



Michigan Blueberry IPM Newsletter

MICHIGAN STATE UNIVERSITY
EXTENSION

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Blueray in Grand Junction

Van Buren County
Jersey in Covert is at late green fruit/early fruit coloring; in Grand Junction, Blueray and Bluecrop are at fruit coloring.



Blueray in Holland

Ottawa County
Blueray in Holland, and Rubel and Bluecrop in West Olive are all at late green fruit/early fruit coloring.

BLUEBERRY NEWS YOU CAN USE...

Disease management: Begin scouting for newly-formed mummified fruit within the field to learn where the source of infections will be for next year's growing season.

Insect management: Japanese beetle emergence is beginning. Fruitworm egg laying is beginning to wind down.

Harvest of early varieties has begun (Bluetta, Weymouth, and Duke).

GROWING DEGREE DAYS

From March 1

	2009		Last Year	
	Base 42	Base 50	Base 42	Base 50
Grand Junction, MI				
6/22	1445	869	1398	863
6/29	1677	1045	1584	993
Projected for 7/6	1818	1129	1759	1112
West Olive, MI				
6/22	1275	734	1221	714
6/29	1504	907	1401	838
Projected for 7/6	1644	1008	1569	950

See [MSU Enviroweather website](http://MSU_Enviroweather_website) for more information.

INSECT MANAGEMENT

Rufus Isaacs & Keith Mason, Department of Entomology, Michigan State University

Insect activity remains steady, but the numbers of some pests are decreasing at the four farms that we sampled. Aphid numbers have declined in response to recent insecticide applications. Cranberry fruitworm flight is almost over in Van Buren County, and flight of this pest is also declining in Ottawa County. The flight of cherry fruitworm is finished at the sites we sampled in Van Buren County, and flight should end this week in Ottawa County. Egglaying by both fruitworm species was seen during scouting this week.

Aphids were found at all four sampled farms, and the percentage of infested shoots has decreased. We are finding 0 to 60% of new shoots have aphids on them, and aphid colonies were not seen in the bush canopy at our sampled farms. The observed aphid colonies ranged in size from 1 to 20 individuals. Parasitized aphids (mummies) were found on 5% of the new shoots at all of the farms we sampled. Growers and scouts should continue to monitor blueberry aphids and mummies on new growth to help assess the effectiveness of aphid management programs.

Cranberry fruitworm flight decreased over the past week at all sampled sites except the West Olive farm. Moths were caught at all four sampled farms and the number caught ranged from 1 to 19 per trap. A single cherry fruitworm moth was caught at the West Olive farm. All four farms were scouted for the presence of fruitworm eggs, the number of eggs found is starting to decrease. Cranberry fruitworm eggs were seen at all four sampled farms, and cherry fruitworm egglaying was detected at the West Olive farm. Early fruitworm feeding damage has increased slightly at the Covert and Grand Junction farms. Most of this damage is from cherry or cranberry fruitworm larvae feeding in a single berry. However, webbing together of multiple berries, indicating cranberry fruitworm feeding, was seen at the Covert farm. We should see cranberry fruitworm egglaying continue to decrease over the next week, and cherry fruitworm egglaying should end over the next week or two. Follow the link to the [model for fruitworm control](#) to see cranberry fruitworm egglaying predictions based on the MSU Enviroweather weather stations in your area.

Leafroller larvae and tussock moth larvae were not observed at any of the farms.

No blueberry maggot flies were caught at any of the sampled farms. Blueberry maggot traps should already be set in fields. Check the trap at least every week, remove and record the number of captured flies. Change odor baited traps or ammonium acetate chargers when the smell weakens, and replace traps that are covered in insects (every 3 to 4 weeks or so). [For more on blueberry maggot, click here.](#)

A single dead Japanese beetle was observed at the Covert farm (Fig. 1), and false Japanese beetles were observed at Ottawa and Van Buren County farms. Growers and scouts should start checking fields for Japanese beetles (JB). Record the total of JB on each of 10 bushes from the field border and 10 interior bushes. To sample a border bush begin on one side of the bush and circle around the bush while visually scanning the canopy. Avoid bumping the bush during counting as beetles will drop or fly off. To sample interior bushes, avoid disturbing the beetles by walking between bushes and scan the halves of two adjacent bushes that face the row middle and count this as one bush. Try to sample from as large an area of the field as possible. [For more on Japanese beetle, click here.](#)



Fig 1. Japanese beetle feeding on fruit from June 2007.

