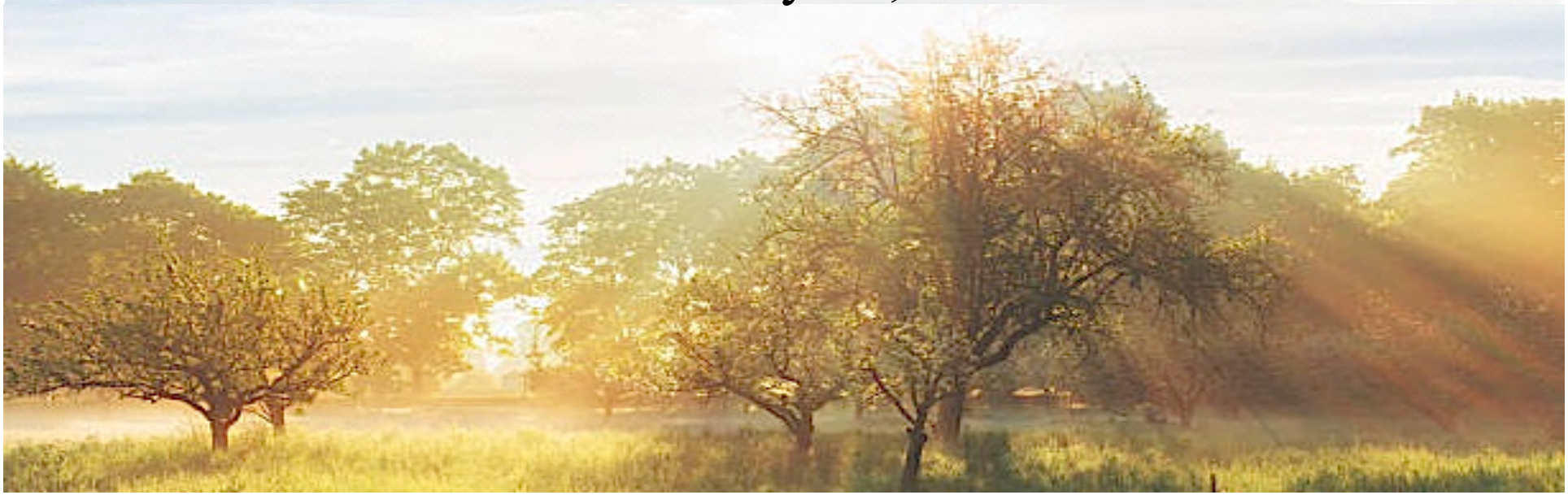
THE JENTSCH LAB

INSECT BIOLOGY, ECOLOGY, AND MANAGEMENT IN HUDSON VALLEY AGRICULTURAL COMMODITIES

Morning Brew: Conversations on Tree Fruit Pest Management

6 a.m. May 4th, 2020



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Agenda:

- Welcome.
  - Weather forecast,
  1. Application windows, pest management scouting, models for predicting management.
  2. Thoughts on bloom thinning with Win Cowgill
  3. Diseases Apple Scab, Fireblight (Guests)
  4. Insect management during bloom & early petal fall:
     1. Treating OBLR and other ‘worms’ during bloom
     2. Mullien Plant Bug
     3. European Apple Sawfly
     4. Plum Curculio

Grower questions and wisdom

Monday	Monday Night	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday
Isolated Showers then Partly Sunny	Mostly Clear	Mostly Sunny	Partly Cloudy	Partly Sunny then Chance Showers	Chance Showers	Chance Showers
High: 60 °F	**Low: 34 °F**	**High: 60 °F**	**Low: 37 °F**	**High: 58 °F**	**Low: 41 °F**	**High: 60 °F**

Monday	Isolated showers between 11am and noon. Mostly sunny, with a high near 60. Northwest wind 6 to 15 mph, with gusts as high as 25 mph. Chance of precipitation is 20%.
Monday Night	Mostly clear, with a low around 34. Northwest wind 5 to 10 mph.
Tuesday	Mostly sunny, with a high near 60. Northwest wind 3 to 7 mph.
Tuesday Night	Partly cloudy, with a low around 37.
Wednesday	A chance of showers after 2pm. Partly sunny, with a high near 58. Chance of precipitation is 30%.
Wednesday Night	A chance of showers before 8pm, then a chance of showers after 2am. Mostly cloudy, with a low around 41. Chance of precipitation is 30%.
Thursday	A chance of showers. Partly sunny, with a high near 60. Chance of precipitation is 30%.
Thursday Night	Partly cloudy, with a low around 38.
Friday	Mostly sunny, with a high near 56.
Friday Night	A chance of showers. Mostly cloudy, with a low around 35. Chance of precipitation is 30%.
Saturday	Partly sunny, with a high near 51.

