

# **Preseason Tree Fruit Meeting**

**Wednesday, March 22, 2023**

**Room 170, Univ. Southern Maine / Lewiston Auburn College,  
51 Westminster Street, Lewiston ME**

# Extension Tree Fruit IPM Program Update

March 22, 2023, Glen Koehler



**\* Extension Program Activities**

**\* PFAS-pesticides**

**\* Fire blight & Southern blight**



THE UNIVERSITY OF  
**MAINE**

Cooperative Extension  
Pest Management Unit

**Highmoor Farm Agric. Exp. Sta.**



**Tree Fruit  
IPM**

# ***Maine Tree Fruit Newsletter***

**Monday, March 20, 2023** Vol 30:4

**\* Orchard Scouting Coop**

**Two scouts**

**North & East**

**South & West**

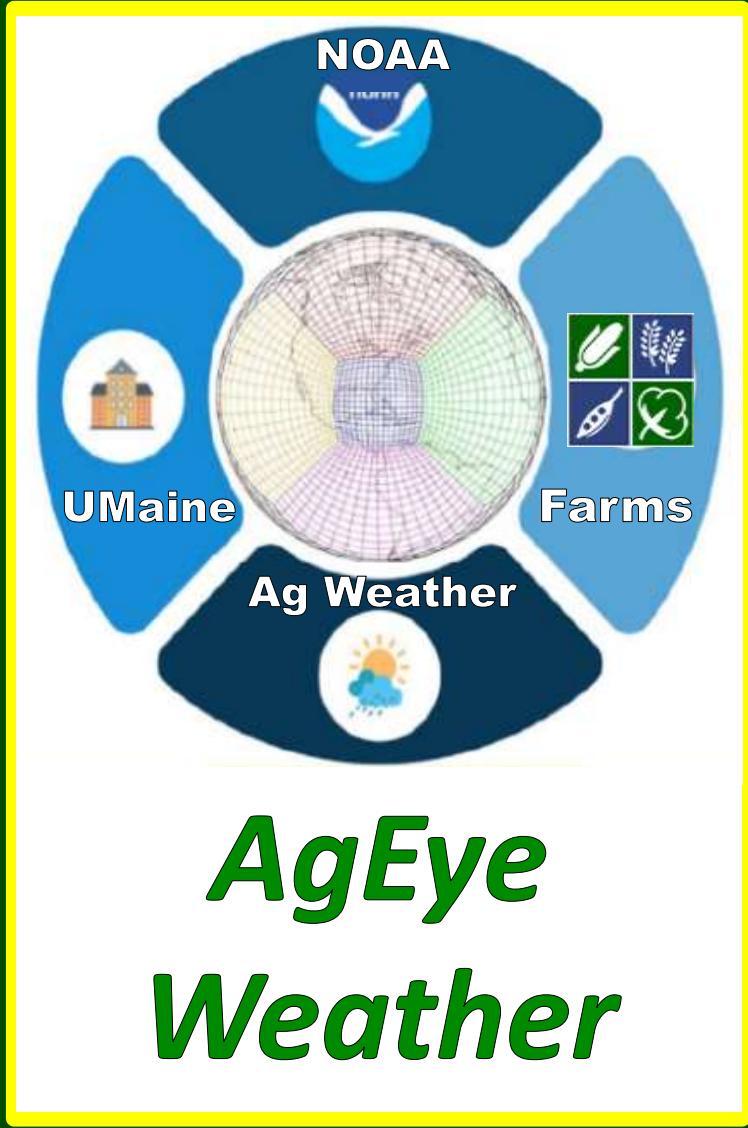
# **\* Troubleshooting & Reporting**

**Glen Koehler**

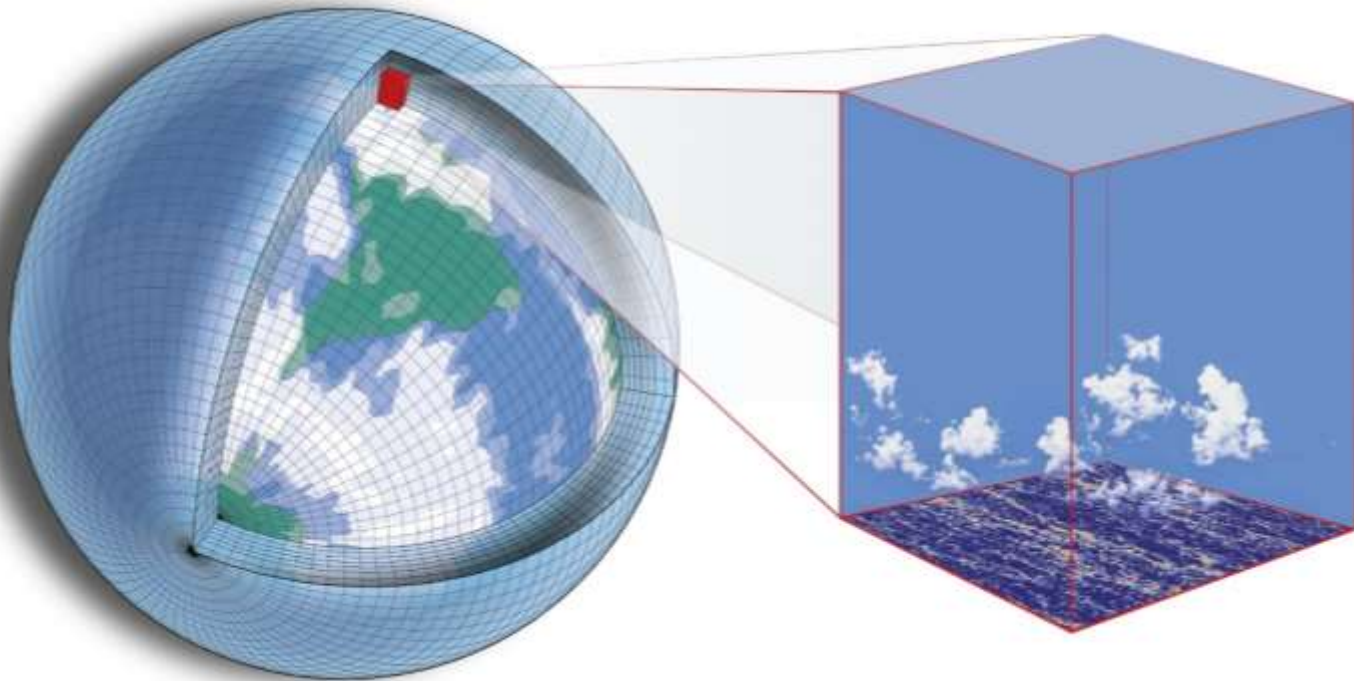
**207-581-2882**

**207-485-0918**

**[glen.Koehler@maine.edu](mailto:glen.Koehler@maine.edu)**



**Observed and Forecast values are saved for each box  
& posted on the internet**



NASA image





# Maine Climate Office

Climate Data Weather Forecasts Publications About

## AgEye Weather

Location (View Map)

Monmouth

Forecast Start

2023-01-08-18z

Tue 1/10

31 °F

22 °F



0.0 in

Wind 8 mph  
Gust 22 mph  
NW

Wed 1/11

28 °F

18 °F



0.0 in

Wind 2 mph  
Gust 8 mph  
E

Thu 1/12

41 °F

25 °F



0.5 in

Wind 7 mph  
Gust 39 mph  
SE

Fri 1/13

45 °F

42 °F



0.7 in

Wind 12 mph  
Gust 54 mph  
SW

Sat 1/14

35 °F

29 °F



0.0 in

Wind 7 mph  
Gust 24 mph  
NW



<https://mco.umaine.edu/ageye>





**Weather variables:**  
 Hourly air temperature.  
 Daily max. & min. temp.  
 Surface temperature.  
 2" and 10" soil temp.  
 Dewpoint temperature.  
 Apparent temperature  
 (heat index & wind chill).  
 Precipitation amount.  
 Chance of precipitation.

Leaf wetness.  
 Relative humidity.  
 Wind speed.  
 Wind gusts.  
 Wind direction.  
 Cloud cover.  
