

THE JENTSCH LAB

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



Morning Brew: Conversations on Tree Fruit Pest Management

6 a.m. April 12th, 2021



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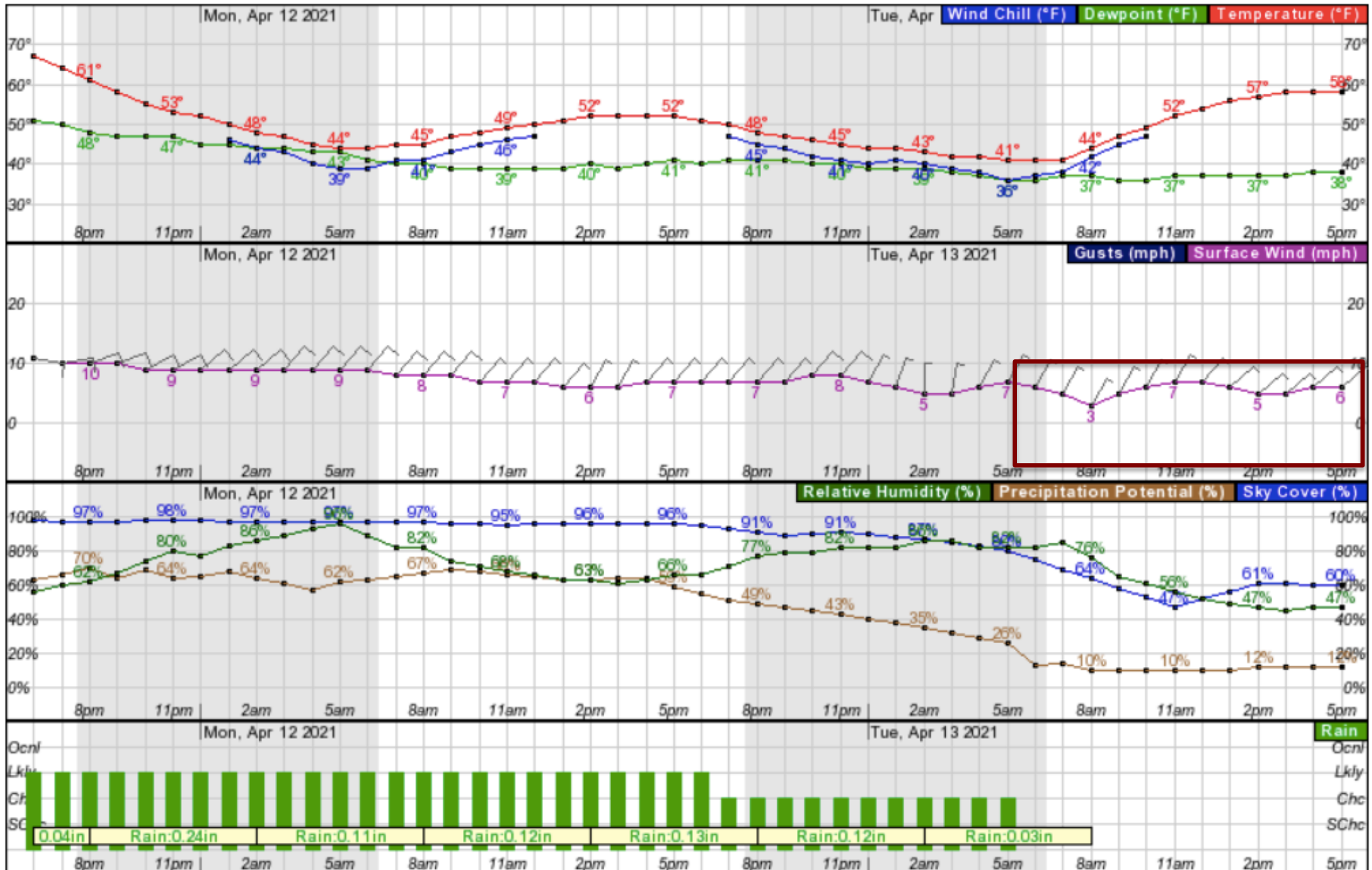


Agenda:

- Welcome
 - Weather forecast, Scouting tree phenology, insect life stages
 - 1. Application windows, pest management scouting, models for predicting management.
 - 2. Pre-bloom Diseases Apple Scab, Fire Blight (K. Cox & D.Rosenberger)
 - 1. Apple Scab Infection: NEWA Site / Rim Pro Site
 - 3. Insect management during bloom & early petal fall:
 - 1. Sprayer Calibration Part II – George Hamilton, UNH Extension
 - 2. 1st Black Stem Borer April 9th
 - 3. Tarnished Plant Bug, Rosy Apple Aphid, Dogwood Borer, San Jose Scale