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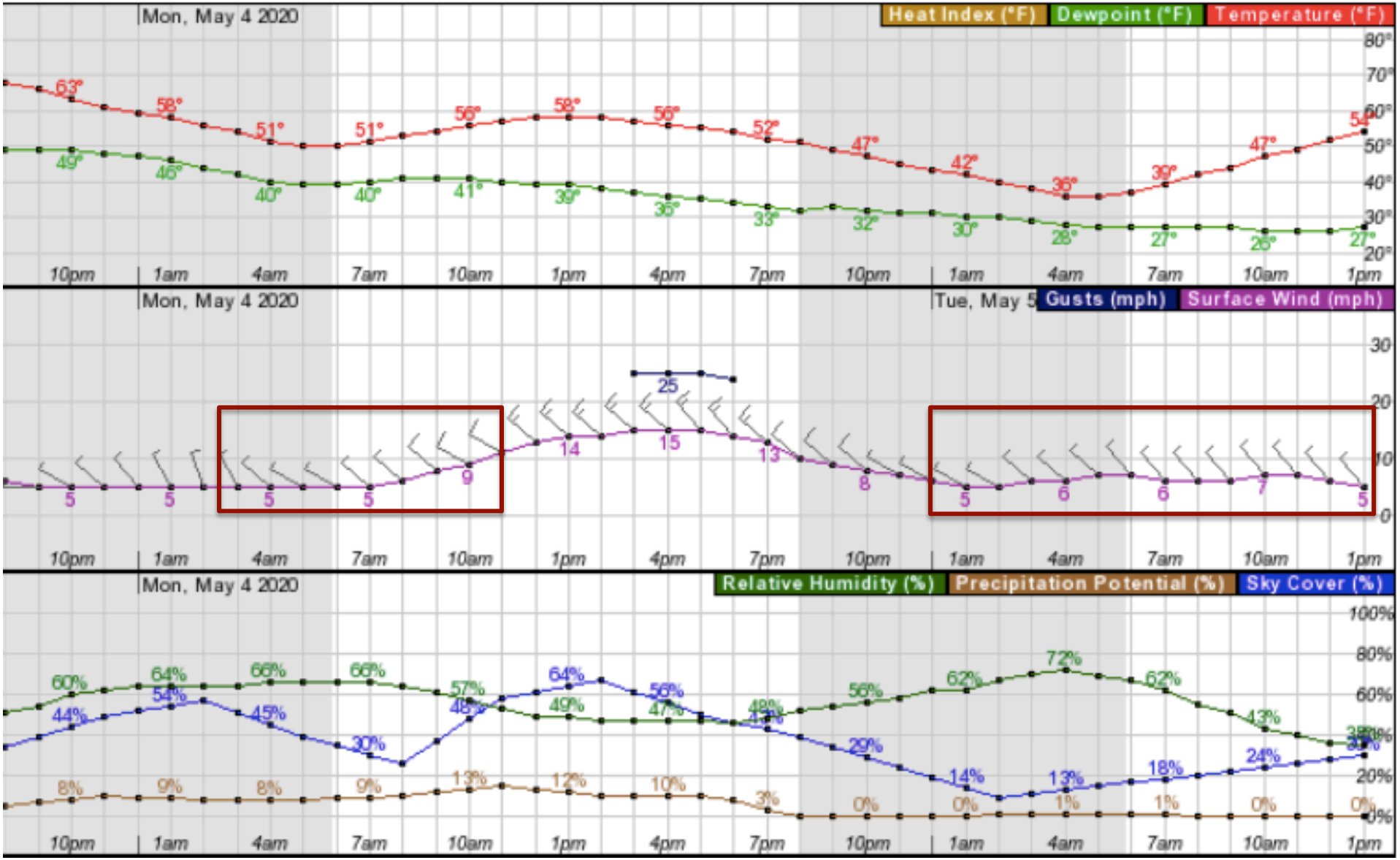
Thursday Night	Partly cloudy, with a low around 38.
Friday	Mostly sunny, with a high near 56.
Friday Night	A chance of showers. Mostly cloudy, with a low around 35. Chance of precipitation is 30%.
Saturday	Partly sunny, with a high near 51.

