



Blueberry Newsletter

A newsletter from Michigan State University for the Michigan blueberry industry

August 24, 2010

Volume 4, Issue 17

News you can use

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News you can use

Disease management. Continue scouting for leaf rust, especially in areas where the disease has occurred before. Scout for mummified berries while they are still easy to see. Collect mummies (50 to 100) and place them in an accessible, moist spot under a blueberry bush, step on them to push them into the soil, and mark the area with a flag for monitoring next spring. Post-harvest fungicide sprays may be useful to protect buds and young canes from infection by anthracnose and Phomopsis.

Insect management. Very few insect were observed over the past three weeks as harvest is nearly complete.

Crop development. In Van Buren County, final harvest is almost complete for Jersey in Covert as well as for Bluecrop and Blueray in Grand Junction. In Ottawa County, harvest of Blueray in Holland is complete, and Bluecrop and Rubel in West Olive are in the middle of final harvest.

Last issue on September 7. Due to the early season we've had this year, the last issue of this newsletter, our end-of-season wrap-up, will be published in two weeks on September 7.



Fruit bud development on Rubel in Covert



Bluecrop ready for final harvest in W. Olive

GROWING DEGREE DAYS

From March 1

	2010		Last Year	
	Base 42	Base 50	Base 42	Base 50
Grand Junction, MI				
8/16	3574	2483	2959	1943
8/23	3795	2648	3152	2080
Projected for 8/30	3965	2763	3306	2178
West Olive, MI				
8/16	3302	2238	2700	1721
8/23	3514	2394	2876	1841
Projected for 8/30	3705	2529	3017	1927

See <http://enviroweather.msu.edu> for more information.

SW Michigan

Mark Longstroth
MSU Extension, Southwest

Blueberry harvest is ending. Many growers are contemplating final harvests this week. [Blueberry maggot](#) is the primary insect pest. [Anthracnose](#) was the most common fruit rot this year. Phomopsis cane canker was severe in some fields and growers should

consider applying protectant fungicides during bud set in the late season. Irrigation after harvest is important to maintain plant vigor and maximize fruit bud set in September for next year's crop. Growers with plantings that experienced poor bud development or poor growth this season should sample their fields for [blueberry bud mite](#).

S U R V E Y U P D A T E

Update on 2010 statewide survey for blueberry scorch and blueberry shock

Annemiek Schilder¹ & Robin Rosenbaum²
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The Michigan Department of Agriculture (MDA) has recently completed a large-scale survey of Michigan blueberry fields to provide for early detection and eradication of blueberry scorch and blueberry shock diseases of blueberry in the state. Blueberry shock and blueberry scorch are caused by specific plant viruses, which are detrimental to blueberry plants but are not harmful to people. Random leaf sampling was done on Michigan blueberry farms of growers who volunteered for the survey. Fields at sites where these viruses were detected in 2009 were also intensively sampled. Samples were tested by ELISA (enzyme-linked immunosorbent assay) in the laboratory. To date, a total of 28,650 leaf samples have been tested from 644 blueberry fields on 133 Michigan farms.

The survey resulted in seven detections of **blueberry scorch** in three different areas of the state and no detections of blueberry shock. As you may recall, in 2009, blueberry scorch was detected in several commercial fields in west Michigan, and blueberry shock was found in a MSU research planting in Fennville, MI. In each case, infected

blocks were removed and destroyed. Some of the positive samples in 2010 were in fields adjacent to last year's infected fields. This suggests that some spread may have taken place by aphids. We are currently investigating the ability of the blueberry aphid (*Illinoia pepperi*) to vector blueberry scorch virus from infected to healthy blueberry plants to determine the risk of spread. The only other means of spread of this virus is via infected planting material.

