

Northern Michigan FruitNet 2016

Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – April 29, 2016

CALENDAR OF EVENTS

5/6	Pesticide Safety Training Wunsch Farms Packing Shed
5/3 – 6/28	Leelanau County IPM Updates Jim and Jan Bardenhagen's Farm (details below)
5/3 – 6/28	Grand Traverse County IPM Updates Wunsch Farms (details below)
5/4 – 6/29	Antrim County IPM Updates Jack White Farms (details below)
5/4 – 6/29	Benzie County IPM Updates Blaine Christian Church (details below)

What's New?

- **Apple Scab Report – April 29, 2016**
 - **Pesticide Safety Training**
 - **Root pruning guide for apple trees to reduce excessive vigor**
 - **Mummy berry springs into action: How to manage this disease**
 - **Retain Use to Increase Sweet Cherry Yields**
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Apple Scab Report – April 29, 2016

No reported scab infection periods since April 24-26.

Emily Pochubay and Nikki Rothwell

With the exception of some spotty rain yesterday evening and overnight, conditions have been relatively dry for most of the region. None of the Enviro-weather stations reported rainfall for yesterday, but some light rain has been reported in more southerly Leelanau county and westerly Grand Traverse county. At this time, there is a slight change for rain today (less than 50% for most northwest locations according to Enviro-weather). These currently predicted conditions are not likely to trigger apple scab infections.

One-hundredth of an inch of rain (.01") is needed to activate apple scab spore discharge. The last significant rainfall was earlier this week, and spores have had several days with temperatures above 32 degrees F to adequately mature on last season's infected leaves on the orchard floor. Tree development has been slow in recent cooler weather, but warmer (upper 50s, possibly 60s) conditions predicted over the weekend and early next week will help trees push out new green tissue as well as accelerate scab spore development. Therefore, thorough coverage of susceptible green tissue prior to the next good rainfall will be critical as there could be a high spore discharge. Good coverage will be even more critical in orchards that had a high level of infection last season. Currently, there are few rainy days in the 10D forecast, but Michigan springs' forecasts are always changing. Hence, we encourage growers to continue to check the radar to determine when to best time their application prior to the next possible rain.

Retain Use to Increase Sweet Cherry Yields

N.L. Rothwell and E. A. Pochubay, NWMHRC

In recent years, many growers have started to use ReTain in their sweet cherry blocks to increase fruit set and ultimately increase their yields. ReTain is a plant growth regulator that has been shown to extend flower viability in cherry by reducing ethylene production in cherry flowers and delaying flower and stigmatic senescence. Due to this effect, flowers that last longer have a higher likelihood to be successfully pollinated, and increased pollination results in a higher yield. Research has shown that ReTain works best if used before poor pollinating conditions (wet, cool, windy weather or low honeybee activity) or on varieties that tend to be shy-bearing.

Moderately cool temperatures are predicted to continue this weekend and into next week around northwest Michigan. Sweet cherries are currently at late side green to early budburst here at the NMWHRC. However, some sweet cherry orchards around

the region are further along. If the weather predictions are correct, we could be at bloom around 5-7 May, and data show that ReTain applications are more effective when applied early. With the predicted cool conditions, bee activity will likely be low making ReTain applications particularly important this year.

We conducted a ReTain trial at three grower farms in 2014. ReTain was applied in two Balaton blocks and one sweet cherry var. Regina block. Each block was approximately 10 acres where half of the block was treated and the other half untreated. ReTain was applied at the recommended rate of 1 pouch per acre (11.7 oz/A) at popcorn to early bloom stage at 100 gal/A. No surfactants or fungicides were tank mixed with the product. We found that ReTain significantly improved yields in the Regina orchard (Figures 1 and 2) and one of the Balaton orchards; in both of these trials, ReTain was applied at <10% bloom. In the second Balaton orchard, the ReTain application was made at 70% bloom, and the PGR had no effect on yield. Therefore, we recommend making ReTain applications early: popcorn to first bloom.

