

# Michigan Blueberry I.P.M. Update



May 13, 2008

Volume 2, No. 4

## **REMINDER!!!!**

### **Blueberry IPM Twilight Meeting**

**When:** May 14, 2008 6-8PM

**Where:** Cornerstone Ag, 01240 57th St.,  
(north of CR 388 - Phoenix Road), Van  
Buren County.

**What:** Timely updates for control of insect,  
disease, and weed control. This is a free  
meeting, with a light dinner served at 6PM.  
Spray credits available for attending.

## **WEATHER NOTES**

*Complete weather summaries and forecasts are available  
at [enviroweather.msu.edu](http://enviroweather.msu.edu)*

Cool weather will continue through this week with high temperatures mostly in the sixties and lows in the forties. After a warm Tuesday with a high near 70, rain showers and thunderstorms are expected Tuesday night and are likely to continue through Wednesday. Sun is expected for Thursday, but a chance of showers returns by Friday and stays in the forecast for the weekend.

## **Contents**

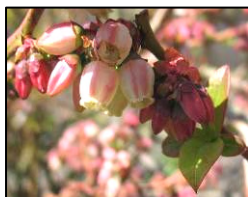
- Crop Stages
- Weather notes and Degree days
- Pest of the Week – Blueberry Aphid
- Insect update
- Disease update
- Gibberellin and fruit set
- Fruitworm Monitoring
- Meetings and Announcements
- In Next Week's issue...

## **CROP STAGES**

**Keith Mason**

**Department of Entomology, MSU**

Bloom is definitely here. In Van Buren County, Jersey in Covert is at 25% bloom, and in Grand Junction, Bluegray and Bluecrop have 25 to 50% of the flowers open. In Ottawa County, Bluegray in Holland, and Rubel and Bluecrop in West Olive are at trace bloom.



Bluecrop nearing 50% bloom in Grand Junction (left)  
and Bluegray at trace bloom in Holland (right).

<b>DEGREE DAYS</b>		
<b>GDD (from March 1)</b>	<b>Base 42</b>	<b>Base 50</b>
	Van Buren County	
5-5-08	445	240
5-12-08	534	285
Projected for 5-19-08	619	325
	Ottawa County	
5-5-08	358	187
5-12-08	437	213
Projected for 5-19-08	522	254

## PEST OF THE WEEK – BLUEBERRY APHID

Rufus Isaacs,  
Department of Entomology, MSU

Leaf clusters have been expanding in the last week, so now it is time to begin scouting for aphids in your fields. Several species of aphids colonize blueberry bushes. The most damaging species transmit viruses that cause poor plant growth and reduced yield. Blueberry aphid (*Illinoia pepperi*) is the vector of blueberry shoestring virus and blueberry scorch, which is also transmitted by *Ericaphis* species aphids. (See the disease section of the MSU Blueberry Facts website for symptoms of these viral diseases.) Early detection and control of aphids can help slow the spread of these diseases in susceptible varieties.

Aphids overwinter as tiny eggs on blueberry bushes. In spring, young aphids hatch and colonize new leaf growth, living on the undersides of leaves. Aphid colonies are usually found on new growth near the base of the bush. Populations grow during the summer and can cause sooty mold on fruit if populations are very high. Parasitic wasps and other natural enemies feed on aphids, suppressing their abundance. Scout for aphids on the undersides of leaves, focusing on young shoots at the bases of bushes.

Scouting during and after bloom can provide information on where aphid populations are developing, and whether there is good biological control activity on the colonies. Do not make any control actions during bloom to protect bees. If aphids reach levels that warrant control later in the season there are a number of newer materials that provide excellent targeted control of this pest. In particular, Assail, Actara, and Provado are insecticides that are very active on aphids and are absorbed into the foliage. This makes them resistant to wash-off and also inside the plant where aphids will ingest the product and be controlled.



Aphid colony on underside of leaf.

[Jerry A. Payne, USDA ARS](#)



Adult blueberry aphid.



