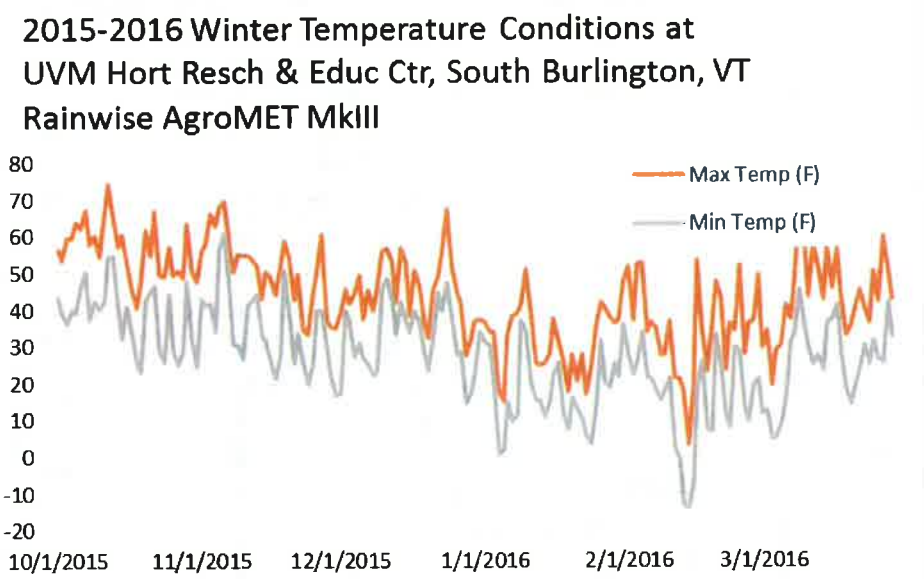
2016 Vermont Apple Season Highlights

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

General Weather Conditions - T. Bradshaw

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

Crop yield in 2015 was high, with relatively lower fruit bud density going into 2016. Temperatures were relatively mild in fall 2016 and cooling was gradual going into winter with no sudden temperature drops during acclimation. Winter was also mild; only one significant cold event from 12-15 February with a low of -14°F was experienced. Late winter was relatively warm, and March high temperatures were >50°F on 11 days. Green tip was not yet present on April 5 when a cold snap (11°F) occurred, which prevented significant bud damage. Growers in higher elevation other sites experienced 3-6°on that night, and some bud damage did occur with one orchard reporting 90% bud damage on McIntosh. Temperatures then gradually warmed to 'normal' levels and green tip on 'McIntosh' occurred 4/16 followed by bloom on **XXXX**. Spring was dry, with 1.83" rain in April, 2.35" in May, and 2.91" in June. Dry weather continued through summer with 6.74" accumulated in July and August. **Ripening weather in September continued to be warm and dry. 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).**



Horticulture Overview - T. Bradshaw

Overall, the Vermont apple crop was above average in 2015, with lower fruit bud development for 2016. Bloom density was low on most cultivars in most orchards and good pollination and fertilization weather were the norm. Petal fall weather was relatively warm and thinning conditions on good, but many growers under-thinned in expectation of a low crop. Dry summer and early fall conditions resulted in small fruit size at harvest 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.

