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ORCHARD RESEARCH & CONSULTING

Morning Brew: Conversations on Tree Fruit Pest Management

6 AM, April 7th, 2025

Poma Tech Inc. is a 501(c)(3) Not for Profit, addressing the evolving pest management research and educational needs in support of the tree fruit industry while mitigating food insecurity across the Hudson Valley region of NYS.

Agenda:

- **Welcome**
  - Introduction
  - 2024 Season in review
  - 2025 Tree phenology
  - Weather forecast - Application windows

Topics

Pre-bloom: Pome Fruit Management

Insect Scouting

a. San Jose Scale, Dogwood Borer, European Red Mite, Pear Psylla Eggs

Trapping

a. Speckled green fruit worm, Redbanded Leafroller, Obliquebanded Leafroller, Tarnish plant bug, Rosy Apple Aphid, Green Apple Aphid, White Prunicola Scale

Disease

a. Apple scab modeling

CornellAgriTech
New York State Agricultural Experiment Station @ Hudson Valley Research Laboratory → poma tech ORCHARD RESEARCH & CONSULTING

Introduction: Peter Jentsch

Employed with Cornell's Hudson Valley Lab for 32 years

- Technician, Sr. Extension Associate / Entomologist & Superintendent (2016)
  - Product Testing pesticide screening trials; Invasive pest research (BMSB, SWD)
  - Biological control of BMSB (Samuai Wasp)
  - Gave presentations on Insect Pest Topics and research results

- Started Poma Tech Inc. a 501(C)(3), in 2021. **Mission**: to support tree fruit growers of with web based and on-farm pest management support.

- **Year 6 of Morning Brew**: Discussions on weekly pest management predictive modeling & relevant topics

2024 Season Review

Rainfall accumulations & temperature events (Milton, NY):

- Winter temperatures remained **historically 'mild'** with lowest temperatures in Milton, NY dipping below the teens during **January 21st-22nd of 3.9º-7.0ºF** respectively. Rapid increase of flower development across varieties.
- Rainfall accumulations of **6.76" in March** (3.6" Ave.) were well above average. **April** with **4.35"** of rainfall in (3.8" Ave.) **light freeze** event occurred across the region on 26th of April with temperatures dropping to **27ºF** in colder sites.
- **May** rainfall **3.83**" (4.4" Ave.). with ample ground moisture for tree growth and fruit cell division. **Bloom lasted 7-days with Petal Fall (PF) completed on 8th of May**.
- **Early apple scab during May** events in susceptible varieties produced **very high** levels of secondary inoculum causing high mid-late season infections.

Hudson Valley Apple Scab: Clintondale, NY. 2024

Infection Events

Starting Date Time	Ending Date Time	Hours	Avg Temp (°F)	Total Rain (in)	Combined
Apr 02 11:01 am	Apr 04 4:00 pm	53	37	1.94	single
Apr 10 11:01 am	Apr 12 5:00 pm	28	56	1.04	combined
Apr 14 2:01 pm	Apr 15 7:00 am	17	51	0.10	single
Apr 17 6:01 pm	Apr 18 5:00 pm	23	44	0.27	single
Apr 30 7:01 pm	May 01 9:00 am	14	55	0.24	single
May 04 11:01 pm	May 06 7:00 am	32	48	0.84	single
May 09 11:01 pm	May 10 6:00 pm	13	51	0.43	combined
May 14 10:01 pm	May 17 12:00 am	42	60	0.72	combined
May 27 7:01 am	May 28 7:00 am	17	66	0.48	combined
May 30 12:01 am	May 30 8:00 am	8	54	0.31	single
Jun 06 7:01 am	Jun 07 6:00 am	9	67	0.80	combined
Jun 22 5:01 pm	Jun 23 8:00 pm	15	74	0.76	combined
Jun 26 8:01 pm	Jun 27 8:00 am	12	65	0.33	single
Jun 29 5:01 pm	Jun 30 2:00 pm	10	72	0.18	combined
Jul 11 1:01 am	Jul 11 7:00 am	6	73	0.02	single
Jul 15 9:01 pm	Jul 16 4:00 am	7	70	0.49	single
Jul 17 2:01 pm	Jul 18 8:00 am	18	72	1.12	single
Jul 20 3:01 pm	Jul 21 4:00 am	6	70	0.17	combined
Jul 22 4:01 pm	Jul 23 12:00 pm	12	69	0.34	combined
Aug 02 11:01 am	Aug 04 4:00 pm	27	73	0.40	combined
Aug 06 2:01 am	Aug 10 8:00 am	67	68	2.51	combined
Aug 17 7:01 pm	Aug 19 9:00 pm	28	68	0.62	combined

Green-tip
15th March

6 Primary Infections

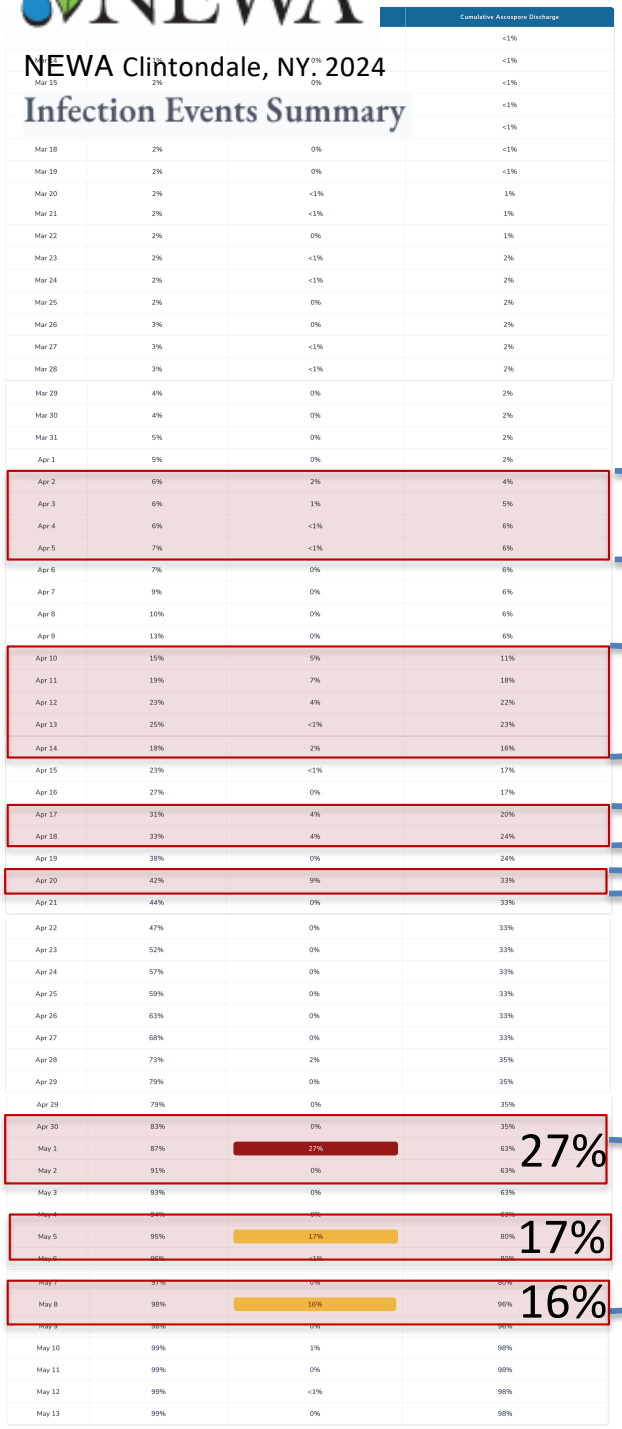
36% spore discharge

16 Secondary Infections

NEWA Apple Scab Model: Predicting Apple Scab Events

NEWA Clintondale, NY. 2024

Infection Events Summary



			Cumulative Ascospore Discharge
Mar 15	2%	0%	<1%
Mar 18	2%	0%	<1%
Mar 19	2%	0%	<1%
Mar 20	2%	<1%	1%
Mar 21	2%	<1%	1%
Mar 22	2%	0%	1%
Mar 23	2%	<1%	2%
Mar 24	2%	<1%	2%
Mar 25	2%	0%	2%
Mar 26	3%	0%	2%
Mar 27	3%	<1%	2%
Mar 28	3%	<1%	2%
Mar 29	4%	0%	2%
Mar 30	4%	0%	2%
Mar 31	5%	0%	2%
Apr 1	5%	0%	2%
Apr 2	6%	2%	4%
Apr 3	6%	1%	5%
Apr 4	6%	<1%	6%
Apr 5	7%	<1%	6%
Apr 6	7%	0%	6%
Apr 7	9%	0%	6%
Apr 8	10%	0%	6%
Apr 9	13%	0%	6%
Apr 10	15%	5%	11%
Apr 11	19%	7%	18%
Apr 12	23%	4%	22%
Apr 13	25%	<1%	23%
Apr 14	18%	2%	16%
Apr 15	23%	<1%	17%
Apr 16	27%	0%	17%
Apr 17	31%	4%	20%
Apr 18	33%	4%	24%
Apr 19	38%	0%	24%
Apr 20	42%	9%	33%
Apr 21	44%	0%	33%
Apr 22	47%	0%	33%
Apr 23	52%	0%	33%
Apr 24	57%	0%	33%
Apr 25	59%	0%	33%
Apr 26	63%	0%	33%
Apr 27	68%	0%	33%
Apr 28	73%	2%	35%
Apr 29	79%	0%	35%
Apr 30	83%	0%	35%
May 1	87%	27%	63%
May 2	91%	0%	63%
May 3	93%	0%	63%
May 4	94%	0%	80%
May 5	95%	17%	80%
May 6	96%	<1%	80%
May 7	97%	0%	80%
May 8	98%	16%	96%
May 9	98%	0%	96%
May 10	99%	1%	98%
May 11	99%	0%	98%
May 12	99%	<1%	98%
May 13	99%	0%	98%

>3% Spore Discharge

>18% Spore Discharge

>8% Spore Discharge

>9% Spore Discharge

Cover Period (April 21-29th)

27%

17%

16%

>60% Spore Discharge

Primary Apple Scab (AS)

2024: Very early start to the season.

Green Tip on the 18th March

2 days later than the earliest GT date (16th March)

Majority of AS spore discharge occurred May 1st – May 8th (Bloom)

Back to Back Apple Scab Infections
30th April – 1st May

Infection Events Summary

Download CSV

Events: Dry Wet

Date (2024)	Infection Events	Average Temp (°F) for wet hours	Leaf Wetness (hours)	Hours > 90% RH	Rain Amount
Apr 30	combined	56	6	12	0.23
May 1	yes	55	9	10	0.01
May 2	no	-	0	9	0
May 3	no	-	0	1	0
May 4	no	49	2	5	0.02
May 5	combined	48	24	24	0.82
May 6	yes	55	12	16	0
May 7	no	54	5	3	0

Cover Period

2024 Season Review

Rainfall accumulations & temperature events:

- **June** experienced below average rain resulting in 2.84" **(4.4 " Ave.),** followed by mild temperature and relatively consistent rains throughout the month.

