 Apple Bud Stage for Selected Cultivars									
Dates posted represent timing when 50% of fruit buds on representative trees had reached the selected bud stage. Weather data are collected with an on-site automated Rainwise MK-III SP1-LR Weather Station (Bar Harbor, ME), connected to the NEWA weather network .									
Cultivar	Orchard	Silver Tip	Green Tip	Half Inch Green	Tight Cluster	Pink	First Bloom	Full Bloom	95% Petal Fall
Ginger Gold	Org 1	4/17	4/22	5/1	5/5	5/7	5/11	5/13	5/19
Honeycrisp	Org 1	4/20	4/27	5/1	5/4	5/8	5/9	5/12	5/20
Liberty	Org 1	2/17	4/27	5/3	5/5	5/8	5/10	5/12	5/19
Macoun	Org 1	4/14	4/27	5/1	5/4	5/8	5/11	5/13	5/19
Zestar!	Org 1	4/13	4/22	4/28	5/1	5/5	5/8	5/11	5/17
Crimson Crisp	Org 4	4/20	4/29	5/1	5/5	5/8	5/11	5/14	5/20
Crimson Gold	Org 4	4/20	4/29	5/2	5/5	5/8	5/11	5/13	5/19
Crimson Topaz	Org 4	4/26	5/1	5/2	5/5	5/8	5/9	5/12	5/19
Galarina	Org 4	4/14	5/1	5/4	5/6	5/8	5/11	5/13	5/19
Florina Querina	Org 4	4/14	5/1	5/3	5/5	5/8	5/11	5/13	5/19
Williams Pride	Org 4	4/14	4/22	5/1	5/3	5/6	5/9	5/12	5/18
Winecrisp	Org 4	4/24	5/1	5/3	5/5	5/8	5/12	5/14	5/20
McIntosh	IPM 20	4/14	4/24	4/29	5/5	5/8	5/10	5/12	5/19
Empire	IPM 20	4/14	4/24	4/29	5/5	5/7	5/9	5/12	5/18
Mutsu	IPM 19	4/17	4/22	4/28	5/4	5/7	5/9	5/12	5/19
Gala	IPM 19	4/14	4/22	4/28	5/4	5/7	5/11	5/12	5/19

General Weather Conditions - T. Bradshaw

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

Gradual cooling in fall 2014 prompted good acclimation of fruit trees to winter cold. Winter was prolonged, and cold, with 30 days minimum low below 0 °F and a maximum low of -18°F in South Burlington and colder temperatures experienced elsewhere in the state. Spring remained cool through April but temperatures rapidly warmed in April and full bloom on 'McIntosh' was on May 12, which is the same as the average date from 1997-2014. The bloom period was relatively dry and warm. Beginning around June 1 and lasting through July, early-mid summer was extremely wet, with 13.7 inches of precipitation measured in those two months. August and September were dry and occasionally hot. Orchards at the UVM HREC experienced drought stress over the weekend of September 6-7. Fall ripening weather was warmer than normal through September, with 2597 degree days (base 50°F) accumulated by October 1 (ten-year average is 2428).

2014-2015 Winter Temperature Conditions at
UVM Hort Resch & Educ Ctr, South Burlington, VT
Rainwise AgroMET MkIII



Horticulture Overview - T. Bradshaw

Overall, the Vermont apple crop was well-below average in 2014, with good fruit bud development for 2015. Bloom density was high on most cultivars in most orchards and with good pollination and fertilization weather. Petal fall weather was relatively cool and thinning difficult on heavily-set trees. Heavy precipitation in June and July allowed for adequate cell division in developing fruit, such that fruit size is reported as good to great in most orchards despite the lack of rain during the ripening period. Drought stress was observed on younger trees in many orchards including at the UVM HREC; we suspect that stress was present but symptoms not as noticeable on older trees with more established root systems. Warm weather in September delayed red color and flavor development on 'McIntosh' and similar cultivars. Sunburn at harvest has been observed on many fruit across the state.