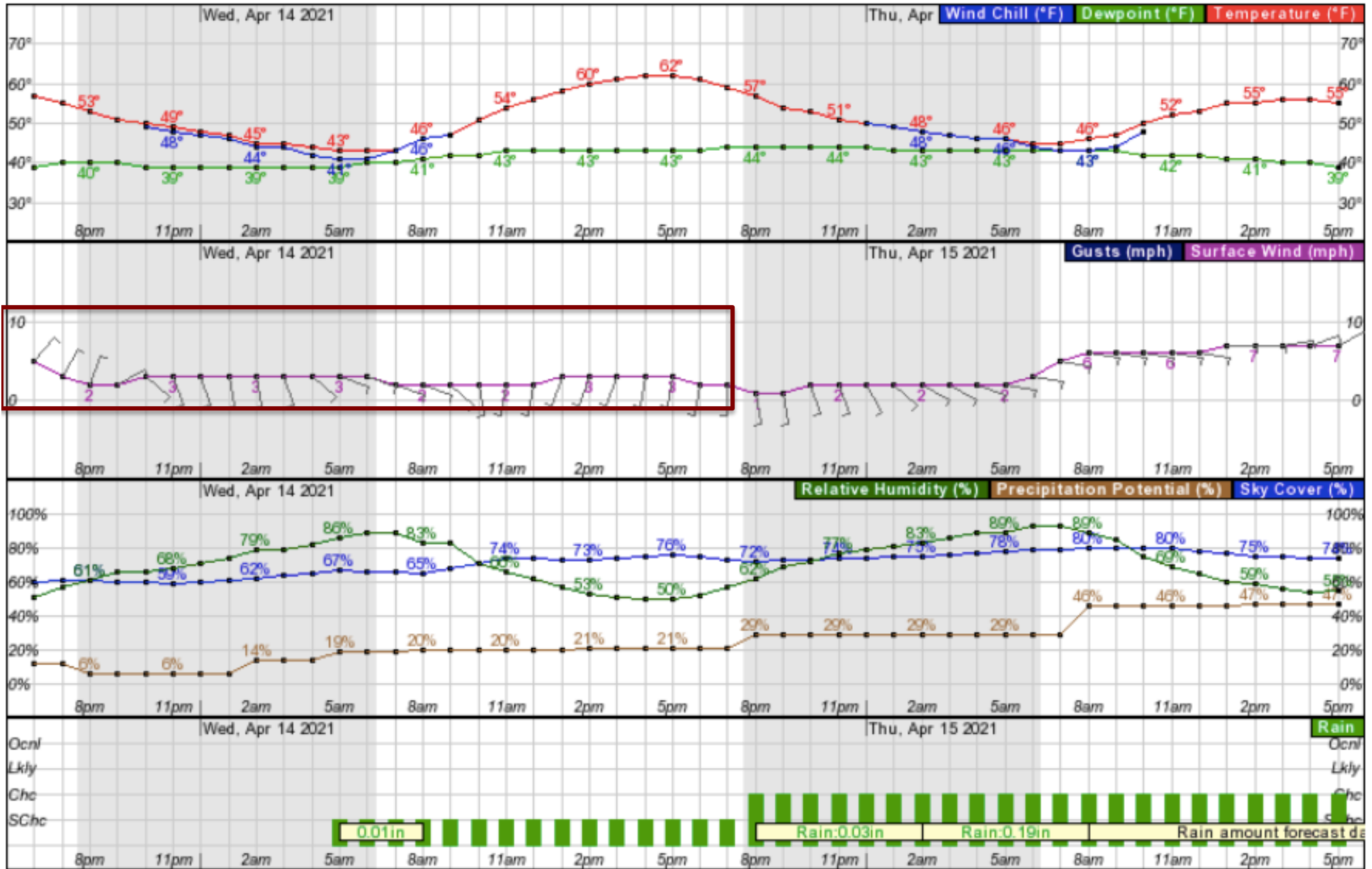
Monday...High chance of rain with moderate to high winds

