September 15, 2009 Volume 3, Issue 20

Michigan Blueberry IPM Newsletter

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BLUEBERRY NEWS YOU CAN USE...

Save the date! A special grower meeting will be held on September 24, 2009 from 9:00AM–12:00PM at the Trevor Nichols Research Complex in Fennville, MI to provide growers with information on the discovery of blueberry scorch and blueberry shock in Michigan. See details on Page 2.

To help us determine turnout for this meeting on 9/24, please email Paul Jenkins at jenki132@msu.edu if you plan to attend (and indicate how many people).

Disease management: See page 3 for an overview of disease management for the 2009 season.

Insect management: Guthion comment period is still open – see Page 3.

Newsletter schedule: The last newsletter of the 2009 season will be published on September 29.

GROWING DEGREE DAYS

From March 1

	2009		Last Year	
	Base 42	Base 50	Base 42	Base 50
Grand Junction, MI				
9/7	3469	2283	3560	2412
9/14	3651	2409	3720	2519
Projected for 9/21	3795	2500	3871	2615
West Olive, MI				
9/7	3177	2029	3300	2179
9/14	3355	2152	3449	2274
Projected for 9/21	3512	2254	3582	2354

See MSU Enviroweather website for more information.

Special Grower Meeting

Blueberry virus update meeting

September 24, 2009
9:00AM-12:00PM
Trevor Nichols Research Complex
6237 124th Avenue, Fennville

A special grower meeting will be held on September 24, 2009 from 9:00AM-12:00PM at the Trevor Nichols Research Complex in Fennville, MI to provide growers with information on the discovery of blueberry scorch and blueberry shock in Michigan. To help us determine turnout for this meeting on 9/24, please email Paul Jenkins at jenki132@msu.edu if you plan to attend (and indicate how many people).

Agenda

Facilitator: Paul Jenkins, MSU

9:00-9:05	Welcome John Wise, MSU
9:05-9:20	MDA-MSU response to the detection of new viruses in Michigan Robin Rosenbaum, MDA
9:20-9:35	Blueberry scorch investigation Mike Hansen & Dave Pasutti, MDA
9:35-9:50	Blueberry shock investigation Mike Hansen & Dave Pasutti, MDA
9:50-10:05	Question and answer period
10:05-10:20	**Break**
10:20-10:35	Diagnosis and biology of blueberry scorch Annemiek Schilder & Rufus Isaacs, MSU
10:35-10:50	Diagnosis and biology of blueberry shock Annemiek Schilder & Rufus Isaacs, MSU
10:50-11:05	Blueberry virus survey results Jerri Gillett and Annemiek Schilder, MSU
11:05-11:20	Future virus sampling and quarantine plans Mike Hansen, MDA
11:20-11:30	Closing remarks Ray Hammerschmidt, MSU Dept of Plant Pathology
11:30-12:00	Question and answer period

Guthion® comment period deadline is September 21st

Rufus Isaacs, Department of Entomology, Michigan State University

Blueberry growers and other interested parties have until Sept 21 to comment on a to the US Environmental Protection Agency (EPA) to slow down the speed of restrictions in the Guthion phaseout. This would give blueberry, apple, and cherry growers more time to develop and adopt effective and economical alternative programs. Anyone with interest in this proposed change is encouraged to make their opinions known by commenting to EPA **before Sept 21**.

The manufacturer of Guthion (MANA) has provided a formal request to the EPA to keep the maximum seasonal limit of Guthion 50 WP for blueberries at 2 pound per acre, and to extend aerial application through the end of 2012. This would change the current phaseout plan that has reduction to 1.5 pounds maximum for 2010-2012, and a ban on aerial Guthion after Sept 2009. This does not change the plan to cancel all use of Guthion in blueberry after September 30, 2012.

If you would like to make a comment on this proposal, details of the announcement and the instructions on how to comment can be found here: www.epa.gov/fedrgstr/EPA-PEST/2009/July/Day-22/p17398.htm Comments can be submitted by mail, email, or through the www.regulations.gov website. All correspondence should include the docket ID number EPA-HQ-OPP-2009-0365.

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DISEASE MANAGEMENT - SEASON OVERVIEW

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

Conditions for mummy berry were favorable during the spring of 2009, with generally more disease pressure than in 2008. This was due to frequent rains and cool weather in spring and higher numbers of overwintering mummies from the previous season. In addition, overly wet fields and frequent rains prevented many growers from applying protective fungicides at critical times. Shoot strikes in four scouted fields were first noticed in mid May and increased rapidly towards the end of May and into early June, followed by a decrease as old shoot strikes (Fig. 1)dried up and fell off the bushes. Conditions during bloom were moderate for dissemination of spores to the flowers as cool conditions reduced honey bee activity. Fruit infection incidence was low to moderately high, particularly in sites with a history of mummy berry. In unsprayed plots in a fungicide efficacy trial in Ottawa County, as many as 83 shoot strikes and 55 mummified berries per bush were observed. In the four scouted fields, the highest average observed was about 70 shoot strikes and 100 mummified berries per bush.

Fig 1. Late mummy berry shoot strike.

