

Michigan Blueberry I.P.M. Update



July 10, 2007

Volume I, No. 13

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The Blueberry IPM Update is a publication produced by Michigan State University Extension. To receive a copy of this newsletter, send an email to masonk@msu.edu. Also available online through blueberries.msu.edu and at: www.isaacslab.ent.msu.edu/blueberryscout/blueberryscout.htm

CROP STAGES

In Van Buren County, Jersey in Covert are 7 to 10 days from first harvest. Blueray and Bluecrop in Grand Junction are between first and second harvest.

In Ottawa County, Blueray are within a week of first harvest in Holland. Rubel and Bluecrop are also within a week of first harvest in West Olive.



Rubel near first harvest at West Olive.

Editor's Note:

As harvest is well underway, and everyone is increasingly busy, The Michigan Blueberry IPM Update will now be published every other week until the end of harvest. We will notify subscribers via email and on the Michigan Blueberry IPM Update website if any critical issues arise.

We hope you find the information in this newsletter useful in guiding what to look for as you scout your own farm. The scouting data shown in the Disease and Insect Updates below are taken from four Michigan blueberry farms. As conditions are different from farm to farm, we must stress that the information in this newsletter should not be used as a substitute for scouting your own fields. Your spray decisions should be made based on what is seen on your own farm.

Please use this newsletter to determine when and how to look for certain pests, identify potential pest problems, and to get information on the biology of pests and other aspects of integrated pest management. See the Insect and Disease Updates below for descriptions of some scouting methods that can be used on your farm.

DEGREE DAYS AND WEATHER NOTES

Weather Forecast: Chance of showers and thunderstorms Tuesday through Thursday with cooler temperatures upper 70's to low 80's Wednesday through Sunday. By 7-16 GDD₅₀ will increase by ~135, and GDD₄₂ will increase by ~190. Complete weather summaries and forecasts are at available enviroweather.msu.edu

GDD (from March 1)	Base 42	Base 50
Van Buren County		
6-25	1788	1153
7-2	1954	1271
7-9	2204	1444
Ottawa County		
6-25	1657*	1044*
7-2	1845*	1177*
7-9	1998*	1347*

* enviroweather data for the West Olive station is missing some dates, so data from Hudsonville was substituted for missing values.

PEST OF THE WEEK

Oriental Beetle

Rufus Isaacs and Keith Mason, MSU Entomology

For the past three years we have been using traps to monitor for this pest at blueberry farms in Ottawa and Van Buren counties. So far we have only caught this beetle at farms in Ottawa County, and in very low numbers. However we have seen that number slowly increase each year, so it is important that growers become aware of this new insect pest.

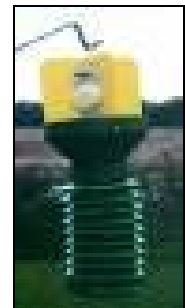
Oriental beetle first arrived in the US on the east coast, and has become an established pest in many states further east than Michigan. In New Jersey it is a primary pest of blueberry, due to its feeding on the roots of bushes. Growers in Michigan experiencing otherwise unexplainable bush decline (especially in Ottawa county) that is distributed in patches in a field, should be sure to excavate the bush and examine roots and surrounding soil for white grubs or feeding damage on the roots. If there is a suspicion of oriental beetle, monitoring for the adult beetles in June and July is possible using a monitoring trap (see below). Larger grubs are in the soil in April and May and smaller grubs are present in the fall after harvest. These can be identified by providing a sample to MSU diagnostics clinic.

This pest is established in the eastern United States and is spreading slowly into the Midwest. Adult Oriental beetles vary from light brown to black with mottling on the wing covers.



Adult oriental beetles

Beetles are active from late June through August; slightly earlier than Japanese beetle. Unlike Japanese beetle, they are active at night and can be monitored using a pheromone-baited bucket style trap. These should be placed on the ground for the greatest likelihood of trapping the beetles. Traps and lures for oriental beetle are available from [Great Lakes IPM](#).



