Cornell Cooperative Extension
Finger Lakes Grape Program

August 15th, 2019

Finger Lakes Vineyard Update

Managing Fruit Flies for Sour Rot 2019

Greg Loeb and Hans Walter-Peterson

In This Issue:

Managing Fruit Flies for Sour	pg. 1
Grape Berry Moth	pg. 4
Crop Insurance	pg. 5
Events	pg. 7
GDD	pg. 8

As many wine growers are aware, 2018 was a bad year for sour rot. A number of factors probably contributed to this but one factor that was clearly involved at one vineyard site in the Finger Lakes was failure of insecticides (particularly Mustang Maxx) to control Drosophila fruit flies. As we have reported previously, fruit flies (also called vinegar flies) significantly contribute to sour rot through mechanisms we do not fully understand. Nevertheless, insecticides targeting them prior to harvest (after about 15 Brix), coupled with biocides such as Oxidate targeting contributing microbes, have been shown to reduce the incidence and severity of sour rot. Several species of fruit flies probably contribute to the problem. Our research has actually indicated that *Drosophila melanogaster* (the common fruit fly of genetics fame often found in kitchens in the summer) is more commonly found in grapes than the invasive spotted wing drosophila, *Drosophila suzukii*, though both species likely contribute to our sour rot problems. Wine growers have increasingly been applying insecticides near harvest as part of their sour rot management program, primarily relying on the pyrethroid insecticide, Mustang Maxx. Recently, working with our Cornell colleague Dr. Jeffrey Scott, we have shown that a local population of *D. melanogaster* has developed resistance to Mustang Maxx, as well as Assail, a neonicotinoid, and malathion, an organophosphate. The population is still susceptible to spinosyn (Delegate or Entrust). We have not detected evidence of insecticide resistance for spotted wing drosophila in New York, however. We do not know how wide spread this *D. melanogaster* resistance issue is but we should have a better idea after this field season. In the meantime, we want to emphasize the need to rotate among several different classes of insecticides in order to slow the development of resistance. Mustang Maxx has several attributes that make it a logical choice for many growers including good efficacy against fruit flies and importantly, a short days to harvest (DTH) restriction of 1 day. Despite these advantages, **it is essential, as part of a resistance management program, to rotate to other classes of insecticides.**

Here we want to review the chemical control options available for controlling Drosophila fruit flies to aid in developing your sour rot control program. Below is a table of the products currently labeled for use against either Drosophila fruit flies or specifically for spotted wing drosophila, including materials added through 2ee label exemptions. We provide the product name, chemical name, insecticide class (IRAC number), days to harvest restrictions and other notes. We do not recommend initiating your chemical control program until grapes reach about 15 Brix. Prior to this, it's not likely that many fruit flies will be present in your vineyard. We caution you to be conservative with sprays. For example, some cultivars with loose clusters such as Cab Franc and Lemberger, are not particularly susceptible to sour rot. Cultivars with tight clusters, such as Riesling and Vignoles, are more prone to sour rot issues. Also, be aware of other factors contributing to sour rot risk.

Managing Fruit Flies for Sour Rot in 2019

Greg Loeb and Hans Walter-Peterson

For example, if the weather leading up to harvest is conducive to sour rot development (e.g. wet and warm conditions) be more diligent with your sprays, but if conditions are not conducive to sour rot, consider reducing sprays at least for cultivars that are not especially susceptible. Another important factor is minimizing berry damage from birds and direct insect pests such as grape berry moth as much as possible.

Some additional comments about insecticides. For insecticides listed in the table below that are allowed through 2ee exemption, make sure to have the exemption in your possession. You can download these from the NYS DEC PIMS web site (http://www.dec.ny.gov/nyspad/products). Note that some insecticide labels list Drosophila species or fruit flies generally. Others only list spotted wing drosophila. In the later situation, legally you must be targeting spotted wing drosophila. We have limited information on how frequently insecticides and biocides should be applied. Our initial studies started sprays at about 15 Brix and continued on a weekly basis until near harvest. We suspect we can reduce the number of sprays without loss of efficacy but we don't have enough data yet to make specific recommendations. Unless you believe you had a control failure the previous year associated with application of Mustang Maxx, it should be ok to use in your rotation. We suggest using at least three different classes of insecticides (different modes of action, e.g. different IRAC classes) in a season, taking into consideration efficacy, days to harvest restrictions and other restrictions such as total amount of active ingredient (A.I.) allowed and insecticides applied in your vineyard targeting other pests. For example, Delegate (a spinosyn) is considered a very good material against spotted wing drosophila but it has a 7 DTH restriction. There are also limitations to the total amount of A.I. allowed in a season and you also must rotate to a new class after two successive sprays.