 Evapotranspiration.  
 Soil moisture % at 0 – 4".  
 Soil moisture % at 4 – 16".  
 Air pressure.

Potential evaporation.  
 Solar radiation (absolute and  
 % of full sunlight shortwave  
 down.)  
 Upward shortwave, down &  
 up longwave radiation.  
 Ground heat flux.  
 Additional values available.

AgRadar Weather Report  
**FRI MAY 15, 2020** at 12 UTC  
**MONMOUTH ME** (44.2308°N, 70.0690°W, Elev. 403 feet)

**48-hour Forecast Detail**

Time (EDT)	<--- FRI MAY 15 --->				<--- SAT MAY 16 ----->								<--- SUN MAY 17 --->			
	12p	3p	6p	9p	12a	3a	6a	9a	12p	3p	6p	9p	12a	3a	6a	9a
<b>AIR TEMPERATURE °F</b>	54	56	54	49	47	47	45	46	52	58	59	48	44	40	46	57
Apparent Temp °F	54	56	54	49	47	47	42	46	49	58	59	45	40	39	44	55
Dewpoint Temp °F	33	35	38	30	33	34	35	35	32	33	33	32	35	33	32	34
Wet-Bulb Temp °F	48	51	49	45	46	46	43	42	42	50	49	48	39	38	42	51
Air Temp at 4-inches °F	61	63	58	49	45	41	37	44	56	63	60	48	44	39	35	57
Freeze Warning	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<b>3-HOUR PRECIP inches</b>	0	0	0	.21	.28	.04	.06	.02	0	0	0	0	0	0	0	0
<b>3-HOUR PRECIP PROB %</b>	0	0	0	62	80	46	71	11	0	0	0	0	0	0	0	0
Precipitation Type	-	-	-	R	R	R	R	D	-	-	-	-	-	-	-	-
Relative Humidity %	44	44	54	72	86	89	99	92	72	66	63	90	97	98	95	86
Leaf Wetness	Dry	Dry	Dry	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Dry	Wet	Wet	Wet	Wet	Wet
<b>WIND SPEED mph</b>	5	6	5	4	4	4	5	6	6	4	3	4	5	4	2	4
Wind Gust mph	11	13	11	9	7	8	9	10	11	8	5	8	17	17	7	7
Wind Direction	E	E	E	E	NE	NE	N	N	N	N	NW	NW	W	W	W	N
Cloud Cover	CDY	CDY	OVC	OVC	OVC	OVC	OVC	CDY	CDY	Sct	Sct	CDY	CDY	OVC	CDY	CDY
Cloud Cover %	81	85	91	92	95	100	100	90	80	55	58	69	74	93	88	81
3-hr Solar Rad KW/m2	1.4	1.6	1.0	0.3	---	---	0.0	0.2	1.2	1.8	0.8	0.4	---	---	0.0	0.2
Solar Radiation %	61	60	25	25	---	---	25	40	51	89	88	76	---	---	55	61

# *Ag-Radar*

Weather makes crops  
grow.