Oriental beetle trap

The female beetles lay eggs in the ground at the bases of bushes, and larvae feed directly on blueberry roots. Larvae are very similar to those of [Japanese beetle](#), but the pattern of hairs on the posterior segment differs, with two parallel rows of 10 to 16 hairs per row. These can be seen using a hand lens, but for positive identification, we suggest sending samples to the MSU Diagnostics Laboratory to ensure an accurate identification. There are many similar-looking grubs and it is important to get a correct identificatio



Roots damaged by Oriental beetle.

DISEASE UPDATE

Timothy Miles and Annemiek Schilder

Department of Plant Pathology, Michigan State University

This week all scouted plots were at the 25% to 50% blue stage. Since it is nearly impossible to scout for blueberry fruit rot diseases at these early stages of ripening due to the latent nature of the infections, this week we will focus on scouting for newly forming mummy berries. This is an ideal time to scout for mummy berry infected fruit because they are becoming more evident as the season progresses (these infections took place at flowering of course). *Phomopsis* twig blight incidence increased slightly from the previous week at all locations. Dry warm conditions are helpful for management of fungal blueberry diseases.

Mummy Berry Fruit Infection

Mummy berry is one of the most economically important blueberry diseases in Michigan as there is usually a zero tolerance for mummified fruit in processed berries. In earlier issues, we have extensively covered life cycle, symptoms, and effective management strategies for this disease. This week, we will focus on symptoms and scouting for this stages of infection. The first external symptoms of fruit infection are a tan-brown to pink discoloration of fruit. In the later stages, the fruit becomes shriveled with shallow ridges (Figure 1 and 2) and may fall to the ground. When scouting for mummy berries, it is extremely important to not only scout on the bush but also on the ground as mummies tend to detach from the cluster prematurely. They are easier to see when the ground is clear of weeds and debris. The amount and location of the mummy berries gives us an insight into where the inoculum will be present next year and also into the efficacy of previous fungicide applications.



Figure 1. A) New mummy berries seen on a fruit cluster, turning tan or sometimes pinkish color during the “fruit coloring” stage. B) Mummies may also be located on the ground during the same time period. C) It is important to scout on the bush and on the ground. (Holland, MI)

Van Buren County

Farm	Date	Number of mummy berries per bush *	Blueberry shoestring virus	Clusters with fruit rot per bush**	Phomopsis-blighted twigs per bush
Covert	6-25	-	0	-	5.7
	7-2	✓ [†]	0	-	7.2
	7-9	2.0	0	-	7.3
Grand Junction	6-25	✓ [†]	0	-	8.2
	7-2	✓ [†]	0	-	9.5
	7-9	12.1	0	-	10.6

Ottawa County

Holland	6-25	✓ [†]	5 (out of 50)	-	8.9
	7-2	✓ [†]	6 (out of 50)	-	9.1
	7-9	8.2	6 (out of 50)	-	9.6
West Olive	6-25	✓ [†]	0	-	10.9
	7-2	✓ [†]	0	-	10.0
	7-9	1.1	0	-	10.4

* - Fruit infected with the mummy berry fungus (berries were scouted on the bush and surrounding it).

** - Number of infected clusters showing signs of sporulation (average number of infected clusters per bush).

† - ✓ indicates an incidence of mummy berry at a scouted site.