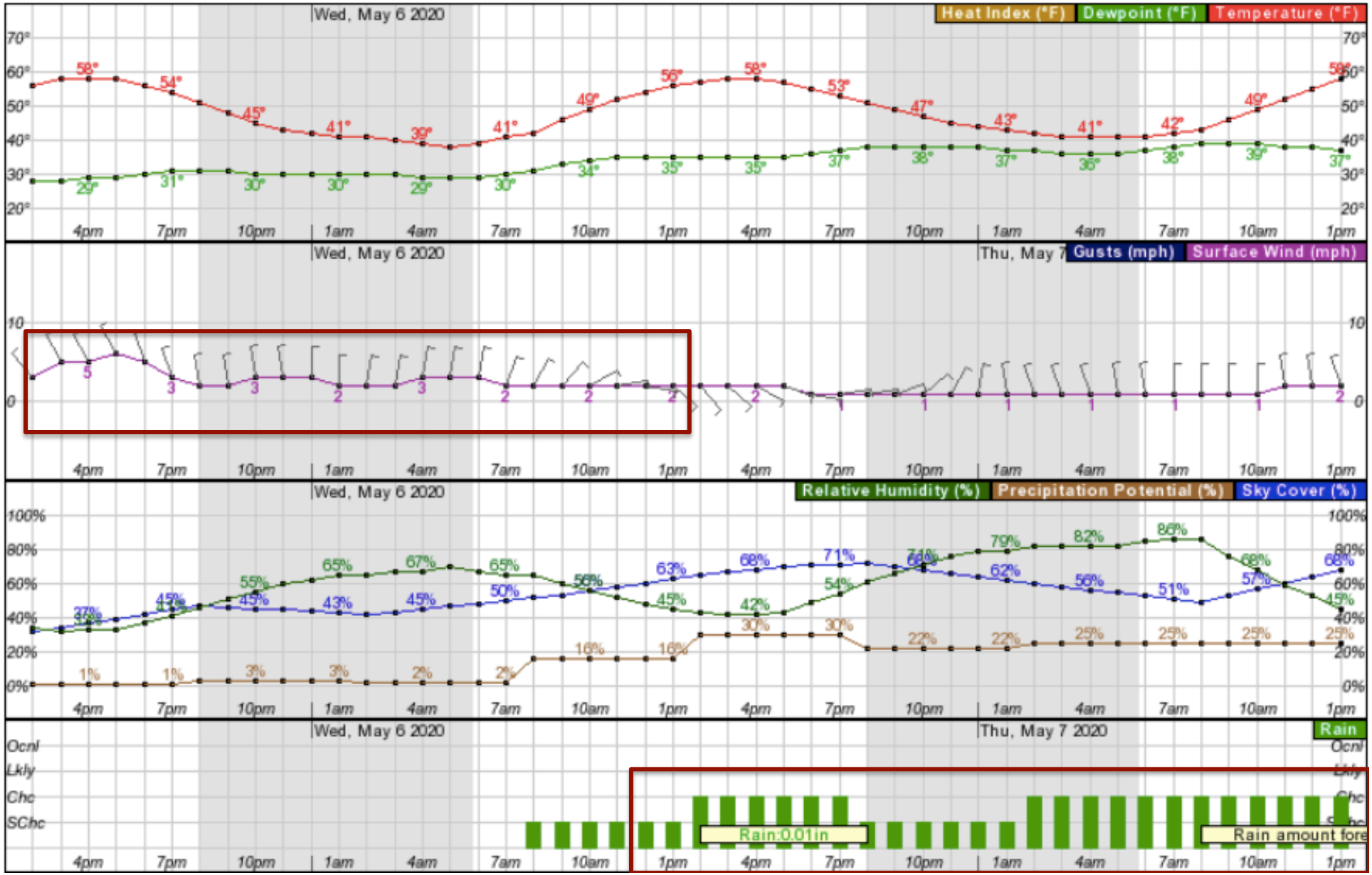
Today…windafter 10AM

Tomorrow…moderate wind
rH good for adhesion / then drying



Northerly wind 2-3 mph

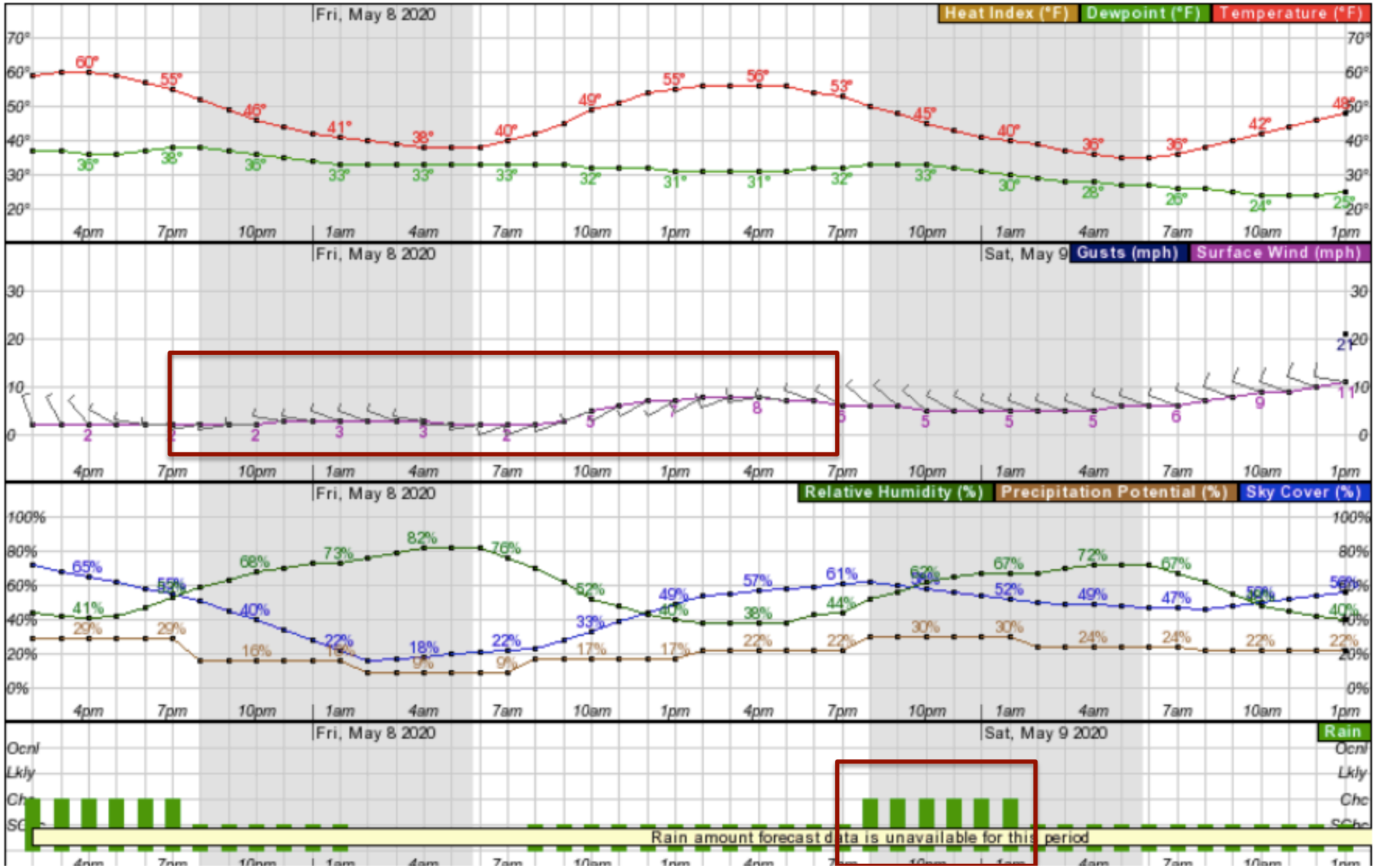
Increasing chance for rain



High rH (Good Adhesion
SlowDry time)

Westerly wind 2-3 mph

Increasing chance for rain



NEWA Weather Forecasting

Apple Scab Infection Events (March 1 - May 1)

Start Date & Time	End Date & Time	Wet Hours	Temp Avg. (F)	Rain (in.)	Combined Event
April 30 5:01 AM	May 1 8:00 PM	36	54	1.02	Yes
April 13 2:01 AM	April 13 7:00 PM	12	56	0.78	Yes
March 28 12:01 PM	March 31 7:00 AM	51	42	0.86	Yes
March 19 12:01 AM	March 20 7:00 PM	25	42	0.75	Yes
Dry conditions last 108 hours at download			Download Time: 5/1/2020 9:00		

NEWA Network for Environment and Weather Applications

Highland, NY
HVRL

Date	Avg Air Temp (°F)	Max Air Temp (°F)	Min Air Temp (°F)	Total Precip (inches)	Leaf Wetness Hours	RH Hrs ≥ 90%	Avg Wind Spd (mph)	Solar Rad (langleys)
04/08/2020	48.6	56.3	44.8	0.15	9	0	3.1	193