- **July** experienced average levels of rain resulting in 4.21" **(4.2" Ave.)** with two days at or above 90^{o}F.

- **August** experienced slightly lower than normal rainfall with accumulations of 4.08" **(4.2" Ave.)** with no days at or above 90^{o}F.

- **September and October** had significant drought conditions throughout the two months with 0.89" (**3.7" Ave.)** and 0.61" **(3.5" Ave)** of rainfall respectively. Orchards required significant amounts of daily irrigation throughout the remaining fruit growing season. Many farms invested in widening, deepening and **developing pond expansion** given the likelihood of continued extreme weather conditions.

- **Harvest** fruit size was generally strong with exceptional color and size, especially in the upper canopy in orchards under intensive irrigation and summer pruning.

Apple Phenology of McIntosh (Marshal Mac on M-26)

Year	GT	HIG	T.C.	Pink	Bloom	P.F.	# days B-PF	PF DD_{43}	PF DD_{50}	Events
2024	18-Mar	25-Mar	14-Apr	21-Apr	1-May	8-May	7.00	531.0	260.0	1.00
2023	31-Mar	9-Apr	11-Apr	15-Apr	23-Apr	7-May	14.00	503.0	248.0	2.00
2022	4-Apr	9-Apr	14-Apr	18-Apr	7-May	14-May	7.00	557.0	269.0	3.00
2021	29-Mar	29-Mar	5-Apr	17-Apr	21-Apr	5-May	14.00	480.0	245.0	4.00
2020	23-Mar	6-Apr	13-Apr	26-Apr	9-May	19-May	10.00	535.1	245.7	5.00
2019	4-Apr	8-Apr	18-Apr	21-Apr	6-May	16-May	10.00	576.1	257.2	6.00
2018	16-Apr	30-Apr	1-May	3-May	6-May	12-May	6.00	514.5	274.6	7.00
2017	10-Apr	13-Apr	16-Apr	24-Apr	27-Apr	8-May	11.00	603.0	312.0	8.00
2016	17-Mar	4-Apr	11-Apr	18-May	25-Apr	12-May	17.00	597.8	186.0	9.00
2015	13-Apr	20-Apr	27-Apr	4-May	6-May	12-May	6.00	527.8	304.5	10.00
2014	13-Apr	18-Apr	28-Apr	6-May	12-May	19-May	7.00	594.9	321.5	11.00
2013	13-Apr	18-Apr	24-Apr	30-Apr	7-May	13-May	6.00	510.6	262.2	12.00
2012	16-Mar	18-Mar	25-Mar	8-Apr	16-Apr	21-Apr	5.00	506.0	267.5	13.00
2011	4-Apr	11-Apr	25-Apr	1-May	9-May	16-May	7.00	526.0	268.3	14.00
2010	20-Mar	2-Apr	6-Apr	11-Apr	20-Apr	28-Apr	8.00	305.0	168.5	15.00
2009	6-Apr	13-Apr	20-Apr	24-Apr	29-Apr	8-May	9.00	452.0	219.6	16.00
2008	10-Apr	14-Apr	21-Apr	24-Apr	29-Apr	7-May	8.00	404.5	207.4	17.00
2007	2-Apr	21-Apr	24-Apr	2-May	7-May	14-May	7.00	397.0	228.3	18.00
2006	3-Apr	10-Apr	17-Apr	22-Apr	26-Apr	8-May	12.00	419.2	220.0	19.00
2005	7-Apr	11-Apr	18-Apr	26-Apr	8-May	16-May	8.00	493.7	258.6	20.00
2004	12-Apr	19-Apr	22-Apr	27-Apr	3-May	13-May	10.00	558.5	304.7	21.00
2003	7-Apr	16-Apr	24-Apr	28-Apr	1-May	19-May	18.00	595.0	324.7	22.00
2002	25-Mar	10-Apr	14-Apr	15-Apr	16-Apr	7-May	21.00	498.0	283.2	23.00
2001	11-Apr	17-Apr	25-Apr	28-Apr	2-May	10-May	8.00	481.3	288.0	24.00
2000	27-Mar	2-Apr	14-Apr	24-Apr	1-May	8-May	7.00	488.3	346.0	25.00
1999	2-Apr	7-Apr	12-Apr	26-Apr	2-May	13-May	11.00	530.1	174.4	26.00
1998	27-Mar	29-Mar	1-Apr	10-Apr	23-Apr	4-May	11.00	498.1	382.0	27.00
1997	4-Apr	11-Apr	21-Apr	28-Apr	1-May	14-May	13.00	422.7	250.0	28.00
1996	15-Apr	19-Apr	22-Apr	29-Apr	6-May	20-May	14.00			29.00
1995	11-Apr	19-Apr	24-Apr	29-Apr	8-May	19-May	11.00			30.00
1994	11-Apr	14-Apr	20-Apr	29-Apr	5-May	12-May	7.00			31.00
1993	12-Apr	19-Apr	24-Apr	1-May	3-May	10-May	7.00			32.00
1992	13-Apr	21-Apr	4-May	7-May	12-May	18-May	6.00			33.00
1991	5-Apr	8-Apr	11-Apr	17-Apr	27-Apr	7-May	10.00			34.00
1990	21-Mar	16-Apr	23-Apr	26-Apr	29-Apr	11-May	12.00			35.00
1989	29-Mar	17-Apr	28-Apr	3-May	9-May	19-May	10.00			36.00
1988	4-Apr	9-Apr	28-Apr	5-May	8-May	19-May	11.00			37.00
1987	29-Mar	10-Apr	18-Apr	22-Apr	29-Apr	16-May	17.00			38.00
1986	31-Mar	7-Apr	19-Apr	27-Apr	3-May	8-May	5.00			39.00
1985	30-Mar	12-Apr	15-Apr	22-Apr	4-May	12-May	8.00			40.00
1984	10-Apr	26-Apr	30-Apr	6-May	16-May	24-May	8.00			41.00
1983	12-Apr	27-Apr	30-Apr	2-May	5-May	18-May	13.00			42.00
1982	15-Apr	22-Apr	30-Apr	4-May	13-May	17-May	4.00			43.00
1981		8-Apr	16-Apr	22-Apr	5-May	14-May	9.00			44.00
1980	15-Apr		24-Apr	2-May	5-May	10-May	5.00			45.00
Earliest day	**16-Mar**	**18-Mar**	**25-Mar**	**8-Apr**	**16-Apr**	**21-Apr**	**4.0**	**305.0**	**168.5**	
Latest day	**16-Apr**	**30-Apr**	**4-May**	**18-May**	**16-May**	**24-May**	**21.0**	**603.0**	**382.0**	
Appox. Midrange	**3/31** (+/-14D)						9.0	506.0	262.2	
Average	3/31	**4/7** (+/-20.5D)								
	4/7		**4/14** (+/-20D)							
	4/14			**4/22** (+/-14D)						
	4/22				**5/1** (+/-15D)					
	5/1					**5/7** (+/-16.5D)				
	5/7									
Median / Mean	**4-Apr**	**11-Apr**	**20-Apr**	**27-Apr**	**3-May**	**12-May**	9.7	500.6	264.0	

Bloom=75% King blossoms open on McIntosh
PF=80% drop of flower petals of McIntosh

2024 McIntosh Phenology (Median/Mean)

Green-tip	18th March
1/4" Green	31st March
1/2" Green	13th April
TC	21st April
Pink	27th April
Bloom	2nd May
Petal Fall	12th May
Bloom to PF	

Bloom to PF **7 days**

Midrange DD_{43} to PF **531.0**
Midrange DD_{50} to PF **260.0**
From Jan. 1

¼" Green-tip (New Paltz, NY)

2024 Insect Pest Impact to Apple

Lepidopteran complex:

Overwintering larvae
Speckled green fruit worm (SGFW) *Orthosia hibisci*
Red banded leafroller (RBLR), *Argyrotaenia velutinana* (Walker)
Obliquebanded leafroller (OBLR) *Argyrotaenia velutinana* (Walker)


Utah State Univ.

During the pre-bloom period through fruit set remain a concern for most Hudson Valley and Lake Champlain pome fruit growers.

The tools for use against the lepidoptera complex
IRAC Class:
5 Spinosyns (Delegate)
11 Bt's (Dipel)
28 Diamides (Altacor)

Mid-late season leafroller damage levels of infestation were observed in research block harvest ratings for **ranging between 3.0-40.0% injury at harvest of Macoun on 16th August.**


Todd M. Gilligan and Marc E. Epstein, CSU, Bugwood.org


J. F. Walgenbach file

2024 Insect Pest Impact to Apple

European Gypsy Moth / Spongy Moth: A Forest / Orchard Insect Pest

2023 – Summer / Fall Biology favored survival (drought)

Held in check by the fungal biocontrol, *Entomophaga maimaiga*
& nucleopolyhedrosis virus (NPV)

2024 - Present throughout Hudson Valley

Late Instar Larva

Male

Female and Egg Mass

2024 - Spring Egg Hatch

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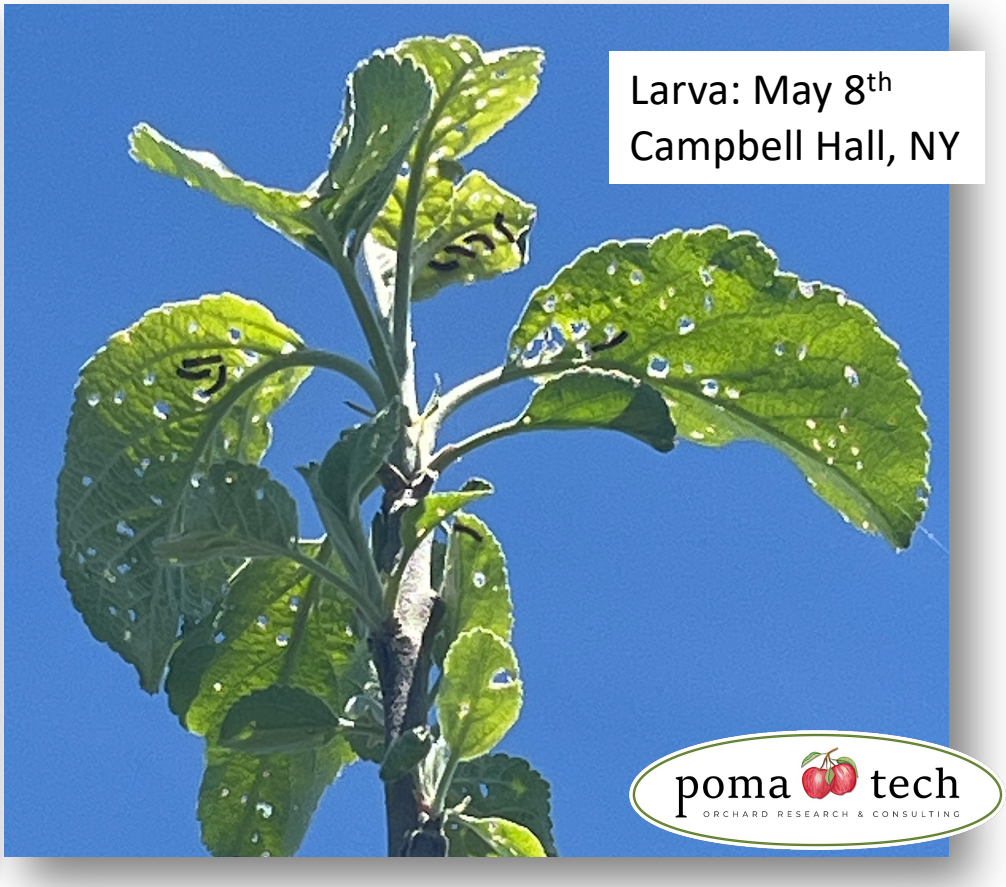
2024 Insect Pest Impact to Apple

Spongy Moth Foliar Injury.