A team from Washington State University and Oregon State University has also conducted ReTain trials. ReTain was applied at four stages during bloom: popcorn, 10 percent full bloom, 50 percent full bloom, and full bloom. The ReTain treatment at 10 percent full bloom gave as much as a 20 percent increase in fruit set compared with the control. That was a gain of almost 9 pounds per tree or 2 tons per acre. Tests with var. Tieton also resulted in significant increases in fruit set. However, unlike the results we observed in Michigan, the western team found that each of the application timings improved fruit set, though there was no consistent trend. They concluded that there could be a broad window when the treatment can be effective. Some of the variability in results could have been attributable to the weather at the time of or immediately after application as warm temperatures would have hastened the senescence of the ovule.

Although the results varied from our trials in Michigan, we are still recommending that ReTain be sprayed early in the season, either popcorn or first bloom. The rate of ReTain is one pouch per acre (11.7oz/acre). The more tissue on the tree, the better the response, but the key timing is early based on our results and past recommendations by the Valent Company. The spray volume is recommended at 100 gal/acre. ReTain cannot be used after petal fall, and it is not recommended if rain is expected within eight hours of application. Temperature should be monitored during application timing as the effectiveness of plant growth regulators decrease at low temperatures. Also, we recommend applying ReTain under slow drying conditions. According to the Valent representatives, they have found that treating a larger block is more effective than treating rows within a block; the overall effectiveness of the active ingredient in ReTain is improved with broad coverage.



Figure 1: ReTain-treated Regina



Figure 2: Untreated Reg

Pesticide Safety Training

Wunsch Farms Packing House

Friday, May 6, 2016 - Wunsch Farms will be hosting a Pesticide Safety Training Workshop on Friday, May 6, 2016. The training will be in at the packing house at 16888 Wunsch Rd. at 9:00 am. It will be conducted by representatives from Telamon Corporation and is free for any farmworkers or dependents of farmworkers. Those interested can RSVP before next Wednesday by contacting Raul Gomez at graul40@gmail.com or 231-944-8478. The training will last about 1 hour and will be in Spanish. If you are interested in attending an English class, please reach out to Raul and they will arrange an English Training, immediately following the Spanish version. Attendees will not receive certification or certification credits but the training will be a great learning opportunity and attendees will cover material that anyone taking the certification test needs to know.

Looking for Input from all Businesses Including Farms in Leelanau County

You and your business are important to the vitality of the Leelanau Peninsula, and the newly-created Leelanau Peninsula Economic Foundation wants to hear from you. What's going well for you in your business? What issues keep you up at night? How can a non-profit economic enabler like the LPEF help businesses in Leelanau County thrive?

The LPEF is conducting a brief e-survey to learn about your dreams, challenges, and your suggestions concerning what they should focus on as they work to strengthen the economic vitality of Leelanau businesses and communities.

Please take a few moments to click on the link below to share your thoughts. The survey's completely anonymous and should take less than 10 minutes of your time.

Thank you,

Leelanau Peninsula Economic Foundation Board

<http://www.surveygizmo.com/s3/2631180/LPEF-Leelanau-Business-Survey-2016>

Measuring spotted wing Drosophila impacts – your help needed!

This survey will help researchers identify impacts of spotted wing Drosophila (SWD) on fruit growers and look for new management tactics and programs, improved insecticide efficacy and SWD training.

Posted by **Rufus Isaacs**, and Larry Gut, Michigan State University Extension, Department of Entomology, MSUE News

Michigan State University researchers are part of a recently funded project, **“Sustainable Spotted Wing Drosophila (SWD) Management for United States Fruit Crops,”** and the team is surveying fruit growers with two goals:

- 1 Measure the impact of SWD throughout the United States.
- 2 Guide our project activities over the next four years.

This five-year project, coordinated by North Carolina State University, is developing national research and extension projects to minimize the impacts of SWD. They include

new management tactics and programs, improved insecticide efficacy for SWD and information and training on SWD for growers, extension agents and others. In order to achieve this and ensure the research and extension efforts match the needs of growers, the project is collecting information on the impacts of SWD on fruit growers, current management practices and preferences, and your requirements for better management of SWD. Participation is voluntary and the survey does not collect personally identifying information. The data will only be analyzed and reported in aggregate form.