Tuesday...less wind after 5AM
rH good for adhesion / then drying



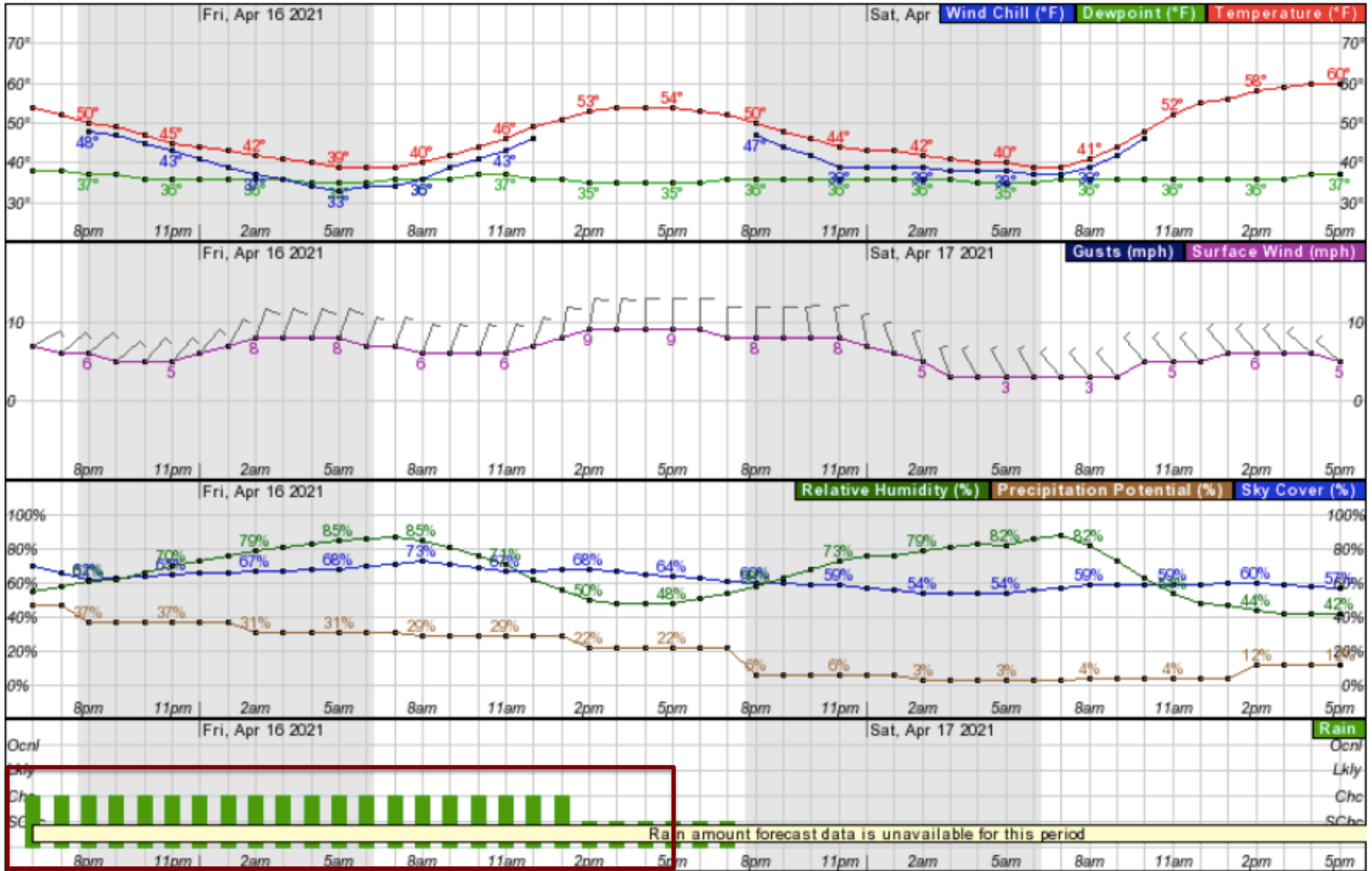
Wednesday: Southerly spray window
wind 2-3 mph

Increasing chance for rain Thursday



Friday Rain

Saturday Clear
Wind 3-6 mph



Kerrik Cox Recommendations for Apple Scab protectant fungicides :

1. “Delayed dormant” silver-tip application of a high (>15%) metallic copper equivalent (MCE) copper fungicide (e.g. Badge, Kocide, Cuprofix) up to ¼” green.
2. Captan with Mancozeb at half maximal rates for each product (e.g. Captan 80 at 2.5lbs/A & Mancozeb 3lbs/A), referred as “Captozeb”.
 1. Excellent residual (Mancozeb) and redistribution (Captan) properties, but has little to no post-infection activity, and must be applied before rains. Re-application is warranted when unprotected tissues emerge 7 days later or when considerable rainfall (> 1”) occurs.
 2. Employ disease forecasting services to identify predicted ascospore releases and potential infection events to improve application timing.
 3. When practical, apply fungicides prior to predicted large releases of ascospores (> 15% discharge) during weather conditions conducive to infection

Kerrik Cox Recommendations for Apple Scab protectant fungicides :

1. Single-site fungicides have post-infection activity to apply with 3 lb/A mancozeb for “next week’s” infection AND within 24-48 hours after the last infection period. It should protect against the next predicted infection and perhaps afford some curative activity if any germinating spores slipped through the fungicide coverage from the previous week.
2. Syllit, will likely be your strongest performer for applications between infection periods. However, Syllit may only be applied twice before pink.
3. Other option would be to use *Aprovia*, *Miravis*, *Sercadis*, Luna Tranquility, **Cevya**, or **Inspire Super**. The *former three products* are exceptionally effective on apple scab, while the latter two are also highly effective, and include an anilinopyrimidine (AP), which works best in the colder temperatures that often occur prior to bloom.
4. As the season progresses into bloom, Luna Sensation or Merivon, which contain quinone outside inhibitor (QoI) fungicides, would be good choices for orchards planted along the lake where apple powdery mildew pressure can be high.
5. Employ predictive modeling and weather forecasting (NEWA, RimPro) to schedule preventative fungicide applications.