Larva create silk threads and 'float' from the woodlands into the orchard (L)

- Feeding on developing foliage in Late April through during late bloom.
- Moving to fruitlets - early petal fall, causing significant injury to fruit

Cause **allergic reactions to orchard workers.**

- The gypsy moth caterpillars have spiny hairs which may cause welts or rashes, lasting up to 4-5 days.

2024 Insect Pest Impact to Apple

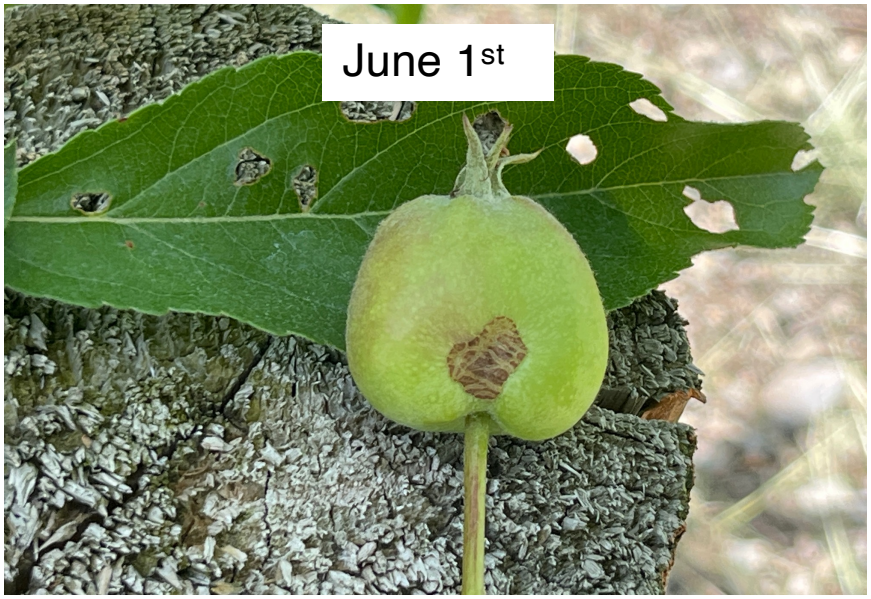
Spongy Moth Fruit Injury.

Gala: Leaf and Fruit Feeding. Orange Co. May 15th

- Sporatic presence throughout blocks
- >15% injury to fruit across infested blocks
- Hand thinning was required

2024 Insect Pest Impact to Apple

Spongy Moth Fruit Injury.



Previous feeding injury from Spongy Moth continued to become more prominent during fruit feeding callous expansion.

2024 Insect Pest Impact to Apple

Tarnished Plant Bug (TPB) Observed in orchards from tight cluster – 2nd Cover

Injury from this pest was observed to be at 2.0% by mid-May in the UTC Macoun this season with typical inverted punctures found on sampled fruit.

Observed TPB injury during harvest fruit evaluations in Macoun on 7th August in untreated plot ranged between 0-4%

2024 Insect Pest Impact to Apple

Plum Curculio (PC) During warm spring, will fly into orchards during pink, scarring fruit at 5mm

Ovipositional injury occurred during the two weeks following petal fall (14th May).

First observation of PC presence and damaged fruitlets was the 21st May (<1%). Macoun, the variety used in efficacy screening studies, had exceeded 8 mm in diameter by 21st May, at which time 5.0% was observed at 7 days post PF.

Injury from this pest was observed moderate to severe last season with 28% ovipositional injury assessed on 2nd June in Macoun.

PC ovipositional injury to fruit remained moderate to severe in **UTC trees into the season expressing 18-60% injury**

2024 Insect Pest Impact to Apple

European Apple Sawfly (EAS)

Activity occurred in relatively high numbers with
early varieties showing 2% injury in
Macoun cluster fruit evaluations

This was the first year in over 10 years in which EAS populations become problematic, requiring p[ink or timely petal fall applications.

Spotted Tentiform Leafminer (STLM)

Populations remain at very high levels in seasonal pheromone trapping with two distinct flights.

Since the **planting of semi-dwarf trees** that correlate with the onset and use of the **neonicotinoid class** of insecticides the STLM has not been observed to cause injury to foliage to a degree requiring insecticide management.

Seasonal parasitism of early larval stages continues to be observed in trees with ‘soft’ insecticide programs. Reduced use of broad spectrum OP use likely has led to parasitic biological control of the STLM larval stage

2024 Insect Pest Impact to Apple

San Jose scale (SJS)

Crawler emergence of 1st generation was predicted to occur during the second week of June (10th – 14th June), biofix based on the 1st **adult pheromone** capture on **21 May** and using 260-360 DD_{50BE} model.

Second generation was predicted based on second flight occurring **16 July**. In general, SJS scale levels were low in infested trees.

The **infestation means ranged from 0.3% to 15.0% injury observed research plots** on 19th August representing combined 1st and 2nd generation fruit infestation levels.

In conventionally treated orchards, the SJS has become a major insect pest to manage in apple, requiring targeted applications for multiple generations. In recent years we've observed a **3rd generation in late September**.

2024 Insect Pest Impact to Apple

Aphids: Woolly Apple Aphid (WAA)

Observed in commercial in many varieties often beginning in Ginger Gold, Fuji and Red Delicious apple. **WAA observed overwintering in pruning sites.**

The aphid feeds on the sap from plants, excreting or 'shunting' excess and concentrated sap, which will act as a substrate for sooty mold. High infestations can colonize the calyx end of fruit becoming problematic at harvest, making the fruit unmarketable.

Overwintering populations established in low levels in pruning wounds and leaf petioles. By **Late-June WAA began** infesting fruit and requiring management by **1st August**.

A single Movento application made at 6 oz./A at petal fall kept populations in check until early-August, at which time additional applications / strategies were required.

Apple Maggot: Assail 30WG and penetrant (LI700 at ≥ 16.0 oz./100) managed the AM & suppressed WAA through late July-August

Rosy Apple Aphids: Admire Pro. (imidacloprid) Applications at 2nd - 4th Cover provided RAA & WAA seasonal management in 2024.

2024 Insect Pest Impact to Apple

Codling Moth (CM)

The internal lepidopteran complex, lesser apple worm (LAW), oriental fruit moth (OFM), and codling moth (CM), showed relatively high levels of damage to apple

1st generation sustained CM adult flight occurred on 21st May with first hatch / larval emergence predicted for 2nd June using 220 DD_{50BE} from CM biofix.

Damage from 1st and 2nd generation CM evaluated at harvest on **Macoun showed 24.0% injured fruit in screening trials** of most infested treatment.

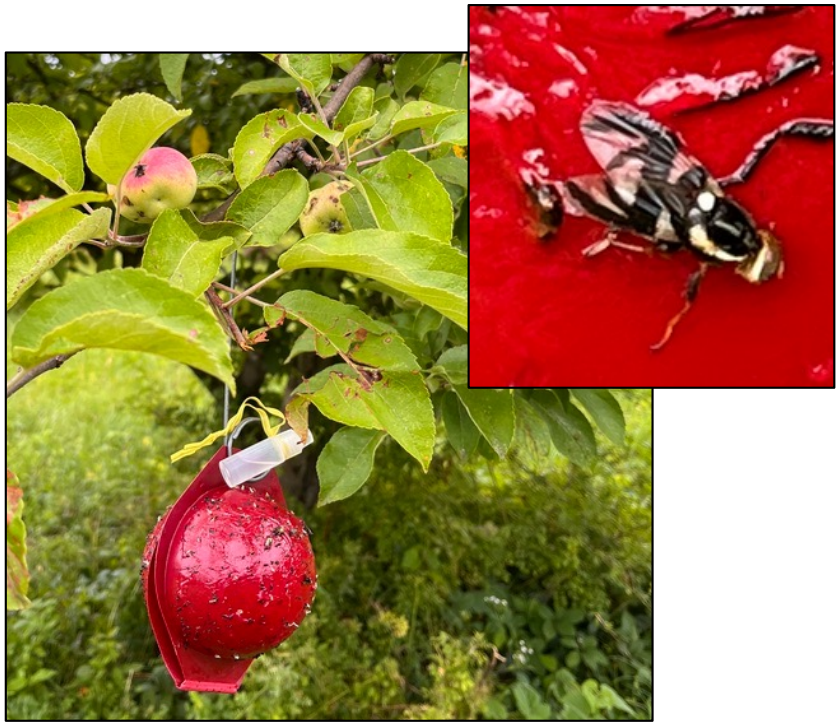
2024 Insect Pest Impact to Apple

Apple maggot (AM)

1st adult capture on 3rd July from edge of commercial orchard in Wallkill, NY.

Conditions for adult emergence were near ideal given intermittent rain yet flies did not emerge in abandoned or commercial blocks until late July, and as such, the threshold of 5 flies per trap per block was not observed in commercial orchards this season.

Injury in untreated trees in our research block had a **range of 10-29% tunneling from AM by late August**.