Helping apple growers  
make decisions since 1997!



## Diseases

Apple scab  
Fire blight bacteria  
Sooty blotch/Flyspeck

## Insect and Mites

Plum curculio  
Codling moth  
European red mite  
Apple maggot  
Leafminers  
White apple leafhopper  
San Jose Scale  
Dogwood & Apple borer

## Apple models



Heather Faubert

- \* When need for protection
  - starts and ends
- \* Infection/Damage
  - potential severity
- \* Re-spray dates
- \* Key monitoring dates

## Apple models

### Operation guidance

Spray conditions  
Bud freeze potential  
Fruit Sunburn  
Weather history & trend  
Rain surplus or deficit  
Evapotranspiration  
Observations archive

### Horticulture

Pollinator Protection  
Thinning sensitivity  
Harvest Dates  
Preharvest Drop risk  
Storage & Fruit quality  
indicators



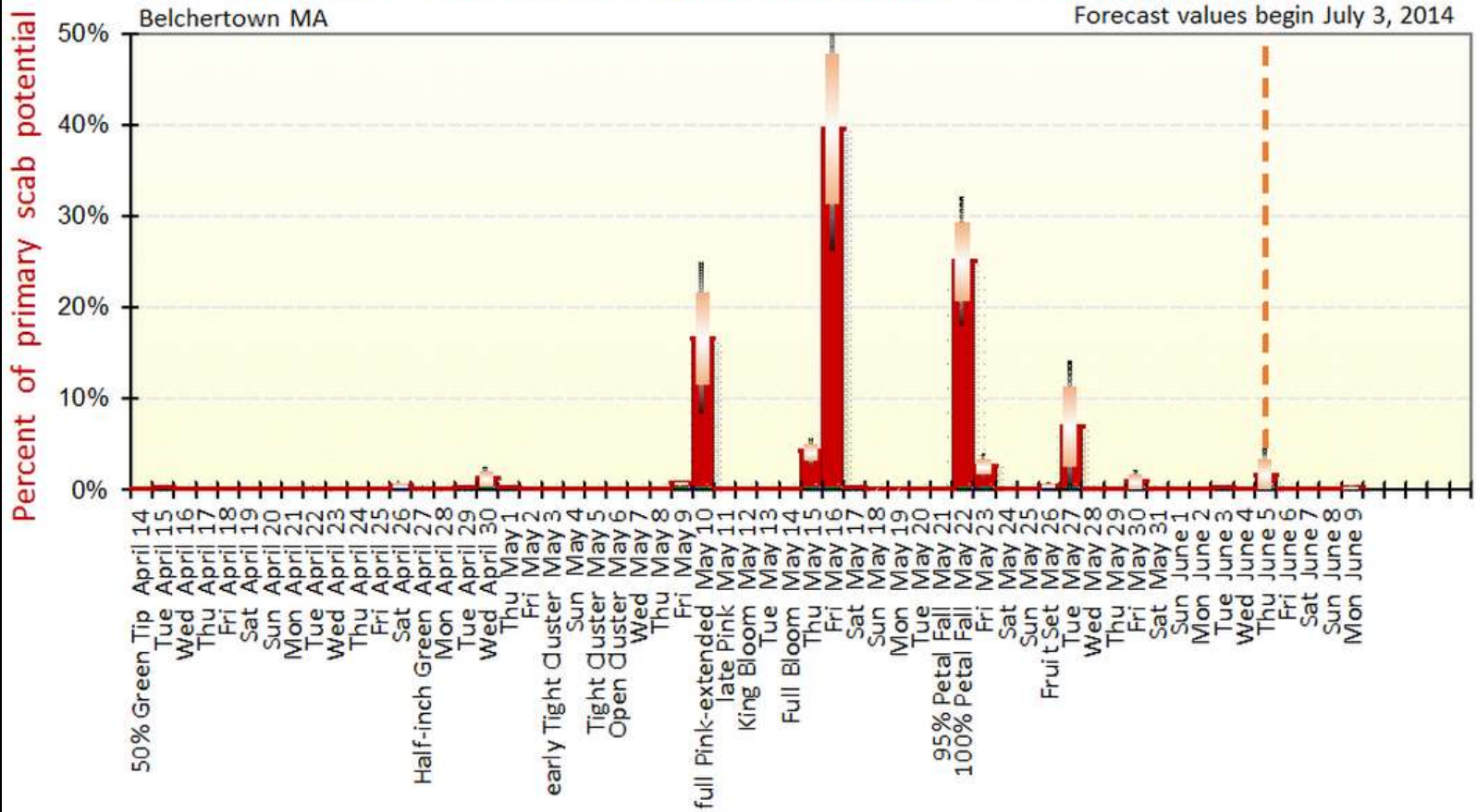
USDA



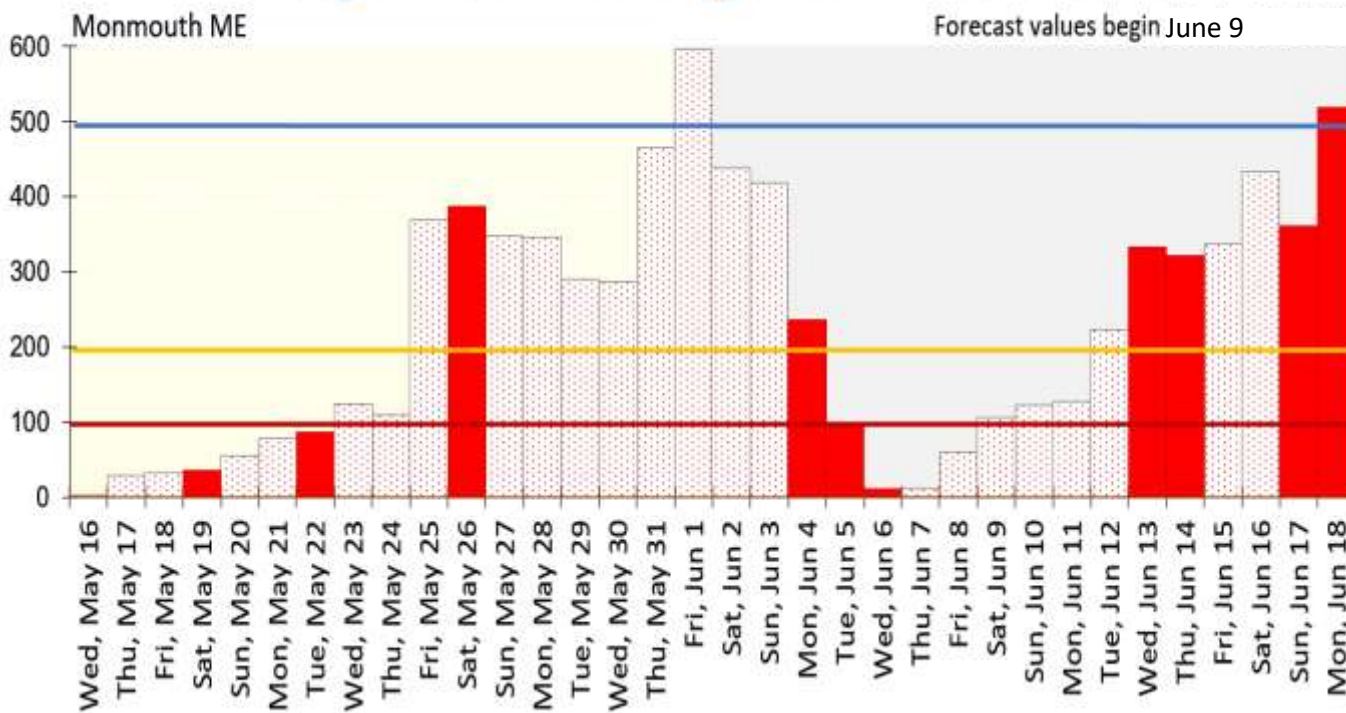
Image: csmk.org public domain

**Ag-Radar**

## Daily primary scab infection potential as % of yearly total



## Fire blight heat units vs. High infection risk thresholds



[Background information for this page](#)

[Return to Apple list for Monmouth ME](#)

# Apple maggot

Weather data for Monmouth ME. Forecast values begin September 19, 2018

Rough estimate for first apple maggot fly trap capture: Friday, July 13.

Estimated 5% AM adult emergence: July 25, Wednesday.

Estimated 50% AM emergence & trap captures: August 13, Monday.

Estimated 98% AM emergence & trap captures: September 6, Thursday.

AM cumulative trap catch dates are only general guidelines

because local soil type and soil moisture conditions that affect emergence are not accounted for.