Parasitized aphid (mummy)

## INSECT UPDATE

Keith Mason and Rufus Isaacs

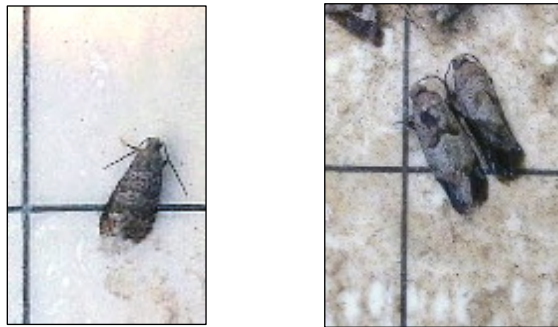
Department of Entomology, Michigan State University

The continued cool weather last week has caused insect activity to remain low at all four farms. No leafroller, climbing cutworm or spanworm feeding was observed. Growers and scouts should still be on the lookout for feeding by these pests. The flower feeding beetle *Hoplia trifasciata* was not seen at any of the four farms, and no feeding damage was seen.

A single cherry fruitworm moth was caught at the Grand Junction farm this week, making this the second week of capturing this pest at that site. Cherry fruitworm captures should increase this coming week, and we should also see the first cranberry fruitworm males in traps in the next few weeks. Traps for these moths should be set already to record the beginning of moth flight, and these traps should be checked each week to track the emergence of this important early-season pest.

We are still catching the "contaminant" moth, *Pseudexentra vaccinii* in cherry fruitworm traps, however the number of captures is very low as the abundance of this moth is declining. See pictures of these moths below.

Some cherry fruitworm traps have also been catching red-banded leafroller as a contaminant. These moths have a red-brown mottled pattern on their wings instead of the dark grey bands shown in the left photo below.



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

### Van Buren County

Farm	Date	CBFW moths per trap	CFW moths per trap	BBA % infested shoots	BBM adults per trap	JB per 20 bushes
<b>Covert</b>	4-28	0	0	0		
	5-5	0	0	0		
	5-12	0	0	0		
<b>Grand Junction</b>	4-28	0	0	0		
	5-5	0	1	0		
	5-12	0	1	0		

### Ottawa County

Farm	Date	CBFW moths per trap	CFW moths per trap	BBA % infested shoots	BBM adults per trap	JB per 20 bushes
<b>Holland</b>	4-28	0	0	0		
	5-5	0	0	0		
	5-12	0	0	0		
<b>West Olive</b>	4-28	0	0	0		
	5-5	0	0	0		
	5-12	0	0	0		

## DISEASE UPDATE

Timothy Miles and Annemiek Schilder

Department of Plant Pathology, Michigan State University

### Mummy berry presses on

Declining mummy berry mushrooms (apothecia) that had already released their ascospores were observed at many of our plots (Figure 1). This week the plots had reduced numbers of apothecia when compared with previous weeks. Last week the average number of apothecia was as high as 11.2 apothecia per bush (Grand Junction), but this week the averages only reached 1.4 per bush (Grand Junction). The first shoot strikes, a result of ascospore infection of emerging leaves, were seen in two scouted plots (Covert and Grand Junction). As discussed in previous "Disease Updates," shoot strikes are a blighting of developing leaves and shoots which often exhibit an "oak leaf" pattern of necrosis (Figure 2). Shoot strikes begin to appear about 12-14 days after the initial infection, depending on the temperature.

### Scouting for mummy berry shoot strikes

To scout for shoot strikes, pick five bushes and record the number of shoot strike infections per bush. Shoot strikes can be identified by the brown oak leaf pattern along the veins of wilting leaves and a layer of gray powdery spores on the upper part of the leaf and petiole. Also, shoot strikes generally do not exhibit browning of the wood beyond the green tissue of the infected shoot. They can occur anywhere on the bush but are sometimes more plentiful lower in the bush. Flower strikes may be distinguished from other blights by the dense gray spore masses on the flower stem. Flower strikes are much less common than shoot strikes and would normally not be present in the absence of shoot strikes. Some cultivars are more susceptible to shoot strikes/flower strikes and less susceptible to fruit infection, whereas others are just the opposite. Susceptible varieties include Berkeley, Blueray, Bluetta, Bluehaven, Jersey, Rubel, and Northland.



