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### The end of another season – thank you for reading the WFN in 2018!

Thanks for sticking with us through another long growing season. We hope everyone has a great harvest season and is looking forward to a quiet winter. We're also looking forward to the slower winter season, but we will be back next spring with another season of the Wisconsin Fruit Newsletter!

Thanks for reading.



## General Information

### UW-Madison/Extension Insect Diagnostic Lab update

By: PJ Liesch

Given the time of the year, the caseload at the UW Insect Diagnostic Lab is starting to lessen for the fall. Insect samples continue to come in to the lab but reports of fruit-pests have shifted in many cases to secondary scavengers, which attack over-ripened or compromised fruits. A summary of recent fruit-pest cases from the UW Insect Diagnostic Lab can be found below:

**Stink Bugs** continue to be reported from around the state. As noted in previous issues of the Wisconsin Fruit Newsletter this year, the commonest stink bugs being reported around Wisconsin include the “green stink bug” (*Chinavia hilaris*), the “brown” stink bugs (*Euschistus* sp.), and the invasive “brown marmorated stink bug” (*Halyomorpha halys*). If you're in a location with BMSB (mostly southern and eastern Wisconsin), be aware that this species is fond of sneaking into homes and other structures to spend the winter, and it will be doing so in the near future.

Damage from **plum curculio** and **codling moth** has been noted by several home growers as they harvest apples from home orchards. Home fruit growers that did not scout for or treat for these pests often notice damage at the time of harvest—but *the time to have acted was weeks ago!*

**Spotted Wing Drosophila** continues to be reported from several parts of the state. Recent reports have come in from home berry growers in south-central and southeastern Wisconsin, and a commercial vineyard in east-central Wisconsin.

**Secondary “scavengers”** are the main fruit pest being reported to the diagnostic lab at the moment from around the state. This group includes wasps (yellowjackets, paper wasps, and bald-faced hornets), multicolored Asian lady beetles, sap/picnic beetles, ants, earwigs, and many other opportunistic insects. Such insects typically do not damage fruit—instead they visit fruit that has been compromised (disease, insect feeding, physical damage, etc.) to feed on the readily-available sugars.

### 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 Sept 15, 2018 through Sept 21, 2018.

<b>PLANT/ SAMPLE TYPE</b>	<b>DISEASE/ DISORDER</b>	<b>PATHOGEN</b>	<b>COUNTY</b>
<b>FRUIT CROPS</b>			
Apple	<a href="#"><u>Cedar-Apple Rust</u></a>	<u>Gymnosporangium juniperi-virginianae</u>	Sauk
Cranberry	<i>Bitter Rot</i>	<u>Colletotrichum gloeosporiodes</u>	Wood
Grape	<i>Zonate Leaf Spot</i>	<u>Cristulariella sp.</u>	Buffalo

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

## Berry Crops

### Blueberry pruning

By: Janet van Zoeren and Amaya Atucha

The main objective when pruning blueberry bushes is to balance the ratio of vegetative and fruiting growth, which is critical to achieve high yields of quality fruit. Under pruning will result in small late-ripening fruit and not enough vegetative growth the following year, whereas over pruning will reduce yield potential. Here we discuss when, what, and how much to prune.

#### When and how often should blueberry bushes be pruned?

Early spring is the best time to prune blueberries. Although some growers need to start pruning after harvest, winter pruning is thought to make plants more susceptible to winter damage which could potentially reduce yields. Ideally, bushes should be pruned moderately every year, rather than pruning heavily every few years, which will result in many new

canes that will become unproductive at the same time. By pruning moderately every year unproductive canes will be removed and the plants will contain canes of many different ages.