Tall spindle system utilizes a weak-framed tree producing high volume fruit requiring

M9 Series: M.9-337 & Nic 29

- Susceptibility to fire blight (M9 series).
- Kari Peters, Penn State **'Sudden Apple Decline'** (**2013** 'M.9-337 & Nic 29).
  - **Graft union is affected:** Severe shedding of bark around graft union.
  - **Necrosis begins at the graft union** and it proceeds up the trunk of the tree.
- **McArtney, Steve & Obermiller, J.**. (2011). **In low temperature event** in 2008-09 G.16 and B.9 had a lower incidence of visible trunk injury
  - **M.9 Pajam 2 and M.9 T337 experienced visible and severe trunk injury**
- **Jason P. Londo Cornell Horticulturalist:** Associate professor of fruit crop physiology and climate adaptation.
  - "In a "mild" year, some rootstocks demonstrate reduced acclimation response and others demonstrated limited deacclimation resistance by mid-winter and are at increased risk of cold damage. M.9

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Hudson Valley NYS: 2021-24
M9 T337 Cambium Necrosis & BSB Infestation

Bark / Cambium Separation

- **Tree Stress Producing Ethanol (EtOH)**
- **Tree collapse**

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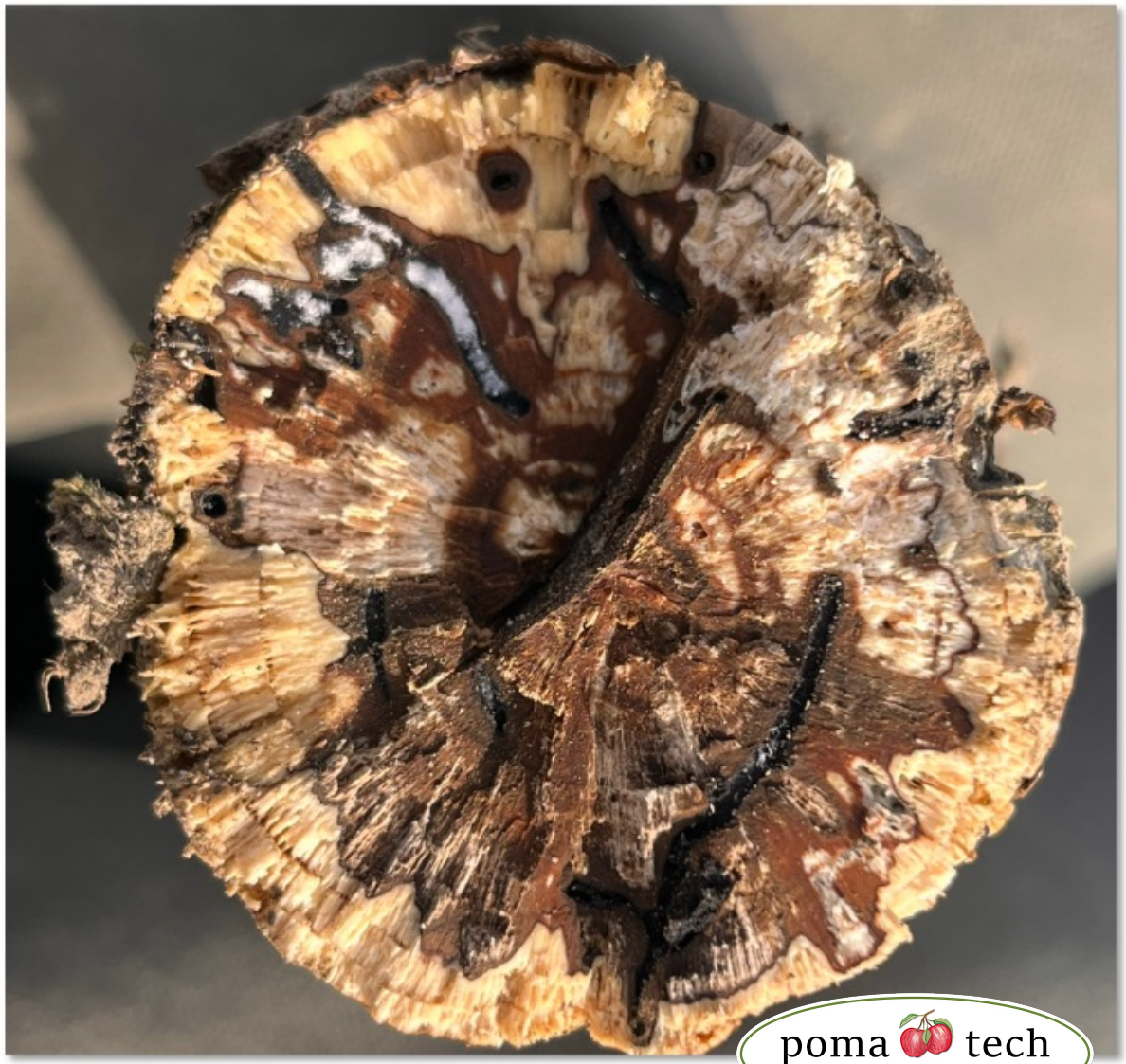
M9 T337 Cambium Necrosis & BSB Infestation

Ambrosia Beetle: Black Stem Borer

Xylosandrus germanus

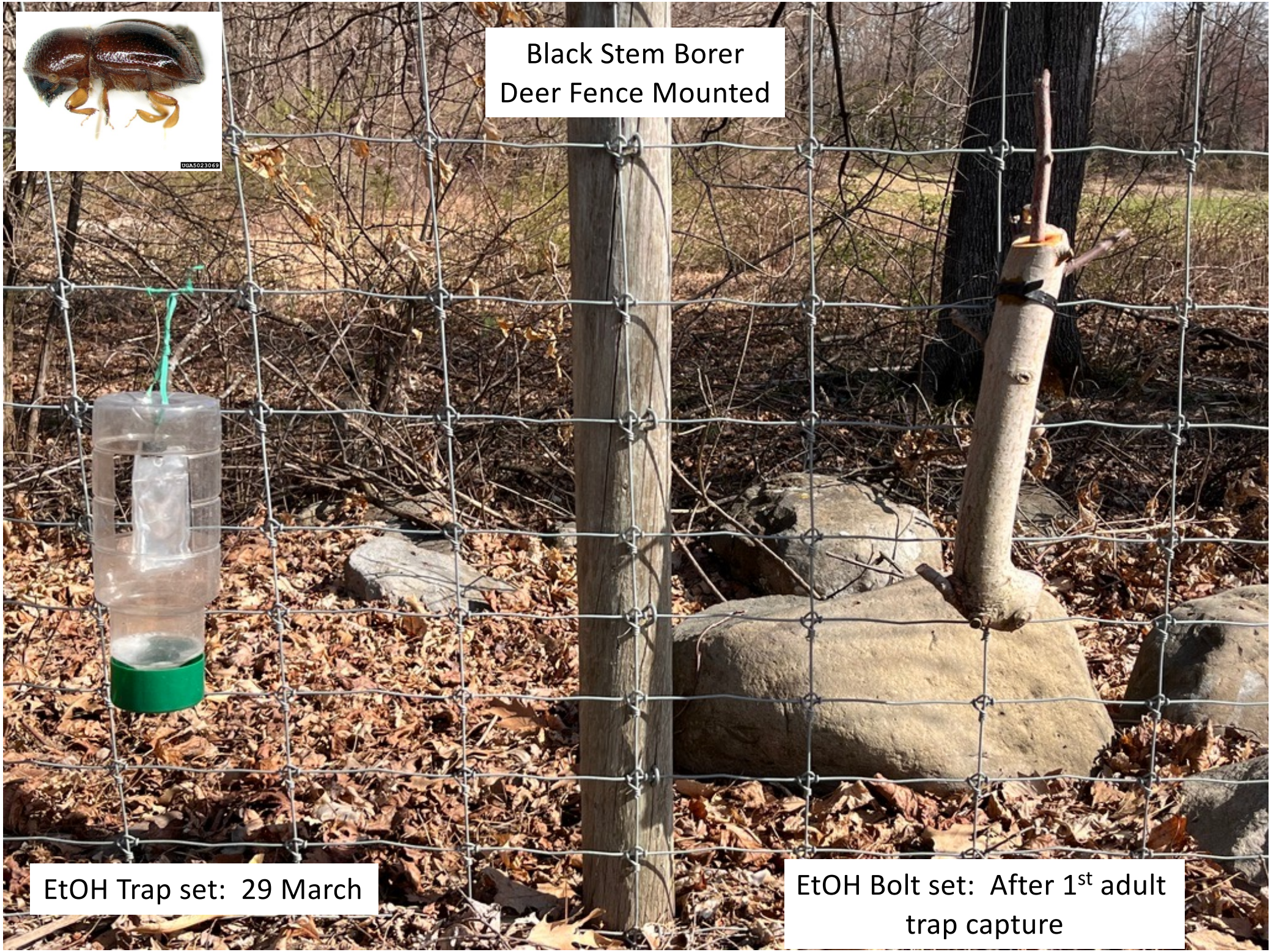
April 10th, 2024

Black Stem Borer Infestation



Wildfire Gala **G41** along woodland.

- BSB infected tree with remaining trunk showing galleries and fungal growth in rearing chambers.


Black Stem Borer
Deer Fence Mounted
EtOH Trap set: 29 March
EtOH Bolt set: After 1st adult trap capture

7 Insect and Mite Management (Geneva)

Table 7.1.4. Degree-day accumulations (from Jan. 1) corresponding to selected fruit phenology and arthropod pest events.