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

Primary Apple Scab Infection Periods: 4/20-23, 4/27-28, 5/10-13, 5/16-17, 5/25/26, 5/27-28

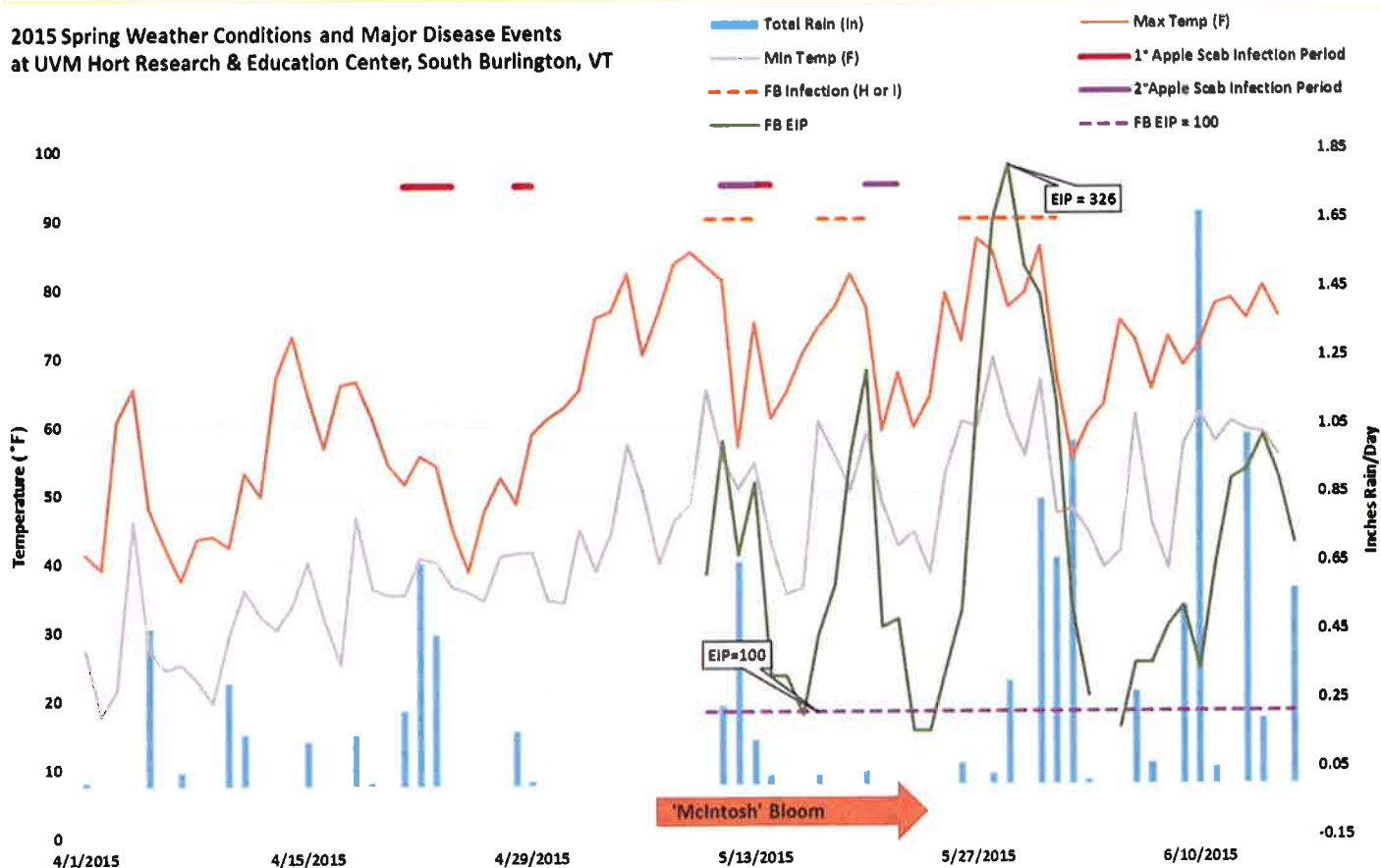
Secondary apple scab infection periods (through July): 5/30-6/2, 6/5-6, 6/8-10, 6/12-13, 6/15, 6/18-19, 6/21-23, 6/24-25, 6/28-7/1, 7/17-20, 7/23-24, 7/28, 7/29-30.