**Figure 1.** Declining apothecium observed in Grand Junction, MI.



**Figure 2.** First shoot strike of the season observed in Grand Junction, MI. Note gray sporulation at the base of the shoot.

<b>Van Buren County</b>					
Farm	Date	Average number of mummies on the ground per bush*	% Germinated mummies	Average number of apothecia on the ground per bush*	Average number of mummy berry shoot strikes*
<b>Covert</b>	4-25	2.2	9.0%	0.4	0.0
	5-2	2.4	8.3%	0.4	0.0
	5-9	1.9	5.3%	0.1	0.1
<b>Grand Junction</b>	4-25	25.7	28.0%	10.9	0.0
	5-2	24.6	30.5%	11.2	0.0
	5-9	18.7	5.9%	1.4	0.1
<b>Ottawa County</b>					
<b>Holland</b>	4-25	3.2	16.0%	0.8	0.0
	5-2	3.2	21.9%	1.0	0.0
	5-9	2.7	3.7%	0.2	0.0
<b>West Olive</b>	4-25	7.3	23.0%	2.7	0.0
	5-2	7.1	28.2%	3.1	0.0
	5-9	9.0	8.9%	1.3	0.0

\*Average number was calculated for ten bushes.

## GIBBERELLIN TO ENHANCE BLUEBERRY FRUITSET

Eric Hanson, MSU Horticulture

This article originally appeared in the MSU Fruit CAT ALERT newsletter on May 1, 2007.

Compared to most fruit crops, a high percentage of blueberry flowers normally produce fruit. When bees are numerous and weather is warm and calm, 80-95 % of flowers may set fruit. However, cold, rainy weather during bloom restricts honey bee activity and pollination, resulting in lower fruit set and often reduced berry size. Flowers that are not pollinated within 3-5 days after opening are unlikely to set fruit. After normal pollination, berry growth is dependent on the production of gibberellin and perhaps other growth promoters in the ovary tissues and viable seeds. If flowers are not pollinated, they abort. If only a few ovules are fertilized, the fruit may set, but not contain enough seeds to grow to full size.

When pollination is limited by poor weather, gibberellin (GA) sometimes improves % set and berry size. Several GA products (ProGibb, GibGro) are labeled for highbush blueberries. GA may result in retention of some seedless (parthenocarpic) fruit that normally drop, and increases the size of berries with low seed numbers. GA can be applied in a single spray during bloom (80 gram active ingredient per acre) or two 40 g sprays, one during bloom and the second 10-14 days later. Higher spray volumes (40 to 100 gallons per acre) may improve coverage and effects. Slow-drying conditions also increase absorption. Also make sure your spray water pH is not above 7.5.

Since the cost of 80 g of GA is over \$100, it is important to know when to use GA. If weather has been reasonable good for bee activity and the white corollas fall easily from the bushes, pollination is probably adequate. Keep in mind that blueberries can bloom over a long time, and often only a few days on good conditions is enough to provide adequate pollination. Consistently cold, rainy and/or windy weather through bloom causes pollination problems. If the corollas stay on the bushes longer than usual and turn red/purple before eventually dropping, pollination may have been inadequate. The corollas of pollinated flowers drop readily while still white. Varieties with fruit set problems (Jersey, Coville, Earliblue, Berkeley, Blueray) are most likely to benefit from GA. Jersey, for example, is relatively unattractive to honeybees, and berry numbers and size are often limited by inadequate pollination. GA does not always provide a benefit, and effects can be subtle. A key to learning about GA benefits is to leave non-treated check rows. This is the only way to tell if your money was well spent.

2006 Trial. Because weather during bloom was poor, we treated Jersey bushes at the Southwest Michigan Research and Extension Center with ProGibb applied twice at 40 g a.i./acre (17, 27 May) or applied once (17 May) to a single application of 80 g/acre on. On 17 May, 30% of Jersey petals had fallen. Treatments were applied in 50 gallons spray per acre.

Results were fairly typical for years when there is a response to ProGibb. The 80 g rate applied once increased yield by about 30% over control plots, and there was a trend towards a response from the 40 g treatment as well (Table 1). The higher yield appeared to result from more berries rather than an increase in average berry weight. During the week prior to the first ProGibb spray, measurable rain occurred every day, and maximum daily temperature exceeded 60oF only on one day. These are the type of conditions when growers are likely to see benefits from ProGibb.