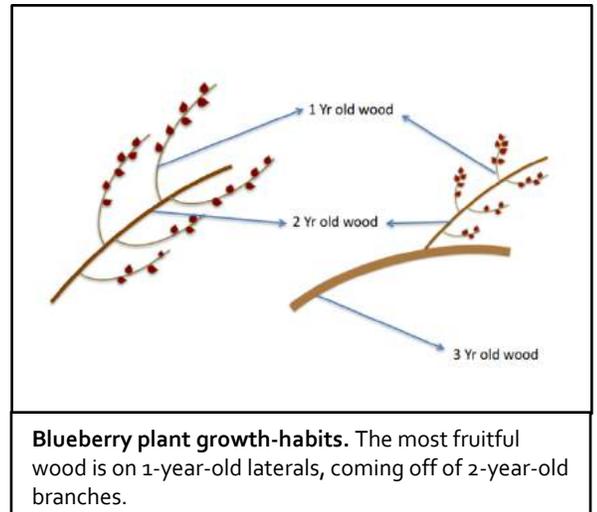
### How much to remove?

How much to remove depends on the age of the blueberry bushes. During the first two years after planting, flowers buds should be removed to encourage vegetative growth. In younger plants (3-7 years old), the focus should be on shaping the bushes by removing dead or damaged canes, as well a twisted low-growing canes. Mature bushes (>8 years old), the goal is to open the canopy to encourage the growth of new canes, and to remove canes that are older than 8 year of age are less productive than younger canes. Ideally, 2 or 3 of those older canes should be removed every year, to maintain long-term productivity.

### What to remove?

There are four basic steps to pruning blueberries:

- **Remove low growth.** This is a good first step, since removing the low growth often helps with the following steps. On mature plants, remove one to two of the thick older canes from the base, allowing younger, more vigorous ones to replace them. On both mature and younger plants, fruiting laterals below knee-height are likely to touch the ground once they produce fruit, and should be removed.
- **Remove twiggy, damaged or diseased wood.** Sections of the bush that look unhealthy or unproductive should be removed. Look for the productive new growth, and remove the less productive old growth. The most productive part of the blueberry bush is on the 1-year-old wood, which is coming off of 2-year-old branches (see Figure 1), so any wood older than two years is serving a structural rather than producing fruit. Three year old wood will have a dull color and will have shorter, twiggy laterals, whereas the productive two year old wood is shinier in color and does not appear twiggy.
- **Thin out the fruiting laterals.** Too many laterals will cause the plant to try to produce too many fruits, leading to late ripening and decreased fruit quality. As a guide, two year old wood can support around 4 to 8 fruiting laterals. Excess laterals can be snapped off by hand, or removed using the pruning shears. Alternatively, you can cut the end of the 2-year-old growth, leaving only 4 to 8 laterals.
- **If necessary, shape the bush.** Remember that you want adequate airflow in the bush, which will help reduce the prevalence of disease and pest issues.



### Additional resources:

There are a lot of good resources on the internet to learn more about blueberry pruning. We recommend you check out the following for more information:

**A Grower's Guide to Pruning Highbush Blueberries** (video). Oregon State University.

[https://media.oregonstate.edu/media/blueberrypruneenglish\\_ver2010.mp4/0\\_05v1qew6](https://media.oregonstate.edu/media/blueberrypruneenglish_ver2010.mp4/0_05v1qew6)

**Pruning Blueberries in Home Fruit Plantings.** Penn State Extension. <https://extension.psu.edu/pruning-blueberries-in-home-fruit-plantings>