Anthracnose fruit rot incidence (Fig. 2) was moderately high this year, and in some fields more than previous years. Frequent rains during the growing season, particularly during fruit development and ripening promoted infection. Infection levels increased rapidly towards harvest. Relatively more post-harvest Botrytis gray mold of berries was noted, which is not surprising as cool wet weather

Fig 2. Anthracnose fruit rot.

Fig 3. Powdery mildew.

promotes the fungus *Botrytis cinerea*. Leaf spots were common in some fields. At some sites, these appeared to be due to pesticide spray injury as no pathogen could be isolated. In other sites, they were caused by bacteria (reddish brown spots with brown blisters on the lower leaf surface). Later in the season, leaf rust was noted here and there (reddish brown spots with yellow pustules on the lower leaf surface). In some fields, leaf spots and distortion were caused by tobacco and tomato ringspot virus (see below). Powdery mildew (Fig. 3) was the cause of wrinkling, reddish or yellowish blotching, and white floury spots on leaves of Jersey bushes in many fields later in the season.

Twig blight was more apparent this year than in previous years, as the rainy spring and summer providing suitable conditions for infection. On the four farms that were scouted, the majority of twig blight was caused by *Phomopsis vaccinii* (Fig. 4). In early to mid summer, cane collapse and flagging was noted in many fields, which appeared mostly due to Phomopsis. These would be the result of infections in 2008 or perhaps even 2007. Some 'Duke' fields showed rather severe blighting of canes and plant death. While there was concern that this might be caused by the fungus *Botryosphaeria*, analysis of a few samples so far have only yielded Phomopsis. The cultivar Duke appears particularly susceptible to cane blight, and brown discoloration of the wood into the crown was noted. This would result in repeated blighting of canes growing from the infected crown. For the first time this year, we detected Phytophthora root rot, caused by the oomycete *Phytophthora cinnamomi* in a blueberry field in Ottawa County that had an area with poor drainage and standing water for days. The bushes showed leaf yellowing and reddening and rapid plant death. The crown and upper roots showed a reddish brown discoloration when cut open. Phytophthora root rot is generally more common on heavier soils with poor drainage and plants grown in bark beds with continuous drip irrigation in the Southeastern US.

Fig 4. Phomopsis twig blight.

Another rare blueberry disease in Michigan was seen again 2009, namely red leaf, which is caused by the fungus *Exobasidium vaccinii*. This fungus systemically invades plants and causes the shoots to be stunted and the leaves to turn fully or partially red in very striking patterns. The leaves are somewhat curled and exhibit a velvety white layer on the underside under humid conditions. Later in the season, this layer turns brown. Infected plants continue to produce infected canes every year.

Virus and virus-like symptoms were common, which is typical for cool years. Blueberry scorch and blueberry shock virus were found in 2009 in several Michigan locations and even made the national news. The three plantings with blueberry scorch virus have been removed whereas the one with blueberry shock virus will be removed later this season. As far as is apparent from testing of nearby fields, these diseases have not spread. A blueberry survey showed no blueberry scorch or blueberry shock virus in about 50 fields surveyed; however, other virus diseases such as tobacco ringspot virus, tomato ringspot virus (Fig. 5), blueberry leaf mottle virus, blueberry shoestring virus were observed. Tobacco and tomato ringspot are common causes of blueberry dieback, stunting, and curled and malformed leaves with necrotic spots. We are still investigating the cause of a new disorder characterized by leaf bronzing and cupping and bush decline, the pattern of which suggests a viruslike cause. The symptoms have been seen in a many older fields of Jersey, Rubel, and Bluecrop. Various ELISA tests were done on plant samples but were negative except for blueberry shoestring virus. The plants were also tested for *Xylella fastidiosa*, a bacterium that invades the vascular system and causes bacterial leaf scorch in the southern US, but none were positive. However, virus-like RNA has been detected and point to a viral cause. Investigations are ongoing as to the cause of this baffling symptom in collaboration with virologists in Oregon and Minnesota.

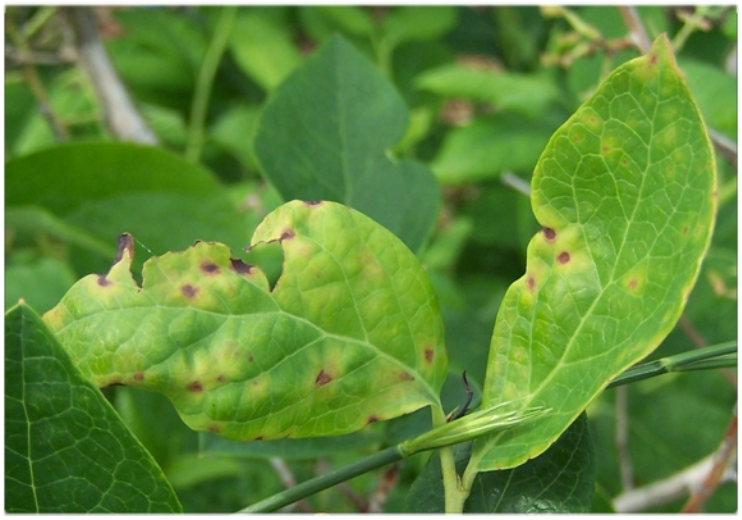

Fig 5. Tomato ringspot virus.

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