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Update on Pest Management and Crop Development
May 9, 2016

COMING EVENTS

	43°F	50°F
Current DD* accumulations		
(Geneva 1/1-5/9):	321.7	133.3
(Geneva 1/1-5/9/2015):	316.1	177.2
(Geneva "Normal"):	367.3	188.9
(Geneva 1/1-5/16, predicted):	405.3	180.2
(Highland 1/1-5/9):	576.7	247.0

Upcoming Pest Events – Ranges (Normal +/- Std Dev):

American plum borer 1st catch ..	390-516	194-284
Comstock mealybug		
1st gen crawlers in pear buds ...	215-441	80-254
European red mite		
egg hatch complete.....	368-470	182-280
Green fruitworm flight subsides .	264-460	122-248
Lesser appleworm		
1st adult catch.....	271-565	127-307
Lesser appleworm		
1st flight peak.....	354-772	176-442
Mirid bugs 1st hatch	331-443	163-229

Obliquebanded leafroller		
larvae active	158-314	64-160
Oriental fruit moth		
1st flight peak	331-537	168-286
Rose leafhopper		
nymphs on multiflora rose	239-397	96-198
Spotted tentiform leafminer		
1st flight peak	269-409	125-215
Spotted tentiform leafminer		
mines present	367-641	170-342
White apple leafhopper		
nymphs on apple	302-560	146-308
McIntosh bloom	346-416	172-218

*[all DDs Baskerville-Emin, B.E.]

Phenologies

Geneva:	Current	5/9, Predicted
Apple (McIntosh):	king bloom+	full bloom
Apple (Empire/R. Del.):	king bloom	full bloom
Pear (Bartlett/Bosc):	50%-full bloom	petal fall
Sweet Cherry (early):	80% petal fall	petal fall-fruit set
Sweet Cherry (late):	full bloom	petal fall
Tart Cherry:	full bloom	petal fall
Plum:	90% petal fall	petal fall

Highland:

Apple
(McIntosh): 90% petal fall
(Empire/Ginger Gold/Red Delicious): 80% petal fall
Pear
(Bartlett, Bosc): fruit set
Peach (early/late): petal fall-shucks on

TRAP CATCHES (Number/trap/day)
Geneva

	4/29	5/2	5/5	5/9
Green Fruitworm	6.0	1.5	0.5	3.0
Redbanded Leafroller	9.5	14.5	37.0	11.5
Spotted Tentiform Leafminer	0.0	12.0	64.0	40.0
Oriental Fruit Moth	0.0	3.5*	5.5	5.5
Lesser Apple Worm	-	-	-	0.0

Highland (Peter Jentsch)

	4/18	4/25	5/2	5/9
Green Fruitworm	<0.1	0.2	<0.1	0.1
Redbanded Leafroller	8.4	21.6	4.0	2.6
Spotted Tentiform Leafminer	19.5	96.9	12.7	7.6
Oriental Fruit Moth	0.0	16.4*	1.9	2.7
Lesser Appleworm	-	-	1.1*	0.3
San Jose Scale	-	-	0.0	0.0

* 1st catch

ORCHARD RADAR DIGEST

[Box Text: WAIT FOR IT]

Geneva Predictions:

Roundheaded Appletree Borer

RAB egglaying begins: June 12. Peak egglaying period roughly: June 30 to July 14. First RAB eggs hatch roughly: June 27.

Dogwood Borer

First DWB egg hatch roughly: June 29.

Codling Moth

1st generation 3% egg hatch expected: June 12.

Lesser Appleworm

1st LAW trap catch: May 17.

Mullein Plant Bug

Expected 50% egg hatch date: May 20, which is 6 days before rough estimate of Red Delicious petal fall date

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 12.

Oriental Fruit Moth

1st generation 55% egg hatch and first treatment date, if needed: June 2.

San Jose Scale

First adult SJS caught on trap: May 25.

1st generation SJS crawlers appear: June 22.

Spotted Tentiform Leafminer

1st STLM flight peak trap catch: May 15.

1st generation sapfeeding mines start showing: May 26

White Apple Leafhopper

1st generation WALH found on apple foliage: May 19.