We would like to get feedback from as many growers as possible! So, please complete the survey here: **Sustainable SWD Management Grower Survey**
Contact me at isaacsr@cns.msu.edu for additional information.

<https://survey.ncsu.edu/swd/>

Funding for this project is provided by the National Institute of Food and Agriculture, U.S. Department of Agriculture Specialty Crops Research Initiative under Agreement No. 2015-51181-24252.

2016 IPM Update Schedule

Emily Pochubay and Nikki Rothwell
Michigan State University Extension

Tree Fruit IPM Updates beginning the first week of May through mid-July (as needed) will highlight management of the seasons current potential pest challenges dictated by weather and pest biology. Attendees are encouraged to bring examples of pests and damage found on the farm to these workshops for identification and discussion. Workshops will be held weekly in Leelanau and Grand Traverse counties and bi-weekly in Antrim and Benzie counties. Tree fruit growers are welcome to attend meeting at any of the locations and times that are most convenient (see below). These workshops are free and do not require registration. We are looking forward to seeing you in a few weeks! For more information, please contact Emily Pochubay (pochubay@msu.edu), 231-946-1510.

Leelanau County

Location: Jim and Jan Bardenhagen, 7881 Pertner Road, Suttons Bay

Dates: May 3, 10, 17, 24, 31; June 7, 14, 21, 28

Time: 12PM – 2PM

Grand Traverse County

Location: Wunsch Farms, Phelps Road Packing Shed, Old Mission

Dates: May 3, 10, 17, 24, 31; June 7, 14, 21, 28

Time: 3PM – 5PM

Antrim County

Location: Jack White Farms, 10877 US-31, Williamsburg (south of Elk Rapids on the southeast side of US-31)

Dates: May 4, 18; June 1, 15, 22, 29

Time: 10AM – 12PM

Benzie County

Location: Blaine Christian Church, 7018 Putney Rd, Arcadia, MI 49613

Dates: May 4, 18; June 1, 15, 22, 29

Time: 2PM – 4PM

RecycleSmart Household Hazardous Waste Drop-Off – Upcoming

Dates

Growers can bring back pesticides of any quantity to any county, free of charge

Leelanau's HHW Collections are taking place on May 14, July 9, August 27, and October 8.

http://www.leelanau.cc/downloads/hhw_flyer_2016_final_1.pdf

Antrim has two events this year: May 14 and August 6:

<http://www.antrimcounty.org/hazardous.asp>

Benzie is holding two HHW Collections on June 25 and July 23:

<http://www.benzieco.net/Household%20Hazardous%20Waste%20Brochure%202016.pdf>

Household hazardous waste products should be handled with care when preparing them for transport to the drop-off event. Keep products in original containers and don't mix products together. Keep containers tightly sealed, packed in a box in an upright, stable position. Transport HHW as far away as possible from you in your vehicle, such as in the bed of a pickup or car trunk.

Items accepted at the HHW collection events include: oil-based paint, latex paint, solvents, automotive fluids, household cleaners, lawn and garden chemicals, pesticides, batteries, fluorescent light bulbs and more.

Small businesses, organizations and schools may qualify to dispose of HHW at a drop-off event. Visit RecycleSmart.info for details about Conditionally Exempt Small Quantity Generator (CESQG) specifications.

For more information, visit www.RecycleSmart.info or call the RecycleSmart Hotline at 231- 941-5555.

Prebloom blueberry meetings scheduled in southwest Michigan for 2016

Two blueberry management meetings are scheduled for April 21 in South Haven and April 28 in West Olive.

Posted on **April 19, 2016** by **Mark Longstroth**, and Carlos Garcia-Salazar, MSUE News



Duke flower buds at bud burst, also called pine cone. Photo by Mark Longstroth, MSU Extension.