Apple scab	Cabrio EG	5.0-8.0 oz/acre 4.0 oz/100 gal water	0	12		
	Flint	2.0-2.5 oz/acre 0.67-0.8 oz/100 gal water	14	12		
	Flint Extra	2.9 fl oz/acre	14	12	High	
	Indar 2F	6.0-8.0 fl oz/acre	14	12		
	Inspire Super	8.5-12.0 fl oz/acre	14	12		
	3	†Rhyme	6.5 fl oz/acre	14	12	
	7	*†Fontelis	16-20 fl oz/acre	28	12	High
	7	*Miravis	3.4 fl oz/acre	30	4	High
	7	*†Sercadis	4.5 fl oz/acre	0	12	High
	11	*†Sovran 50WDG	3.2-6.4 oz/acre 1.0-1.6 oz/100 gal water	30	12	
	M3	Manzate ProStik	3.0-6.0 lb/acre 1.0-2.0 lb/100 gal water	BL, 77(A)	24	
	M3	Penncozeb 75DF	3.0-6.0 lb/acre 1.0-2.0 lb/100 gal water	BL, 77(A)	24	
	M3	Polyram 80DF	3.0-4.5 lb/acre	BL, 77(A)	24	
	M4	Captan 50WP	8.0 lb/acre 1.0-2.0 lb/100 gal water	0	24	
	M4	Captan 80WDG	5.0 lb/acre 0.65-1.25 lb/100 gal water	UDH	24	
	U12	Syllit FL	1.5 pts/acre	7	48	
9 + 7	*†Luna Tranquility	11.2-16 fl oz/acre	72	12	High	
11 + 7	*†Luna Sensation	4.0 to 5.8 fl oz/acre	14	12	High	
11 + 7	*†Merivon	4-5.5 fl oz/acre	0	12	High	

Single Site
Post-infection activity

Contact
Protectants

Single Site - Post

Dual Sites
Post-infection activity

NEWA Weather Forecasting: Highland, NY

NEWA 2.0 <http://newa.cornell.edu/>

NEWA 3.0 <http://dev.newa.cornell.edu/>

Apple Scab Infection Events (March 1 - April 11)					
Start Date & Time	End Date & Time	Wet Hours	Temp Avg. (F)	Rain (in.)	Combined Event
April 11 5:01 PM	April 13 2:00 AM	33	49	0.61	
March 31 2:01 PM	April 1 1:00 PM	20	48	0.20	Yes
March 28 10:01 AM	March 29 2:00 AM	14	50	1.17	Yes
March 24 3:01 PM	March 26 8:00 AM	28	53	0.49	Yes
Dry conditions last 114 hours at download		Download Time: 4/11/2021 17:00			

NEWA Weather Forecasting: Highland, NY

Ascospore Maturity Summary								
	Past	Past	Current	5-Day Forecast			Forecast Details	
Date	4/9	4/10	4/11	4/12	4/13	4/14	4/15	4/16
Ascospore Maturity	3%	3%	4%	4%	5%	6%	7%	8%
Daily Ascospore Discharge	0%	0%	<1%	<1%	<1%	0%	0%	0%
Cumulative Ascospore Discharge	2%	2%	3%	3%	3%	3%	3%	3%

[Ascospore Maturity Graphs](#)

Infection Events Summary								
	Past	Past	Current	5-Day Forecast			Forecast Details	
Date	4/9	4/10	4/11	4/12	4/13	4/14	4/15	4/16
Infection Events	No	No	Combined	Combined	Yes	No	No	No
Average Temp (F) for wet hours	-	-	58	48	44	47	49	50
Leaf Wetness (hours)	0	0	7	24	5	2	2	2
Hours \geq 90% RH	0	0	0	0	0	0	0	0
Rain Amount	0.00	0.00	0.13	0.46	0.01	Night 33% Day 19%	Night 25% Day 18%	Night 18% Day 4%

Welcom to the RIMpro Cloud Service !



Real time information and forecast of pest and disease development

RIMpro Cloud Service is an interactive Decision Support System (DSS) for pest and disease management in fruit and wine grape production.

For many growers and consultants RIMpro is their essential tool for effective crop protection.

Connect your weather station to the system in minutes. Get valuable real-time information to manage your crop protection in integrated, low-input or organic production systems.

The RIMpro simulation models are carefully developed in cooperation with specialist, worldwide validated, and widely used. User-friendly interfaces show you what you need to know to make your decisions. RIMpro is no black-box. All biological processes in the models are explained and you can set all simulation parameters to your personal experience. RIMpro is constantly developed further based on user feedback, input of working groups and projects, and new insights in the biology of the pests and diseases involved.