04/09/2020	44.4	51.4	39.0	0.57	7	0	2.9	140
04/10/2020	40.7	43.7	36.7	0.00	0	0	4.5	284
04/11/2020	42.9	51.5	35.5	0.00	0	0	2.9	514
04/12/2020	49.3	62.6	32.2	0.00	0	0	2.6	408
04/13/2020	57.5	62.2	52.2	0.88	12	0	5.1	81
04/14/2020	47.8	55.3	41.4	*0.00*	*0*	0	*2.0*	*389*
04/15/2020	42.8	49.1	36.5	0.00	0	0	3.3	523
04/16/2020	39.0	45.0	32.8	0.00	0	0	3.3	472
04/17/2020	37.8	47.4	29.7	0.10	4	0	2.8	377
04/18/2020	36.4	43.8	31.9	0.57	12	0	3.5	240
04/19/2020	48.4	61.5	33.1	0.00	0	0	3.9	554
04/20/2020	46.3	53.0	41.0	0.00	0	0	5.0	383
04/21/2020	42.1	50.0	33.0	0.13	3	0	3.0	190
04/22/2020	37.7	45.3	31.0	0.00	0	0	3.6	506
04/23/2020	38.5	44.2	29.9	0.00	0	0	1.5	184
04/24/2020	41.2	48.0	37.1	0.29	16	0	4.5	182
04/25/2020	51.1	64.8	38.2	0.00	0	0	2.1	458
04/26/2020	43.7	49.5	36.0	0.51	14	0	5.4	82
04/27/2020	40.2	44.5	36.3	0.07	14	0	7.3	152
04/28/2020	49.5	62.0	38.3	*0.00*	*0*	0	*4.0*	*609*
04/29/2020	49.6	56.6	40.7	0.00	0	0	2.2	186
04/30/2020	49.9	55.7	43.2	0.72	16	0	3.4	27
Monthly summary	45.8	67.5	29.7	4.13	113	0	3.8	9892