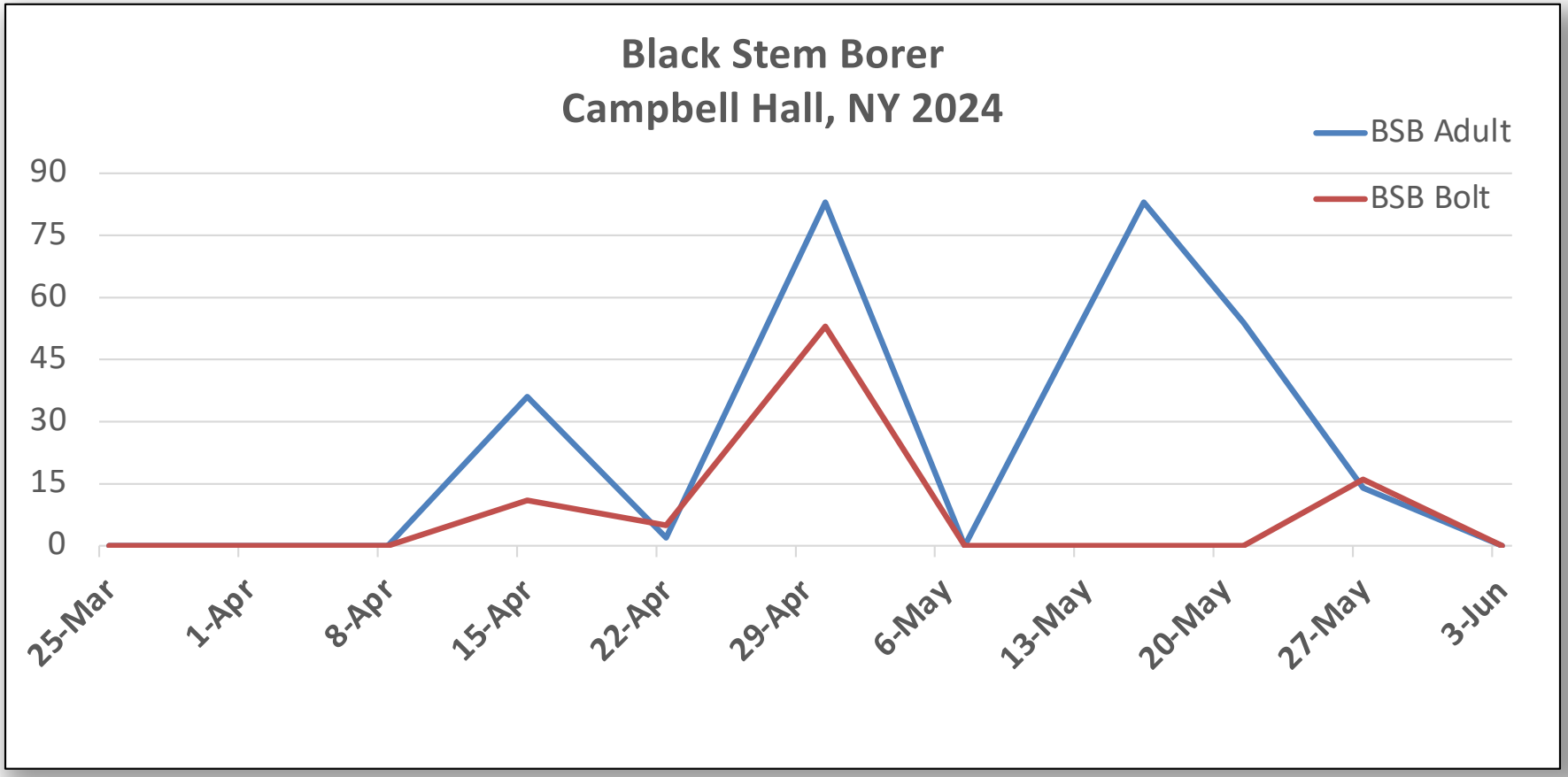
	DD Base 43°F		DD Base 50°F		Approx. Date	
Pest/Phenology Event	mean	std dev	mean	std dev	mean	std dev
Tight cluster (McIntosh)	**228**	**27**	**105**	**19**	**27-Apr**	**7 days**
Tarnished plant bug - 1st observed	222	105	105	62	25-Apr	15 days
OBLR - 1st overwintered larvae observed	236	78	112	48	29-Apr	7 days
Black stem borer - 1st adult catch	283	50	137	40	6-May	3 days
European red mite - egg hatch observed	284	53	134	34	6-May	4 days

Black stem borer (BSB), *Xylosandrus germanus*

1st Adult Emergence **April 15th 2024**

1st Adult boring Activity **April 15th 2024**

Lure 95% EtOH



Adult Female Black Stem Borer Emergence
Milton, NY

Orange Co. May 6th

Single Danitol application at 21.3 oz./A to EtOH apple cuttings (Bolts) to prevent Black Stem Borer (BSB) infestation after 1 week ineffective.

European Red Mite *Panonychus ulmi* (Koch) (ERM)
Two Spotted Spider Mite *Tetranychus urticae* (Koch) (TSSM)

Considerable late season bronzing in commercial orchards during the 2024 growing season.

Varieties most impacted included Red Delicious, Fuji and Honey Crisp followed by Stayman and Empire.

Repeated applications of conventional miticides made during the late summer were sufficient to maintain levels of population below threshold to reduce foliar damage.

High temperatures exceeding 90ºF often beginning in late May into June exacerbated egg production while providing ideal conditions for rapid generational times.

European Red Mite

Two Spotted Spider Mite

Stink bug complex

Brown marmorated stink bug (BMSB), *Halyomorpha halys*
Green Stink Bug (GSB) *Acrosternum hilare*

Observed throughout the southern Hudson Valley for the past 14 years with the first BMSB confirmation in NYS on December 2008.

Commercial orchards employing alternate row middle coverage of efficacious insecticides (pyrethroid formulations) maintained injury levels well below 1%.

Use of Venerate XC, Marrione BioScience (ProFarm), has been shown to be effective as a feeding deterrent.

Threshold Tedders trap capture on Aug 14th

Woodchuck populations

- Increasing in number in commercial orchards
- Trunk gnawing and girdling and killing young trees
- Reduce cambium bark in older trunks, likely reducing fruit production.

2025 Tree Phenology in Mid-Hudson Valley

- **Green-tip on 30th March** in McIntosh
  - (45 year mean of 31st March in McIntosh @ HVRL)

- **½“ Green-tip on 3rd April** **1/4” Green-tip on 3rd April**

2025 Mid-Hudson Valley Tree Phenology
Milton, NY

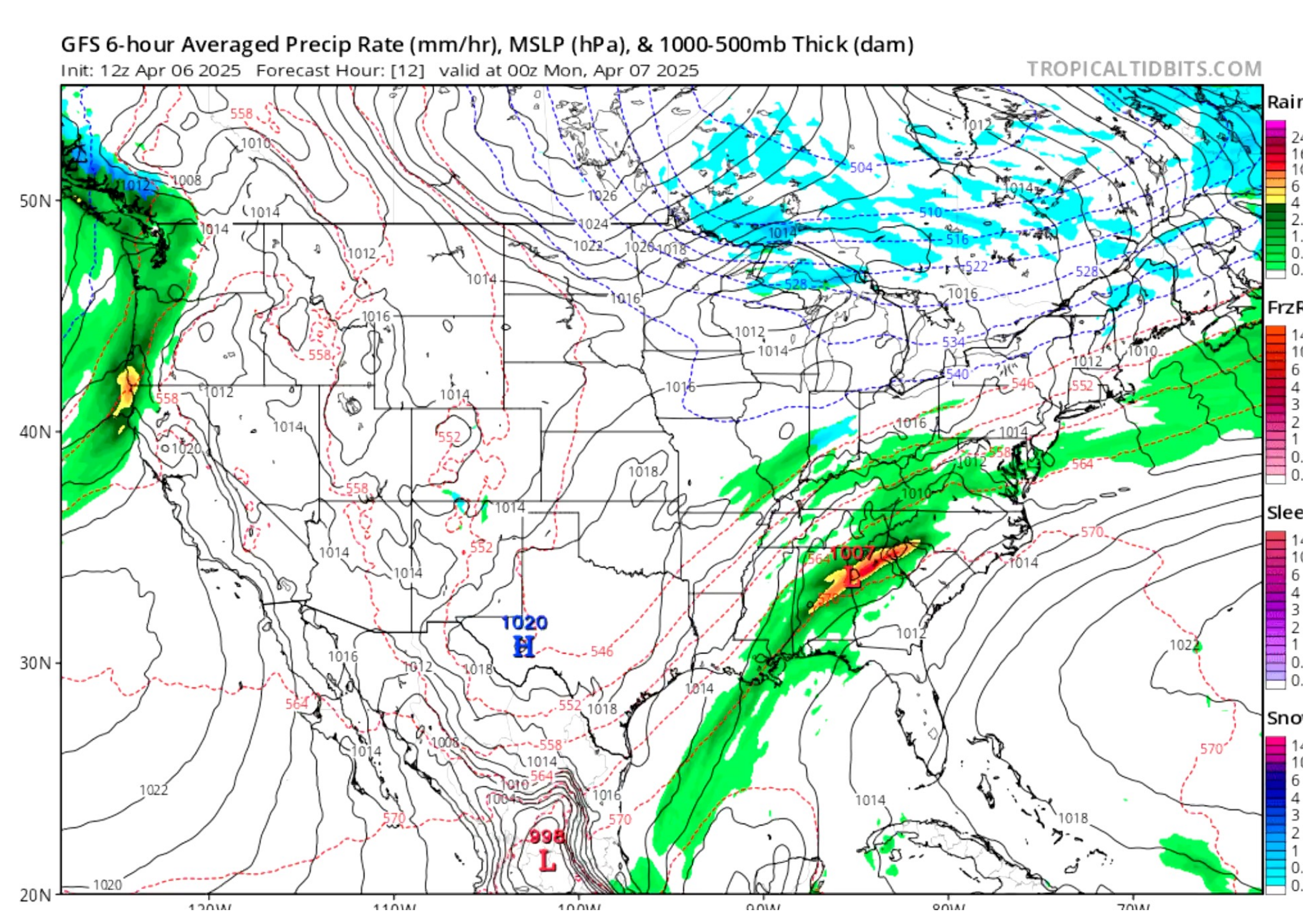
Green tip - ½" Green: Pink Lady, Fuji, Ruby Frost, McIntosh…

- Increasing risk for apple scab infection
- Increasing Leaf Surface Area

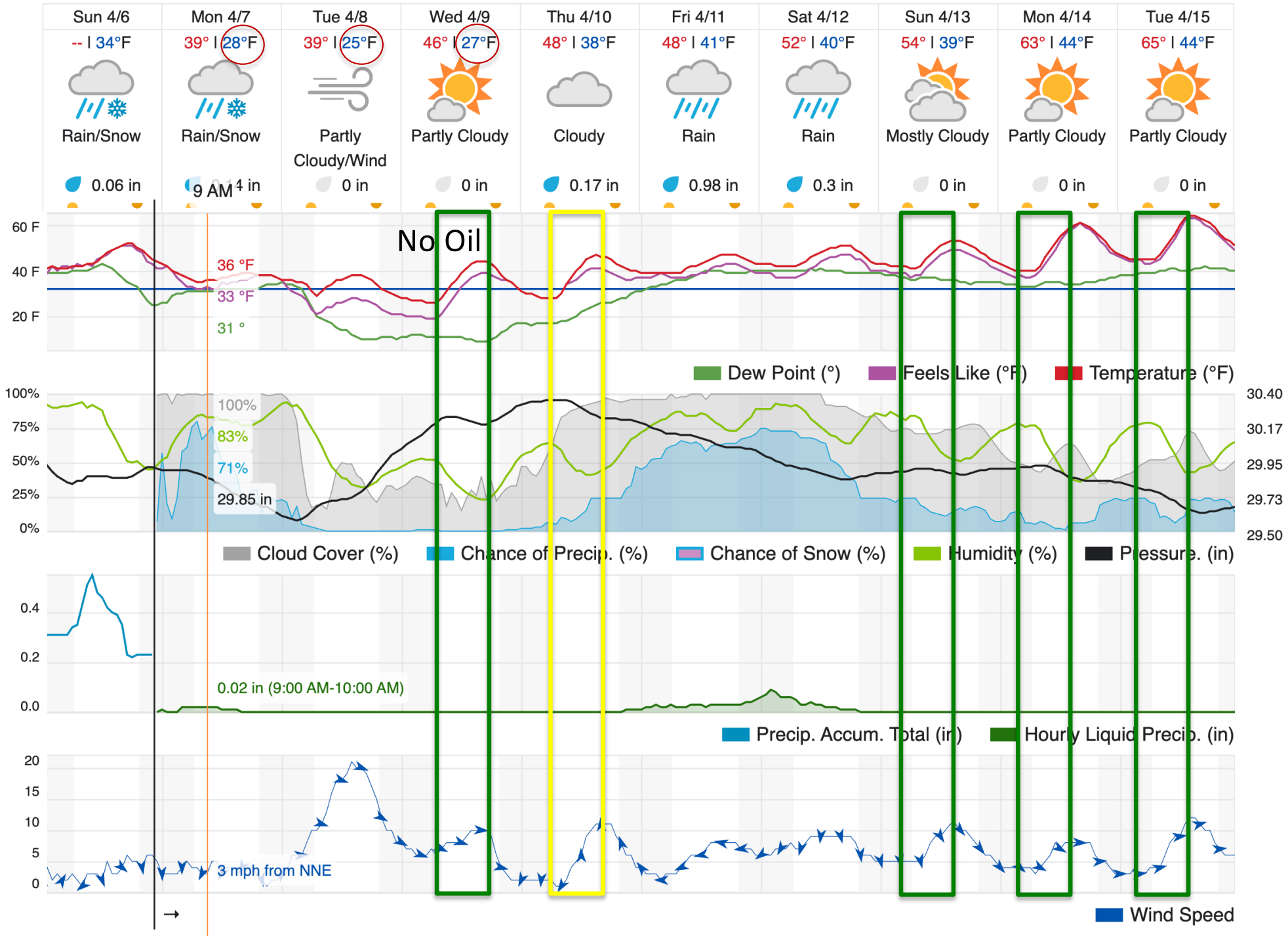
Freeze: Low Temperature freeze events are forecast this week (Mon-Wed.) (Oil Applications may cause injury to green tissue)

