

# SCAFFOLDS Fruit Journal, Geneva, NY

Volume 27, No. 7

Update on Pest Management and Crop Development

May 7, 2018

---

## COMING EVENTS

	43°F	50°F
Current DD* accumulations		
(Geneva 1/1-5/7):	265.0	138.8
(Geneva 1/1-5/7/2017):	389.3	184.1
(Geneva "Normal"):	336.8	166.4
(Geneva 1/1-5/14, predicted):	398.7	227.3
(Highland 1/1-5/7):	389.5	204.1
Upcoming Pest Events – Ranges (Normal +/- Std Dev):		
Black stem borer 1st catch .....	249-374	104-200
Comstock mealybug 1st		
gen crawlers in pear buds.....	215-441	80-254
European red mite egg hatch .....	231-337	100-168
Green fruitworm catch subsides	269-477	126-253
Lesser appleworm 1st catch .....	276-564	129-305
Mullein plant bugs 1st hatch .....	331-443	163-229
Oriental fruit moth		
1st flight peak .....	333-536	167-285
Redbanded leafroller		

1st flight peak .....	230-378	104-197
Rose leafhopper		
1st nymphs on multiflora rose.	239-397	96-198
Spotted tentiform leafminer		
1st flight peak .....	269-407	124-213
White apple leafhopper		
nymphs on apple .....	302-560	146-308
McIntosh bloom .....	344-415	168-218
*[all DDs Baskerville-Emin, B.E.]		

### Phenologies

Geneva:	<u>Current</u>	<u>5/14, Predicted</u>
Apple		
(McIntosh, Red Del.):	50% pink	pink-king bloom
Apple (Empire, Idared):	tight cluster- 50% pink	king bloom
Pear		
(Bartlett):	early white bud	bloom
(Bosc):	green cluster	bloom
Sweet Cherry	bloom	bloom- petal fall
Tart Cherry:	early white bud	bloom
Peach:	50% bloom	shuck split
Plum:	bloom	bloom
Apricot:	bloom	bloom-

Highland:

Apple

(McIntosh): 48% bloom

(Golden Del.): 22% bloom

(Ginger Gold): 42% bloom

(Red Delicious): 52% bloom

Pear

(Bartlett): 99% bloom

(Bosc): 88% bloom

Peach: 33-64% petal fall

Sweet cherry: 91% bloom

Plum (Stanley): 96% bloom

## PEST FOCUS

Geneva: 1st Spotted Tentiform Leafminer catch, 5/2.  
1st Oriental Fruit Moth catch, 5/4.

Highland: 1st Oriental Fruit Moth catch today, 5/7.  
1st Brown Marmorated Stink Bug catch, 5/2.

## TRAP CATCHES (Number/trap)

Geneva

	4/30	5/2	5/4	5/7
Green Fruitworm	0.0	1.0	0.0	0.0
Redbanded Leafroller	1.5	31.0	59.0	—
Spotted Tentiform LM	0.0	1.0*	3.5	15.0

Oriental Fruit Moth	—	—	1.0*	3.0
Highland (Peter Jentsch)				
	4/16	4/23	4/30	5/7
Green Fruitworm	0.0	0.5	0.0	0.0
Redbanded Leafroller	28.0	8.5	97.5	153.5
Spotted Tentiform LM	0.0	3.0*	29.0	42.5
Lesser Appleworm	0.0	1.5*	4.5	0.0
Oriental Fruit Moth	-	0.0	0.0	52.0*
	* 1st catch			

## [Section: DISEASES]

### Weekly Apple Scab and Blossom Blight Updates for NY (5/7 to 5/12/18)

(Kerik Cox & Katrin Ayer, PP&PMB, Geneva)

Below are apple scab and blossom blight predictions for NY apple regions based on the NEWA disease forecast system (<http://newa.cornell.edu/index.php?page=apple-diseases>). Information is kept concise. Alerts will also be posted to Twitter @FruitPathology with updates occurring throughout the week, which would allow notifications to send to mobile device. The various outputs are explained below the tables.