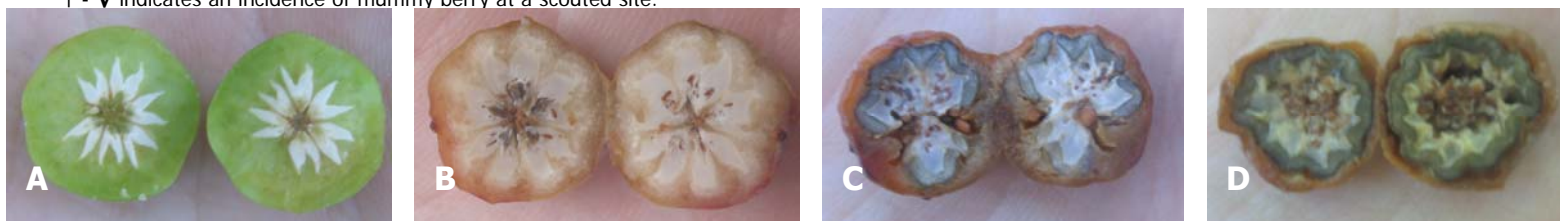


Figure 2. Growth stages of fruit infected with the mummy berry fungus (*Monilinia vaccinii-corymbosi*) A) Immature green fruit with cottony white mycelium in ovaries. B) Fungus will eventually colonize the entire fruit. C, D) The fungus will begin to develop a ridged wall separating the fruit from the fungal area, forming a tough “sclerotium” in the center of the berry.

INSECT UPDATE

FRUITWORMS

Cranberry fruitworm moth flight is essentially over in both Van Buren and Ottawa Counties. No cherry fruitworm moths were caught last week. No fresh cranberry fruitworm or cherry fruitworm eggs were found. Single berries with feeding damage were found only at the Covert and Holland farms and the amount of this damage is lower than last week. Live larvae were observed only at the Holland farm. Clusters with webbing and frass (cranberry fruitworm feeding damage) were found at the Covert, West Olive and Holland farms. In the next week, we expect to see the amount of fruit with fruitworm feeding damage decrease.

BLUEBERRY APHID

Aphids were detected at the Holland and West Olive Farms. The percentage of infested shoots has gone down at most farms and the number of parasitized aphids is increasing. You should be scouting your bushes for aphids. If they are present on or near varieties that are susceptible to shoestring virus, the use of insecticides for control may be needed.

TUSSOCK MOTH

No larvae were observed.

BLUEBERRY MAGGOT

No flies were captured. However emergence has been reported at other sites in Allegan County. Other sites in Ottawa county are reporting high captures of this pest. Continue to use traps to monitor this pest throughout the harvest period.

JAPANESE BEETLE

Beetles were observed only at the Holland farm. The number of beetles observed has decreased as growers are using insecticides to control this pest. Some beetle feeding damage has been found on leaves and fruit. Continue to scout for this pest through out the harvest period. For insecticide control options [see the newsletter from 6-26-07](#).

SCOUTING FOR JAPANESE BEETLE

Begin scouting for Japanese beetle in mid to late June. Visually scan the canopy of 10 bushes on the field border and 10 bushes in the interior of the field. Count the number of beetles observed. As beetles are very mobile, check for the presence of feeding damage on leaves and fruit to let you know if beetles have been active in the field recently. See pictures above for examples of fruit and leaf feeding.



Top: Leaf feeding by Japanese beetle.

Bottom: Japanese beetle feeding on fruit.

Van Buren County

Farm	Date	CBFW moths per trap	CFW moths per trap	Blueberry aphid % infested shoots	Blueberry maggot per trap	Japanese beetle per 20 bushes
Covert	6-25	18	0	0	0	1
	7-2	3	0	0	0	9
	7-9	0	0	0	0	0
Grand Junction	6-25	16	0	30%	0	2
	7-2	5	0	20%	0	1
	7-9	2	0	0	0	0

Ottawa County

Holland	6-25	9	0	25%	0	0
	7-2	0	0	30%	0	5
	7-9	0	0	15%	0	11
West Olive	6-25	0	0	15%	0	0
	7-2	0	0	40%	0	0
	7-9	1	0	65%	0	0

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For more information, see our website at
blueberries.msu.edu



This newsletter is produced by the MSU Blueberry Team with support from MSU Extension and the EPA's Region 5 Strategic Ag. Initiative Program

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