Critical Spring Temperatures for Tree Fruit Bud Development Stages

Pome Fruit									
Apples	Silver tip	Green Tip	½ inch green	Tight Cluster	First Pink	Full Pink	First Bloom	Full Bloom	Post Bloom
Old temp	16	16	22	27	27	28	28	29	29
10% kill	15	18	23	27	28	28	28	28	28
90% kill	2	10	15	21	24	25	25	25	25
Pears	Bud Swell	Bud Burst		Tight cluster	First White	Full White	First Bloom	Full Bloom	Post Bloom
Old temp	18	23		24	28	29	29	29	30
10% kill	15	20		24	25	26	27	28	28
90% kill	0	6		15	19	22	23	24	24


GFS 6-hour Averaged Precip Rate (mm/hr), MSLP (hPa), & 1000-500mb Thick (dam)
Init: 12z Apr 06 2025 Forecast Hour: [12] valid at 00z Mon, Apr 07 2025
TROPICALTIDBITS.COM
50N
40N
30N
20N
1020 H
1007 L
998 L
Rain
FrzR
Slee
Snow

Milton, NY 10-Day Weather Forecast – Applications for Management: Apple Scab



NEWA Apple Scab Model: Predicting Apple Scab Events

NEWA Milton, NY

Infection Events Summary

McIntosh Green Tip Date
3/30/2025
Highland, NY

Ascospore Maturity Summary

Download CSV

Daily Discharge Thresholds: ≥ 10% > 20%

Date	Ascospore Maturity	Daily Ascospore Discharge	Cumulative Ascospore Discharge
Mar 30	1%	<1%	<1%
Mar 31	2%	<1%	1%
Apr 1	2%	<1%	1%
Apr 2	2%	0%	1%
Apr 3	3%	<1%	2%
Apr 4	4%	0%	2%
Apr 5	4%	1%	3%
Apr 6 Forecast	5%	1%	4%

Increasing Spore Maturity

Increasing Spore Discharge

NEWA Apple Scab Model: Predicting apple scab events

NEWA Milton, NY

Infection Events Summary

Infection Events Summary

Download CSV

Events: Dry Wet

Date (2025)	Infection Events	Average Temp (˚F) for wet hours	Leaf Wetness (hours)	Hours > 90% RH	Rain Amount
Mar 30	combined	42	5	24	0.05
Mar 31	combined	51	18	16	0.7
Apr 1	yes	43	5	5	0.09
Apr 2	no	40	3	0	0.01
Apr 3	no	43	9	13	0.08
Apr 4	no	61	3	0	0
Apr 5	combined	44	15	8	0.29
Apr 6 Forecast	combined	43	14	13	0.19

Infection Events

Download CSV

Starting Date Time	Ending Date Time	Wet Hours	Avg Temp (˚F)	Total Rain (in)	Combined
Mar 30 10:01 pm	Apr 01 5:00 am	24	48	0.83	Yes

2025 version becomes available for purchase (target date: Late March 2025)

https://www.cornellstore.com/2024-PMEP-Guide-for-Commercial-Tree-Fruit-Production

Provides up-to-date pest management and horticultural information for those producing tree fruit commercially in New York State.

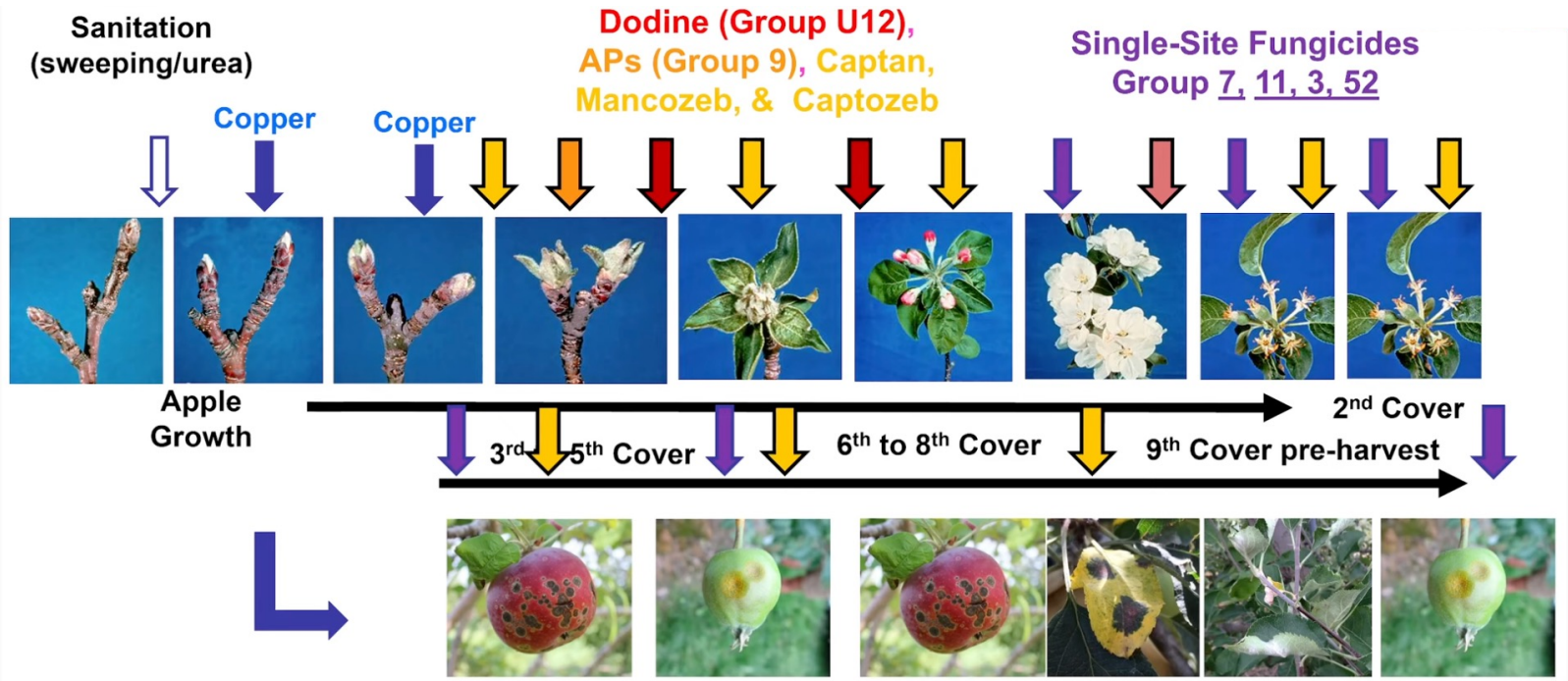
Designed as a practical guide for tree fruit producers.

Print Copies & Online Access versions

Kerrik Cox, Associate Professor,
School of Integrative Plant Science,
Plant Pathology and Plant-Microbe Biology Section, Cornell AgriTech

Apple Scab Management

7	*†Sercadis
7	*Aprovia
M1	Badge SC
M1	§Badge X2
M3	Manzate ProStik
M3	Penncozeb 75DF
M3	Polyram 80DF
M4	Captan 50WP
M4	Captan 80WDG
U12	Syllit FL
9	Scala
9	Vangard WG
9 + 7	*†Luna Tranquility
11 + 7	*†Luna Sensation
11 + 7	*†Merivon