## APPLE SCAB

Week of 5/7/18*	Hudson Valley	Wayne	Niagara	Champl. Valley	Finger Lakes
Infection Predicted	Low (5/7)	High (5/10-11)	High (5/10-11)	None	High (5/10-11)
Maturity	72%	40%	6%	33%	54%
Discharge	8%	33%	4%	8%	30%

\* predictions are regional, the model works best under local conditions. Always check weather and crop stage (green tip) before making a management decision.

### Infection predicted:

- **"Low"**: <10% ascospores discharged; **"Moderate"**: 10-20% ascospores; **"High"**: >20% ascospores discharged
- **"None"** – no infection predicted for the week; **"Date"**: An infection event is predicted for the date listed. If a multi-day infection event is predicted, the first full date of the infection will be listed

**Ascospore maturity:** The percent ascospore maturity during the predicated infection event. If there is no infection predicted, the maturity for the end of the week is listed.

**Discharge:** The percent ascospore discharge during the predicted infection event. If no infection predicted, the cumulative ascospore discharge for the week is listed.

## BLOSSOM BLIGHT

Week of 5/7/18*	Hudson Valley	Wayne	Niagara	ChAMPL. Valley	Finger Lakes
Infection Risk	Moderate-High (5/9-10)	Low (5/10)	None	None	Low (5/9-10)
Highest EIP	95	50	--	--	73
Highest 4-Day DH	400	200	--	--	280

\* predictions are regional, the model works best under local conditions. Always check weather and crop stage (green tip) before making a management decision.

### Infection risk:

- **"Low"**: EIP and 4-day DH accumulation at/below 75 and 300, respectively; **"Moderate"**: EIP and 4-day accumulation between low and high-risk values; **"High"**: EIP and 4-day DH accumulation at or above 100 and 400, respectively with moisture predicted
- **"None"**: little to no risk predicted for the week;
- **"Date"**: The date of highest risk for the week listed.

**Highest EIP & 4-Day DH:** The highest EIP value and 4-day DH accumulation for the week listed.

MANAGING FIRE BLIGHT IN 2018

(Kerik Cox, Plant Pathology and Plant-Microbe Biology  
& Juliet Carroll, NYS IPM Program, Geneva;  
[kdc33@cornell.edu](mailto:kdc33@cornell.edu) & [jec3@cornell.edu](mailto:jec3@cornell.edu))

**[Box text: FIRE-FIGHTING]**

## **2017 Fire Blight Season Recap**

The number and magnitude of fire blight outbreaks in NY was a little lighter than the previous years, but some growers still experienced losses due to fire blight.

There were only two critical risk periods for blossom blight and these occurred around the 1st and 18th of May. In western NY, the risk period around the 1st of May was of less concern given the cool weather at that time, but temperatures were warmer in eastern NY, increasing risks. While the period around the 18th of May represented "extreme risk for blossom blight", many sites were at or beyond petal fall, reducing the overall risk for some locations with early flowering cultivars.

In 2017, we received many fire blight samples for antibiotic resistance testing from the western NY and the Lake Champlain regions. Fortunately, no resistance to any antibiotics was observed in any of the samples. Shoot blight was the predominant type of sample received, and no places even reported blossom blight.

It's important to note that low or even unnoticeable levels of blossom blight could have still been the source of the late season shoot blight outbreaks in 2017. As bloom is upon us in 2018, it will be important to keep track of the fire blight history in apple blocks, and, where fire blight history and scion / rootstock susceptibility warrant, to protect apples during high risk weather conditions during petal fall and shoot elongation.

## **Present Season**

Currently, only orchards in the Hudson Valley have reached bloom with the sudden warm weather. Unfortunately, these experienced a period of high to extreme risk over the weekend with the first open flowers. Orchards in western NY may only begin to reach king bloom this week and may only be at low to moderate risk of infection when the weather warms on Thursday. Orchards in the Lake Champlain region are unlikely to reach king bloom this week. While there is risk of infection on Wednesday/Thursday with the high temperatures and rain, the risk should be somewhat tempered by the low numbers of open flowers. While regional extension specialists in the Hudson Valley are rightfully concerned about the risk of blossom blight

infection over the weekend, the situation seems less dire in the other production regions of the state.