Finally, please let us know if you have observed what appears to be a control failure for an insecticide application targeting fruit flies. An indication of a control failure would be observing numerous healthy-looking adult fruit flies in the vineyard block immediately or shortly after an insecticide application. Some adults might be expected with continual emergence, but populations should be noticeably lower.

Table 1. List of insecticides for use against Drosophila fruit flies (vinegar flies) labeled in New York including trade and common names, IRAC (Insecticide Resistance Action Committee) chemical class based on mode of action, days to harvest restriction and other information. Also see the NY and PA grape guidelines for additional information.

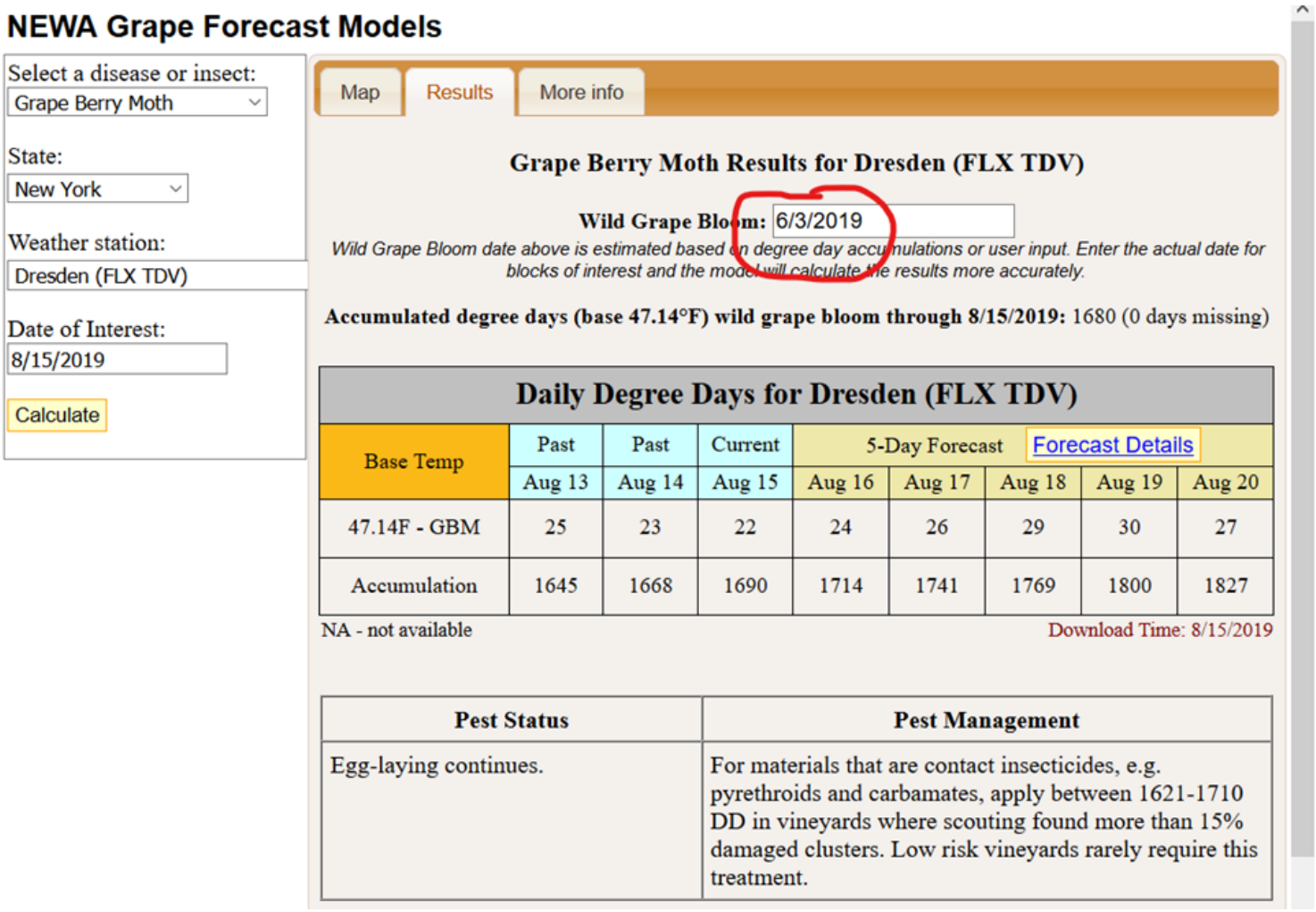
Product name	EPA Number	IRAC Code	2(ee) required?[a]	Rate	REI (hrs)	PHI (days)	Reapplication interval (days)[b]	Max applications per season	Maximum product applied per season	Comments
Assail 30SG	8033-36-70506	4A	Yes	4.5-5.3 oz/acre	12	3	14	2	10.6 oz	2ee required for SWD. Good but not great efficacy. Do not use an adjuvant.
Danitol 2.4 EC	59639-35	3A	No	11-21 fl oz/acre	24	21	7	2	42 fl oz	'Vinegar flies' and SWD listed on the label.
Delegate WG	62719-541	5	No	3-5 oz/acre	4	7	4	5	19.5 oz	SWD is listed on recent label. Older labels may not include SWD. No more than 2 consecutive applications of Group 5 materials.
Entrust SC	62719-621	5	Yes	4-8 fl oz/acre	4	7	5	5	23 fl oz	2ee required for SWD. OMRI listed. No more than 2 consecutive applications of Group 5 materials.
Grandevo WDG	84059-27	NA	No	2-3 lbs/acre	4	0	NA	NA	NA	Based on entopathogenic bacteria. Labeled for fruit flies. Organic. Modest efficacy but potential rotation option with Entrust SC for organic growers.
Malathion 5EC	19713-217	1B	No	3 pints/acre	24	3	14	2	6 pints	Drosophila included on the label. Use max rate.
Malathion 57%	67760-40-53883	1B	No	3 pints/acre	24	3	14	2	6 pints	Drosophila included on the label. Use max rate.
Malathion 8 Aquamul	34704-474	1B	No	1.88 pints/acre	24	3	14	2	3.76 pints	Drosophila included on the label. Use max rate.
Mustang Maxx	279-3426	3A	No	4.0 fl oz/acre	12	1	7	6	24 fl oz	'Vinegar flies' and SWD listed on the label.

