Wisconsin Fruit News

Volume 3, Issue 6 – June 29, 2018

General Information

Rain and insecticide applications on fruit

By: Christelle Guédot, UW-Madison Department of Entomology

This has been a really wet spring and early summer this year and the almost continuous rainfalls raises questions about the "rainfastness" of insecticides applied in fruit production. Following rain events, pesticide residues may be removed from the plant surface or diluted making the product less effective. A pesticide is considered "rainfast" when it has time to dry on the surface of the plant or be absorbed by the plant tissue and remains effective even after rainfall or irrigation. Recently, John Wise at Michigan State University has done extensive work on this topic and I am summarizing some of his work here.

Several factors can influence the rainfastness of a pesticide and how effective that pesticide will be following precipitation. The chemistry of the pesticide may affect how it will penetrate the plant cuticle. Some insecticides remain on the cuticle of the plant, some have translaminar movement from the top surface to the bottom of the leaf, or some have systemic activity where it is absorbed by the plant. The assumption is that the more the insecticide penetrates the plant tissue the more likely it is to have better rainfastness. Another factor will be the inherent toxicity of the insecticide and its persistence in the environment will affect its effectiveness and residual activity. The third factor is the amount of precipitation experienced after an application and the amount will vary based on the chemical classes and the target (fruit or leaves).

In general, for most insecticides, 2-6 hours of drying time following application is enough to "set" the product in/on the plant, however, drying time can significantly influence rainfastness based on the ability of the specific product to penetrate the plant as discussed previously. For example, with neonicotinoids, optimal penetration is achieved in up to 24 hrs and thus precipitation forecast should be considered when planning an application.

Insecticide persistence, plant penetration and rainfastness rating			
Compound class	**Persistence (residual on plant)**	**Plant penetration characteristics**	**Rainfast rating**
Organophosphates	Medium - Long	Surface	Low
Carbamates	Short	Cuticle Penetration	Moderate
Pyrethroids	Short	Cuticle Penetration	Moderate - High
Neonicotinoids	Medium	Translaminar & Acropetal	Moderate
Oxadiazines	Medium	Cuticle Penetration	Moderate
Avermectins	Medium	Translaminar	Moderate
IGRs	Medium - Long	Translaminar	Moderate
Spinosyns	Short - Medium	Translaminar	Moderate - High
Diamides	Medium - Long	Translaminar	Moderate - High

Table 1. Insecticide persistence, plant penetration and rainfastness rating for different insecticide classes from John Wise, MSU.

John Wise and other researchers at MSU have been conducting trials on rainfastness of insecticides over the years and some of their data is summarized below. Table 1 describes the persistence, plant penetration characteristics, and rainfastness rating for the different classes of insecticides. In this table, you can see that insecticide classes penetrate the plant differently (acropetal being when the chemical moves from the center to the growing tips of leaves, as in systemic insecticides) and have different persistence on the plant, and these characteristics affect the rainfastness rating provided by MSU.

In Table 2, rainfastness of insecticide classes are rated based on the amount of rainfall for fruit and leaves. The rainfastness decreases with the amount of rainfall and varies with the class of insecticide as well as between fruit and leaves' residues.

For more information on this topic, check out the article from John Wise,Rainfast characteristics of insecticides on fruit. John also has tables in there about apple and grape insecticide precipitation wash-off re-application decision chart where he has recommendations for reapplying insecticides after different amounts of rainfall for different insecticides.

Happy growing season and let's hope the rain lightens up a little!

Rainfastness rating chart: General characteristics for insecticide chemical classes						
Insecticide class	**Rainfastness ≤ 0.5 inch**		**Rainfastness ≤ 1.0 inch**		**Rainfastness ≤ 2.0 inches**	
	Fruit	**Leaves**	**Fruit**	**Leaves**	**Fruit**	**Leaves**
Organophosphates	Low	Moderate	Low	Moderate	Low	Low
Pyrethroids	Moderate/High	Moderate/High	Moderate	Moderate	Low	Low
Carbamates	Moderate	Moderate/High	Moderate	Moderate	Low	Low
IGRs	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Oxadiazines	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Neonicotinoids	Moderate, Systemic	High, Systemic	Low, Systemic	Low, Systemic	Low, Systemic	Low, Systemic
Spinosyns	High	High	High	Moderate	Moderate	Low
Diamides	High	High	High	Moderate	Moderate	Low
Avermectins	Moderate, Systemic	High, Systemic	Low,Systemic	Moderate, Systemic	Low	Low

Highly rainfast = ≤ 30% residue wash-off
Moderately rainfast = ≤ 50% residue wash-off
Low rainfast = ≤ 70% residue wash-off
Systemic = Systemic residues remain within plant tissue

Table 2. Rainfastness of insecticides by chemical classes from John Wise, MSU.