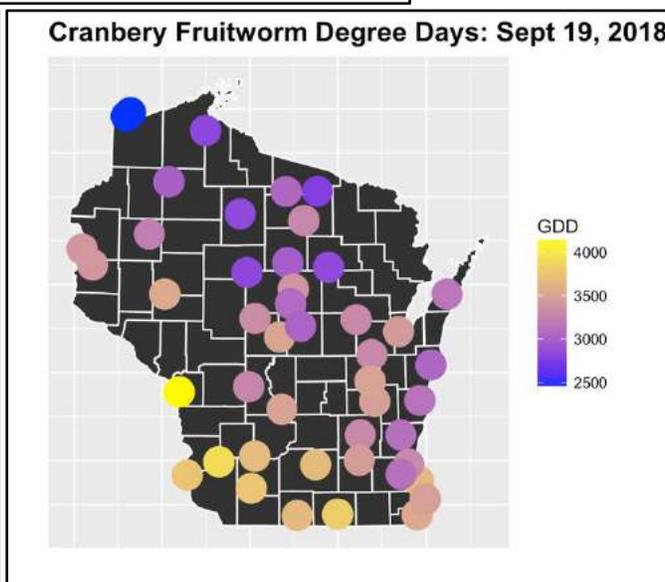
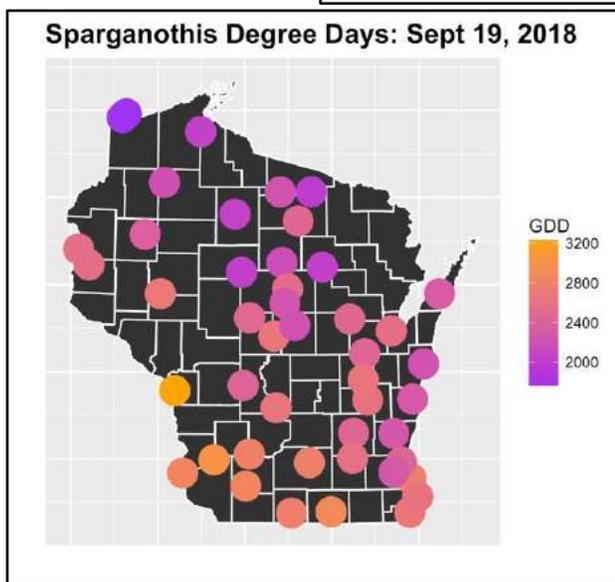
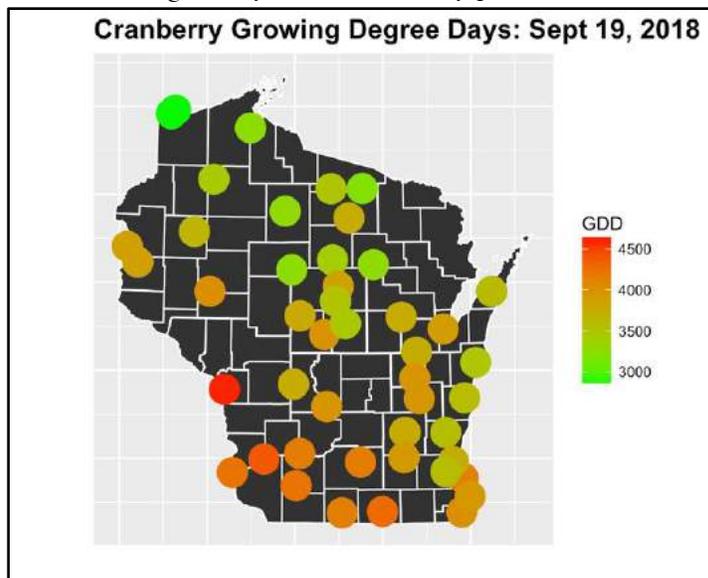
You can find more information about all aspects of blueberry production on the “other berry crops” page of our website (<https://fruit.wisc.edu/other-berry-crops/#blueberry>).

# Cranberries

## Cranberry plant and pest degree-days: September 19, 2018

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

Check out the maps below for the degree-days of the cranberry plant and associated pests.<sup>1</sup>



Use the table below to compare degree-day accumulations for all three organisms across the last couple of years and between Northern and Central WI.

	Sept 19	Cranberry DDs			Sparg DDs			CFW DDs		
		2016	2017	2018	2016	2017	2018	2016	2017	2018
<i>Northern WI (Minocqua)</i>		3371.7	3008.4	3543	2064.5	1734.4	2269.7	2913.6	2556.4	3105.9
<i>Central WI (Wisconsin Rapids)</i>		4018.3	3677.1	4031.6	2608.1	2288.7	2708.5	3524.1	3190.3	3578.2

<sup>1</sup> 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.