[Section: DISEASES]

MANAGING FIRE BLIGHT IN 2016

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[Box text: FIRE AND RAIN]

2015 Fire Blight Season

Given the number and magnitude of fire blight outbreaks throughout NY and the New England states in 2014, there was a lot of apprehension about fire blight in 2015. In western NY and the Lake Champlain region, bloom came and went quickly in a burst of warm weather from beginning to the end of May with the warmest weather happening around May 11th. While blossom blight was fairly manageable or unproblematic, shoot blight was fairly devastating for many operations in areas that received 5–7" of warm (>60°F) rains during active shoot growth in June. Orchards ranged from having little to no shoot blight following bloom to having devastating shoot blight that ran unchecked with the warm weather, vigorous growth, and ample moisture.

The situation in the Hudson Valley was quite different. The bloom was earlier in late April and lasted through the end of May, with consistently warm weather that led to some severe blossom blight model predictions from May 5–21. Fortunately, apple growers in the Hudson Valley managed to avoid blossom blight and subsequent shoot blight infections. There were some light rains at bloom, and growers expected to see infections, but little to no fire blight was observed. While it would be nice to believe that the lack of fire blight was due to the efficacy of aggressive management programs, there is concern that lack of appropriate consideration of moisture sources on the part of the models led to many type I errors (i.e., fire blight infections were predicted, but did not occur). While not as egregious as type II errors (fire blight not predicted, but infections occurred), it was frustrating for growers who felt that streptomycin applications weren't warranted. For a greater discussion of the 2015 situations in the Hudson Valley, see Dave Rosenberger's blog: (http://blogs.cornell.edu/plantpathhvl/2016/04/21/credibility-of-fire-blight-forecasts/).

Present Situation

Currently, orchards in eastern NY are in bloom to petal fall, and the weather has been fairly cool and a bit rainy. It

seems that both models and regional extension specialists are in agreement that there is a low risk of blossom blight infection. Moreover, the apparent lack of fire blight in eastern NY in 2015 should further reduce concerns of blossom blight in eastern NY. However, such orchards would still be at risk for shoot blight infections later in the season. Western NY may bloom this week depending on the location and variety. It is important to consider that orchards with considerable shoot blight outbreaks in 2015 could have inoculum present during bloom left over from overwintering cankers. The cool weather preceding bloom should be good for keeping inoculum levels low, but there may be several days in the 60s and maybe 70s, with rain toward the end of the week. 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 Maryblyt, here are three things to consider before making applications of antibiotics or other costly materials for blossom blight:

1 - The models really only help you identify periods of weather that are favorable for infection. Despite the use of words like "extreme" and "infection" colored in vibrant red, what is really predicted is extremely favorable weather. Also, weather predictions can vary and change on a daily basis. When this happens, the model predictions will change drastically, and the risk will change as well.

2 - Consider the presence of fire blight in previous seasons in the planting. If there wasn't fire blight in the previous season or if you've never had fire blight, don't let model predictions or extension alerts (such as this article) "scare you" into applying unnecessary antibiotics.

3 - The age of the planting and the susceptibility of variety planted play a large part in the development of fire blight, and none of the models consider these factors in detail. If you have a 1–2-year old planting of a highly susceptible variety, it may be more important to protect these blocks based on model predictions. However, a 15-year old McIntosh planting on resistant rootstocks may not warrant protection during bloom.

Antibiotic Resistance and Management

Although the specter of streptomycin resistance in western and central NY has been absent for the last two years, fire blight can still be very difficult to control if weather favors the pathogen. Moreover, the shoot blight phase of the disease can still present a considerable problem, despite the success or failure of 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 and the registration of Kasumin 2L. Kasugamycin is another aminoglycoside antibiotic like streptomycin, and while it doesn't have local

systemic activity, it is an effective alternative antibiotic to streptomycin and provides excellent blossom blight control. In 2016, we will be continuing to screen fire blight samples for streptomycin- and kasugamycin-resistant *Erwinia amylovora*. Information on submitting samples is outlined at the end of the guidelines.

Below we present our guidelines for managing fire blight. The guidelines are broken up into four sections: guidelines for production regions where streptomycin has never been detected, chemical management guidelines for high risk regions where streptomycin resistance has been detected, guidelines for new plantings, and guidelines for on-farm nursery production.