New fruit team publications, and updates to website

By: Janet van Zoeren, Amaya Atucha and Christelle Guédot

The fruit team has a few new publications, which are listed and described below. These are available, along with many other of publications, at the UW Learning Store (https://learningstore.uwex.edu), as well as on our website (https://fruit.wisc.edu).

- **Training systems for cold climate hybrid grapes in Wisconsin (A4157).** This publication explains some of the more important factors to consider when choosing a training system for cold climate grape production. These factors include: cultivar vigor and growth habit, trellis cost, labor availability, and level of mechanization.

- **Plum Curculio (A4160).** This publication describes the identification, life cycle, damage symptoms, and management practices for Plum Curculio in both pome and stone fruit. The management section covers both commercial growers and backyard gardeners.

- **Apple Maggot (A4159).** This publication discusses the apple maggot, which in addition to being a pest of apple, "will also infest pears, apricots, peaches, cherries, crabapples, and wild rosehips". There are sections on the identification, life cycle, damage symptoms, monitoring, and cultural, biological and chemical controls of this pest.

- **Protecting Pollinators and Improving Pollination on Wisconsin Cranberry Marshes (A4155).** In this publication we provide best management practices for protecting pollinators and promoting yield on the cranberry marsh. Sections include information about: pollination and pollinator biology, habitat enhancement for pollinators, communication between beekeepers and cranberry growers, and reducing pesticide exposure.

These publications, as well as other resources on growing fruit crops in Wisconsin, are **available at our website (https://fruit.wisc.edu)**. You can type "Wisconsin fruit program" into your web browser, or type in "fruit.wisc.edu", to get to our website. We use this website, as well as the newsletter, to keep you up to date on the most recent pest alerts, and newest research findings. Additionally, we are continually working to update and improve the website by adding new resources to the main fruit crop pages (raspberries and blackberries, strawberries, grapes, cranberries, apples and pears, stone fruit, other berries, and hazelnuts). The website has additional sections with links to: UW Extension A publications that relate to commercial fruit production, home owners, and an archive of all the Wisconsin Fruit Newsletter issues. Please be sure to check out these resources, and we hope you will find them of use!

UW-Madison/Extension Insect Diagnostic Lab update

By: PJ Liesch

Beetles and stink bugs have dominated the fruit-related insect cases at the UW Insect Diagnostic Lab over the past two weeks:

Rose chafer. Photo courtesy of Ben Bradford.

One of the top fruit-feeding insects recently has been the **rose chafer** (*Macrodactylus subspinosus*), which can be common in parts of the state with sandy soil. Many reports have come in from the central and western parts of the state in the last two weeks. Rose chafer adults feed on a wide range of landscape trees/shrubs, but they have also been reported in the state on fruit trees (apple and stone fruits), grapes, and caneberries. Similar to the Japanese beetle, the rose chafers tend to chew round the tougher veins in the leaves, creating a lace-like pattern (skeletonization). Activity of rose chafers typically drops off in early to mid-July.

Early reports of **Japanese beetles** have started to trickle in over the past two weeks, mostly from southern Wisconsin. Activity is expected to increase dramatically in the near future across all but the far northern parts of the state—where Japanese beetles do not yet cause problems for fruit growers. Growers should be scouting for Japanese beetles as they can cause significant damage to fruit trees, grapes, caneberries, and other crops. A few Japanese beetle look-alikes have also been spotted recently, including the **sand chafer** (*Strigoderma arbicola*) [Columbia and Dane counties], *Dichelonyx* scarabs (*Dichelonyx* sp.) [southern and northwestern WI], and the **emerald euphoria** (*Euphoria fulgida*) [Marathon county], but these are not considered economic pests.

Reports of **plum curculio** damage continue to come into the UW Insect Diagnostic Lab—oviposition scars on pome fruits (various spots in the state) and larvae in cherries (Sauk Co.).

Adult shothole borer. Photo courtesy of Pest and Diseases Image Library, Bugwood.org.