It is likely that the detections represent multiple introductions of blueberry scorch virus into the state from areas where the disease is endemic (e.g., New Jersey or the Pacific Northwest). From the observed occurrence in a few older plantings of various cultivars, it appears that these introductions may have occurred years ago, before blueberry scorch was even recognized as a plant disease. A more recent introduction of blueberry scorch virus appears to have occurred via non-symptomatic nursery stock (cultivars Legacy and Hannah's Choice) before blueberry scorch and shock viruses were included in the virus-tested nursery stock program. Known sources have been destroyed. Distinctive scorching symptoms may not be present, depending on the virus strain and cultivar. However, "Hannah's Choice" plants showed poor growth and "Legacy" leaves had a pale green color and red line patterns in some cases.

At this time, the eradication strategy entails removing only blueberry-scorch positive plants and employing an

effective aphid control program in affected commercial blueberry fields. In blueberry nurseries, more stringent measures are required. The next steps in the program for monitoring and mitigation of invasive blueberry viruses will be determined in collaboration with the Michigan blueberry industry. Follow-up monitoring will be likely in 2011 depending on available funds. An informational meeting for growers and other interested parties is planned at the Trevor Nichols Research Complex in October. Further details will follow. If you have any concerns or questions about the MDA statewide blueberry virus survey, contact Robin Rosenbaum, Plant Industry Section Manager at MDA, (517) 335-6542. If you would like to have any blueberry plants on your farm tested for plant viruses, there is still an opportunity to do so: contact Jerri Gillett (MSU Small Fruit Pathology Lab) at 517-355-7539 or by email: gillett@msu.edu.

Late-season weed management chores

As harvest winds down in the late summer and fall, there are a couple weed management chores that will pay off in the future.

1. Scout your fields.

Spend some time walking your fields and recording weed pressure and determine how successful your preemergent herbicide program was. Note where control was good and poor, and record which weeds are present. Is weed pressure related to the soil type or herbicides used last spring? This information will help in formulating your herbicide programs for next spring. Also note where perennial weeds have become established.

2. Treat tough perennial weeds.

Late summer and fall is a good time to work on tough to control perennial weeds such as virginia creeper vine (Fig. 1), grapevine (Fig. 2), milkweed, goldenrod, poison ivy, and brambles. These perennials generally do not respond to soil applied herbicides, but can be managed by careful applications of glyphosate (e.g Roundup) late in the summer. Glyphosate is effective on these weeds, but can also kill blueberries. Perennial weeds are killed because the chemical moves to below-ground plant parts. Translocation is a two-edged sword. Glyphosate absorbed by blueberry leaves and green bark also moves in the bush, and can kill whole canes or bushes. Use extreme care to avoid contact with green blueberry tissues (stems and leaves). For spot spraying perennials:

- use 2% glyphosate solutions
- add ammonium sulfate to improve absorption
- avoid all green blueberry tissues
- apply when weeds are still green

Weeds such as blackberry, Virginia creek, and grapevine may need to be pulled down out of bushes to treat



Fig 1. Virginia creeper vine; Photo: E. Hanson.

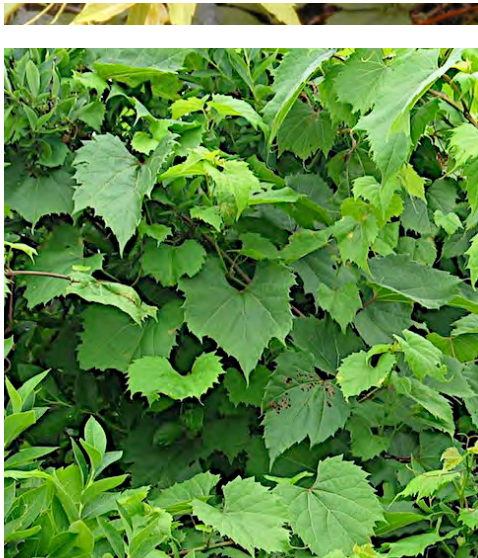


Fig 2. Wild grapevine; Photo: E. Hanson.