NEWA Network for Environment and Weather Applications

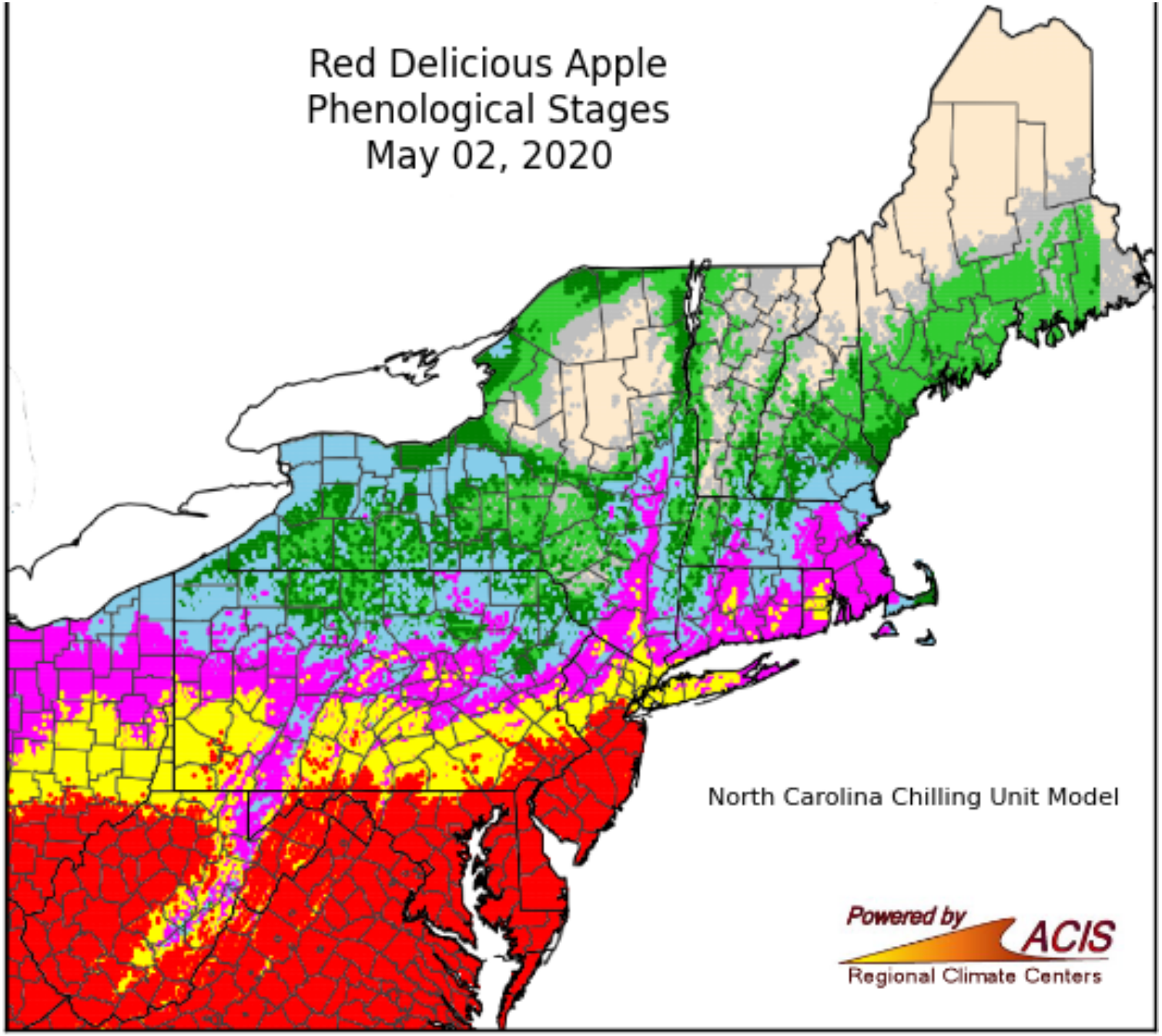
New Paltz, NY (WG Minard)