Grower

As grower you connect your on-farm weather station to the system. You simply use the default settings or set the parameters to your local conditions and experiences. You can enter your fungicide treatments and follow the estimated residual effect in time.

Consultant

As consultant you can setup a private RIMpro network for your clients even using different types of weather stations. RIMpro generates an interactive geographic map showing all your stations. You can embed this map in your own company's website to offer your clients access to all your station results. You can also create links to single stations, or only to the results of single models.

RIMpro Login

Username

Password

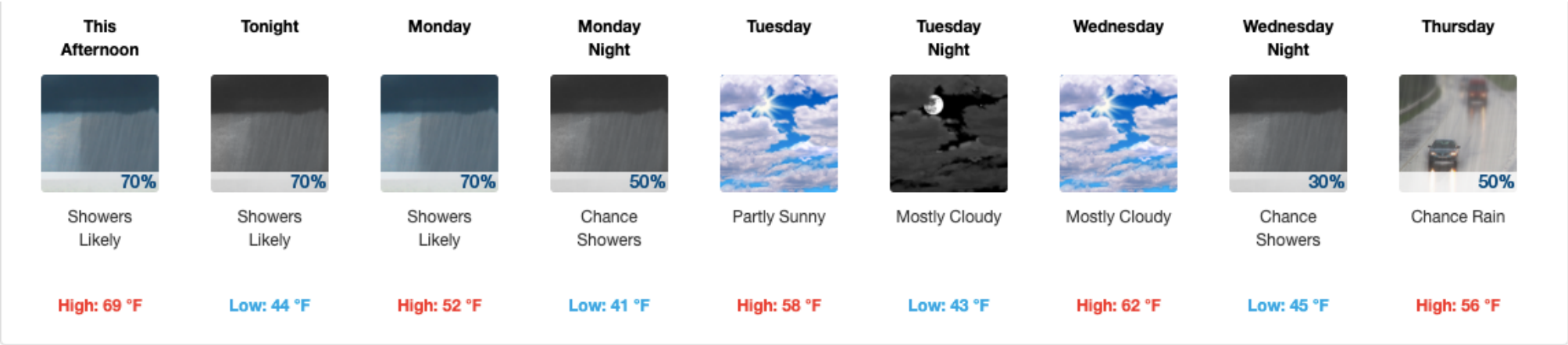
Forgotten your password ?
Send an email to: support@rimpro.eu