GUIDELINES FOR PRODUCTION REGIONS WHERE STREPTOMYCIN RESISTANCE HAS NEVER BEEN DETECTED

1 - All fire blight cankers should be removed during winter pruning. Remove all trees with central leader or main trunk infections. Infected wood should be removed from the orchard and either burned or placed where it will dry out rapidly.

2 - Copper sprays should have been 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 - When blossom infection is forecast, apply at least 24 oz/acre of streptomycin. If there are concerns about the effectiveness of streptomycin, submit a sample for testing and follow the guidelines for regions where streptomycin resistance has been confirmed. Consider including the penetrating surfactant Regulaid (1 pt/100 gal of spray solution) in the first streptomycin spray 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 strep. If later antibiotic applications are needed, streptomycin or kasugamycin (Kasumin 2L) should be used.

4 - Prohexadione-Calcium (Apogee) applications [6–12 oz/100 gal (3–6 oz/100 gal for tree <5 years)] for shoot blight should be seriously considered, especially on highly susceptible varieties when apple trees have 1–3 inches of shoot growth, typically late bloom. A second treatment should be made 14–21 days later. This is a preventive treatment and will not be effective if you wait until you see signs of infection.

5 - Fire blight strikes should be pruned out promptly and destroyed. It is best to prune well back into healthy wood, at least 12 inches behind the water soaking margin or into 2nd year wood.

6 - If severe blossom blight occurs where strep was applied in a timely manner, contact CCE for SmR Ea testing (see Sample Submission Instructions). No quarantine will be imposed if SmR Ea is found in your orchard, as SmR Ea is not a regulated pathogen.

7 - 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.

CHEMICAL MANAGEMENT GUIDELINES FOR HIGH RISK REGIONS WHERE STREPTOMYCIN RESISTANCE HAS BEEN DETECTED (confirmed SmR Ea)

Follow the guidelines (above) ***except for the following differences***:

1 - If **SmR Ea** has been confirmed at your operation:

a - When the first blossom infection is forecast, apply kasugamycin (Kasumin 2L) at 64 fl oz/acre in 100 gallons of water. Do not spray alternate row middles. Do not apply after petal fall. The PHI is 90 days. The REI is 12 hours. Consider including the penetrating surfactant Regulaid (1 pt/100 gal of spray solution) to enhance the effectiveness of kasugamycin.

b - At the 2nd high risk period, apply a tank mix of streptomycin at 24 oz/acre in combination with either

oxytetracycline* at 32 oz/acre, or a bloom time rate of a registered copper** product.

c - At the 3rd or 4th high risk periods, repeat steps 'a' and 'b', respectively.

2 - If **SmR Ea** has **not** been confirmed at your operation, but is present in the region:

a - When the first blossom infection is forecast, apply a tank mix of streptomycin at 24 oz/acre in combination with either oxytetracycline* at 32 oz/acre, or a bloom time rate of a registered copper** product.

b - At the 2nd high risk period, apply kasugamycin (Kasumin 2L) at 64 fl oz/acre in 100 gallons. Consider including the penetrating surfactant Regulaid (1 pt/100 gal of spray solution) to enhance the effectiveness of kasugamycin.

c - At the 3rd or 4th high risk period, repeat steps 'a' or 'b', depending on concerns about the effectiveness of streptomycin.

3 - Prohexadione-Calcium (Apogee) sprays should be applied at 6–12 oz/100 gal (3–6 oz/100 gal for tree <5 years) at 1–3 inches shoot growth. A second treatment should be made 14–21 days later. Apogee will not be effective if applied after you see fire blight symptoms.

*Oxytetracycline must be applied before infection occurs, since it is only bacteriostatic (stops bacteria from multiplying) and will leave live cells behind. Therefore, monitor fire blight forecasts and heed CCE alerts carefully when using oxytetracycline. Data from university field research trials suggest that different formulations of the same antibiotic active ingredient may perform differently in the field. Consult with specialist before choosing the product for your operation.