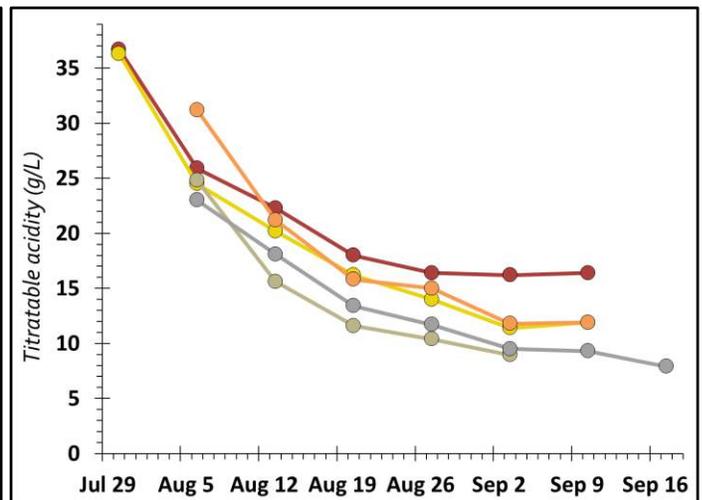
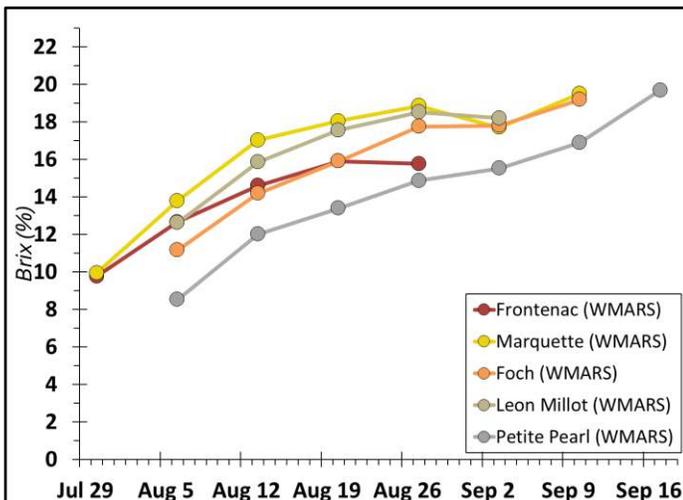
## Grape Variety Developmental Stages: Sep 20, 2018

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

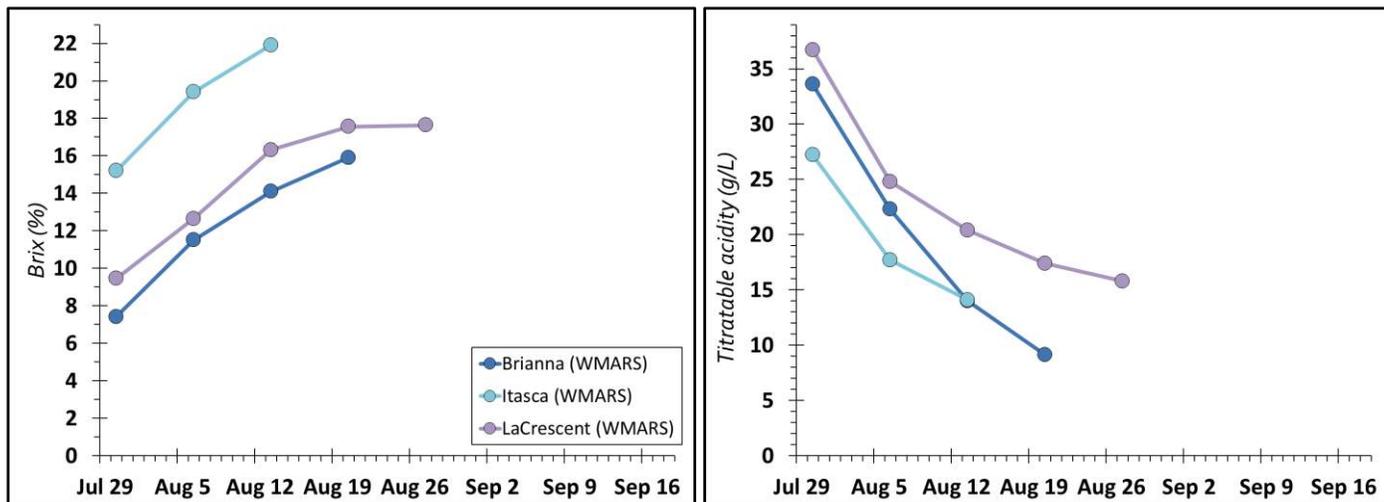
Dane County:

We have finished harvest for the year at the West Madison Agricultural Research Station (WMARS). Sugar (Brix) and TA (titratable acidity) concentrations at the time of harvest are shown in the chart below, along with graphs below to track their progression throughout the ripening period.

Sept 17, 2018		
Grape Brix and Titratable Acidity (TA)		
WMARS		
Grape Variety (Reds)	Brix (%)	TA (g/L)
Frontenac	HARVESTED at 20.7	HARVESTED at 14.2
Marquette	HARVESTED at 23.4	HARVESTED at 12.6
Foch	HARVESTED at 21.0	HARVESTED at 10.5
Leon Millot	HARVESTED at 15.5	HARVESTED at 9.5
Petite Pearl	HARVESTED at 19.7	HARVESTED at 7.9
Grape Variety (Whites)	Brix (%)	TA (g/L)
Brianna	HARVESTED at 15.9	HARVESTED at 9.1
Itasca	HARVESTED at 21.9	HARVESTED at 14.1
La Crescent	HARVESTED at 17.6	HARVESTED at 15.8



Brix (above left) and Titratable acidity (above right) of red wine grape varieties as WMARS.



Brix (above left) and Titratable acidity (above right) of white wine grape varieties as WMARS.

**Door County:**

At the Peninsular Agricultural Research Station (PARS) we are also nearing harvest, with all cultivars currently at E-L developmental stage 37 (“berries not quite ripe”).

Following photos taken on Sept 19<sup>th</sup> at Peninsular Agricultural Research Station (PARS)



Brianna at PARS;  
“berries not quite ripe”  
E-L number = 37



La Crescent at PARS;  
“berries not quite ripe”  
E-L number = 37



La Crosse at PARS;  
“berries not quite ripe”  
E-L number = 37



Marquette at PARS;  
"berries not quite ripe"  
E-L number = 37



Frontenac at PARS;  
"berries not quite ripe"  
E-L number = 37



St Croix at PARS;  
"berries not quite ripe"  
E-L number = 37

*Growing degree days:*

April 1 - Sept 19	Grape Growing Degree Days (Base 50, BE)	
	2018	2107
<b>WMARS</b>	<b>2769</b>	2314
<b>PARS</b>	<b>2217</b>	1779

The growing degree-day accumulations as of Sept 20<sup>th</sup> for this year are: 2,769 GDD at WMARS and 2,217 GDD at PARS. We calculated degree-days using a base of 50°F, starting on April 1<sup>st</sup> 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>).

## Post-harvest tasks in the apple orchard

By: Janet van Zoeren and Amaya Atucha

Harvest marks the culmination of all the work you've put into the orchard this year, but even as it's just wrapping up it's already time to start thinking about preparing for winter and for next year's crop. Here are a few tasks to focus on after harvest finishes up in your orchard blocks.

### Fall herbicide applications

Post-harvest is a good time to think about weeds, because at the end of the season you can clearly see which areas of the orchard have the highest weed pressure, and weeds are big enough that you can identify which species of weed you have where. If you don't have time or otherwise are not able to apply herbicide in the fall, it is still a good idea to scout the orchard for areas of weed pressure and record which species are present, to help guide herbicide decisions next spring.