Create new RIMpro account

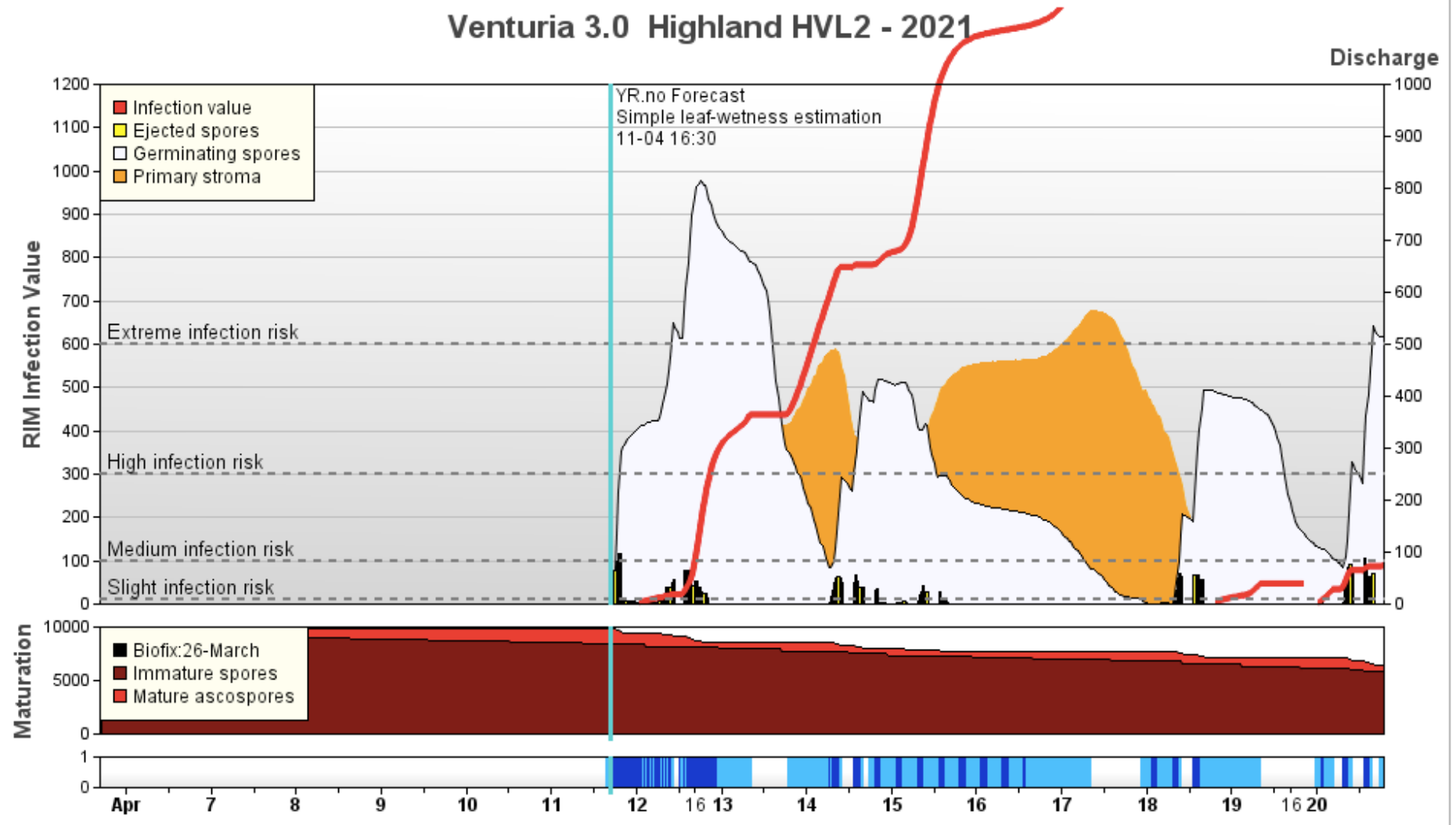
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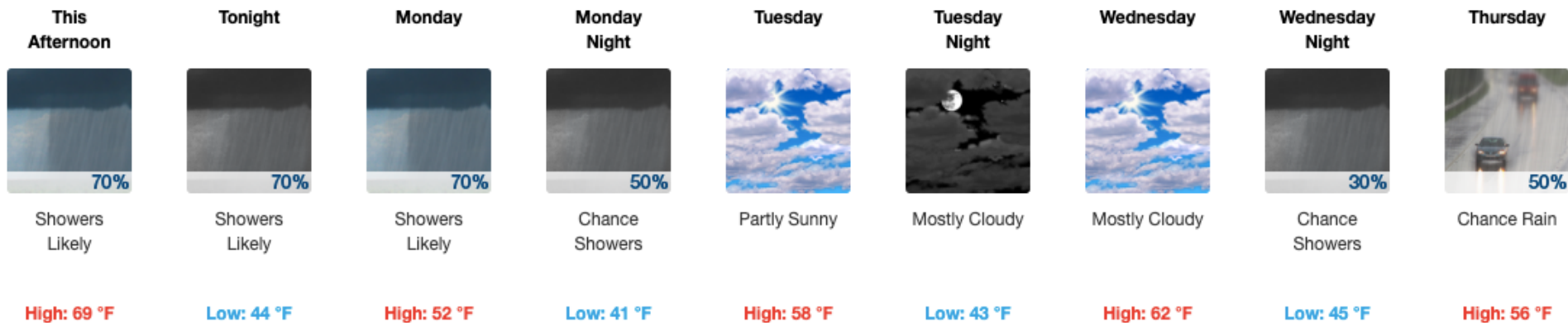
RIMpro B.V.
Keizersgracht 482
NL-1017 EG Amsterdam The Netherlands
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<https://rimpro.eu/>