The warm in the middle of the week could boost inoculum levels, but several days in the mid-60s toward the end of the week will slow bacterial reproduction and reduce risk. However, the risk of fire blight may increase following week as temperatures are forecast to be in the 70s. In this regard, it will be important to watch forecasts, check the models, and follow extension specialists' alerts.

As you consider model outputs from NEWA or other forecasting models, here are some things to consider before making applications of antibiotics or other costly materials for blossom blight:

**1 - Predictions and forecasts are theoretical.** The theoretical models predicting disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage and disease occurrence determined through scouting or monitoring.

**2 - Consider the history of fire blight in the planting.** If there was not fire blight the previous season or if you have never had fire blight, do not let excessive model predictions or extension alerts (including this article) "intimidate you" into applying unnecessary antibiotics each time an alert is released. Consider the timing of the last application and potential for material depletion as well.

**3 - Consider the age of the planting and the susceptibility of variety and rootstock.** These factors play a large role in the development of fire blight. None of the models consider these factors. If you have a young planting of a highly susceptible variety, it may be more important to protect these blocks based on model predictions than a 15-year-old 'McIntosh' planting on resistant rootstocks, which may not warrant the same level of protection during bloom. A listing of susceptible cultivars and rootstocks is linked from the NEWA model page for fire blight.

**4 - The models only identify periods of weather that are favorable for infection.** All wetting events are now color-coded light blue in NEWA to draw attention to the weather factors that promote bacterial ingress into the flowers. Despite words like "extreme" and "infection"

colored in vibrant red, the models only predict favorable weather conditions. If favorable weather for infection is not predicted in the current forecast, if the apple variety is not highly susceptible, if there is no prior history of fire blight, and if the trees aren't being pushed into high vigor with nitrogen, the actual risk of fire blight infection may be low to non-existent.

### **5 - Weather forecasts can vary and change daily.**

When this happens, the model predictions will change drastically, and the risk will change as well. Bacteria double about once every 20 minutes under optimal conditions; for fire blight bacteria this is warm (>60°F) wet conditions. The models use degree hours, not degree days, to accommodate the rapid growth rate of these pathogens. Check the fire blight predictions, especially those in the forecasts, frequently. The 1- and 2-day forecasts are the most reliable; those at 3-, 4- and 5-days are less reliable as predictors. NEWA uses the National Weather Service forecasts. Compare these to your favorite local weather forecast provider.

### **Status of antibiotic resistance in 2018**

Despite extensive screening, streptomycin resistance has not been detected in NY for the last four years. If we keep practicing resistance management by rotating

bactericides and antibiotics with limited use of streptomycin application after bloom, we may never experience outbreaks of streptomycin resistance as we had in 2011 to 2013. However, sending blossom blight or trauma blight samples for screening, when they occur after streptomycin applications, is the best approach for assessing the occurrence of streptomycin resistance in your operation.

Even in the absence of streptomycin resistance, fire blight can still be difficult to control if weather favors the pathogen. Moreover, the shoot blight phase of the disease can still present a considerable problem following an apparent success in blossom blight management. In this regard, we have continued to refine and update our guidelines for managing fire blight in NY with an emphasis on young plantings. The guidelines are broken up into three sections: general guidelines for season-long management, additional guidelines for new plantings, and guidelines for on-farm nursery production. Tables of fire blight susceptibility for popular cultivars and rootstocks are linked from the NEWA model page for fire blight.

**General guidelines for season-long management.**

1 - All fire blight strikes and shoots with larger cankers should be removed during winter pruning. Remove any trees where the central leader or main trunk has become infected. Infected wood should be removed from the orchard and either burned or placed where it will dry out rapidly. The fire blight pathogen can withstand cold temperatures, but is intolerant to drying.

2 - Copper sprays should be applied at green tip. Processing varieties can be protected with copper as late as 1/2-inch green, depending on requirements of the label.

3 - Although we've previously mentioned the new 2ee label for the use of Apogee at pink to mitigate spread of blossom blight into the shoot tissues, we are not recommending this use pattern as a standard practice for managing fire blight until we have a greater appreciation of the potential benefits and impacts on crop physiology. Growers using prohexadione Ca at pink for the purposes of training narrow fruiting wall plantings may have reduced risk of fire blight development following such applications.