Adult **shothole borers** (*Scolytus rugulosus*) were found in a plum branch sample from Dane county. These bark beetles can attack branches of stressed/weakened fruit trees.

Stink Bug reports have picked up for the year. The commonest species being encountered around the state are from the **brown stink bug** group (*Euschistus* spp.); this group includes the **dusky stink bug** (*Euschistus tristigmus*), which superficially resembles the brown marmorated stink bug but is smaller, has a different antennal color pattern, and several black dots along the midline of the tip of the abdomen. The vibrantly-patterned, nymphs (juveniles) of the **green stink bug** (*Chinavia hilaris*) were recently reported in Dane county; the large, entirely-green adults become common later in the season. Lastly, several adults of the invasive **brown marmorated stink bug** (*Halyomorpha halys*) have been detected in orchard settings in SE Wisconsin.

UW-Madison/Extension Plant Disease Diagnostic Clinic (PDDC) update

By: Brian Hudelson, Sue Lueloff, John Lake and Ann Joy

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from June 16, 2018 through June 29, 2018.

PLANT/ SAMPLE TYPE	DISEASE/ DISORDER	PATHOGEN	COUNTY
FRUIT CROPS			
Apple	Cedar-Apple Rust Phomopsis Canker	Phomopsis sp. Gymnosporangium juniperi-virginianae	Chippewa Dane
Blueberry	Root Rot	Pythium sp., Fusarium sp., Rhizoctonia sp.	Chippewa
Gooseberry	White Pine Blister Rust	Cronartium ribicola	Winnebago
Grape ('Marquette')	Grape Yellows	Unidentified phytoplasma	Pierce
Strawberry	Root/Crown Rot	Rhizoctonia sp.	Waupaca

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.

Berry Crops

Japanese beetle emergence has begun!

By: Christelle Guédot, UW-Madison Department of Entomology

We started seeing our first Japanese beetle (JB) adults in and around Dane county in the last couple of weeks with numbers increasing from one week to the next (see JB article in the grape section of this issue). The emergence of JB is right on cue with historical emergence records, with a start date right around Father's Day.

At this time, we recommend to start scouting your patch, especially on the edges of the blocks, for JB moving into your patch. JB like to feed on caneberries and blueberries and will be attracted to them from the surrounding landscape. If you are starting to see JB in your berries, please refer back to our article in WFN Vol 1 Issue 8 where we discuss monitoring and management practices for berry crops, including insecticides against JB. Read and follow the label to make sure the insecticides are registered for the crop you are planning to spray. At this time, it is not advised to spray grass for larvae as adults are emerging. JB females lay their eggs in grassy areas in and around your farm. We recommend you let the grass in your alleyways and around your patch grow to more than 3 inches to deter females from laying eggs in it. Also, withhold irrigation on the grassy areas as JB females prefer moist soil to lay eggs. Because JB has only one generation per year, deterring females from laying eggs in the turf grass on your farm will reduce the population overwintering on your farm.

Cranberries

Cranberry plant and pest degree-days: June 27, 2018

By: Elissa Chasen and Shawn Steffan, USDA-ARS and UW Entomology

Use the table below to view the degree-days accumulations of the cranberry plant and associated pests, and compare with recent years. Recall that degree-days are calculated based on the daily high and low temperature accumulations and that they vary by species according to species specific temperature thresholds. Developmental thresholds for each species are: cranberry plant - 41 and 85˚F; sparganothis fruitworm - 50 and 86˚F; and cranberry fruitworm - 44 and 87˚ F.

June 27	Cranberry DDs			Sparg DDs			CFW DDs		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
Northern WI (Minocqua)	1250.2	1139.5	1352.9	686.4	592.1	824.8	1043.4	935.6	1166.7
Central WI (Wisconsin Rapids)	1600.3	1486.6	1523.6	944	840.9	954.2	1358.1	1251	1322

Our model predicts that sparganothis fruitworm egg hatch has begun in Central WI and is just about to begin in Northern WI.

Event	DDs from March 1 (approximate)
Flight initiation	595.7
First eggs laid	681.0
Peak flight	884.12
First egg hatched*	895.4
End of egg laying	1,634
Last egg hatched*	1,890

* Egg hatch window: 895 – 1,890 DDs

Grapes

Post bloom fruit-zone leaf removal. Now is the time!