Full-dose Apple Maggot insecticide application date	Estimated % cumulative apple maggot trap captures	Inches Rain	Rough guess at date to clean apple maggot fly traps and count from zero to compare against threshold for respray decision.				
			Product names in red letters have "Good" rating vs. apple maggot. Products in blue letters have a "Fair" rating.				
			<a href="#">Apple maggot emergence AFTER depletion date to help optimize respray interval.</a>				
			Imidan 1.5" rain days 1-7, 1.0" rain days 8-14.	Assail 1.0" rain days 1-14.	Pyrethroids 1.0" rain days 1-10.	Delegate, Sevin 2.0" rain days 1-6, 0.5" rain day 7-10.	Avaunt, Exirel 1.0" rain days 1-6, 0.5" rain day 7-10.
Sun, July 22	< 1%	0.33	July 27, Fri	July 26, Thu	July 26, Thu	July 28, Sat	July 26, Thu
Mon, July 23	2%	0.18	July 27, Fri	July 26, Thu	July 26, Thu	July 29, Sun	July 26, Thu
Tue, July 24	4%	0	July 27, Fri	July 26, Thu	July 26, Thu	July 30, Mon	July 26, Thu
Wed, July 25	7%	0	July 27, Fri	July 26, Thu	July 26, Thu	July 31, Tue	July 26, Thu
Thu, July 26	9%	1.09	August 2, Thu	August 1, Wed	August 1, Wed	August 1, Wed	August 1, Wed
Fri, July 27	11%	0.42	August 4, Sat	August 4, Sat	August 4, Sat	August 3, Fri	August 3, Fri
Sat, July 28	14%	0.17	August 4, Sat	August 4, Sat	August 4, Sat	August 3, Fri	August 3, Fri
Sun, July 29	16%	0	August 4, Sat	August 4, Sat	August 4, Sat	August 4, Sat	August 4, Sat
Mon, July 30	18%	0	August 4, Sat	August 4, Sat	August 4, Sat	August 5, Sun	August 4, Sat
Tue, July 31	20%	0	August 4, Sat	August 4, Sat	August 4, Sat	August 6, Mon	August 4, Sat



