

# Michigan Blueberry I.P.M. Update



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**Editor's Note:** Welcome to the second edition of our IPM Update and Newsletter. Now that our monitoring traps are set and the scouting is running, we can compare last week's monitoring with this week's. So, our Disease Update and Insect Update tables contain two weeks information to show potential trends in pest pressure.

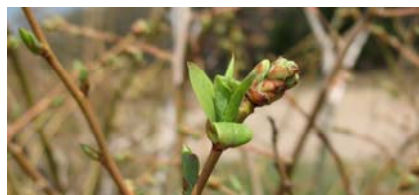
## DISEASE UPDATE

[See the MSU Blueberry Facts website for an article on management of mummy berry](#)

Key: CV = Covert; GJ = Grand Junction; HO = Holland; WO = West Olive.

## CROP STAGES

	Van Buren Co.		Ottawa Co.	
	Covert	Grand Junction	Holland	West Olive
<b>Field 1</b>	<b>Jersey</b>	<b>Blueray</b>	<b>Blueray</b>	<b>Rubel</b>
Stage	bud break	bud break	bud break	bud break
<b>Field 2</b>	<b>Jersey</b>	<b>Bluecrop</b>	<b>Jersey</b>	<b>Bluecrop</b>
Stage	bud break	bud break	bud swell	bud break



Jersey at bud break in Covert

	Van Buren County				Ottawa County			
	CV		GJ		HO		WO	
	4-16	4-23	4-16	4-23	4-16	4-23	4-16	4-23
Mummified berries per bush*	0.25	0.2	27	43	13	20	6	9
% germinated mummified berries	0	0	26	26	19	29	18	24
Mummy berry mushrooms per bush*	0	0	21	17	5	8	2	2

Notes: Infection periods for mummy berry will continue through this week. Growers should scout for mummy berry and consider fungicide treatment if mummies and/or mushrooms are found.

\* An area of ~ 9 sq ft was scouted under each bush.

## DEGREE DAYS AND WEATHER NOTES

GDD (from March 1)	Van Buren County		Ottawa County	
	4-16	4-23	4-16	4-23
<b>Base 50</b>	133	189	91	137
<b>Base 42</b>	286	382	213	295

Weather Forecast: Mild temperatures with rain possible Wednesday and Thursday. By 4-30 GDD<sub>50</sub> will increase by ~25, and GDD<sub>42</sub> will increase by ~65. Complete weather summaries are at [enviroweather.msu.edu](http://enviroweather.msu.edu)

## INSECT UPDATE

Key: CV = Covert; GJ = Grand Junction; HO = Holland; WO = West Olive. CBFW = cranberry fruitworm; CFW = cherry fruitworm.

	Van Buren County				Ottawa County			
	CV		GJ		HO		WO	
	4-16	4-23	4-16	4-23	4-16	4-23	4-16	4-23
CBFW moths per trap	set	0	set	0	set	0	set	0
CFW moths per trap	set	0	set	0	set	0	set	0

Scouts and growers should set traps for these pests in the next week. In the next week, it is not likely that cranberry fruitworm or cherry fruitworm will emerge.

[Click here for more info about fruitworms.](#)

## CONTAMINANT MOTH IN CHERRY FRUITWORM TRAPS

Keith Mason

MSU Department of Entomology

We have started to catch a moth in cherry fruitworm traps that is not cherry fruitworm. This "contaminant" moth is *Pseudexentra vaccinii* and is commonly caught in cherry fruitworm traps. Although it reportedly may feed on blueberry; we have never found it to be a pest of any economic consequence in Michigan. The contaminant moth is ~½ inch long which is much larger than cherry fruitworm which is ~¼ inch long. Cherry fruitworm also have an iridescent banding pattern while the contaminant moth has darker markings on a light gray body. See the photos below to help with identification.



Cherry fruit worm (left) and the contaminant found in cherry fruitworm traps, *Pseudexentra vaccinii* (right).