By: Amaya Atucha, UW Extension Fruit Crop Specialist

Fruit-zone leaf removal is a very effective practice to open up the canopy and increase the exposure of clusters to sunlight and airflow. What are the benefits of this practice?

- Reduce disease pressure, as clusters dry quickly after dew or rainfall in an open canopy.
- Increase spray coverage and efficacy.
- Improve fruit quality (increased sugars and reduced acidity).

Leaf removal cluster zone after fruit set at WMARS research vineyard during the last week of June. Picture to the left shows vine before leaf removal and picture to the right shows with clusters exposed after leaves have been removed.

Three years of research on fruit-zone leaf removal in cold climate grapes in Wisconsin have shown that fruit-zone leaf removal can reduce titratable acidity (TA) by 5 to 20% at harvest depending on the year, mostly due to a reduction in malic acid concentration. In addition, post bloom fruit-zone leaf removal has also increased total anthocyanin concentration in juice and wine of red cultivars, such as Marquette, Frontenac, and Petite Pearl. For most of the cultivars we have evaluated, we have not seen a negative effect of the fruit-zone leaf removal treatment on yield, with the exception of Brianna. During the three-year study period, Brianna had significantly lower yields in the fruit-zone leaf removal treatment compared to the control. Brianna is a cultivar that has long internodes and relatively big leaves compared with other cold climate grape cultivars, which means that removing 2 or 3 leaves around the clusters might reduce the production of carbohydrates and negatively impact yield.

When is the best time for fruit-zone leaf removal?

This practice can be carried out any time between fruit set and veraison. Studies looking at timing of leaf removal have reported reduced fruit set when leaf removal is done during bloom or earlier. It is possible that removing those leaves very early reduced the amount of carbohydrates need during fruit set and initial berry growth period, thus reducing yield. Leaf removal past veraison can also have detrimental effects, as fruit grown in shaded canopies have thinner skin that is more prone to sunburn, in addition to not being as effective on improving fruit quality as when after fruit set.

Close-up of leaf removal in the cluster zone after fruit set at WMARS research vineyard during the last week of June. Picture to the left shows vine before leaf removal and picture to the right shows with clusters exposed after leaves have been removed.

How many leaves should be removed?

Leaf removal can be done manually or by machine. Not all the leaves from the fruiting zone have to be removed, ideally you should retain enough leaves so that 70-90% of the fruit is visible. Removing 2 to 3 leaves per shoot around the cluster can be enough to increase fruit sunlight exposure. Prior to removing leaves, make sure to tuck in shoots and remove lateral shoots, which will also help increase sunlight exposure and improve airflow in the fruiting zone.

A reason to start spraying fungicides early in the growing season

By: Denise Smith and Patty McManus

If you think black rot on grapes is just a few spots on the leaves, look closer! In our test plots that have not been sprayed with fungicides this growing season, we are also seeing black rot lesions on canes, leaf stems, and stems in the fruit clusters. This flower stem is covered with the spore-producing structures of the fungus and will not develop into fruit. Additionally, spores from these fruiting bodies can incite infection of other berries at a time when they are highly susceptible to black rot. Berries will remain susceptible to black rot until about 4 to 5 weeks after bloom. See the 2018 Midwest Fruit Pest Management Guide for information on effective fungicides.

Grape Variety Developmental Stages: June 29, 2018

By: Janet van Zoeren, Annie Deutsch, Jacob Scharfetter, and Amaya Atucha

At the West Madison Agricultural Research Station (WMARS), berry ripening ranges from E-L 31 ("berries pea-sized, 7 mm diameter") to E-L 33 ("bunch closure, berries still hard and green"). At the Peninsular Agricultural Research Station (PARS), fruit set is underway in all cultivars, which range from E-L 27 ("bunch setting, at right angles to stem") to E-L 29 ("berries peppercorn size, bunches tending down"). There were no insects seen at PARS this week.

E-L stands for Eichhorn-Lorenz Phenological stages to describe grapevine development

Following photos taken on June 28th at West Madison Agricultural Research Station.