# Apple maggot

Rough guess at date to clean apple maggot fly traps and count from zero to compare against threshold for respray decision.

Product names in red letters have "Good" rating vs. apple maggot.

Product names in blue letters have a "Fair" rating.

## Apple Maggot Emergence after Depletion for Respray Timing

Full-dose Apple Maggot insecticide application date	Estimated % cumulative apple maggot trap captures	Inches Rain	Imidan 1.5" rain days 1-7, 1.0" rain days 8-14.	Assail 1.0" rain days 1-14.	Pyrethroids 1.0" rain days 1-10.	Delegate, Sevin 2.0" rain days 1-6, 0.5" rain day 7-10.	Avaunt, Exirel 1.0" rain days 1-6, 0.5" rain day 7-10.
Wed, August 1	22%	0.44	August 8, Wed	August 4, Sat	August 4, Sat	August 7, Tue	August 4, Sat
Thu, August 2	25%	0	August 9, Thu	August 4, Sat	August 4, Sat	August 8, Wed	August 4, Sat
Fri, August 3	28%	0.37	August 10, Fri	August 9, Thu	August 9, Thu	August 9, Thu	August 9, Thu
Sat, August 4	30%	0.8	August 14, Tue	August 14, Tue	August 14, Tue	August 13, Mon	August 13, Mon
Sun, August 5	32%	0	August 14, Tue	August 14, Tue	August 14, Tue	August 13, Mon	August 13, Mon
Mon, August 6	35%	0	August 14, Tue	August 14, Tue	August 14, Tue	August 13, Mon	August 13, Mon
Tue, August 7	38%	0.07	August 14, Tue	August 14, Tue	August 14, Tue	August 13, Mon	August 13, Mon
Wed, August 8	40%	0.02	August 15, Wed	August 14, Tue	August 14, Tue	August 14, Tue	August 14, Tue
Thu, August 9	43%	0.58	August 18, Sat	August 18, Sat	August 18, Sat	August 17, Fri	August 17, Fri

## Codling Moth (CM)

1st generation, estimated first sustained trap catch biofix date: June 7, Thursday.

Codling moth development as of Tuesday, September 29:

2nd gen. generation adult emergence at 91% and 2nd gen. generation egg hatch at 64%.

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Insecticide targetted against plum curculio and apple maggot may also prevent codling moth damage.  
If targetted codling moth control is needed, key management dates are shown below.

Optimum date to apply RIMON or ESTEEM ovicide/larvicide Insect Growth Regulator (IGR) is shortly before CM egg laying begins (100 CM degree days after start of 1st gen. flight): June 17, Sunday.

For INTREPID IGR, the optimum first application timing is just before first hatch (150-200 DD): June 21 to June 24.

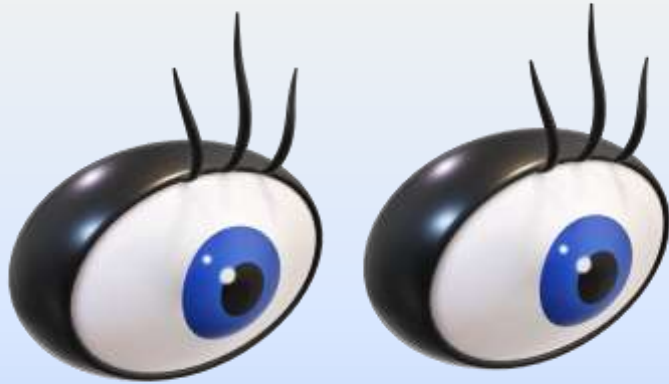
For conventional larvicide, Bt, Grandevo, or granulovirus (Cyd-X, Madex etc.),  
best timing for first of multiple applications against 1st generation CM is at 3% CM egg hatch (250 DD):  
June 28, Thursday.

Peak (30% to 70%) 1st generation codling moth egg hatch is from July 5 to July 15.

1st generation 95% egg hatch is around: July 27.

Best date for follow-up application depends on type of material applied  
and weather since previous application. See Codling Moth tables for follow-up spray dates to maintain protection  
through 1st generation CM egg hatch.