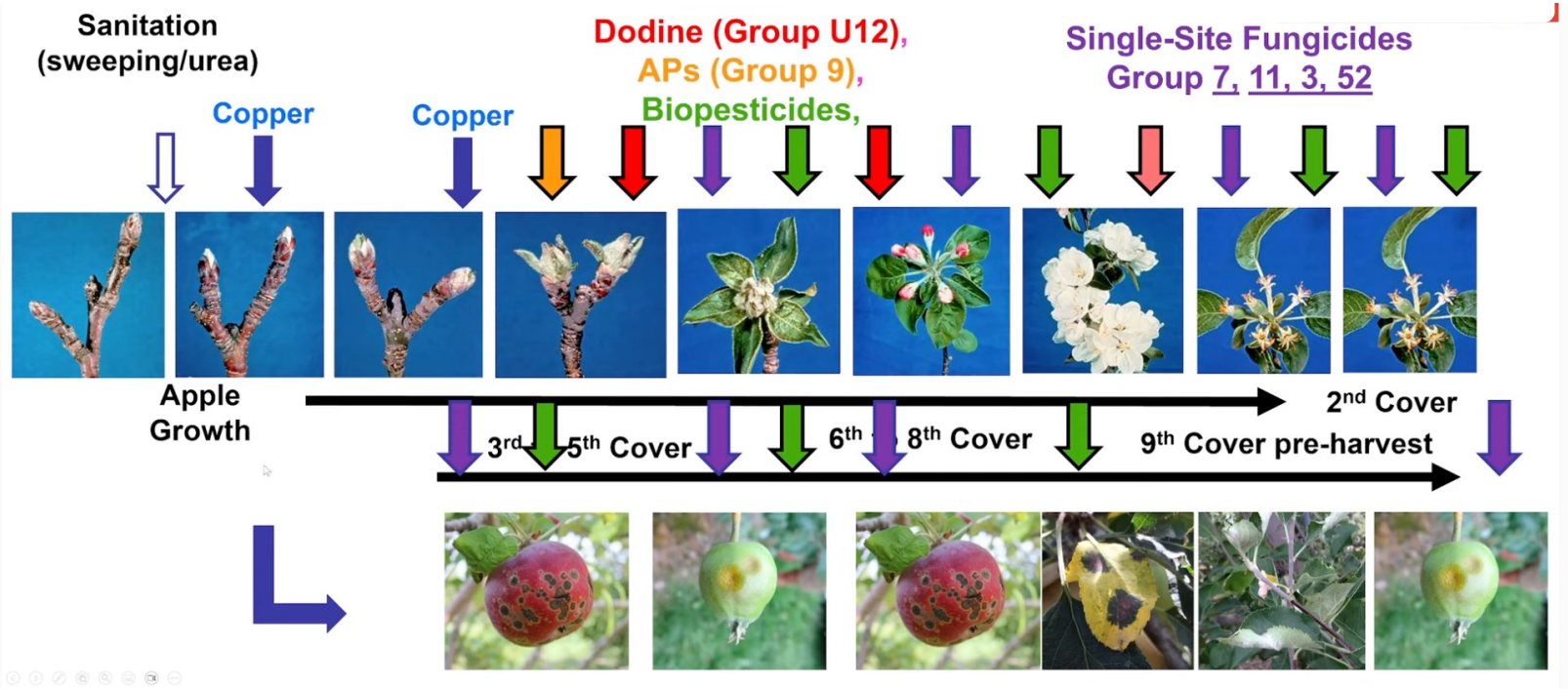


Captec + Manzate Max rotation with Aprovia
Additional rotations with Cevya, Flint Extra

Kerrik Cox, Associate Professor,
School of Integrative Plant Science,
Plant Pathology and Plant-Microbe Biology Section, Cornell AgriTech

Apple Scab Management

7	*†Sercadis
7	*Aprovia
M1	Badge SC
M1	§Badge X2
M3	Manzate ProStik
M3	Penncozeb 75DF
M3	Polyram 80DF
M4	Captan 50WP
M4	Captan 80WDG
U12	Syllit FL
9	Scala
9	Vangard WG
9 + 7	*†Luna Tranquility
11 + 7	*†Luna Sensation
11 + 7	*†Merivon



Biopesticides: Protectants / Eradicants: Double Nickel, Serenade Opti, Serifel, Taegro, Blossom Protect, Fracture, Sytlet Oil, Polyoxin D

Rotations: *Bacillus subtillus* & Aprovia (Research)

https://cropandpestguides.cce.cornell.edu/Guidelines/2024/TreeFruit/

Green Tip

Protectants

Pest	IRAC & FRAC	Product	Rates	PHI (days)	REI (hrs)	Efficacy
Apple scab	7	*†Sercadis	4.5 fl oz/acre	0	12	High
	7	*Aprovia	5.5-7.0 fl oz/acre	30	12	High
	M1	Badge SC	3.5-7.0 pts/acre	0	48	
	M1	§Badge X2	3.5-7.0 lb/acre	0	48	
	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	Scala	7.0-10.0 fl oz/acre	72	12	
	9	Vangard WG	3.0-5.0 oz/acre	0	12	
	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
Powdery Mildew	9 + 7	*†Luna Tranquility	11.2-16 fl oz/acre	72	12	Moderate
	11 + 7	*†Luna Sensation	5.0 to 5.8 fl oz/acre	14	12	High
	11 + 7	*†Merivon	4-5.5 fl oz/acre	0	12	High

Spring Insect Pest Management

Pear Psylla Adult 4.28.08

Insect Scouting / Trapping: Pear Psylla

March: Adults present on tree branches

- **Scout Perimeter** Examine branches for eggs within twig growth scales

Management: Upon 1st egg laying, apply

- **Surround WP** at 50 Lbs / A bI-weekly to Bloom
- **Petal Fall:** apply 1% horticultural oil on a 14d program

To end of the season

- Application of adulticide pyrethroid pre-bloom to

reduce egg-laying and inhibit egg laying of Pear Midge.

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Pear psylla		§DES-X	2 gal/100 gal water	0	12	Moderate
		§M-Pede	2 gal/100 gal water	0	12	Moderate
Alternating 2-3 Apps. Surround Pre-bloom, 1% oil post-bloom		§Surround 95WP	50 lb/acre	UDH	4	Moderate
	3A	Ambush 25WP	12.8-25.6 oz/acre	PB	12	Moderate
	3A	*Asana XL 0.66EC	9.6-19.2 fl oz/acre 7.3-12.8 fl oz/100 gal water	28	12	Moderate
Best used during cool temperature	3A	*Danitol 2.4EC	16-21.3 fl oz/acre	14	24	Moderate
	3A	*Pounce 25 WP	12.8-25.6 oz/acre	PB	12	Moderate
	3A	*Mustang MAXX	1.28-4.0 fl oz/acre	14	12	Moderate
	3A	*Warrior II 2.08CS	1.28-2.56 fl oz/acre	21	24	
Honeybee repellency	4A	*†Actara 25WDG	5.5 oz/acre	14/35 (A)	12	High
	4A	Assail 30SG	4-8 oz/acre	7	12	Moderate
	4D	*†Sivanto Prime	10.5-14.0 fl oz/acre	14	4	High
	5	Delegate 25WG	4.5-7 oz/acre	7	4	High
	7C	Esteem 35WP	4-5 oz/acre	45	12	High
	16	*†Centaur 0.7WDG	34.5-46 oz/acre	14	12	High
	28	*†Exirel (FMC)	13.5-20.5 fl oz/acre	3	12	High
	6 + 28	*†Minecto Pro	10.0-12.0 fl oz/acre	28	12	High

Spring Insect Pest Management

Insect Scouting / Trapping: Tarnished Plant Bug (TPB)

April: Tight Cluster – Pink, Petal Fall

- **<u>Scout Perimeter</u>** 'Early' Apple Var. Along Broadleaf Weed Complex for adults
- **Adult Feeding:** 'Bleeding' Sap Flower Bud Clusters (Temp. 50^{o} - 60^{o} F For 3d)
- White 6"x8" Traps Hung @ 2' Low Branches. **Trap Threshold 3 / Trap**

Management: At Tight Cluster-Pink: Assail SG





Tarnished plant bug

Table 11.1.1 Pesticide Spray Table - Apples.

(Refer to back of book for key to abbreviations and footnotes.)

Pest	IRAC & FRAC	Product	Rates	PHI (days)	REI (hrs)	Efficacy	Comments (see text)
	3A	*Asana XL	4.8-14.5 fl oz/acre 2-5.8 fl oz/100 gal water	21	12	High	
	3A	*Baythroid XL	2-2.4 fl oz/acre	7	12	High	
	3A	*Danitol 2.4EC	10.67-16 fl oz/acre	14	24	High	
	3A	*Mustang MAXX	1.28-4.0 fl oz/acre	14	12	High	
	3A	*Pounce 25 WP	6.4-16 oz/acre	PF	12	High	
	22A	Avaunt 30WDG	5-6 oz/acre	14	12	Moderate	
	29	Beleaf	2-2.8 oz/acre	21	12	High	
	3A + 6	*Gladiator EC	19 fl oz/acre 4.75 fl oz/100 gal water	28	12	High	
	28 + 3A	*†Besiege	6-12 fl oz/acre	21	24	High	

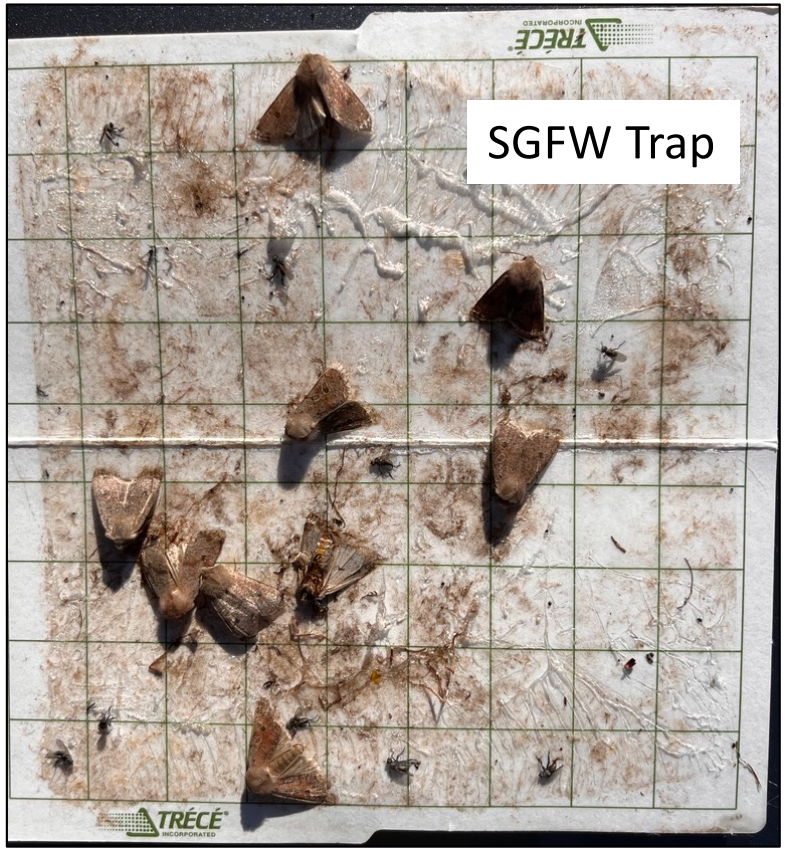
Spring Insect Pest Management

Insect Scouting / Trapping: Lepidopteran Complex

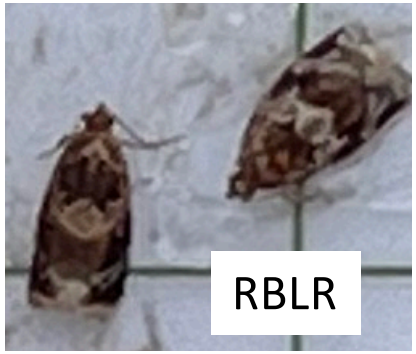
Use wing trap and species pheromone hung along orchard perimeter near abandoned orchard or woodland habitat.