### Rodent control for the winter

As many of you have probably experienced, rodents can cause major problems during the winter by gnawing on the bark and girdling trunks. Trapping or baiting rodents in the fall and mowing aisles to expose rodents to hawks and other predators can help keep populations low going into winter, but if you suspect you have a lot of rodents in your orchard, you may also want to wrap tree trunks with any sort of protective layer prior to snowfall; the wrap should reach a few inches higher than the predicted highest snow depth. More information about identification and management of orchard voles can be found in Penn State's article, "[Wildlife Damage Control 9: Voles](#)". More information about wrapping tree trunks to protect them from rodent damage can be found in the University of Illinois Extension article, "[Protect plants from winter damage from rabbits and rodents](#)", or at the Penn State blog post entitled "[How to stop voles from chewing on tree trunks over winter](#)".

### Repairing/winterizing fences and irrigation lines

Of course, repairs are endless and not limited to fall, but this can be a good time to catch up on repairing things like fences and irrigation lines, so that you can go into winter with things in good shape, and ready to deploy immediately when needed in the spring. This is also a good time to think about repairing trellis lines or posts.

### Tree painting

If you receive strong winter sun, you may want to consider painting the south-facing bases of your trees with a white latex paint. This will prevent the southern side of the tree from warming too quickly, which cause lead to a large difference in temperature between the south and north sides of the trunk, leading to bark cracking.

### Training trees

On younger blocks, fall is the best time for training branches, as they have just finished lengthening and are about the thicken, meaning they will quickly become more sturdy and keep their new shape better. The type of training required depends on your orchard system, but may include tying limbs to trellis wires or posts, or weighting them down to maintain a more horizontal or downward slope.

### Fall fertilization applications

Fall nitrogen applications, after the fruit has been harvested but prior to leaf-fall, can help build up the tree's reserves. A 3-5% foliar urea application has shown an increase in nitrogen concentration in spurs, which could translate to better fruit set and fruit size the following growing season. Research conducted by Dr. Lailiang Cheng at Cornell showed no advantage of foliar versus soil nitrogen application during the post harvest period. However, one advantage of foliar versus soil urea applications in the fall is the effect in reducing the number of ascospores, and thus help control scab.

Other nutrients you may want to consider applying in the fall include boron, zinc, magnesium, copper, and potassium. For more information on apple orchard nutrient management, please read [“When and How Much Nitrogen Should Be Applied in Apple Orchards?”](#) (New York Fruit Quarterly, Vol 18, number 4), [“Post-harvest Nutrient Management”](#) (Apal.org), and browse the resources supplied on our website at <https://fruit.wisc.edu/apples-and-pears/#nutrient>.

**Beware: brown marmorated stink bug is on the increase this fall!**

By: Janet van Zoeren and Christelle Guédot, UW – Madison Fruit Crop Entomology and Extension

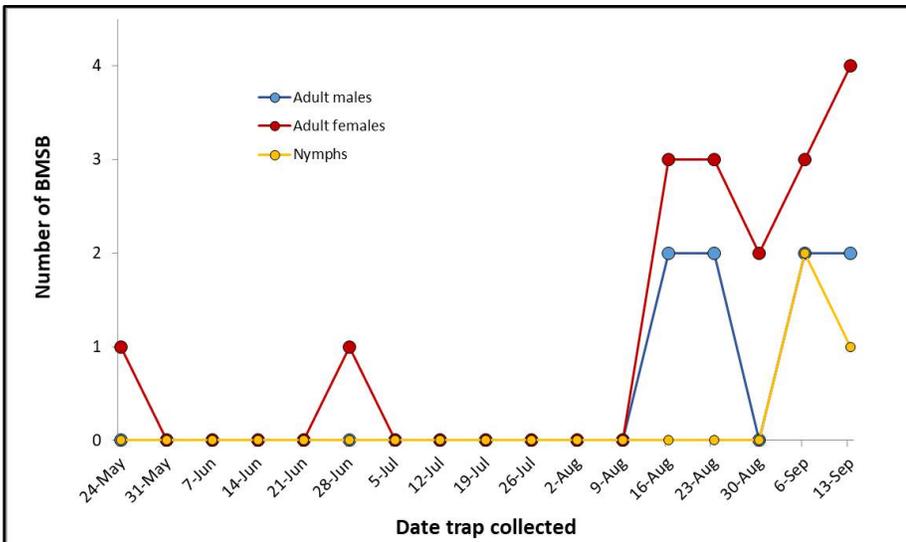
Brown marmorated stink bug (BMSB) is showing up in increased number in Madison and in Dane county orchards this fall. Our trap in Madison’s east side is catching much higher numbers this fall than in any previous year at this time of year (about 100 BMSB on and around the trap this past weekend!), and we’ve heard anecdotal reports of growers finding BMSB on apples and in their harvest buckets. This concern is going to continue to get worse in coming years, and we highly recommend you implement a monitoring program next year, as well as prepare a management plan in anticipation of numbers continuing to rise.