**1st generation 20% CM egg hatch (360 DD): July 4.**  
**= Target date where a single larvicide application is used to reduce 1st generation CM.**  
**This is also good timing for follow-up to initial IGR application.**



**Pest forecasts  
DO NOT replace field monitoring!**

## \* INSECTS \*

### INSECT DATES (CM, DWB, LAW, MPB, OFM, OBLR, RBLR, SJS, STLM, TPB, WAL)

Key life cycle and management dates

### Plum Curculio – insecticide depletion Table

Plum Curculio – insecticide depletion Chart

Experimental only: Plum Curculio activity rating

Codling Moth insecticide depletion table: JUNE

Codling Moth insecticide depletion table: JULY

Codling Moth insecticide depletion table: AUGUST

Apple Maggot JULY monitoring & respray dates

Apple Maggot AUGUST monitoring & respray dates

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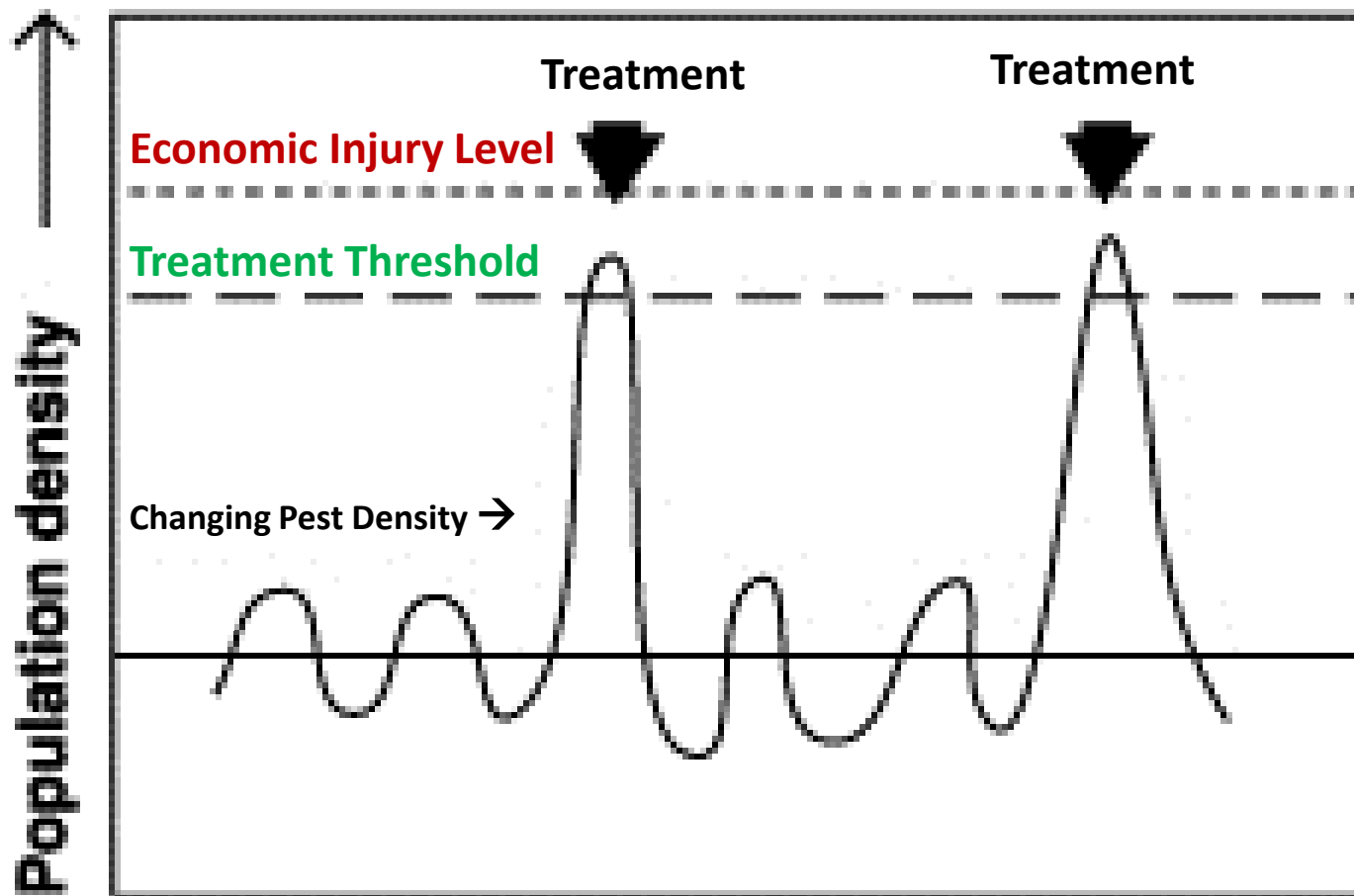
## \* MITES \*