***McIntosh Green Tip Date:** 4/24

Estimated date of 100% Ascospore Maturity (NEWA): 5/28

According to the NEWA apple scab model, primary apple scab season lasted for five weeks in 2015. However, dry conditions during that period call into question the validity of the model and substantial ascospores were likely mature in the orchard going into infection periods beginning May 30 or even June 5. Abundant rainfall beginning around this time allowed for substantial conidial infection development in unprotected orchards. Disease management was good overall, with some scab evident in commercial orchards where extended spray schedules were used.

2015 Spring Weather Conditions and Major Disease Events at UVM Hort Research & Education Center, South Burlington, VT



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 (). Extreme risk dates in **bold**.

(5/9), **5/10**, (5/11), **5/12**, (5/16-18), **5/19**, (5/25-26), **5/27-30**, (5/31).

Petal fall occurred on most cultivars by 5/20, but potential late bloom on cider cultivars prompted running the model through May. Continued heat through June exacerbated conditions for shoot blight infections. Copper was applied to all HREC orchards at green tip. No protective antibiotic applications were made against fire blight in UVM HREC Organic orchards in 2015; in non-organic orchards, streptomycin was applied at full label rate on 5/11 and 5/14. Commercial orchards were diligent in applying strep this year, and very little damage was observed in the field.

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. However, damage was substantially less than expected, and lower than observed in 2014 in all orchards.

Codling moth (CM) appears to have been well-managed in 2015 at the UVM HREC and in commercial orchards. Deployment of mating disruption has been effective at the UVM site where three applications of granulosis virus (CYD-X) with supplemental *Bt* were used and CM damage was under 1% overall. **European Apple Sawfly** (EAS) damage was common in organic orchards during

hand thinning, but scars were rare on harvested fruit. **Apple maggot** (AM) damage decreased in both IPM and organic orchards compared to 2015. **Plum curculio** and **tarnished plant bug** (TPB), did not cause significant damage to fruit as observed at harvest. **Brown marmorated stink bug** was not observed in the orchards.

Summaries of Weekly Scouting in HREC Organic Orchards- J. Foster, S. Kingsley-Richards, T. Bradshaw

2015 Weekly trap captures organic Orchards 1 & 4, UVM Horticulture Research & Education Center, South Burlington, Vermont

	Visual Sticky Traps							Pheromone or volatile-baited traps			
	STLM	TPB	EAS	OFM	RBLR	CM	LAW	TABM	OBLR	STLM	AM
28-Apr	0	0.25	0	-	-	-	-	-	-	-	-
5-May	0.75	8.5	0	-	-	-	-	-	-	-	-
12-May	-	9.75	0.25	0	91	-	-	-	-	-	-
18-May	-	0.75	7.75	0	30	-	-	-	-	-	-
26-May	-	-	0.5	0	35	2	0	0	0	0	-
2-Jun	-	-	-	0	2	1	0	0	0	0	-
8-Jun	-	-	-	0	9	0	0	3	11	11	-
16-Jun	-	-	-	0	3	0	0	17	21	21	-
22-Jun	-	-	-	0	0	1	0	13	11	11	-
29-Jun	-	-	-	0	0	1	0	3	17	17	0
7-Jul	-	-	-	0	0	1	0	29	6	6	0
13-Jul	-	-	-	0	1	0	0	19	8	8	0
20-Jul	-	-	-	0	13	0	0	4	0	0	0
28-Jul	-	-	-	1	4	0	1	0	2	2	0
3-Aug	-	-	-	0	4	0	0	0	0	0	0
10-Aug	-	-	-	0	5	0	0	0	3	3	0
19-Aug	-	-	-	0	10	0	0	0	1	1	0
24-Aug	-	-	-	0	9	0	0	2	0	0	0

STLM = spotted tentiform leaf miner, OFM = oriental fruit moth, RBLR = red banded leafroller, LAW = lesser appleworm, TABM = tifted apple bud moth, OBLR = obliquebanded leafroller.

Monitoring notes:

- No Apple Maggot Fly adults were captured in traps in Organic orchards in 2015.
- One suspected Oriental Fruit Fly adult was captured in trap in Organic orchards on July 28, 2015. This was the only trap capture on any trap in any sector of the site during the season and identification is unconfirmed.
- Tarnished Plant Bug and Spotted Tentiform Leafminer numbers were much higher in 2015 than 2014 (scale increased 10x)