[a] If yes, a copy of the 2(ee) approval must be in possession when the material is applied.

[b] Minimum number of days before reapplication of the material.

Grape Berry Moth

It's been a few weeks since I have looked at the grape berry moth (GBM) model to see where we stand with regard to our next window for applications, if they're necessary. As of today (August 15), warmer sites in the Finger Lakes like our Teaching Vineyard are nearing the end of the period where sprays for the third GBM generation should be applied (see photo below). I circled the biofix date of wild grape bloom as a reminder to be sure that the model uses the correct biofix date for your location when you use it. At least in some situations, the model will auto fill the wrong date for your particular location which can result in poor predictions from it. In our case, the model uses June 8 as the biofix date if we don't change it to the correct one, June 3. Cooler sites in the region like Branchport, Hammondsport and Wayne County are either early in the window or still approaching it, so growers in these areas should be checking their GBM hotspots now to see if there is sufficient activity to warrant a spray. The recommended threshold for action for this generation of GBM is 15% of scouted clusters showing symptoms of GBM activity. If there are fewer than this number of clusters with GBM stings in areas that are most heavily impacted by this pest, the benefits of a spray may not be worth the cost of the application.



NEWA Grape Forecast Models

Select a disease or insect: Grape Berry Moth

State: New York

Weather station: Dresden (FLX TDV)

Date of Interest: 8/15/2019

Calculate

Map | Results | More info

Grape Berry Moth Results for Dresden (FLX TDV)

Wild Grape Bloom: 6/3/2019

Wild Grape Bloom date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the results more accurately.

Accumulated degree days (base 47.14°F) wild grape bloom through 8/15/2019: 1680 (0 days missing)

Daily Degree Days for Dresden (FLX TDV)

Base Temp	Past	Past	Current	5-Day Forecast				Forecast Details
	Aug 13	Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20
47.14F - GBM	25	23	22	24	26	29	30	27
Accumulation	1645	1668	1690	1714	1741	1769	1800	1827

NA - not available

Download Time: 8/15/2019

Pest Status	Pest Management
Egg-laying continues.	For materials that are contact insecticides, e.g. pyrethroids and carbamates, apply between 1621-1710 DD in vineyards where scouting found more than 15% damaged clusters. Low risk vineyards rarely require this treatment.

NY Crop Insurance Fact Sheet

Grape SCO for FLGP Counties 2018

What is SCO and how does it work?