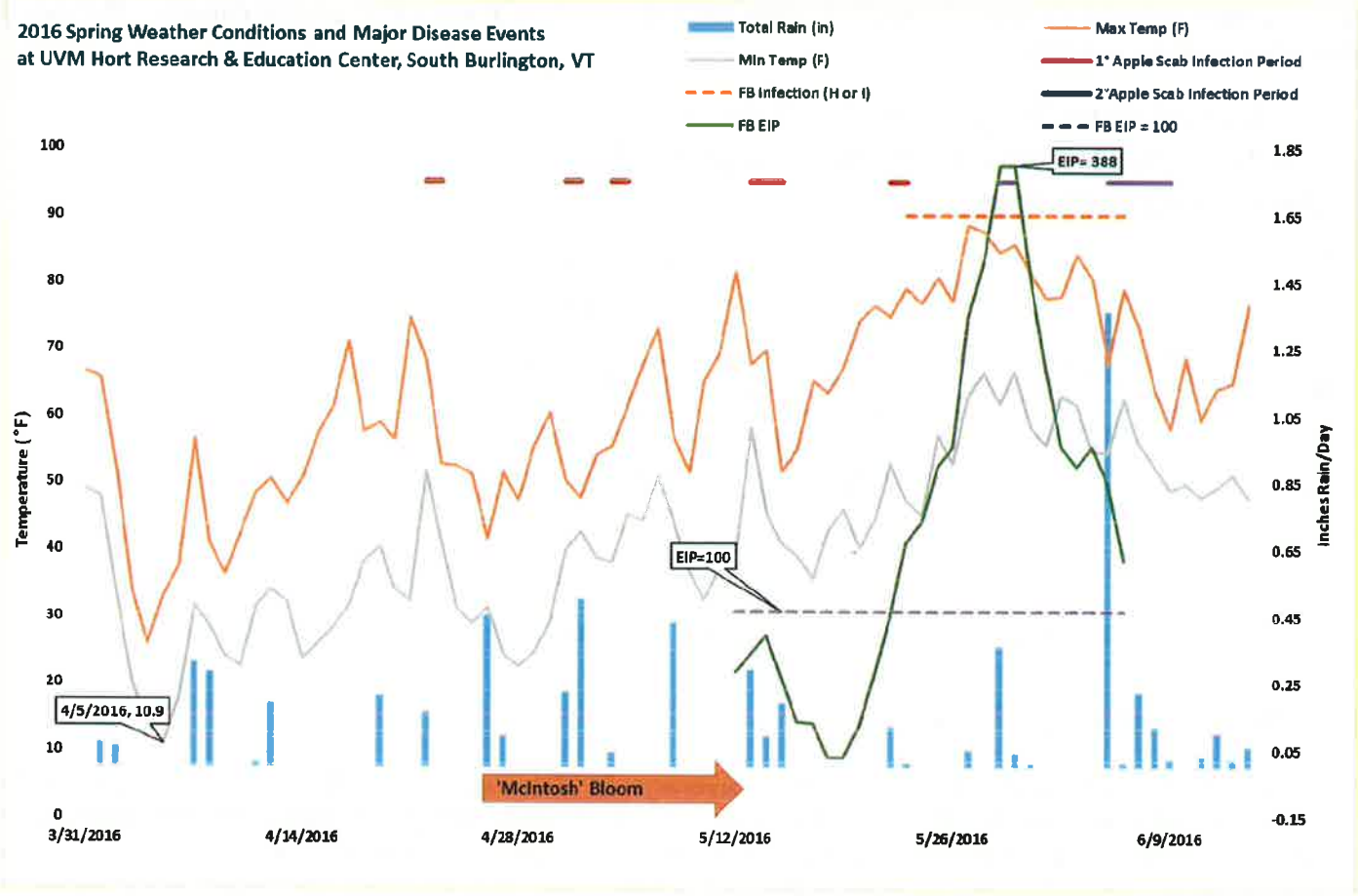
Pest Management Overview - T. Bradshaw, S. Kingsley-Richards, A. Hazelrigg

Primary Apple Scab Infection Periods: 4/22, 5/1-2, 5/4-5, 5/14-15, 5/22-23.
Secondary apple scab infection periods (through July): 5/29-30, 6/5-9, 6/22, 6/28-29, 7/1-2, 7/9-10, 7/18-19, 7/22-24.

***McIntosh Green Tip Date:** 4/13

Estimated date of 100% Ascospore Maturity (NEWA): 5/22

According to the NEWA apple scab model, primary apple scab season lasted for approximately seven weeks in 2016. 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 29 or even June 5. Disease management was good overall, with some scab evident in commercial orchards where extended spray schedules were used.



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**.

(5/22), **5/23**, (5/24-26), **5/27**, (5/28), **5/29-31**, 6/1, **6/2-8** (stopped on 6/8).

Petal fall occurred on most cultivars by 5/28, but potential late bloom on some 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 2016; in non-organic orchards, streptomycin was applied on 5/23 (half-rate, mistake on inventory in shed) and 5/27. Commercial orchards were good about applying strep this year, and no damage was observed on strep-treated trees. However, growers who did not apply strep experienced infection, which was severe in some cases.

In a disease-resistant organic orchard, strikes were observed on several cultivars. Galarina and Crimson Crisp continue to be highly susceptible to the disease, and Crimson Gold, Crimson Topaz, and Florina Querina susceptible.

Codling moth (CM) appears to have been well-managed in 2016 at the UVM HREC and in commercial orchards. Deployment of mating disruption continues to be effective at the UVM site where two applications of granulosis virus (CYD-X) with supplemental *Bt* were used and CM damage was under 3% overall. **European Apple Sawfly** (EAS) damage was common in orchards during hand thinning, and scars are easily found on harvested fruit. **Apple maggot** (AM) damage increased in both IPM and organic orchards compared to 2015. High trap captures were also reported across much of the state in commercial orchards. **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. **San Jose Scale** damage continues to be an increasing problem in many orchards.