4 - During bloom, follow a blossom blight forecasting modeling system such as the ones offered in NEWA ([newa.cornell.edu/index.php?page=apple-diseases](http://newa.cornell.edu/index.php?page=apple-diseases)), Maryblyt™ 7.1 (<http://grapepathology.org/maryblyt>), or RIMpro (<http://www.rimpro.eu/>). Time applications during high risk weather only. If the operation rarely or has never had fire blight, it may not be necessary to apply antibiotic each time a high-risk period is forecast. Regardless of model predictions, it is rarely necessary to make more than three applications for blossom blight.

5 - Begin antibiotic applications for blossom blight with a single application of streptomycin at 24 oz/acre. Consider including the penetrating surfactant Regulaid (1 pt/100 gal of application volume) in the first application to enhance the effectiveness of streptomycin. Regulaid would be especially beneficial when applied under rapid drying conditions. Regulaid can be omitted from subsequent applications so as to minimize the leaf yellowing that is sometimes associated with repeated applications of streptomycin. If later antibiotic applications are needed, streptomycin or kasugamycin (Kasumin 2L, 64 fl oz/A in 100 gallons of water) should be used. Consider making at least one application of Kasumin 2L for resistance management

purposes. If there are concerns about the effectiveness of streptomycin or kasugamycin, contact the authors of this article to discuss the product failure and determine if it would be necessary to submit a sample for antibiotic resistance testing. The presence of shoot blight later in the season isn't necessarily an indication that antibiotics applied during bloom failed due to resistance.

6 - In the two weeks following bloom, scout for and prune out fire blight strikes promptly. Destroy pruned strikes by burning or leaving them out to dry. It is best to prune well back into healthy wood, at least 12 inches behind the water-soaked margin. Take care, as summer pruning may stimulate active shoot growth, leading to new susceptible tissues that could later become infected. If fire blight reaches the central leader, the tree should be removed. However, the spot in the orchard may be safely replanted.

7 - Preventive applications of prohexadione-calcium (Apogee or Kudos) for shoot blight should be seriously considered, especially on highly-susceptible apple varieties during shoot elongation beginning in late bloom.

a. Best results with prohexadione-calcium are often achieved by applying 6-12 oz/100 gal (3-6 oz/100 gal for tree <5 years) when trees have 1-2" of shoot growth. A second application should be made 14-21 days later.

b. Programs where prohexadione-calcium is applied at low rates slowly over the period of active shoot growth are gaining popularity as a means of providing disease control and reducing impacts on tree productivity. Specific programs may vary slightly, but generally consist of three applications at 1-2 oz/100 gal on a 14-day schedule, beginning with early shoot growth in mid to late bloom. Take caution, as such programs have not been widely validated over many seasons and locations.

8 - Preventive applications of copper can be used post-bloom and during the summer to protect against shoot blight infections. Copper must be applied before infection occurs, as it will only reduce bacteria on the surface of tissues. Copper will have no effect on existing shoot blight infections. Copper may cause fruit russet in young developing fruit. Apply with adequate drying time and use hydrated lime to "safen" copper. Terminal shoots can outgrow protective residues of

copper. Hence, a low-rate fixed copper program consists of applications on a 7-10 day schedule during high risk weather until terminal bud set.

9 - It may be possible to save plantings on resistant rootstocks that have a moderate amount of shoot blight. Apply a rescue treatment of prohexadione-calcium at the highest rate to the planting (6-12 oz/100 gal) and allow 5 days for the product to affect the tree. Afterwards, prune out existing and newly developing shoot blight every two weeks for the rest of the season. Remove any trees where fire blight has reached the central leader. If pruning seems to stimulate additional shoot growth, a second application of prohexadione-calcium could be warranted.

10 -If you need to interplant apple trees in existing orchards where fire blight was observed, replant in late fall to better synchronize bloom with the established trees in the following season.

### **Additional guidelines for new plantings (1-2 years)**

1 - If possible, plant varieties grafted on fire blight-resistant rootstocks.

2 - Trees should be carefully examined for fire blight infections before planting. Any infected trees should be discarded.

3 - Immediately after planting, and 14 days later, a copper application should be made using the lower copper rates that are labeled for use after green tip. Ensure that soil has settled to avoid phytotoxicity to roots.