## PEST OF THE WEEK

### Cutworms and spanworms

Rufus Isaacs and Keith Mason

MSU Department of Entomology

During this time of year when night time temperatures become milder, and flower buds and leaf buds are beginning to swell and grow, you may see two insect pests, cutworms and spanworms, which may feed on new growth. Both pests are moth larvae that are occasionally



Left, cutworm damage, right, cutworm larva on soil. [Mississippi State Univ Archives](#)

found in blueberry, and if left unchecked either can cause economic losses. So as you are scouting your fields keep an eye out for the symptoms described below.

Cutworms damage plants by feeding on young tissues. They spend the day time in leaf litter or in upper soil layers under bushes, and they tend to be more of a problem in weedy fields. Larvae are active at night and crawl up onto bushes after the first warm spring days. For this reason, inspect bushes for injured buds during delayed-dormant to budbreak. Buds may be partly or entirely consumed, and multiple buds may be damaged during one night of feeding. Cutworm larvae are typically 1 inch long (25 mm) and dark colored. When disturbed, they curl into a circular or C-shaped.

Several species of spanworm (inchworm) larvae feed on blueberry, where they chew holes through the sides or tops of buds. These insects have thin bodies with large fleshy legs only at the front and rear ends of the body. Their coloration makes them well camouflaged in blueberry bushes.



Left, typical spanworm damage, right, spanworm larva mimicking a twig.

Spanworms can look like twigs. Other common names for this type of larva are inchworms or loopers due to the characteristic looping way they walk. They may also remain completely still when disturbed, mimicking a branch to avoid predators. Detect spanworms by shaking branches over a beating tray. Inspect buds for feeding during bud swell.

As cutworms and spanworms are both moth larvae, the strategies you use for controlling other moth pests such as leafrollers and fruitworms are generally effective.

## BLUEBERRY FROST PROTECTION

Eric Hanson, MSU Small Fruit Specialist  
and  
Mark Longstroth, MSUE District Extension  
Educator

Blueberry growers can protect against spring freezes by using sprinklers to reduce in damage to blueberry flowers. Sprinklers do not protect blueberries in all circumstances. In 2002, many growers used sprinklers to protect their blueberries when they were at swollen bud and the temperatures were forecast to fall to the upper teens. Sprinklers will not protect crops under these extreme conditions. Sprinklers are used near bloom time when the flowers are visible and the lows are forecast to be in the upper to mid 20s. Unless your system is specifically designing to provide a lot of water in a short period of time it is doubtful that it will protect below 24 F.



### Know how much protection your sprinkler system can provide

The system's irrigation rate and uniformity determine the freeze protection that sprinkler systems can provide. More water is needed to protect at lower temperatures and higher wind speeds (see accompanying table). Most systems in Michigan are designed to deliver 0.12 to 0.15

inches of water per hour. These systems can protect to 22°F under very still conditions, but only to 26°F if there is a slight breeze (2-4 mph). If you do not know your delivery rate, catch water in 6 to 8 cans placed on the ground throughout the planting.

Most systems cannot easily be changed to deliver more water and protect to lower temperatures. Increasing the operating pressure is not advisable because the volume is not increased substantially (increase from 60 psi to 80 psi may provide only 15 percent more water). Higher pressure can also break lines. Higher pressures also generate considerable mist and change the uniformity of application. Larger nozzles can be installed in some systems but only if the capacity of the mainlines, well and pump can handle the added volume. For example, 9/64-inch nozzles that deliver 0.12 inches water per hour require 60 gallons per minute per acre of blueberries. Switching to 5/32-inch nozzles would deliver 0.15 inches per hour but require 68 gallons per minute per acre. Even if systems can provide adequate volume to protect from temperatures in the low 20's, breakage from ice accumulation can be considerable.