The Supplemental Coverage Option (SCO) is an additional crop insurance option that provides coverage for a portion of the underlying crop insurance policy deductible. It follows the coverage of the underlying policy. For an underlying Yield Protection policy, the SCO covers yield loss.

Loss payments are made when there is a loss in yield for the designated SCO area. It is NOT based on the individual policyholder's yield performance.

What is the cost and coverage?

SCO increases the level of coverage to 86% of a producer's APH Yield. The SCO endorsement results in an additional premium and administrative fee.

The amount of protection and cost is based on the underlying policy coverage:

- Lower underlying coverage, higher SCO protection and cost
- Higher underlying coverage, lower SCO protection and cost
- There is no coverage overlap between underlying and SCO coverage
- Covers all planted acreage of the crop.

When is an indemnity paid?

The indemnity is based on area yield loss for yield protection plans. The producer should keep basis risk, or the relationship between a farm and area-level yields, in mind when considering an SCO endorsement for a crop insurance policy. Indemnity payments begin if area yield is less than 86% of the expected SCO yield (area loss more than 14%).

The actual amount of the SCO indemnity payment is based on the individual underlying policy. The maximum value of the indemnity payment is:

(86% - Individual Underlying Policy Coverage Level) X Expected Crop Value

where the Expected Crop Value is:

(APH yield X price election)

SCO for FLGP-county producers

New York state grape producers have the option of purchasing the SCO endorsement for an Actual Production History (APH) policy. Like the underlying APH Grape policy, the SCO will also be guaranteeing yield, based on the yield of a larger area. There are varying established prices for grapes covered by SCO, which depend on the variety and SCO area.

FLGP-county Grape SCO Areas

The counties that make up an SCO area can vary greatly across the areas. For example, if county A's SCO area consists of counties A and B, it is does not necessarily mean that county B's SCO area also consists of counties A and B. It is also possible for a county's SCO area to consist of all counties where the crop of interest is insured within the state. **RMA's explanation for SCO area selection is based on data availability. If yield data are not sufficient for a county, other counties are added to the SCO group to achieve a sufficient yield database.**

For more NY crop insurance information, visit: www.agriskmanagement.cornell.edu

NY Crop Insurance Fact Sheet

FLGP Grape SCO 2018 (reverse)

The SCO Grape Areas for each FLGP county:

SCO Area	Included Counties
Ontario	Ontario, Seneca, Steuben, Wayne, Yates
Schuyler	Schuyler, Seneca, Steuben, Yates
Seneca	Ontario, Schuyler, Seneca, Wayne, Yates
Steuben	Ontario, Schuyler, Steuben, Yates
Wayne	Ontario, Schuyler, Seneca, Steuben, Wayne, Yates
Yates	Ontario, Schuyler, Seneca, Steuben, Yates

FLGP-county Grape SCO Expected and Actual Yields (tons/acre)

The SCO endorsement has been available since 2016. The expected and final area yields are shown in the table below as tons/acre:

		Ontario	Schuyler	Seneca
2016	**Exp.**	6.30	6.10	6.20
	Final	**5.70**	**5.50**	**5.50**
2017	**Exp.**	6.29	6.14	5.74
	Final	7.54	7.35	7.24
2018	**Exp.**	6.15	5.75	5.77
	Final	**6.09**	5.91	**5.76**
2019	**Exp.**	6.15	5.95	5.99
	Final	-	-	-

		Steuben	Wayne	Yates
2016	**Exp.**	6.40	6.10	6.30
	Final	**5.60**	**5.50**	**5.50**
2017	**Exp.**	5.84	6.12	6.29
	Final	7.53	7.33	7.33
2018	**Exp.**	5.87	5.74	5.73
	Final	6.06	5.86	5.86
2019	**Exp.**	6.07	5.93	5.93
	Final	-	-	-

We see a few instances of final yields falling below expected. However, even in the case of the largest SCO yield shortfall in a FLGP county — Yates county in 2016 — the actual yield equal to ~87% expected yield was still above the 86% indemnity trigger.

How are the SCO yields calculated?

Final area yields are calculated as the acre-weighted average yield reported by producers who are participating in APH, YP, RP, and RPHPE, as applicable for the crop (only APH for NY grapes). In general, final area yields are calculated based on all yield data received up to a date within 1-2 weeks of May 1st (listed in the AIB SCO Price and Yields tab).

Expected area yields are calculated as a trend yield based on historical data available to RMA.

Reported yields for **all varieties** of grapes are used to determine the area yields.