### European Red Mite (ERM) KEY DATES

ERM resample dates – JUNE

ERM resample dates – July&August

Mite thresholds

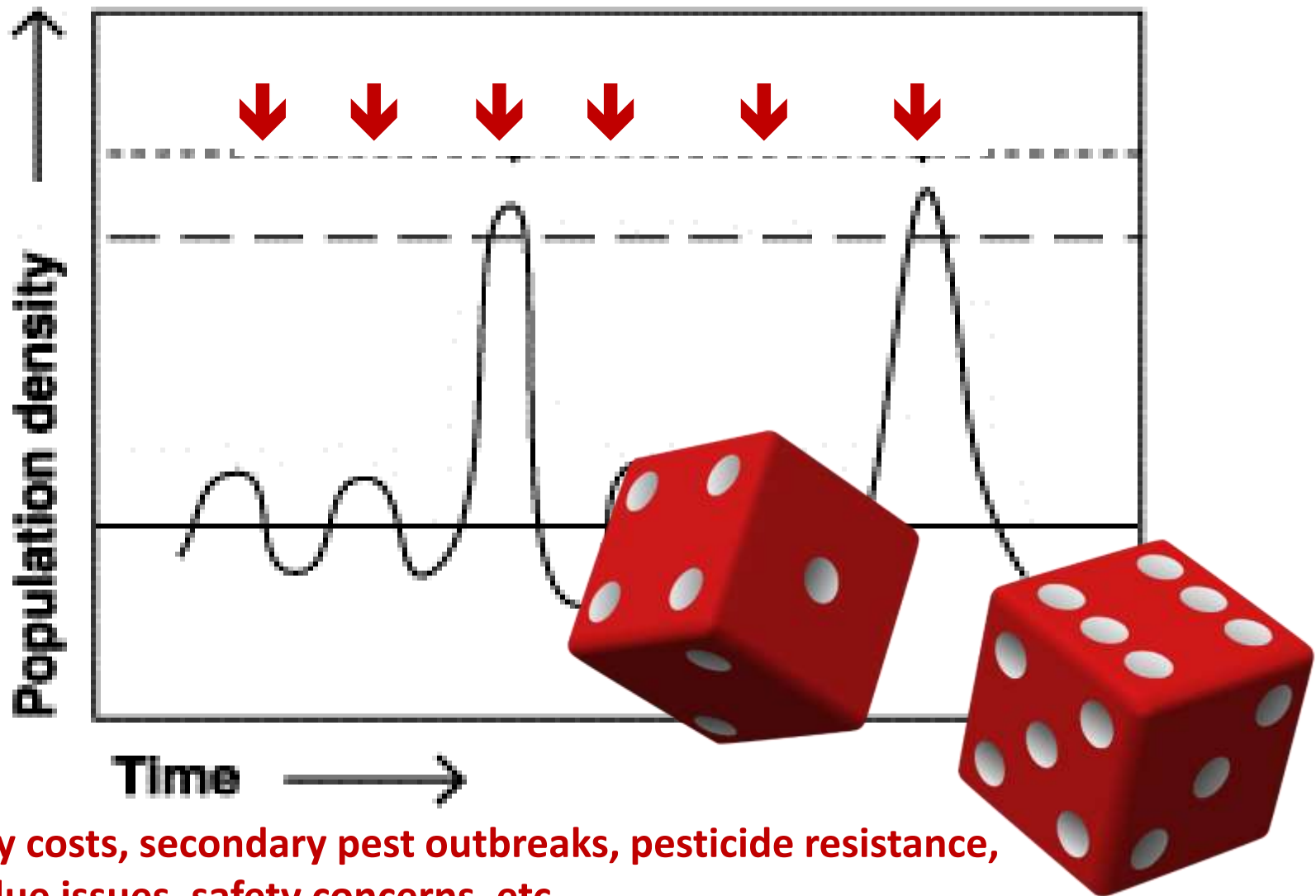


**Time** →

Treatment thresholds are based on a cost vs. benefit risk assessment



**“Spray on detection” or “Constant protection” is a bigger risk.**



**Spray costs, secondary pest outbreaks, pesticide resistance, residue issues, safety concerns, etc.**

**High Efficacy**

x

**High Efficiency**

**= Pest management \$uccess**

**100% High Efficacy**

x

**0% High Efficiency**

**= 0% Pest management \$uccess**

**0% High Efficacy**

x

**100% High Efficiency**

**Also = 0% Pest management \$uccess**



**100% High Efficacy**

**X**

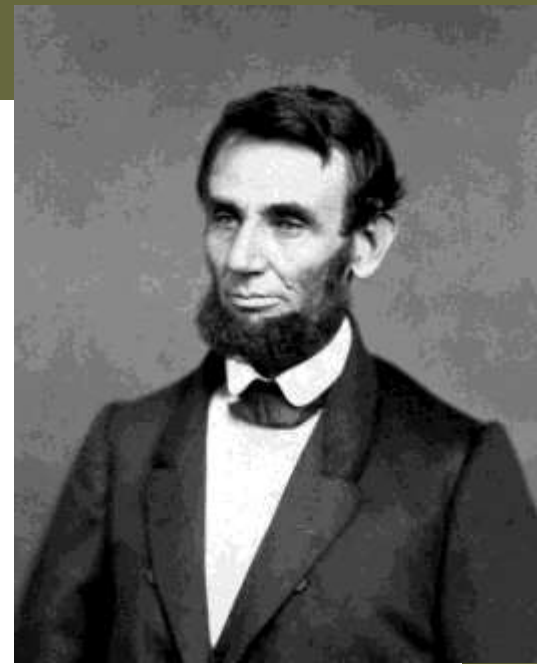
**100% High Efficiency**

**= 100% \$uccess**

Growers who know the  
who, what when, where, why & how  
of orchard pest management:

**Are more Efficient**  
and **more Effective**

**Fewer surprises, fewer big losses**  
**Lower costs, better crops**  
**Less stress, more fun.**



# Maine PFAS pesticide list legal status

- ❖ These products are registered by EPA and State of Maine for food use.
- ❖ That process required passing tests for human health and environmental safety.
- ❖ The concern is public perception about chemicals prominent in the news as a serious health concern and currently set for cancellation **NO LATER THAN** December 31, 2029.