4 - Until we better understand the use pattern, it is not advisable to apply prohexadione Ca to young plantings.

5 - Trees should be scouted at 7-day intervals for fire blight strikes until July 31st. Infected trees should be removed as described above. Plantings also need to be scouted 7-10 days after hail or severe summer storms. The NEWA fire blight disease forecast tool ([newa.cornell.edu/index.php?page=apple-diseases](http://newa.cornell.edu/index.php?page=apple-diseases)) can assist by providing an estimate of symptom emergence following a storm or other trauma event. Also, scout the planting at the end of the season (mid-September).

6 - If possible, remove flowers before they open. New plantings may have considerable numbers of flowers the first year, and blossom removal may not be

practical. If practiced, the blossoms should be removed during dry weather and before a lot of heat units have been accumulated, because both factors contribute to higher risk of fire blight infection.

7 - Trees should receive an application of copper at a stage equivalent to bloom. Observe the labeled REI before blossom removal.

8 - To protect any remaining bloom, follow the chemical management program for your regions of streptomycin resistance risk.

### **Guidelines for on-farm nursery production**

1 - Collect budwood from orchards where fire blight is not established or from a neighboring farm without fire blight.

2 - Limit streptomycin and kasugamycin applications to 2-3 per season. These should be timed according to a disease forecast prediction or CCE alert.

3 - When fire blight pressure is high and shoots are actively growing, apply copper at the lowest labeled rate to prevent shoot blight.

4 - Before conducting tree management tasks in the nursery, apply a copper product at the lowest labeled rate and observe the labeled REI.

5 - Any pinching or leaf twisting should be practiced on dry sunny days with low relative humidity, after the REI of a copper application has expired.

6 - When working in the nursery, field workers must wear clean clothing, and should wash hands and disinfect working tools often.

7 - If fire blight is found in the nursery, completely remove the infected trees including the root system, and place them in trash bags between rows. Subsequently, remove the culled trees from between the rows and discard them. Under no circumstances should infected trees be pulled between nursery rows when trees are wet, otherwise fire blight may be spread down the rows.

8 - Maintain weed control through cultivation. Apply registered post-emergence herbicides using a shielded boom. There are some residual herbicides registered for use in nurseries.

9 - When trees have reached the desired height, consider applying the lowest labeled rate of Apogee (1-2 oz/100 gal) to slow growth and reduce susceptibility to shoot blight.

10 - Manage nitrogen levels to balance tree growth and fire blight susceptibility.

## **[Section: INSECTS]**

### DRIVEN TO PINK

(Art Agnello, Entomology, Geneva; [ama4@cornell.edu](mailto:ama4@cornell.edu))

### **[Box text: DON'T BLINK]**

Last week finally delivered on the promise of some of the season's first summer weather, so most areas in western NY should be within hailing distance of pink bud by now, and the Hudson Valley has vaulted past and is already seeing apple bloom. Insect management duties at this period have always been somewhat transitory, and not nearly as urgent as at petal fall, but the following might help put the various possibilities into perspective for those that can take advantage of them.

First, if **San Jose scale** is a concern and you have yet to do anything to head it off, there is still a limited window of suitable management tactics available before foliar development progresses too far to permit effective coverage. If you were intending to use oil, a 1% spray through tight cluster (provided you're not past it) can be quite effective, provided you're able to thoroughly cover the wood surfaces. Insecticidal options include Centaur (34.5 oz/A), Esteem (4–5 oz/A), Lorsban (4EC or Advanced at 1.5–4 pt/A; or 75WG at 2–2.67 lb/A) or Supracide 2EC at 3 pt/A). Remember that you are limited to only 1 application of Lorsban in apples per season, whether prebloom as a foliar or trunk spray, or as a postbloom trunk application.

The pests of greatest concern at pink bud are usually **rosy apple aphid** (RAA), **oriental fruit moth** (OFM), and **tarnished plant bug** (TPB), with **European apple sawfly** and **plum curculio** waiting in the wings, optimally for attention at petal fall. OFM just made its entrance in Geneva last Friday and in Highland today, so it will not be too long before biofix is established in a number of plantings statewide. In blocks with a history of OFM infestation, 1 or 2 traps checked at least weekly will help indicate the timing and relative size of the first

generation population this year. What should be the response when the numbers start building?