Fig 3. Greenbriar on blueberry bush; Photo: E. Hanson.

safely. This takes time and costs money, but consider what these weeds are costing you in lost income. If a bush is covered by Virginia creeper vine, yield will be reduced by 80%. This easily equates to a \$ 6-10 loss in income. The loss is incurred each year and grows as the vines spread to affect neighboring bushes. Investing 15 minutes to carefully pull vines out of that bush and safely treat them on the ground is money well spent.

3. Fall application of preemergent herbicides.

April/May is the most common time to apply preemergent herbicides in Michigan blueberries, but fall applications can be effective also. October/November is usually less busy than the spring, and rainy periods in the spring can hamper timely applications. We recently compared spring and fall applications of several standard herbicides; most provided comparable control. Fall may be better than the spring for control of some weeds. Marestalk, for example, can emerge in the fall, so spring applications are too late for control. Consider experimenting with fall applications. Chateau is a good candidate material for the fall, as are combinations of Chateau with older materials such as Karmex or Princep.

*Eric Hanson
Department of Horticulture
Michigan State University*

Blueberry stunt samples needed

Blueberry stunt does not appear to be very common in Michigan but may be mistaken for a virus disease, herbicide injury or nutrient deficiency. It is caused by the blueberry stunt phytoplasma, a type of bacterium lacking a cell wall that lives in the phloem cells (sieve tubes) of infected blueberry plants. Infected bushes may be severely stunted and branches at the base of the plant appear bushy due to shortened internodes. The disease affects isolated bushes or bushes in small patches in a field. Leaves are cupped slightly downward and may have chlorotic areas along the edge and between veins. Symptomatic leaves may turn bright red in the fall. Blueberry stunt phytoplasma can spread by cuttings from infected mother plants and is also vectored by sharp-nosed leaf hoppers (*Scaphytopius* spp.). Infections generally coincide with peaks in

leafhopper activity. Infections become systemic and plants are infected for life. Blueberry stunt disease can be avoided by planting clean planting stock. However, at present, stunt is not included in virus testing programs of certified virus-tested nursery stock. If the disease has been diagnosed, the best remedy is to remove and destroy infected plants, monitor leaf hoppers

and apply well-timed insecticides to control leaf hoppers if needed based on scouting.

The blueberry stunt phytoplasma is difficult to detect in plant tissues, and traditionally required light or electron microscopy of leaf veins, where the organism is most likely to be encountered. However, with a new DNA analysis technique called polymerase chain reaction (PCR), phytoplasma detection in plant tissues has become a lot easier. We need to evaluate the new test method and are looking for fresh leaf samples of blueberry plants with stunt symptoms. If you suspect stunt in blueberries in your field and would like to send samples for free testing, please contact Jerri Gillett at 517-355-7539 or via email at gillett@msu.edu to arrange collection and testing of the samples.

Annemiek Schilder
Department of Plant Pathology
Michigan State University



Fig 6. Curved leaves with yellow edges are symptomatic of blueberry stunt disease; *Photo: P. Fisher, OMAFRA.*

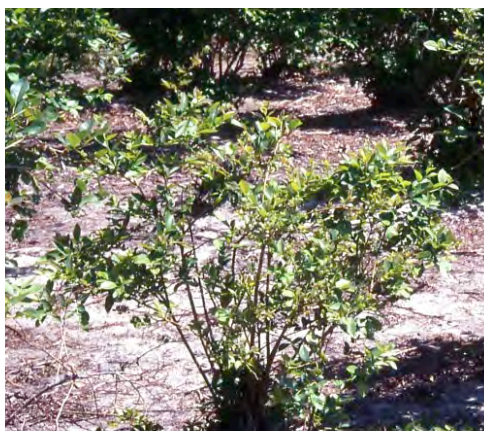


Fig 4. Stunted blueberry bush; *Photo: A. Schilder.*



Fig 7. Small, curved leaves of stunt-infected bush; *Photo: P. Fisher, OMAFRA.*



Fig 5. Bushy growth at base of blueberry bush with stunt symptoms; *Photo: A. Schilder.*



Fig 8. Early fall color in stunt infected plants; *Photo: P. Bristow, formerly Washington State Univ.*

Insect update

As harvest of most varieties is drawing to a close, and pest insect abundance is declining, this will be the final Insect Update of the season. We hope you found the information we presented helpful.