The first blueberry management meetings for blueberry growers in 2016 have been scheduled for southwest Michigan in Van Buren and Ottawa counties. The first meeting in **Van Buren County is Thursday, April 21**, from 5:30 to 8 p.m., at Haven Harvesters, [165 Veterans Blvd, South Haven, MI 49090](#). This meeting is sponsored by Haven Harvesters LLC and New Age/Landmark Laboratories, who are providing a light supper at the beginning of the meeting. There will be talks on early season insect, disease and

weed control, frost control and irrigation by Michigan State University Extension fruit specialists and educators. Also at this meeting will be an update from Tom Payne of the North American Blueberry Council/US Highbush Blueberry Council

The **Ottawa County meeting is Thursday, April 28**, from 5:30 to 8 p.m. at the Ottawa County Fillmore Complex, 12220 Fillmore Street, West Olive, MI 49460. The agenda is similar to the first meeting, with talks on using sprinklers to reduce freeze injury during bloom, early season blueberry diseases, insect and weed control, and a discussion of water sampling for food safety. Light snacks and refreshments will be provided.

Two Michigan pesticide applicator recertification credits will be available to attendees for both meetings. No registration is necessary for either meeting, which are open to all blueberry growers and consultants in southwest Michigan.

Message for MAEAP Partners and Supporters

The MAEAP Incentives Task Force, developed by the MAEAP Advisory Council, has created a survey for all farmers (both MAEAP-verified and not MAEAP-verified). The survey seeks to identify the incentives and challenges for participating in MAEAP. We encourage your organization to share the message below with your farmer/grower members. The highlighted sections of the message below can be customized and filled in with your organization's name to accompany the survey link that you forward to your members.

The survey should only take 3-5 minutes.

The deadline for the survey to be completed is: April 24

Survey link: <http://bit.ly/MAEAPSurvey>

If you have any questions, please contact Emily Reinart with Michigan Farm Bureau at [517-679-5337](tel:517-679-5337) or ereinart@michfb.com.

Root pruning guide for apple trees to reduce excessive vigor

There are many benefits to pruning roots on apple trees to control excessive tree vigor.

Posted by Phil Schwallier, and Amy Irish-Brown, MSUE News

Using root pruning to help control excessive tree vigor has been researched by Dave Ferree of [Ohio State University](#) and Jim Schupp of [Pennsylvania State University](#). Root pruning is accomplished by pulling an offset subsoiler blade or a large coulter along the tree row. The blade cuts roots as it passes the trees. The blade should be set at a cutting depth of near 12 inches and pass near the trees at 1-4 feet from the tree on both sides of the row. Generally, pruning deeper has no additive effect on the trees – most major roots are within 12 inches of the soil surface. About 60 percent of the total tree roots need to be cut to have a significant effect on the trees. A lesser percent of root pruning will have less effect on the vigor control of the trees.

Use the trunk diameter as a guide to estimate root pruning distance from the tree. A root pruning distance of three times the trunk diameter will cause severe response; four to five times will cause a moderate tree response and five to seven times will cause a mild tree response. The root pruning effects may be evident for two years, usually always more than one year, but root pruning can be performed every year. Root pruning should be done starting at apple bloom and up to two weeks after full bloom. Earlier timing will stress trees sooner with greater tree response and later timing will give less stress and, therefore, less tree response and vigor control. Tree vigor and crop load will impact the success of the root pruning operation. In the situation of high tree vigor and a light crop load, the tree will be less responsive to the pruning. Extremely vigorous trees can be double root-pruned 30 days apart for an increased effect.

According to [Michigan State University Extension](#), bloom time root pruning has no effect on fruit set. Root pruning will generally reduce fruit size by perhaps 0.125 inches, but can reduce diameter up to 0.25 inches in very hot dry years or with very aggressive pruning. Yields will be reduced from the reducing in fruit diameter, but this is typically not extreme. Vegetative shoot growth, branching and trunk diameter will be reduced. Root pruning increases light penetration into trees, improves spur quality and increases fruit color. Root-pruned trees tend to have lower nitrogen (N), phosphorus (P) and potassium (K) in leaves. Root pruning enhances return bloom (perhaps doubling return bloom), and reduced fruit drop near harvest has been reported. Use root pruning on excessively vigorous trees, excessively large fruited varieties and varieties/blocks that resist blooming or setting fruit.