In all the FLGP SCO areas, the native vs. hybrid acreage reported to RMA is split approximately 50-50. Steuben Co. is a notable exception where Natives make up >55% of reported acreage. (Calculated from RMA—Summary of Business data)

For More Information...

Yields for all SCO areas are published at:

http://cli.re/g3xnQp

A crop insurance agent can provide you with detailed information regarding a policy for your farm. Find a crop insurance agents using the RMA agent locator at:

http://cli.re/gzPVWy

For more NY crop insurance information, visit: www.agriskmanagement.cornell.edu

Upcoming Events

Don't forget to check out the calendar on our website (http://flgp.cce.cornell.edu/events.php) for more information about these and other events relevant to the Finger Lakes grape industry.

Tailgate Meeting #8 – Final Tailgate of the Season
Tuesday, August 20 4:30 – 6:00 PM
Hermann J. Wiemer Vineyards
3962 NY Route 14, Dundee NY

Our final Tailgate Meeting of the season will be held at Hermann J. Wiemer Vineyards, and will include brief presentations from guest speakers Janet van Zoeren (initial results from a trunk disease survey in the FLX) and Justine Vanden Heuvel (digital soil mapping project). Pesticide credits are available for each Tailgate Meeting this season. No registration required – just bring a chair and your questions and observations about what's going on in the vineyard. We look forward to seeing everyone who can make it for this final Tailgate before harvest gets underway!

2019 GDD & Precipitation

FLX Teaching & Demonstration Vineyard – Dresden, NY					
Date	**Hi Temp (F)**	**Lo Temp (F)**	**Rain (inches)**	**Daily GDDs**	**Total GDDs**
8/8/2019	81.2	63.7	0.19	22.5	1676.4
8/9/2019	76.1	62.0	0.06	19.1	1695.5
8/10/2019	73.6	59.1	0.01	16.4	1711.8
8/11/2019	78.3	56.0	0.00	17.2	1729.0
8/12/2019	82.9	60.3	0.00	21.6	1750.6
8/13/2019	77.6	67.3	0.25	22.5	1773.0
8/14/2019	78.2	62.8	0.00	20.5	1793.5
Weekly Total			**0.51”**	**139.6**	
Season Total			**13.86”**	**1793.5**	

GDDs as of August 14, 2018: 2028.9

Rainfall as of August 14, 2018: 14.44”

Seasonal Comparisons (at Geneva)

Growing Degree Day

	2019 GDD [1]	Long-term Avg GDD [2]	Cumulative days ahead (+)/behind (-) [3]
April	48.1	64.1	-5
May	204.1	255.5	-5
June	449.1	480.9	-5
July	712.8	642.1	-1
August	272.4	592.7	-2
September		357.6	
October		110.1	
TOTAL	1686.4	2503.0	

[1] Accumulated GDDs for each month.

[2] The long-term average (1973-2017) GDD accumulation as of that date in the month.

[3] Numbers at the end of each month represent where this year’s GDD accumulation stands relative to the long-term average. The most recent number represents the current status.

2019 GDD & Precipitation (continued from page 5)

Precipitation

	2019 Rain [4]	Long-term Avg Rain [5]	Monthly deviation from avg [6]
April	2.22”	2.85”	-0.63”
May	4.42”	3.13”	+1.29”
June	3.61”	3.60”	+0.01”
July	2.20”	3.44”	-1.24”
August	1.30”	3.21”	
September		3.57”	
October		3.39”	
TOTAL	13.75”	23.16”	

[4] Monthly rainfall totals up to current date

[5] Long-term average rainfall for the month (total)

[6] Monthly deviation from average (calculated at the end of the month)

Additional Information

Become a fan of the Finger Lakes Grape Program on Facebook, or follow us on Twitter (@cceflgp) as well as YouTube. Also check out our website at http://flgp.cce.cornell.edu.

Got some grapes to sell? Looking to buy some equipment or bulk wine? List your ad on the NY Grape & Wine Classifieds website today!

Cornell Cooperative Extension
Finger Lakes Grape Program

Hans Walter-Peterson—Team Leader
Donald Caldwell—Viticulture Technician

The Finger Lakes Grape Program is a Cornell Cooperative Extension partnership between Cornell University and the Cornell Cooperative Extension Associations in Ontario, Seneca, Schuyler, Steuben, Wayne and Yates Counties.

flgp.cce.cornell.edu

YouTube

"Cornell Cooperative Extension is an equal opportunity, affirmative action educator and employer"