Brianna at WMARS; "bunch closure, berries still hard and green" E-L number = 33

La Crescent at WMARS; "berries pea size" E-L number = 31

La Crosse at WMARS; "bunch closure, berries still hard and green" E-L number = 33

Itasca at WMARS; "beginning of bunch closure" E-L number = 32

Marquette at WMARS;
"beginning of bunch closure"
E-L number = 32

Frontenac at WMARS;
"berries pea size"
E-L number = 31

Foch at WMARS;
"beginning of bunch closure"
E-L number = 32

Petite Pearl at WMARS;
"beginning of bunch closure"
E-L number = 32

Following photos taken on June 28th at Peninsular Agricultural Research Station (PARS)

Brianna at PARS;
"berries peppercorn size, bunches tending down"
E-L number = 28

La Crescent at PARS;
"bunch setting, at right angles to stem"
E-L number = 27

La Crosse at PARS;
"bunch setting, at right angles to stem"
E-L number = 27

Marquette at PARS;
"bunch setting, at right angles to stem"
E-L number = 27

Frontenac at PARS;
"bunch setting, at right angles to stem"
E-L number = 27

April 1 - June 28	Grape Growing Degree Days (Base 50, BE)	
	2018	2107
WMARS	**1026**	905
PARS	**679**	574

The growing degree-day accumulations as of June 28th for this year are: 1,026 GDD at WMARS and 679 GDD at PARS. After the slow, cool spring, we are now significantly ahead of the degree day accumulations from this date in 2017 and 2016.

We calculated degree-days using a base of 50°F, starting on April 1st as a biofix. "BE" (Baskerville-Emin) refers to a specific way in which to calculate degree days, using a sine wave instead of a simple average temperature calculation – this gives a somewhat more accurate estimation of degree days. We calculated degree days using the NEWA website, and you can visit their "About degree days" page to learn more about the formulas they use for their calculations (http://newa.cornell.edu/index.php?page=about-degree-days).

Grape insect scouting report – Japanese beetle season begins

By: Janet van Zoeren and Christelle Guédot, UW-Madison Department of Entomology

A rule of thumb for when Japanese beetle (JB) begins flying in Wisconsin is to look for them around Father's Day, and, right on cue, we've had our first JB activity in the vineyards over the past couple weeks. In our weekly scouting at the West Madison Agricultural Research Station (WMARS), we saw a single JB on June 21st, on a Marquette variety vine. Then on June 28th, we saw an average of 4 JB per vine in the same block. Jacob Henden, a graduate student with us who is doing work across the state on JB saw similar numbers – less than 1 per vine last week, and around 4-6 per vine this week.

Although numbers are still low at this time, they will begin to ramp up quickly, and now is a good time to remind you about some information we published in previous issues of this newsletter about identification, seasonal and spatial distribution and managing JB in Wisconsin vineyards. Start scouting your vineyards, especially on the edges of the blocks as many JB adults move inside the vineyards from the surrounding landscape. At this time, there is no point to be spraying your lawns for larvae as adults are emerging. Please, refer back to the 2018 Midwest Fruit Pest Management Guide for product recommendations and refer back to the article on managing JB.

Happy growing season!

Section 24(c) Special Local Need label for Mustang Maxx

By: Christelle Guédot, UW-Madison Department of Entomology

Spotted wing drosophila (SWD) has become the most detrimental pest of tart cherry in the Midwest. Tart cherry growers have been lacking insecticides that are efficacious against this pest while having a short pre-harvest interval, due to the high susceptibility of ripening and ripe fruit to this devastating pest and the zero-tolerance for insects in fruit in cherry production.

In the last year, we have been working with the WI DATCP, EPA, FMC Corporation (the manufacturer of Mustang Maxx), and cherry growers to reduce the Pre-Harvest Interval (PHI) of Mustang Maxx to 3 days on tart cherry for the control of SWD. We just obtained from WI DACTP a Section 24(c) Special Local Need Label for use on tart cherry (see the copy of the 24(c) label below). This label is valid, for tart cherry only, until the end of 2020.

Mustang Maxx 8EC is manufactured by FMC Corporation. It is a pyrethroid (IRAC 3A) and has the active ingredient zeta-cypermethrin. Mustang Maxx works on contact and ingestion. Mustang Maxx is rated excellent for the control of SWD.

As always, make sure to read the label before using any pesticide. You can find the label of Mustang Maxx here: Mustang Maxx. All applicable directions, restrictions, and precautions on the Mustang Maxx label must be followed.