# Child growth and development hampered by 'forever chemicals' in blood, study says

By Sandee LaMotte, CNN | Posted - March 20, 2023 at 6:18 p.m.

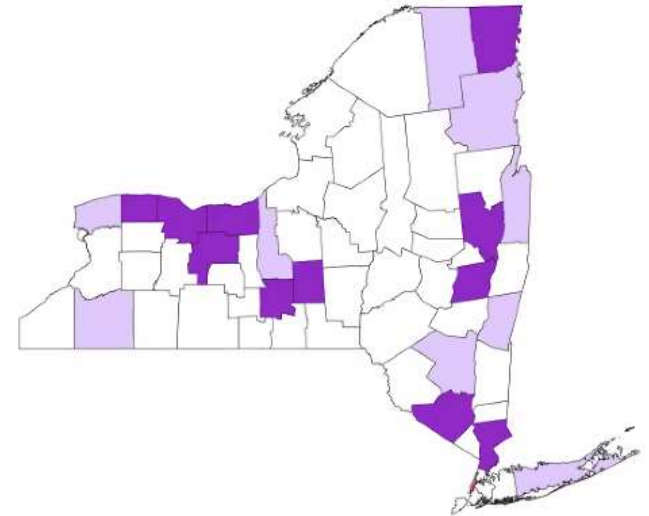


...altering hormonal and metabolic pathways needed for human growth and development, according to a new study.

# Conclusions

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- Strep-resistance found in many counties
- Potential spread of 41:23:38
  - Confined to Western NY?
- 2023 sampling will continue
  - Farm history
  - Importance of year to year sampling





## Fire Blight Sample Submission Form

Submit fire blight infected fruits, leaves, and strikes for free testing. Samples are tested for fire blight bacteria, streptomycin resistance, and strain. We will get back to you as soon as we can with the results, and thank you for sending them in!

# To Participate in 2023 Survey

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- Email Isabella Yannuzzi at [imy3@cornell.edu](mailto:imy3@cornell.edu)
- We have a QR Codes that will

QR codes to 2023 FB survey info  
&

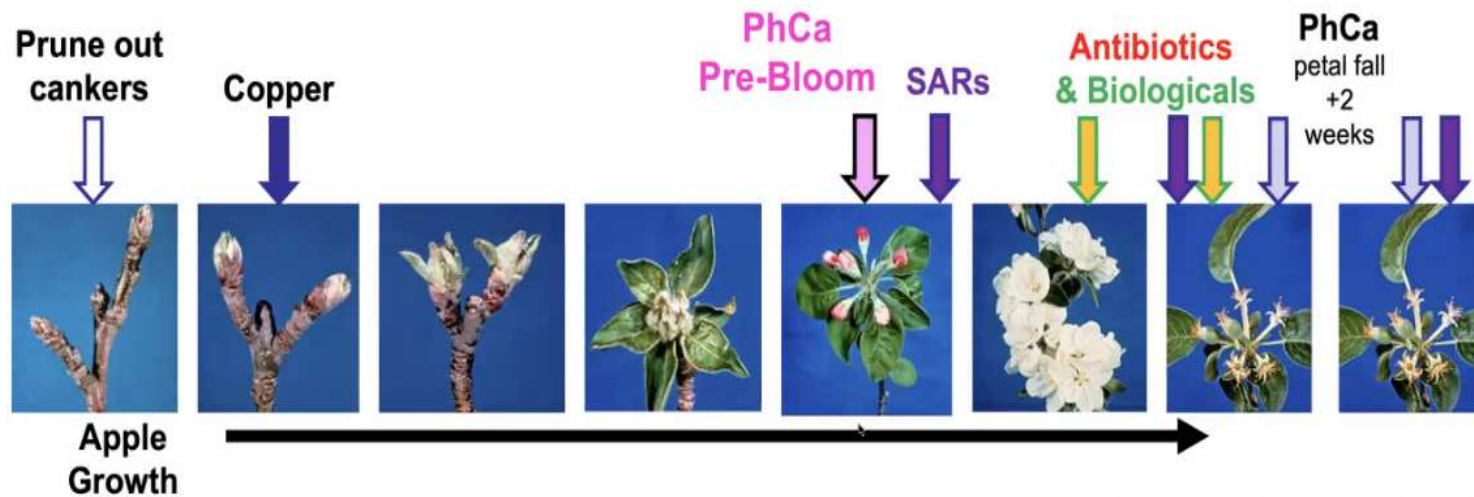
Sample submission form

<https://tinyurl.com/FBsurveyForm>

<https://tinyurl.com/FBform2>



# Fire blight Management Overview



Season long effort to prevent blossom and shoot blight



slide by Kerik Cox, Cornell AgriTech



# Fire Blight Management

- Pre-season
  - Dilute delayed-dormant Fixed Copper application at silver tip (15% MCE) (Warm weather causes cankers to ooze > fire flight inoculum increases greatly)
- Tight Cluster – Pink
  - Early prohexadione Ca (PhCa) 6 oz/100 gal or 2 oz/100 + 1 oz/100 ASM (Actigard)
  - Thicken pedicel cell walls & prevent systemic invasion of fire blight bacteria