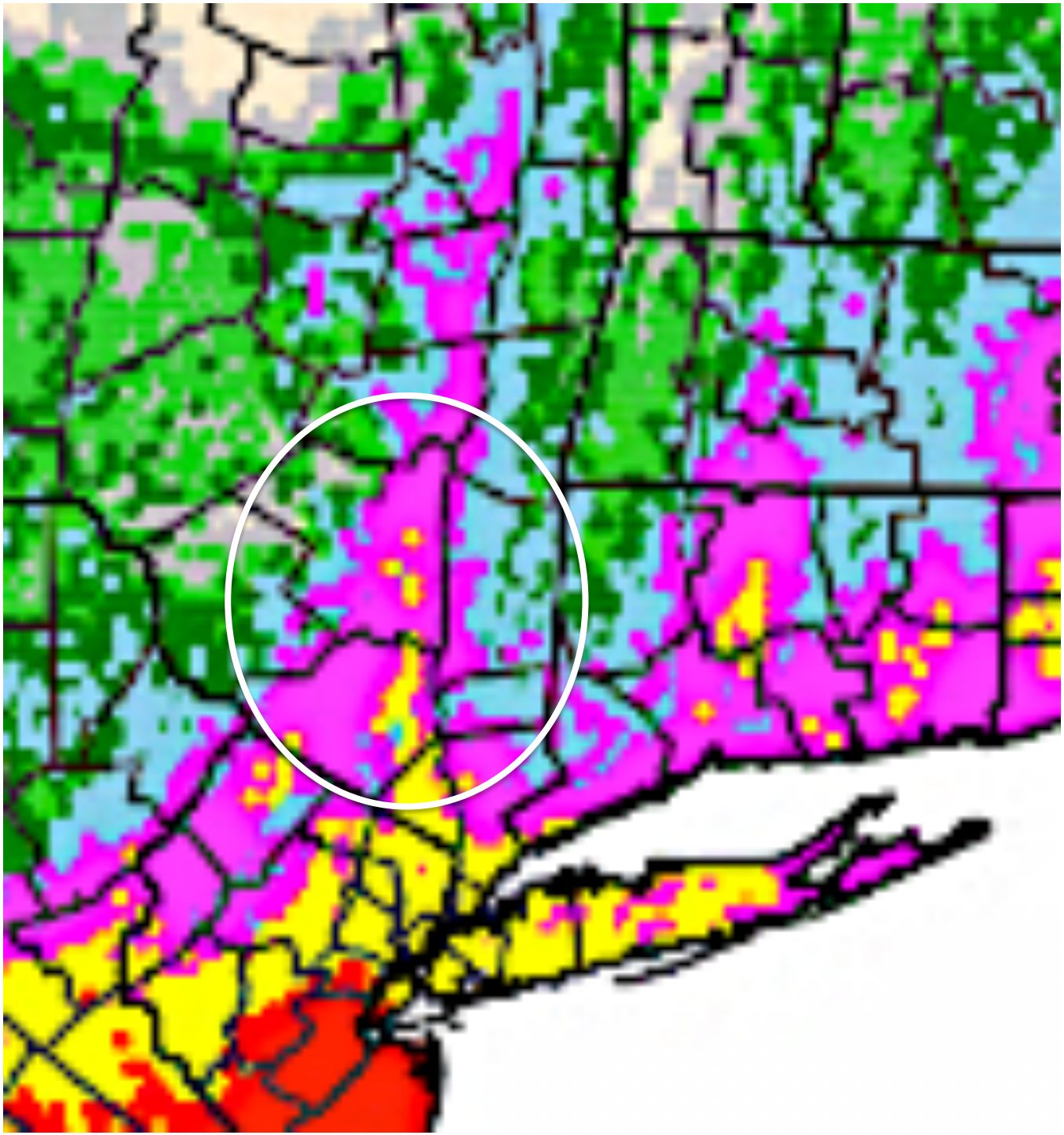
Date	Avg Air Temp (°F)	Max Air Temp (°F)	Min Air Temp (°F)	Total Precip (inches)	Leaf Wetness Hours	RH Hrs ≥ 90%	Avg Wind Spd (mph)	Solar Rad (langleys)
04/08/2020	48.2	57.5	40.0	0.11	13	12	3.0	26
04/09/2020	44.0	50.1	36.2	0.48	8	14	3.9	44
04/10/2020	40.2	43.2	36.4	0.01	0	0	6.6	24
04/11/2020	41.8	50.9	34.9	0.00	0	0	5.4	24
04/12/2020	47.0	62.7	25.9	0.00	0	0	2.7	130
04/13/2020	58.2	64.2	52.2	1.14	12	13	6.4	33
04/14/2020	47.7	55.3	41.6	0.00	0	0	3.8	24
04/15/2020	41.6	48.9	31.6	0.00	0	0	4.6	24
04/16/2020	38.8	43.4	32.7	0.00	0	0	5.2	24
04/17/2020	37.0	46.8	27.4	0.11	5	3	3.0	25
04/18/2020	36.2	44.0	30.0	0.63	14	13	3.3	51
04/19/2020	46.4	61.7	28.5	0.00	0	3	3.6	38
04/20/2020	43.2	53.7	32.6	0.00	0	1	3.7	24
04/21/2020	40.5	51.3	26.6	0.15	5	2	3.8	26
04/22/2020	37.4	44.6	31.2	0.00	0	0	6.1	24
04/23/2020	37.7	45.7	27.4	0.00	0	0	1.5	24
04/24/2020	40.6	48.6	34.8	0.34	18	16	4.3	25
04/25/2020	50.8	65.0	34.2	0.00	0	9	2.1	39
04/26/2020	43.7	48.0	37.3	0.49	14	7	5.7	24
04/27/2020	41.1	45.2	37.4	0.05	18	7	9.4	24
04/28/2020	48.6	62.8	35.7	0.00	0	2	3.7	61
04/29/2020	46.8	55.6	33.1	0.00	2	4	2.6	24
04/30/2020	50.7	57.4	43.5	0.71	20	17	5.2	27
Monthly summary	45.1	66.8	25.9	4.32	139	132	4.4	1133

NEWA Network for Environment and Weather Applications

Marlboro, NY (Truncalli)