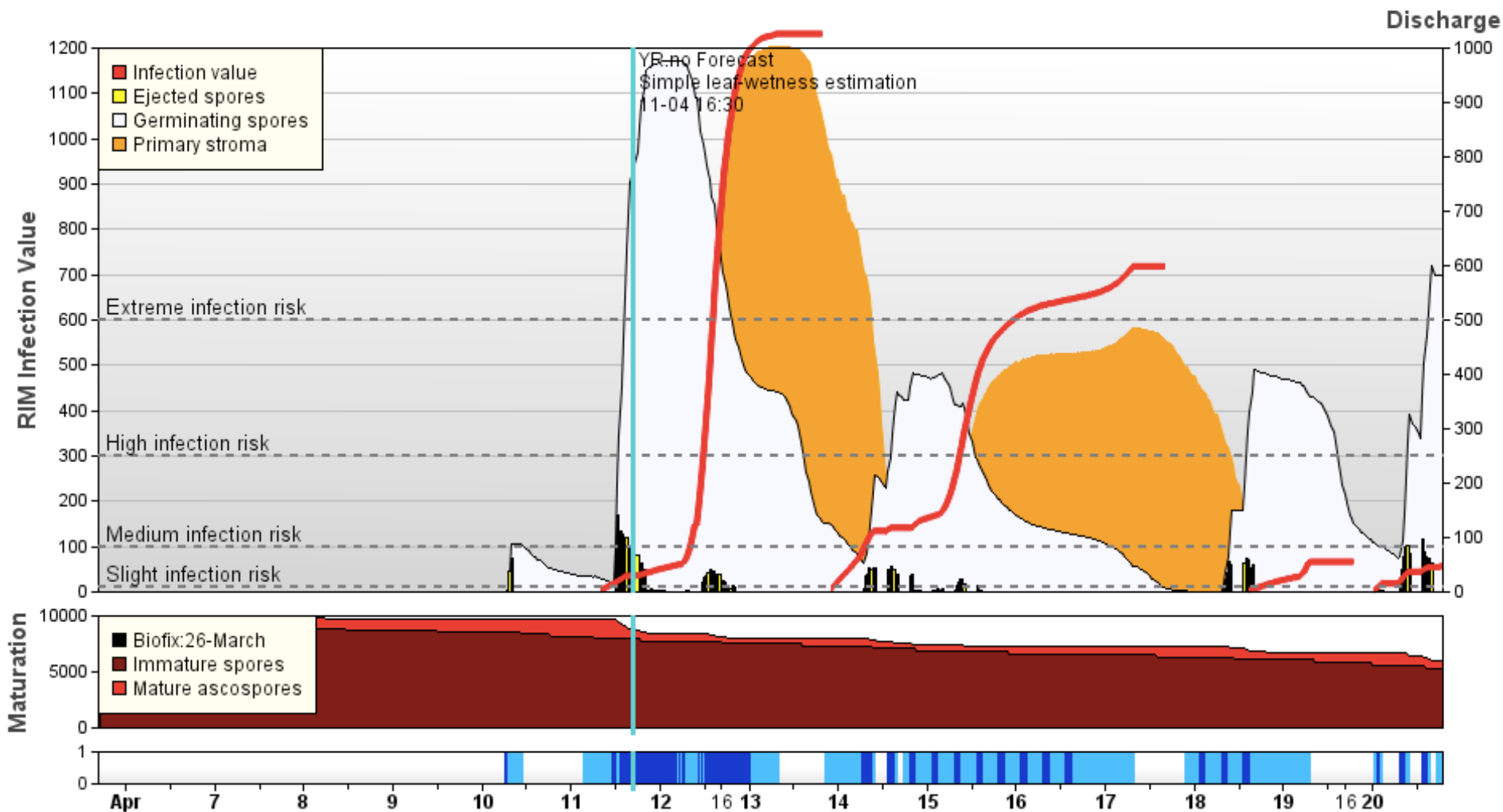


Venturia 3.0 Highland HVL2 - 2021





Venturia 3.0 Yorktown - 2021





Tarnished Plant Bug Injury to Gala

- Beleaf at 70F bloom...
- Pyrethroid
- Pyrethroid premix with Thiamethoxam @ PF-1C

Note: The a.i. Thiamethoxam used in pre-bloom applications will **negatively** impact pollinators potentially reducing pollination activity

Tarnished Plant Bug

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	*Mustang MAXX	1.28-4.0 fl oz/acre	14	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/28	*†Besiege Chlorantraniliprole/Lambda-cyhalothrin	6-12 fl oz/acre	21	24	High
3A/6	*Gladiator EC	19 fl oz/acre 4.75 fl oz/100 gal	28	12	High



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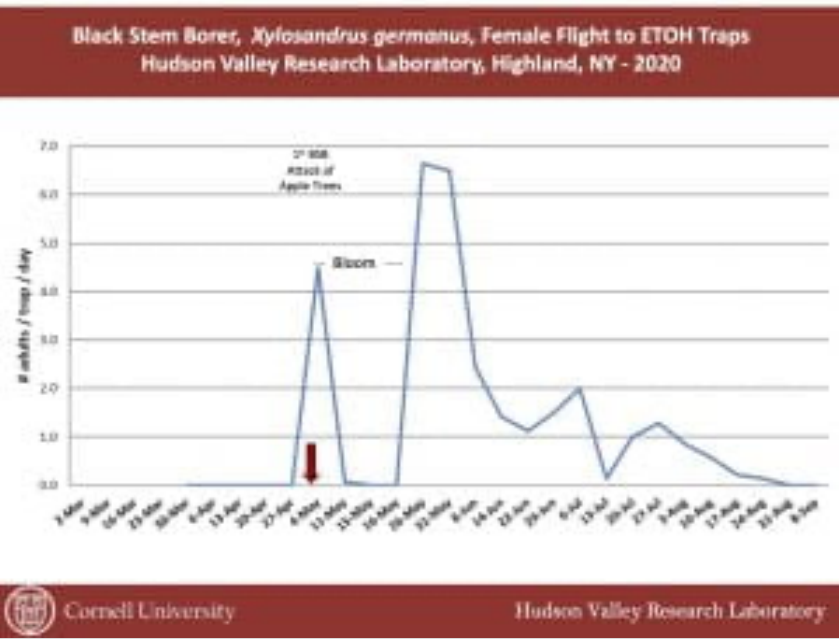
The Black Stem Borer (BSB), *Xylosandrus germanus* a species of ambrosia beetle, continues to challenge newly planted and young apple trees.