In a normal year, the average temperature ranges tend to result in very little egg hatch during pink and bloom, as this usually holds off until petal fall. For growers wishing to save A-list products like Altacor or Delegate until after petal fall, a B.t. product would be an option from pink through bloom. Regardless, don't neglect the value of using (and frequently checking) pheromone traps to set the clock on both OFM and codling moth development in specific blocks. Also, the value of mating disruption as a component of OFM and CM management programs cannot be overstated. Now is the optimal time to deploy pheromones for both of these species; although CM starts to fly a bit later, our favored approach is to use products that incorporate the mating pheromones of both insects, so it's prudent to act now to ensure that you're ready for their emergence. These first flights of the season give us the best opportunity to get on top of internal worm control, because timing and development of the different stages only gets more complicated (i.e., less synchronized) as the season progresses.

Depending on block history and personal philosophy, RAA and TPB can be either annual challenges, puzzling but token annoyances, or else a complete flip of the coin. Do they occur, do they need to be treated, are they able to be controlled adequately, and does it matter if they're just ignored? These pests also have yet to indicate their potential for problems this season, although it's likely that rosies can be found already in some orchards, given enough inspection. It's possible to scout for RAA at pink, but this is often not practical, considering all the other things demanding your attention at this time. TPB is not a good candidate for scouting, and if the bloom period is prolonged by cool, wet weather, a pink spray is of little use. You'll need to decide for yourself whether this bug is of sufficient concern to you to justify treating.

We have seen few orchards in western NY (and only slightly more in the Hudson Valley) where TPB control is warranted, simply because the most effective treatment has been to use a pyrethroid, which: a) kills predator mites, and b) still rarely lowers TPB damage enough to be economically justified. If you elect a spray of Asana, Baythroid, Danitol, Gladiator, Pounce, Warrior or Voliam Xpress/Beseige at pink for plant bug, you'll take care of rosy apple aphid (plus mullein plant

bug and STLM) at the same time. If RAA is your main concern, you could elect a pink spray (non-pyrethroid options include Actara, Assail, Beleaf, Esteem, Lannate, Lorsban, or Vydate) if you have the luxury of a suitable application window. Once again, be sure to consider potential impacts on non-target species such as beneficials, and be aware of your bee supplier's concerns about effects on pollinating bees.

**Leafrollers** are also out there, but only a portion of the population will be active at this time, so although you might get good control of any larvae you spray now, don't forget that the rest of the population won't be out (and susceptible to sprays) until bloom or petal fall, so it's probably better to wait until then to address this pest.

Finally, if **mites** normally need attention in a given block, and you haven't elected (or been able to use) a delayed-dormant oil application as a part of your early season mite management program, you'll be needing to rely on either: one of the ovicidal acaricides (Apollo, Savey/Onager, Zeal) available for use, whether before or after bloom; a rescue-type product after bloom (add Acramite, Envidor, Kanemite, Nealta, Nexter, and Portal to the above list) that can reduce motile numbers later

on if they should begin to approach the threshold; or Agri-Mek, which falls somewhere between these two strategies. Like the true ovicides, Agri-Mek should also be considered a preventive spray, as it needs to be applied early (before there are very many motiles) to be most effective, generally within the first 2 weeks after petal fall. Recall that Proclaim is related to Agri-Mek, and also has some miticidal activity, if you expect to use it at petal fall for leafrollers. For any of the rescue products, the operational threshold (through June) is an *average* of 2.5 motiles per leaf (see the chart on p. 75 of the Recommends).

---

—  
This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

Scaffolds is published weekly from March to September by Cornell University -- NYS Agricultural Experiment Station (Geneva), and Ithaca -- with the assistance of

Cornell Cooperative Extension. New York field reports welcomed. Send submissions by 2 p.m. Monday to:

Scaffolds Fruit Journal

Editor: A. Agnello

Dept. of Entomology, NYSAES

630 W. North St.

Geneva, NY 14456-1371

Phone: 315-787-2341 FAX: 315-787-2326

E-mail: ama4@cornell.edu

Online at

<<http://www.scaffolds.entomology.cornell.edu/index.html>>