**Copper must be applied before infection occurs. Therefore, monitor fire blight forecasts and heed CCE alerts carefully when using copper. Copper may cause fruit russet. Hydrated lime may be used to safen copper. An example would be Badge SC at rate of 0.75 to 1.75 pints /acre buffered with 1–3 lbs. of hydrated lime for every 2 pints of Badge to minimize fruit finish damage.

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. Infected trees should be submitted for strep resistance testing and subsequently

discarded. Contact CCE for SR Ea testing, listed under "Sample Submission", below.

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 - 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 disease forecasting model for fire blight 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).

5 - 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 and there is a high risk of fire blight infection.

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

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

8 - Samples of any infections observed after planting should be submitted for strep resistance testing — see contact information below. Infected trees should be removed entirely in these high density orchards.

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 model 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 done 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 their hands and disinfect working tools often.

7 - If fire blight is found in the nursery, completely remove the infected tree, 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 unbagged infected trees be pulled between nursery rows when trees are wet, otherwise fire blight will be spread down the rows.

8 - Control potato leafhoppers in the nursery using a registered product.

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

10 - When trees have reached the desired height, consider applying the lowest labeled rate of Apogee to slow growth and reduce susceptibility to shoot blight. Manage nitrogen levels to balance tree growth and fire blight susceptibility.

SAMPLE SUBMISSION INSTRUCTIONS

If fire blight-infected trees and strikes are observed after proper streptomycin application, call or email one of the persons below to provide you with sample submission instructions, and possibly to come and collect samples and take data on the situation.

- Tess Grasswitz, Tel: 585-261-0125

email: tg359@cornell.edu

Lake Ontario region

• Dan Donahue, Tel: 845-691-7117
email: djd13@cornell.edu
Hudson Valley region

• Anna Wallis, Tel: 518-410-6823
email: aew232@cornell.edu
Lake Champlain region

• Juliet Carroll, Tel: 315-787-2430,
email: jec3@cornell.edu
Western NY

• Kerik Cox, Tel: 315-787-2401,
email: kdc33@cornell.edu
Statewide

[Section: CHEM NEWS]

NEALTA MITICIDE LABELED IN NYS

BASF has obtained a NYS registration for Nealta (EPA Reg. No. 7969-336), a miticide labeled for the control of European red mite and twospotted spider mite in apples and pears. Cyflumetofen, the active ingredient, is a respiration inhibitor in IRAC Group 25, one of the "METI" (mitochondria electron transport inhibitor) compounds; to help prevent the development of resistance, rotate its use

with a product in another IRAC group. This product has a restricted-entry interval of 12 hours and a PHI of 7 days.

DANITOL 2(ee) REGISTRATION FOR BLACK STEM BORER

The NYS DEC has approved a 2(ee) Supplemental label for the use of Danitol against black stem borer in apples. This label, which must be in the possession of the user at the time of application, can be accessed on the PIMS website at: http://pims.psur.cornell.edu/LabelResults.php?ProductId=219246&SearchPage=ProductName.php.

[Section: GENERAL INFO]

EVENT ANNOUNCEMENTS

The Cornell Fruit Field Day will be held in Geneva on Wednesday, July 20. This event, being organized by Cornell University, the NYS Agricultural Experiment Station, CALS Fruit Program Work Team and Cornell Cooperative Extension, will feature ongoing research in berries, hops, grapes, and tree fruit. All interested persons are invited to learn about the fruit research under way at Cornell University. Attendees will be able to select from tours of different fruit commodities. It will be based at the NYSAES Fruit and Vegetable Research Farm South, 1097 County

Road No. 4, 1 mile west of Pre-emption Rd. in Geneva, NY. Admission is $50/person ($40 for additional attendees from the same farm or business). Pre-registration is required; walk-in registration may be available for a $10 surcharge on the day of the event. Please use the registration link below to register via credit card:
http://events.cals.cornell.edu/ffd2016

CORNELL AND CCE EMPLOYEES get free admission, but please pre-register using the same link; there's a **Cornell Staff** tab at the top of the home page, which will take you to a page to pre-register and select your lunch option.

To participate as a sponsor, see the website page or contact Shelly Cowles (315-787-2274; mw69@cornell.edu).

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