Date	Avg Air Temp (°F)	Max Air Temp (°F)	Min Air Temp (°F)	Total Precip (inches)	Leaf Wetness Hours	RH Hrs ≥ 90%	Avg Wind Spd (mph)	Solar Rad (langleys)
04/08/2020	49.4	55.4	45.5	0.08	8	7	2.8	0
04/09/2020	45.3	51.5	39.7	0.35	7	12	4.8	0
04/10/2020	40.5	43.4	36.6	0.00	0	0	7.7	0
04/11/2020	42.5	50.7	34.7	0.00	0	0	5.4	0
04/12/2020	49.6	60.8	33.0	0.00	0	0	3.2	0
04/13/2020	57.4	63.3	53.1	0.93	13	15	5.7	0
04/14/2020	47.6	53.7	42.3	0.00	0	0	3.8	0
04/15/2020	42.4	48.4	37.2	0.01	8	0	4.2	0
04/16/2020	39.0	43.2	33.6	0.01	4	0	4.9	0
04/17/2020	37.2	46.4	29.2	0.15	4	3	2.7	0
04/18/2020	36.8	43.8	32.2	0.41	12	13	3.9	0
04/19/2020	48.0	60.7	33.2	0.00	0	0	2.8	0
04/20/2020	46.9	53.3	41.7	0.00	0	0	4.0	0
04/21/2020	43.4	51.1	35.8	0.29	4	2	4.4	0
04/22/2020	37.7	44.7	31.1	0.00	0	0	7.0	0
04/23/2020	38.6	45.1	29.4	0.00	0	0	1.9	0
04/24/2020	41.7	47.8	36.8	0.35	14	13	4.0	0
04/25/2020	50.5	63.5	37.9	0.00	0	8	2.2	0
04/26/2020	43.6	49.1	36.6	0.47	14	8	4.7	0
04/27/2020	40.3	44.9	36.2	0.06	14	11	6.3	0
04/28/2020	49.8	62.5	38.7	0.00	0	0	3.4	0
04/29/2020	49.5	55.7	43.8	0.00	0	0	3.3	0
04/30/2020	51.4	60.0	44.0	0.75	13	12	6.1	0
Monthly summary	45.9	66.3	29.2	4.01	135	111	4.3	0


Red Delicious Apple
Phenological Stages
May 02, 2020
North Carolina Chilling Unit Model
Powered by ACIS
Regional Climate Centers
Dormant
Silver Tip
Green Tip
1/2" Green
Tight Cluster
Pink Bud
Bloom
Petal Fall



Frost Damage & Phenology Update for May 3, 2020

by DANA ACIMOVIC posted on MAY 3, 2020

On April 23, a weather station at the HVRL recorded low temperature of 26.7F that lasted for 4 hrs. During that period most of apple cultivars at the station were in tight cluster. Among observed cultivars, Empire was most advanced with 74% in pink bud. This afternoon, I have sampled 20 shoots per cultivar randomly and estimated frost injury on the king and lateral flowers. The results are presented in the table below.

	Frost Injury on Flowers (%)	
Cultivar	King	Lateral
Empire	81	51
Gala	15	6
Honey Crisp	45	12
Fuji	65	30
NY1	38	3
NY2	64	24

HVRL Research Orchard

Red Delicious Flower Cluster

- Red Max on M26
- 20 Years old
- Mid-Hill facing east

Video of microscope view

- Full Bloom

Win Cowgill – Rutgers Emeritus/ Win Enterprises International, LLC

Horticulturalist

- Conversations on Bloom thinning

Pollination: Flowering Competition

- Mow dandelions prior to PF application

- Tarnished Plant Bug-Bloom-2C
  - Reduce broadleaf plants in orchard row middles to reduce TPB habitat
  - Pyrethroid management
  - Beleaf ?

May 2nd

Insect Pest Management Scouting:

1st Black Stem Borer − Walden, NY

Newly planted trees in wet soils − Trunk application prior top bloom

Lorsban − Assail - Pyrethroids labeles

Newly planted trees very susceptible to borer (DWB)