**Table 3. Effect of ProGibb applications of average berry weight and yield of 'Jersey' blueberries, SWMREC, 2006.**

Treatment	Average berry weight (g)		Yield (lb/bush)		
	1st pick	2nd pick	1st pick	2nd pick	Total
Control	1.22 a	0.78 a	4.1 a	0.9 a	5.0 a
ProGibb 40 g twice	1.18 a	0.82 a	5.0 a	1.1 a	6.1 ab
ProGibb 80 g once	1.27 a	0.85 a	5.0 a	1.5 b	6.5 b

## **MONITORING FOR FRUITWORMS**

### **Rufus Isaacs and Keith Mason, MSU Entomology**

To monitor for Cranberry fruitworm (CBFW) and Cherry fruitworm (CFW) use pheromone baited traps. For each species, use one Large Plastic Delta Trap (LPD) w/ the appropriate sex pheromone lure pinned to the inside of the roof of the trap. Attach the trap to the outer canopy of the upper third of a blueberry bush on the field border. Traps should be hung adjacent to woods in "hot spots" where damage has been noted in the past. Set traps at least 30ft apart in mid to late April. Check traps weekly, record the number of moths caught. Remove moths from the sticky trap insert and replace sticky insert as needed. Traps are available from Great Lakes IPM.

After moths are caught and after petal fall, bushes should be inspected for eggs and damage each week for a five minute sampling period. This allows growers and scouts to detect when fruit protection is needed from fruitworms, and can help identify whether the control program is effective. Working in a "hotspot," look at as many fruit clusters as possible on 10 to 20 bushes along the field border. Looking at the fruit clusters can help you find eggs in calyx cup, larvae entry holes and damage. When inspecting the fruit grasp the cluster and view with the sun over your shoulder. Carefully turn the clusters over and inspect the bottom of the fruit as well as the top for entry holes and/or frass. Record the number of cranberry fruitworm and cherry fruitworm eggs and the number of berries with damage.

We are also working on a degree day model that will allow growers to better time their applications of insecticides against cranberry fruitworm. In our 2007 trials, an application of Confirm applied 100 growing degree days (base 50°F) after biofix (first sustained captures of CBFW moths in traps) and 10 days later provided similar control to a program based on Guthion applied after petal fall and two weeks later. We will be repeating this trial in 2008 and conducting some experiments on farms to verify that this strategy can provide improved timing for control of this pest.

***The twilight meeting held this week (see details on front page) will include a description of how to keep track of degree days, and how to use these to time fruitworm sprays.***

## MEETINGS AND ANNOUNCEMENTS

### **2008 Blueberry IPM Twilight Meeting Schedule:**

*All meetings held from 6-8PM*

May 14: Cornerstone Ag, Van Buren County

May 28: Carini Farms, Ottawa County

June 11: Cornerstone Ag, Van Buren County

June 24: Carini Farms, Ottawa County

These meetings are hosted by MSU to update growers on insect, disease, and weed control as the season progresses. They are completely free, with a light dinner served at 6PM. For more information, contact Paul Jenkins (517-432-7751, [jenki132@msu.edu](mailto:jenki132@msu.edu)).

### **IN NEXT WEEK'S ISSUE...**

Anthracnose Fruit Rot

Fruitworm Management

Nitrogen Fertilization

### **MSU BLUEBERRY TEAM**

Eric Hanson, Horticulture

Annemiek Schilder, Plant Pathology

Rufus Isaacs, Entomology

John Wise, Trevor Nichols Research Complex

Matt Grieshop, Organic Pest Management

Paul Jenkins, Small Fruit Education Coordinator

Mark Longstroth, Van Buren County Extension

Carlos Garcia, Ottawa County Extension

Bob Tritten, SE Michigan Extension

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



This newsletter is produced by the MSU Blueberry Team with support from Project GREEN, North Central IPM Center, MSU Extension and the EPA's Region 5 Strategic Ag. Initiative Program

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