The first BSB was observed Friday 9th April.

1st boring sites have not been observed.

ETOH apple wood ‘bolts’, >1” in diameter are used to monitor BSB attack to trees.

In 2021, studies are on going in the use of Beetle Guard (ISCA Tech) a verbenone methyl silicate repellent to determine efficacy of the product on BSB attack of stressed apple trees.



Black stem borer	1B	*Lorsban Advanced	1.5 qt/100 gal water	28(A)	96	Moderate
	3A	*Danitol 2.4EC	16-21.3 fl oz/acre	14	24	Moderate
	3A	*Warrior II 2.08CS	2.56 fl oz/100 gal water	21	24	Moderate

San Jose Scale *Quadraspidiotus perniciosus* (SJS)



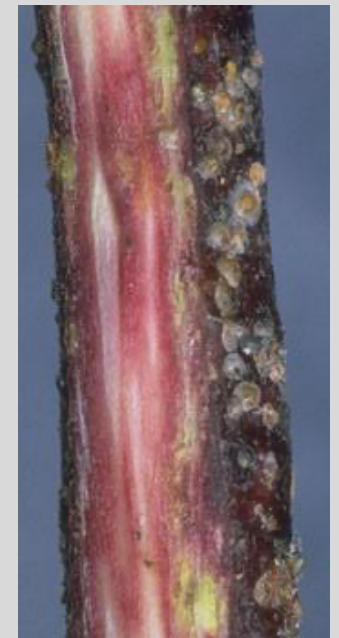
Reside beneath black-cap coverings. Adult males emerge to mate, females reside under coverings, crawlers emerge ((Approx. June 10-20th)

Pre-bloom options included:



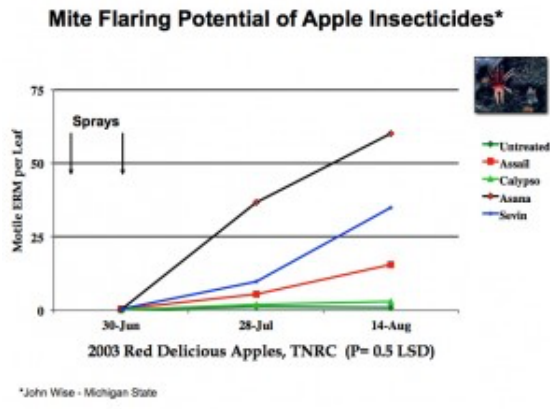
- * Lorsban – does not require penetrant
- * Esteem (DD-Pink): Insect growth regulator (IGR) – does not require penetrant
- * Centaur (DD-Pink): Insect growth regulator (IGR) – requires penetrant
- * $\geq 1\%$ Oil (DD-Pink) alone or with IGR's
- * Venerate XC (TC-Pink) – requires penetrant
- * Sivanto Prime (DD-Pink)

	oil	2 gal/100 gal water			High
	§Venerate XC	2.0-4.0 qt/acre	0	4	Moderate
1B	*Lorsban 4E	1.5-4 pts/acre	PB/28	96	High
		1 pt/100 gal water	(A)		
1B	Lorsban 75WG	2.0-2.67 lb/acre	PB/28	96	High
		0.3-0.67 lb/100 gal water	(A)		
4D	*†Sivanto Prime	10.5-14.0 fl oz/acre	14	4	High
16	*†Centaur	34.5 oz/acre	14	12	High
		0.7WDG			
	oil	2 gal/100 gal water plus			High
7C	Esteem 35WP	4-5 oz/acre	45	12	



European Red Mite:

- Overwinter egg stage emerging during tight cluster to pink
- Ovicide
- Larvicide from TC – Pink
- Adulticide post bloom



	oil	1-2 gal/100 gal water			High
10A	Apollo 4SC	4-8 fl oz/acre	45	12	High
10A	Onager 1EC	12-24 fl oz/acre	28	12	High
10A	Savey 50DF	3 oz/acre	28	12	High
10B	Zeal 72WS	2-3 oz/acre	14	12	High



Rosey Apple Aphid



Management Options

Pre-bloom

vs

Post Bloom

1B	*Lorsban 4E	1 pt/100 gal water	PB/28 (A)	96	High
1B	Lorsban 75WG	0.3-0.67 lb/100 gal water	PB/28 (A)	96	High
4D	*†Sivanto Prime	7.0-14.0 fl oz/acre	14	4	High
7C	Esteem 35WP	3-5 oz/acre	45	12	High
9C	Beleaf 50SG	2.0-2.8 oz/acre	21	12	Moderate
28	*†Exirel	13.5-20.5 fl oz/acre	3	12	High
9D	*†Versys Inscalis	1.5 fl oz/acre	7	12	High
3A/28	*†Besiege	6-12 fl oz/acre	21	24	High

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