Present: Increasing **pheromone trap** captures increasing for Speckled green fruit worm (SGFW 25/trap) and Redbanded Leafroller (RBLR 6/trap) in the mid-Hudson Valley

Management: larvae during Tight Cluster – Pink




Speckled green fruit worm larva



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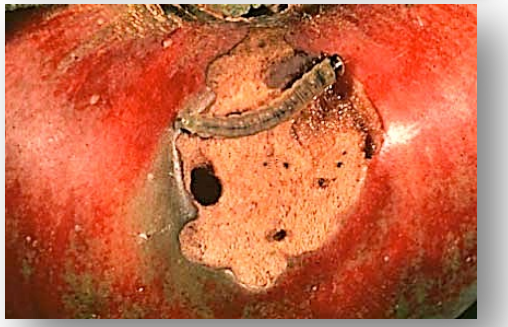
Green fruitworms		Spear-Lep	1-2 pts/acre	0	4		[21.1e,21.1]
		*†Verdepryn 100 SL	5.5-11.0 fl oz/acre	7	4	High	[1.1,1.2,21.1, 21.1f]
	1A	*Lannate LV	1.5-3 pt/acre 0.75 pt/100 gal water	14	72	High	[21.1,21.1a]
	1A	*Lannate SP	0.5-1 lb/acre 0.25 lb/100 gal water	14	72	High	[21.1,21.1a]
	3A	*Asana XL	4.8-14.5 fl oz/acre 2-5.8 fl oz/100 gal water	21	12	High	[21.1,21.1b]
	3A	*Baythroid XL	1.4-2 fl oz/acre	7	12	High	[21.1,21.1b]
	3A	*Danitol 2.4EC	16 fl oz/acre	14	24	High	[21.1,21.1b]
	3A	*Mustang MAXX	1.28-4.0 fl oz/acre	14	12	High	[1.1,21.1]
	3A	*Pounce 25 WP	6.4-16 oz/acre	PF	12	High	[21.1,21.1b]
	6	*Proclaim	3.2-4.8 oz/acre 0.8-1.2 oz/100 gal water	14	12/48(E)	High	[21.1]
	28	*†Altacor	2.5-4 oz/acre	5	4	High	[21.1,21.1c]
	28	*†Exirel	8.5-17 fl oz/acre	3	12	High	[1.1,1.2,21.1]
	3A + 6	*Gladiator EC	19 fl oz/acre 4.75 fl oz/100 gal water	28	12	High	[1.0,21.1]
	28 + 4A	*†Voliam Flexi WDG	4-7 oz/acre	35	12	High	[1.0,21.1,21.1d]
	3A + 4A	*†Endigo ZC	5-6 fl oz/acre	35	24	High	[1.0,21.1,21.1d]
	4A + 3A	*Leverage 360	2.4-2.8 fl oz/acre	7	12	High	[1.0]
	28 + 6	*†Minecto Pro	8.0-12.0 fl oz/acre	28	12	High	[1.1,1.2,1.0, 1.3,21.1]
	28 + 3A	*†Besiege	6-12 fl oz/acre	21	24	High	[1.0,21.1]



Insect Scouting / Trapping:

Management:

Hudson Valley: Applications to trunk of infested trees employing labeled insecticide at Pink and Petal Fall using high volume course directed spray from ground to 1st scaffold limbs or to 3'.

Labeled options include the pyrethroids Danitol and Warrior II:

Black stem borer	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

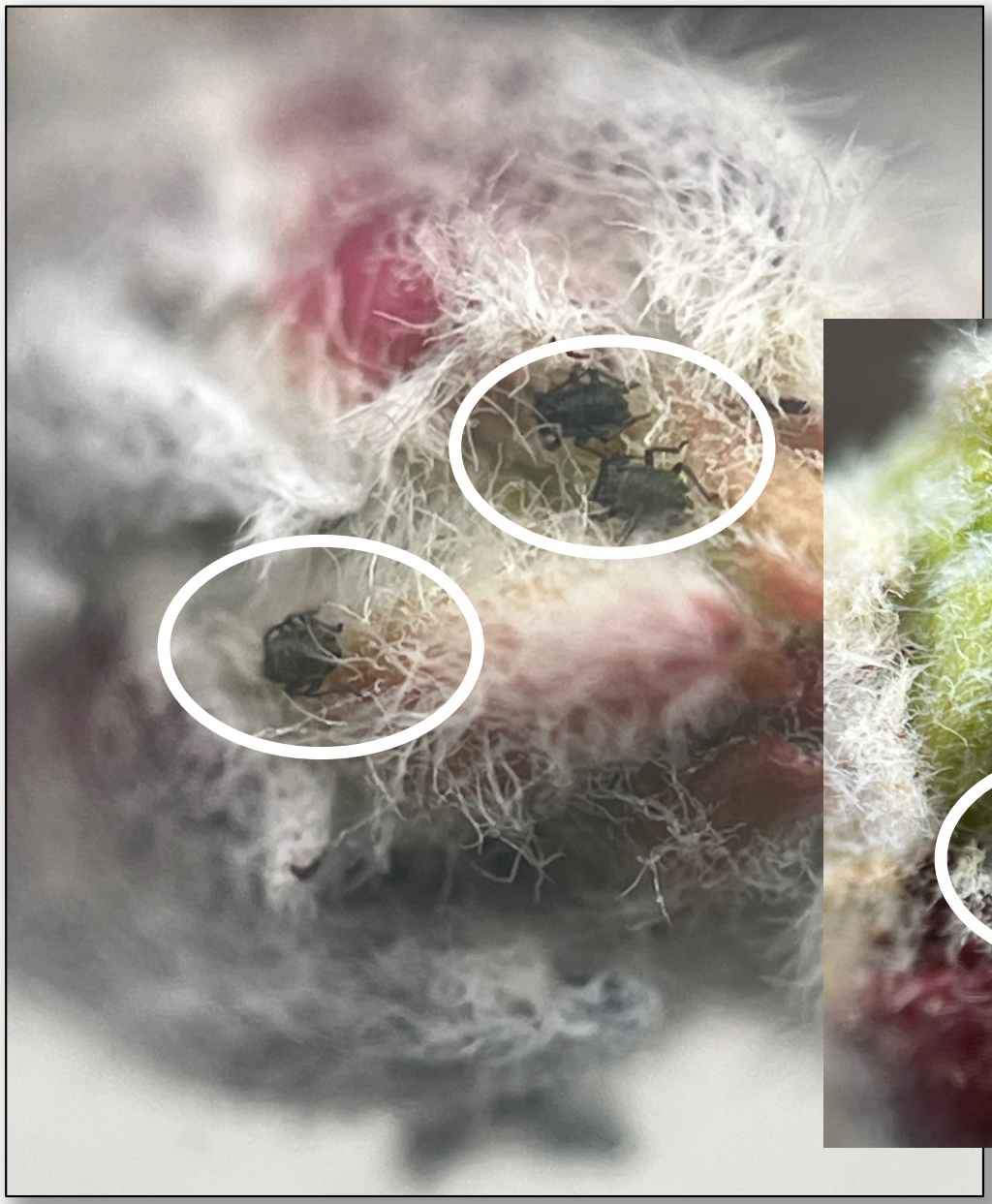
Materials tested and found to be efficacious against BSB by Larry Gut at Michigan State include:

Bifenthrin (*Brigade),
Permethrin (*Pounce) ,
Zeta-cypermethrin (Mustang Maxx).

Image: Declining Gala with BSB infestation in low level block with high water table.

Green & Rosy Apple Aphid. **April 3rd Wallkill, NY**

- Gala flower bud at green-tip
- Feeding causes deformed foliage, flowers and fruit



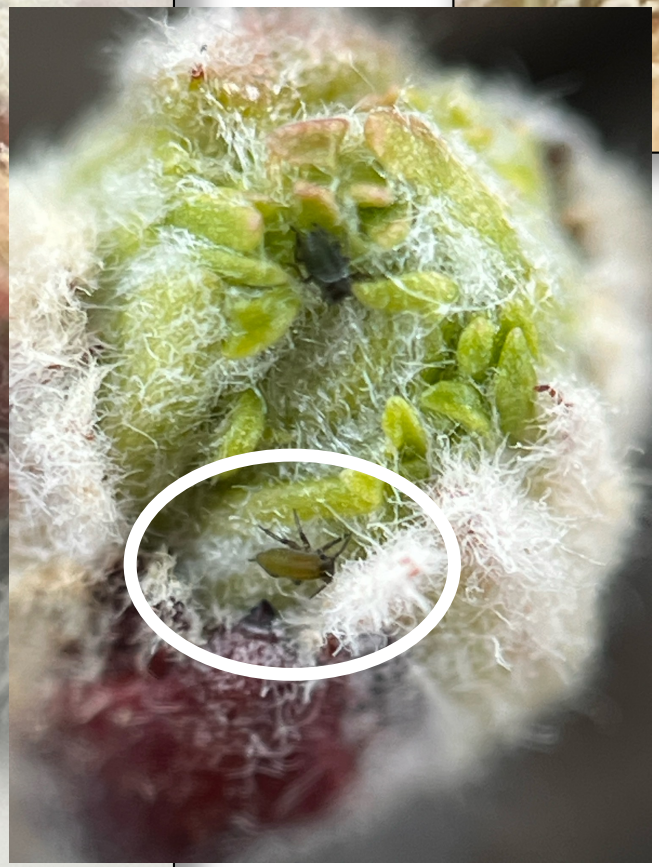


Table 11.1.1 Pesticide Spray Table - Apples.

(Refer to back of book for key to abbreviations and footnotes.)

Pest	IRAC & FRAC	Product	Rates	PHI (days)	REI (hrs)	Efficacy	Comments (see text)
Rosy apple aphid	4D	*†Sivanto Prime	7.0-14.0 fl oz/acre	14	4	High	[28.2,28.4a]
	9D	*†Versys Inscalis	1.5 fl oz/acre	7	12	High	[1.2,28.2]
	28	*†Exirel	13.5-20.5 fl oz/acre	3	12	High	[1.1,1.2,1.4, 28.5]
	29	Beleaf	2.0-2.8 oz/acre	21	12	Moderate	[28.2,28.2b]
	28 + 6	*†Minecto Pro	10.0-12.0 fl oz/acre	28	12	High	[1.2,1.0,28.5]
	28 + 3A	*†Besiege	6-12 fl oz/acre	21	24	High	[1.0]
	1A	*Lannate LV	1.5-3 pt/acre 0.75 pt/100 gal water	14	72	High	[12.1d,28.2]
	1A	*Lannate SP	0.5-1 lb/acre 0.25 lb/100 gal water	14	72	High	[12.1d,28.2]
	1A	*†Vydate L	4-8 pts/acre	14	48	Moderate	[28.2,28.3a]
	4A	*†Actara	4.5 oz/acre	14/35(A)	12	High	[15.4,28.2, 28.3b]
	4A	*Assail 30SG	2.5-4 oz/acre	7	12	High	[28.2,28.3c]
	4D	*†Sivanto Prime	7.0-14.0 fl oz/acre	14	4	High	[28.2,28.4a]

THE JENTSCH LAB

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

Thank you for your participation