In some cases, trees can lean after root pruning, and with dwarf trees the trellis is important. However, leaning generally is not noticeable. For dwarf trees and in light soil, supplemental irrigation may be needed.

Effects of root pruning include:

- 3 Reduced tree vigor.
- 4 Reduced shoot growth.
- 5 Reduced harvest fruit drop.
- 6 Reduced fruit size.

- 7 Reduced trunk diameter.
 - 8 Increased light penetration into trees.
 - 9 Increased spur quality.
 - 10 Increased fruit red color.
 - 11 Increased fruit firmness.
 - 12 Increased return bloom.
 - 13 Increased need for irrigation.
 - 14 Increased root suckers at the pruning cut site.
 - 15 May increase fruit set.
 - 16 Lowered leaf N, P and K.
 - 17 May increase tree leaning.
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Mummy berry springs into action: How to manage this disease

Mummy berry has germinated in Michigan blueberry fields and apothecia or apothecial initials are present. Growers should scout fields for the fungus and be prepared to manage this disease.

Posted by **Annemiek Schilder**, Michigan State University Extension, Department of Plant, Soil and Microbial Sciences, and Mark Longstroth, MSU Extension, MSUE News



Stages in mummy berry germination and apothecium development. Photos by Timothy Miles (top) and Mark Longstroth (bottom).

Mummy berry is caused by the fungus *Monilinia vaccinii-corymbosi* and is characterized by blighting of young shoots, which are referred to as “shoot strikes.” Fruit infection leads to the shriveling and mummification of berries, hence the name mummy berry. These mummies overwinter on the ground below blueberry bushes. At the beginning of the growing season, small, trumpet-shaped apothecia develop on the overwintered mummies and start releasing ascospores which infect young leaves.

Previous research has shown that the optimum temperature for formation of apothecia is 50 to 57 degrees Fahrenheit. These temperatures are also very conducive to leaf infection, which requires four to six hours of continuous leaf wetness under those conditions. Leaf wetness can come from rain, dew, fog or overhead irrigation water. Infection can occur at temperatures as low as 36 F, but a wetness period of 10 hours is required for infection at that temperature. The risk of infection is reduced at temperatures of 80-86 F and above.

In general, longer wetness periods lead to more infections, observed as higher numbers of shoot strikes. Also, frost injury increases susceptibility of the shoots to infection. In past trials, fungicide applications within 24 hours of a frost event significantly reduced shoot strike incidence.

Mummy berry shoot infection conditions for lowbush blueberries					
Wetness Duration (h)	Average temperature (F) during wet period				
	36	43	50	57	65
2	0	0	0	0	0
4	0	0	0	0	0
6	0	Low	Low	High	High
8	0	Moderate	High	High	High
10	Moderate	High	High	High	High
15	Moderate	High	High	High	High
24	High	High	High	High	High

Table source: Paul Hildebrand, Ag Canada, Nova Scotia.

At this time in Michigan fields, mummies have germinated and apothecia or apothecial initials are present. We had already started seeing “apothecial initials,” the horn-like structures developing on overwintered mummies in March, indicating that the mummies were ready. The mummy germination rate is 20 to 45 percent this spring, with higher germination rates and more advanced development at wetter locations. This germination rate is pretty typical of most years in Michigan. Spore release starts when the apothecial opening is about 2 millimeters and continues to increase as the apothecia expand.

Open apothecial cups have been reported and now that the blueberries are at green tip or leaf expansion, this indicates a risk of primary infection. In general, the more apothecia that are present and the larger the apothecial cups, the greater the risk of infection. [Michigan State University Extension](#) therefore advises scouting in fields with a history of mummy berry to confirm the stage of development of the fungus. Continued scouting will also help determine when infection risk has passed. Remember that there can be several flushes of apothecia depending on soil moisture. Later flushes of apothecia are actually more risky due to the presence of shoot strikes with fresh spores during bloom.