Insect Scouting Results

Farm	Date	CFW moths per trap	CBFW moths per trap	BBA % infested shoots	BBM adults per trap	JB per 20 bushes
Van Buren County						
Covert	6/22	0	40	15%	set	--
	6/29	0	7	0%	0	1 (dead)
Grand Junction	6/22	0	26	40%	set	--
	6/29	0	7	25%	0	0
Ottawa County						
Holland	6/22	1	22	60%	set	--
	6/29	0	19	0%	0	0
West Olive	6/22	0	11	85%	set	--
	6/29	1	15	60%	0	0

CFW=cherry fruitworm; CBFW=cranberry fruitworm; BBA=blueberry aphid; BBM=blueberry maggot; JB=Japanese beetle

DISEASE MANAGEMENT

Annemiek Schilder & Tim Miles, Department of Plant Pathology, Michigan State University

This week all scouted plots were at the late green fruit stage and some early cultivars have already started to ripen. Twig blight symptoms were reduced in incidence in our scouted plots as compared to last week. Twig blights can be caused by various fungi, including *Phomopsis vaccinii*, *Colletotrichum acutatum* and *Botrytis cinerea*. Also, infected mummy berry fruits were detected in all of our scouted plots by cutting open immature fruits.



Fig 2. A) Early and B) late development of *Monilinia vaccinii-corymbosi* in ovaries of cut blueberries observed near Grand Junction on June 25.

Mummy berry

Scouting for mummy berry disease during this time of year is difficult because immature blueberries don't show symptoms until the fruit begins to ripen. On the other hand, infections are advancing within developing immature fruits and are visible upon cutting open berries (Fig. 2). Some infections are now starting to also become outwardly visible, as infected berries turn a tan-brown color and develop shallow ridges (Fig. 3, next page).

Fig 3. Mummy berry-infected fruit of an early blueberry variety observed near Grand Junction on June 25 (note the tan-brown color and shallow ridges).



Fig 4. Mosaic symptoms on a shoot (cv. Jersey) observed near Covert on June 25.

Mosaic

Both fields in Van Buren County showed the presence of blueberry mosaic (Fig. 4). The causal agent of mosaic is unknown but a virus is suspected. No vector has ever been identified for mosaic but it appears to spread slowly in a field. In years with cold springs, symptoms may be more apparent, which may give the impression that the virus has spread compared to last year. Virus and virus-like diseases are important as they can reduce yield and stunt the growth of the plant. Some virus diseases can eventually kill the plant. Virus diseases can be controlled by the removal of infected plant material, planting virus-tested plants, and a well timed-insecticide program to control insect vectors.

Disease Scouting Results

Farm	Date	Avg number of mummy berry shoot strikes per bush*	Avg number of blighted twigs per bush**	Blueberry shoestring virus***	Presence of mummy berry infected fruit****
Van Buren County					
Covert	6/18	0.7	19.0	7/50	present
	6/25	0.3	16.4	7/50	present
Grand	6/18	31.3	3.7	10/50	present
	6/25	0.4	2.9	10/50	present
Ottawa County					
Holland	6/18	1.0	6.9	8/50	present
	6/25	0.1	4.7	8/50	present
West Olive	6/18	16.7	13.4	0/50	present
	6/25	3.6	11.9	0/50	present

*Average number based on 10 bushes.

**Blighted twigs may be caused by various fungi, including *Phomopsis vaccinii*, *Colletotrichum acutatum*, and *Botrytis cinerea*.

***Number of bushes showing blueberry shoestring virus symptoms (50 bushes were scouted).

****Fruit were sampled by cutting open berries and checking for the indicative white mycelial star pattern.



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