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#### Irrigation rate (inches/hour) to protect buds under different wind and temperature conditions (from U. of Florida Ext. Circ. 287)

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Temp (F)	Wind speed (mph)		
	0-1	2-4	5-8
27	.10	.10	.14
26	.10	.16	.30
24	.12	.24	.50
22	.16	.30	.60
18	.20	.40	.70

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### When to attempt to frost protect

Blueberry flower buds and flowers become more sensitive to cold as they develop. Swollen but closed buds tolerate 15 -20 F. At tight cluster or early pink bud (individual flowers are visible but still tight in bud), injury will occur between 18 and 23F. Once flowers have separated from one another but the corollas (petals) are still closed, 22–25 F may be lethal. By the time the corolla is half their full length, they are damaged



at 25 to 26 F. Fully open flowers are killed at 27F. The most sensitive stage is just after the petal fall, when 28F may cause damage. Dr. Mike Mainland from North Carolina State University provided a useful rule of thumb during a workshop in 2003. He suggested not even attempting frost control until at least a few flowers are open. He reasons that most flowers are tight enough to tolerate 22-24F until the first flowers open, so protecting before the first bloom is not useful. This rule of thumb is especially useful when there is a wide difference the emergence of buds on a shoot. If most of the flower buds on a shoot are terminal (at the end of the shoot) and are opening at the same time, then you might want to frost protect in late pink bud. But there is no reason to try and protect flower buds at temperatures below 23 or 24F.

Another consideration is wind. Don't attempt to frost protect if the combination of wind and temperature will exceed to capacity of your system to protect (see accompanying table). Dr. Mainland suggested studying the weather forecast closely, and hanging colored flagging in the field to indicate wind strength.

### How early in the evening should I start irrigating?

When irrigation begins, air temperatures are initially reduced due to evaporative cooling. The amount of cooling depends on the relative humidity. If the air is very dry (dew point 15 – 20F), start the irrigation when the air temperature drops to 36F. If the relative humidity is high (dew point above 24F), start irrigating when air temperature falls to 34F.

### When can I stop irrigating?

Stop irrigating when the ice is melting and temperature is rising. Ice breaking free from branches indicates water is forming under the ice and it is likely safe to quit. Normally this is when temperatures are above freezing and rising. Beware of sudden dips in the temperature soon after sunrise.



### Soil surface considerations

Some frost avoidance can be gained by keeping the soil surface clean of vegetation, moist and packed. Moist soils have a large capacity to capture and store heat energy during sunny days, and release heat to maintain air temperature during cold nights. Weeds, sod, and plant residues insulate the soil from the sun and reduce heat capture. In addition, tall grass and weeds raise the effective ground level. This is important since cold air is heavier than warm air, and settles along the ground and in the lowest areas of fields. If fields are covered with foot tall grass or weeds, flower buds a foot higher in the canopy may be injured during a frosty night. Mowing fields with tall weeds is worthwhile.

Another consideration is that moist soils have a higher heat capacity than dry soils, and packed soils absorb more heat than recently cultivated soils. It is not worthwhile to cultivate just before a frost. Some growers attempt to irrigate during the day prior to predicted frosts in order to increase the capacity of the soil to absorb heat. This may be of some value if water is applied early in the day, and there is ample sun to warm the wet soil. Irrigating late in the day or on cloudy days will not increase soil temperatures and provide more heat at night. The bottom line is that clean, moist, and packed soil surfaces absorb the most radiant energy during the day, and protect from frost by releasing this heat during the night.

## UPCOMING MEETINGS

### May 17 - Blueberry IPM Scout Training, Hands-On Workshop

Meet at 1 pm at Trevor Nichols Research Complex in Fennville, then drive to blueberry farm

### June 13 - Blueberry Scouting and IPM Demonstration Workshops

10-12am at Bodtke Farm, Van Buren County  
3-5pm at Carini Farms, Ottawa County



## IN NEXT WEEK'S ISSUE

- More scouting information
- Update on fruitworm monitoring and management – (This article was originally scheduled for this issue, but it will be put in next week's issue to make it more timely).
- Guthion label update

### MSU Blueberry Team

Horticulture - Eric Hanson

Plant Pathology - Annemiek Schilder

Entomology - Rufus Isaacs

Trevor Nichols Research Station - John Wise

Van Buren Co. - Mark Longstroth

Ottawa Co. – Carlos Garcia

Berrien Co. - Greg Vlaming

Southeast Michigan – Bob Tritten

For more information, see our website at [blueberries.msu.edu](http://blueberries.msu.edu)