When soils stay cool and moist, apothecia may last for two to three weeks and release spores on a daily basis, especially in the morning as the relative humidity starts to drop. Ascospores are dispersed by wind, which picks up in speed in late morning. Warm and dry soils will lead to quicker deterioration of the apothecia. You can use MSU's [Enviro-weather](#) website to monitor for mummy berry infection conditions at nearby weather stations. There is no specific model for mummy berry, but blueberry growers can use the [Multi-Crop Disease Summary](#) tool in the fruit section of [Enviro-weather](#) to find the hours of wetness and the average temperature during the wetting period for all the stations in the region.

Fungicides work best when applied preventatively (before infection) because the fungus grows too fast during optimal conditions for post-infection sprays to work well. While the risk of fungicide resistance development appears to be relatively low for this pathogen, it is nonetheless advisable to alternate fungicide chemical classes as indicated by different Fungicide Resistance Action Committee (FRAC) code numbers. If shoot strikes are controlled well – you can scout fields to confirm this – and no shoot strikes are present during the bloom period, the risk of fruit infection is minimal, unless there is a nearby field where shoot strikes are present. Spores produced on the shoot strikes can be carried by bees to nearby fields that are in bloom. Be careful with fungicide applications during bloom; avoid spraying after bee hives have been placed in the field or spray at night when bees are not active.

Fungicide efficacy against mummy berry in blueberries.				
Trade Name	Active ingredient	FRAC Code*	Shoot strike	Fruit infection
<i>Systemic Fungicides</i>				
Indar	fenbuconazole	3	Good efficacy	Good efficacy
Proline	prothioconazole	3	Good efficacy	Good efficacy
Quash	metconazole	3	Good efficacy	Good efficacy
Tilt	propiconazole	3	Good efficacy	Moderate efficacy
Protexio	fenpyrazamine	17	Good efficacy	Good efficacy
Omega	fluazinam	33	Moderate efficacy	Moderate/Good efficacy

Pristine	pyraclostrobin + boscalid	11/7	Moderate efficacy	Good efficacy
Quit Xcel	azoxystrobin + propiconazole	11/3	Moderate/Good efficacy	Moderate efficacy
Inspire Super	difenoconazole + cyprodinil	3/9	Good efficacy	Good efficacy
Protectant Fungicides				
Bravo	chlorothalonil	M5	Moderate efficacy	Poor to fair efficacy
Ziram	ziram	M3	Moderate efficacy	Poor to fair efficacy
Serenade + Nu-Film P	<i>Bacillus subtilis</i> + terpene-based adjuvant	44	Moderate efficacy	Moderate efficacy
Double Nickel 55	<i>B. amyloliquefacies</i>	44	Moderate/Good efficacy	Moderate efficacy
Sulforix	calcium polysulfide	M2	Moderate efficacy	Poor to fair efficacy
Oso	polyoxin D zinc salt	19	Moderate efficacy	Moderate efficacy
Regalia**	giant knotweed extract	P5	Moderate efficacy	Moderate efficacy

*Fungicides sharing the same number belong to the same chemical class and thus have the same mode of action.

**Add Regalia at 1 quart per acre to other fungicides such as sterol inhibitors or strobilurins to improve control.

Dr. Schilder's work is funded in part by MSU's AgBioResearch.

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WEB SITES OF INTEREST:

Insect and disease predictive information is available at:

<http://enviroweather.msu.edu/homeMap.php>

This issue and past issues of the weekly FruitNet report are posted on our website:

<http://agbioresearch.msu.edu/nwmihort/faxnet.htm>

60-Hour Forecast:

<http://www.agweather.geo.msu.edu/agwx/forecasts/fcst.asp?fileid=fous46ktvc>

Information on cherries:

<http://www.cherries.msu.edu/>

Information on apples:

<http://apples.msu.edu/>

Information on grapes:

<http://grapes.msu.edu>

Fruit CAT Alert Reports:

<http://news.msue.msu.edu>