**BMSB are in higher numbers in urban sites this fall than in any previous year at this time of year.**

**Trapping data from the 2018 season**

This summer we had a combination of clear sticky traps and black



pyramid traps. We have caught very low numbers of BMSB in the black pyramid trap, and higher numbers in the sticky traps. At the orchard with highest populations, we caught a total of 7 BMSB on the sticky trap last week (four female, 2 male, 1 nymph). We can’t compare directly to the numbers from last year (because we are using different types or traps and/or in different locations), but numbers do seem to be on the rise.

**BMSB caught per week on a clear sticky panel trap in a Dane County orchard.** The blue line refers to male BMSB, the red line refers to female BMSB, the orange line refers to BMSB nymphs, and the total cause per week can be calculated by adding up the three lines.

**Monitoring and controlling BMSB recommendations**

We strongly recommend you begin to monitor for BMSB in your orchard next year, if you haven’t done so already. There are two commonly used types of monitoring traps for BMSB: the clear sticky panel trap and the black pyramid trap. The advantage of the clear sticky panel trap is that we get much higher numbers of BMSB on those traps, so you will be more likely to have earlier detection and to know earlier in the season if you have BMSB in your orchard. However, the

advantage of the black pyramid trap is that research has been done to find a provisional economic threshold for trap catch numbers with the black pyramid traps (which has not yet been done for the sticky traps), so you can use pyramid trap numbers to help decide whether BMSB control is necessary in your orchard. That provision threshold used in other states for BMSB in apple is **10 adults per black pyramid trap per week** (count adults found both on and in the trap).



**BMSB feeding damage.** Photo by G. Krawczyk Pennsylvania State

You may also want to look for BMSB feeding damage on your fruit at harvest. The image at right shows BMSB feeding damage. If you would like more information about comparing BMSB to other late-season apple damage, you can look back to our article the previous issue of this newsletter ([WFN season 3, issue 11](#)).

If chemical controls need to be applied (if you reach the action threshold mentioned above), some insecticide classes known to provide good control of BMSB include pyrethroids (IRAC code 3A), carbamates (IRAC code 1A), and neonicotinoids (IRAC code 4A). In general, the choice of which insecticide to use should take into account the pre-harvest interval and re-entry restrictions, other pests present, and effects on beneficial insects and the environment. Once you reach the threshold, spraying an effective insecticide two times at a seven-day interval has shown high efficacy against BMSB. Because BMSB prefer edges of orchards and fields, if an insecticide is necessary, by spraying only to the outer few rows (perimeter spray) you can still maintain approximately 85% of the effectiveness of an insecticide applied throughout the crop. To make the spray even more effective, a pheromone-baited lure can be placed approximately every 20 feet along the edge of the crop or in a neighboring trap crop, increasing the likelihood of BMSB to settle along this edge where you would then spray.

## Calendar of Events

**September 27, 2018** – [Women Caring for the Land Workshop](#)

8:30 am – 3 pm, Long Winter Farm, W1446 Lawlor Rd, East Troy, WI

**November 14, 2018** – [Two Apple Farm Organic Apple Field Day](#)

1 pm – 3:30 pm, Two Onion Farm, 19638 Cottage Inn Road, Belmont, WI

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