Return bloom in Apples

By: Janet van Zoeren and Amaya Atucha

Ensuring adequate bloom every year is highly important in commercial apple production. However, this can be a challenge in years with heavy crop loads or in cultivars with strong alternate bearing. To ensure next year's bloom, the first step is to properly thin during the current year, which can be sufficient to ensure return bloom in some cultivars (such as Gala, Cortland and McIntosh). However, in strongly alternate bearing cultivars (such as Honeycrisp, Fuji, Jonagold, and Golden/Red Delicious), and/or when there is a heavy crop load, the application of plant growth regulators, after the thinning window is closed, will promote a good return bloom for the next growing season.

Products:

NAA (Fruitone L®; PoMaxaTM; Refine™) it is applied at 5 ppm (2 ounces/100gallon or 4 ounces/acre) or 2.5 ppm with a surfactant. Once fruits have reached 30 mm (about 6 weeks after full bloom), it can be applied every other week with your cover spray, for a total of 4 applications. is not an aggressive return bloom promoter, and should be applied three to four times in a season, approximately weekly. The recommended rate for NAA is 5 ppm, which can be reduced to 2.5 ppm if mixed with a surfactant. NAA applications can be tank mixed with a cover spray, however growers should be cautions of potential risk of fruit and leaf damage. although care should be used if using a surfactant as some cover sprays can show phytotoxicity if combined with a surfactant.

Ethephon (Ethrel; Ethephon 2; Motivate™) is applied with a single application at 35 mm diameter fruit (6 – 8 weeks after bloom) for non alternate bearing cultivars, or 2 applications separated by 2 or 3 weeks for strong alternate bearing cultivars. The application rate will depend on the cultivar and crop load, but a general rate of 0.5-1 pints/100 gallons (or 1-2 pints/acre) is recommended. It is not recommended to mix ethephon with a surfactant, or to tank mix ethephon with cover sprays.

These products can also be combined into a program using a single application of ethephon, followed by an additional 2-3 applications of NAA. This combination of products has worked well for Honeycrisp, Macs, and Macouns in upstate NY.

Timing:

Return bloom products, if applied before fruit reach 30 mm diameter, will have unintended chemical thinning effects on the trees. For that reason, **it is important to wait until fruit reach at least 30– 35 mm diameter (6 – 8 weeks after bloom) before applying a return bloom spray**. However, by early- to mid-July, once fruit begins to mature, these products begin to promote premature ripening and/or fruit drop. **Avoid applying return bloom sprays immediately before or during hot weather (80-90 °F)**, as it might result in leaf yellowing, early ripening, and reduced fruit size and yield.

Relevant Literature:

Schupp, J. 2018. Apple PGRs – Promoting Return Bloom.

Schwallier, P. and A. Irish-Brown. 2014. Use summer NAA to enhance return bloom on apple varieties.

Calendar of Events

July 18, 2018 – Summer Apple Growers Field Day
8 am – 5 pm, Oakwood Fruit Farm, 31128 Apple Ridge Rd, Richland Center, WI

July 19, 2018 – WMARS Vineyard Walk
1 pm – 4:30 pm, West Madison Agricultural Research Station, 8502 Mineral Point Rd, Verona, WI

July 20, 2018 – Women Caring for the Land Workshop
10 am – 2 pm, Bouressa Family Farm, N3775 Ritchie Rd, New London, WI

August 13, 2018 – PARS Vineyard Walk
1 pm – 4 pm, Peninsular Agricultural Research Station, 4312 Hwy 42 N., Sturgeon Bay, WI

August 14, 2018 – Women Caring for the Land Workshop
8:30 am – 3 pm, Buser Cattle Company, 6440 Wiesner Rd, Omro, WI

August 23, 2018 – WBGA Fall Field Day
8 am – 5 pm, Nature's Finest Foods, 4902 County Rd S, Oshkosh, WI

There are more "Women Caring for the Land" Workshop dates and locations. Please see the events section of our website for more information about this series.

Useful Links:

Wisconsin Fruit Website: https://fruit.wisc.edu/

You can purchase ($10) the 2016 Midwest Fruit Pest Management Guide from the UW Learning Store: http://learningstore.uwex.edu/Midwest-Fruit-Pest-Management-Guide-2016-P1785.aspx

Insect Diagnostics Lab: http://labs.russell.wisc.edu/insectlab/

Plant Disease Clinic: http://labs.russell.wisc.edu/pddc/

Soil and Forage Analysis Lab: https://uwlab.soils.wisc.edu/

Weed Identification Tool: http://weedid.wisc.edu/weedid.php

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