Over the past three weeks, the number of aphid colonies in the fields we scouted remained consistently low, and a few small aphid colonies are still present at the Grand Junction and Holland farms. Parasitized aphids have increased over the past few weeks and were observed at all of the scouted farms.

No blueberry maggot flies were caught in the last three weeks at any of the monitored farms, and for the season, very low numbers of maggot flies were observed at those farms.

Japanese beetles numbers have been very low over the past three weeks and no new Japanese beetle feeding damage was observed on leaves or fruit at any of the monitored farms. Overall the number of Japanese beetles we observed at our monitoring sites was lower than in recent years.

Tussock moth larvae, which can be a pest during harvest was not seen at any of the farms we scouted.

Growers that need to treat for blueberry bud mite should prepare to make insecticide applications immediately post-harvest. For more information about the biology and management of this pest see the [August 3rd Michigan Blueberry Newsletter](#).

As a final reminder, growers and scouts should make notes of where pest insects and damage were present this season to help identify hot spots and help with management plans for next season.

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

Table 1. Insect scouting results.

Farm	Date	CFW moths per trap	CBFW moths per trap	BBA infested shoots (%)	BBM adults per trap	JB per 20 bushes
<i>VAN BUREN COUNTY</i>						
Covert	8/16	-	-	0	0	0
	8/23	-	-	0	0	0
Grand Junction	8/16	-	-	5	0	1
	8/23	-	-	10	0	0
<i>OTTAWA COUNTY</i>						
Holland	8/16	-	-	5	0	1
	8/23	-	-	5	0	0
West Olive	8/16	-	-	0	0	0
	8/23	-	-	0	0	0

2010-11 Grower Events

JULY 28, 2010 **10AM-12PM**

2010 Japanese beetle biocontrol field day

We have organized a biocontrol field day for Wednesday, July 28, 2010 at the Michigan State University Tollgate Research and Extension Center in Novi, Michigan. At 10:00, 10:30 and 11:00 AM we will give brief presentations on the Japanese beetle biocontrol program, including instructions on how to transport and release infected beetles. Following each presentation participants will be given a small zip-lock sandwich bag containing infected live Japanese beetles. You are welcome to take them and release them anywhere in Michigan, but Japanese beetle cannot be transported out of the State of Michigan unless you have a permit from USDA-APHIS.

SEPTEMBER 28, 2010 **1-4PM**

Trevor Nichols Research Complex Field Day

Location: Trevor Nichols Research Complex, Fennville
Education program information: John Wise, 269-330-2403
Website: <http://www.maes.msu.edu/tnrc/calendar.htm>

The field day will focus on insect and disease research and efficacy trials that were carried out this season by Larry Gut, Rufus Isaacs, Annemiek Schilder, George Sundin, Mark Whalon and John Wise.

OCTOBER 12-15, 2010

NABC-USHBC Fall Meeting

Location: Amway Grand Plaza Hotel, Grand Rapids

OCTOBER 12-13, 2010

National Blueberry Exposition - runs concurrent with the NABC-USHBC fall meetings

Location: Amway Grand Plaza Hotel & DeVos Place Conv. Center

Contact expo@blueberries.com for more information.

DECEMBER 7-9, 2010

Great Lakes Fruit, Vegetable, and Farm Market Expo

Blueberry sessions: Wed, Dec. 8, morning and afternoon

Location: DeVos Place Convention Center, Grand Rapids
Education program information: Eric Hanson, 517-355-5191, x1386

Website: <http://www.glexpo.com/index.php>

FEBRUARY 9-10, 2011 (Tentative)

Southwest Hort Days

Location: Lake Michigan College, Benton Harbor
Education program information: Mark Longstroth,
269-330-2790

Website: <http://www.canr.msu.edu/vanburen/swhort.htm>



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