Considerations for Dogwood borer mating disruption

No adult codling moth flight - mating disruption asap

Tarnished Plant Bug

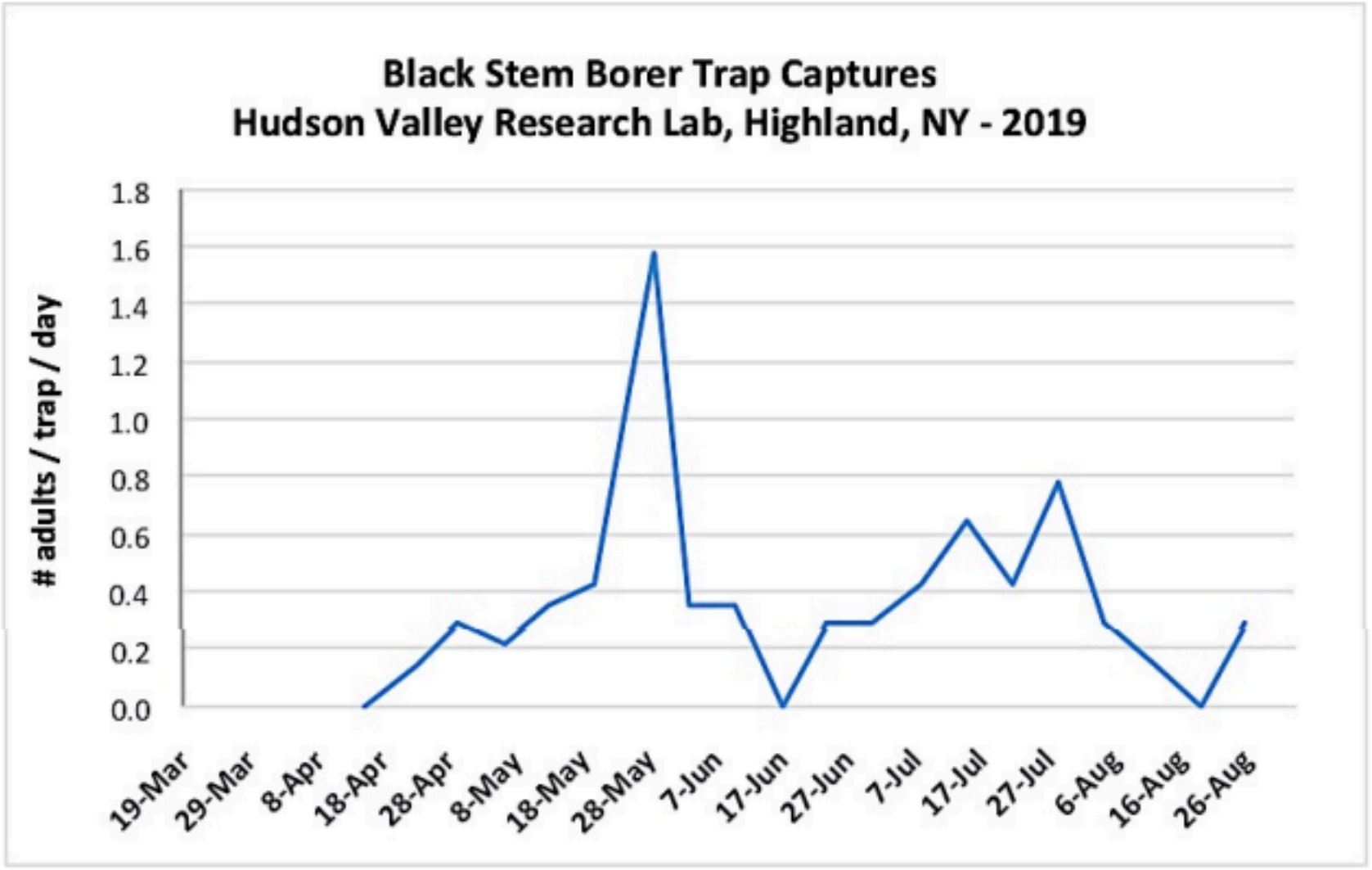
Plum Curculio

Increasing temperature = higher levels of insect feeding on flowers

Models For Predicting Management.

Codling moth		§Checkmate CM2.0	2.4-4.8 fl oz/acre		4	Moderate
		§Isomate-CM/OFM TT	200 ties/ acre		0	High
		§Madex HP	0.5-3 fl oz/acre	0	4	Moderate
Lesser appleworm		§Isomate-CM/OFM TT	200 ties/ acre		0	High
Oriental fruit moth		§Checkmate OFM-F 24.6S	1.32-2.93 fl oz/acre		0	Moderate
		§Cidetrak CM-OFM Combo	200-220 dispensers/A			High
		§Cidetrak OFM-L Meso	18-35 dispensers/A			High
		§Isomate-CM/OFM TT	200 ties/ acre		0	High
		§Isomate OFM TT	100 ties acre		0	High
		§Madex HP	0.5-3 fl oz/acre	0	4	Moderate

Mullein plant bug	4A	Assail 30SG	4-8 oz/acre	7	12	High
Obliquebanded leafroller	11A	§Agree 3.8WS	1-2 lb/acre	0	4	Moderate
	11A	§Dipel 10.3DF	0.5-2 lb/acre	0	4	High
	11A	§Javelin WG	0.5-4 lb/acre	0	4	Moderate
	18	*†Intrepid 2F	8-16 oz/acre	14	4	High


Black Stem Borer Trap Captures
Hudson Valley Research Lab, Highland, NY - 2019
adults / trap / day
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
19-Mar
29-Mar
8-Apr
18-Apr
28-Apr
8-May
18-May
28-May
7-Jun
17-Jun
27-Jun
7-Jul
17-Jul
27-Jul
6-Aug
16-Aug
26-Aug

Tarnished Plant Bug Injury to Gala

- Beleaf at 70F bloom…
- Pyrethroid & Pyrethroid premix with Thiomethoxam @ PF-1C

3A	Ambush 25WP	6.4-25.6 oz/acre	PF	12	High
3A	*Asana XL 0.66EC	4.8-14.5 fl oz/acre 2-5.8 fl oz/100 gal water	21	12	High
3A	*Baythroid XL 1EC	2-2.4 fl oz/acre	7	12	High
3A	*Danitol 2.4EC	10.67-16 fl oz/acre	14	24	High
3A	*Pounce 25 WP	6.4-16 oz/acre	PF	12	High
3A	Warrior II 2.08CS	1.28-2.56 fl oz/acre	21	24	High
9C	Beleaf 50SG	2-2.8 oz/acre	21	12	High
22	Avaunt 30WDG	5-6 oz/acre	14	12	Moderate
3A/6	*Gladiator EC	19 fl oz/acre 4.75 fl oz/100 gal water	28	12	High
3A/28	*†Besiege Chlorantraniliprole/Lambda-cyhalothrin	6-12 fl oz/acre	21	24	High
4A/3A	*†Endigo ZC	5-6 fl oz/acre	35	24	High
4A/3A	*Leverage 360	2.4-2.8 fl oz/acre	7	12	High