M I C H I G A N

Blueberry Newsletter

A newsletter from Michigan State University for the Michigan blueberry industry

April 14, 2010 Volume 4, Issue 2

SPECIAL MUMMY BERRY UPDATE

MICHIGAN STATE UNIVERSITY

Blueberry news you can use

Disease management

Growers should scout for mummy berry and consider fungicide treatment if leaf buds are past green tip and mummies and/or apothecia are found.

Crop development

Bluecrop fruit bud burst in Van Buren County (Fig. A) and Bluetta, an early variety, at early pink bud in Van Buren County (Fig. B). *Photo credits: M. Longstroth, 12 April 2010.*

Fig. A. Bluecrop at bud burst on 12 April 2010.

Fig. B. Bluetta at early pink bud on 12 April 2010.

Pre-Bloom Blueberry Meeting

April 29, 6 to 8 PM at Cornerstone Ag

A pre-bloom blueberry grower meeting is scheduled for April 29, 6-8 PM, at Cornerstone Ag's packing facility. Cornerston Ag is located at 01240 57th Street, north of Phoenix Rd., east of Grand Junction. The focus of the meeting will be pest and disease control in the bloom and post-bloom period.

GROWING DEGREE DAYS — From March 1

	2010		Last Year	
	Base 42	Base 50	Base 42	Base 50
Grand Junction, MI				
4/5	245	119	152	59
4/13	340	171	177	65
Projected for 4/20	423	216	236	95
West Olive, MI				
4/5	221	102	94	29
4/13	284	129	112	32
Projected for 4/20	368	173	165	58

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

Mummy berry poised for action in blueberry

Mummy berry is caused by the fungus *Monilinia vaccinii-corymbosi* and is characterized by blighting of young shoots, which are referred to as "shoot strikes". Fruit infection leads to the shriveling and mummification of berries, hence the name mummy berry. Most mummified berries fall

Fig. 1. Mummy with apothecial initials resembling horns on a Viking's helmet (1 April 2010, photo: T. Miles)

to the ground before harvest, but some make it into the harvested lugs. There is a zero tolerance for mummified berries in processed fruit. Mummified berries actually consist of a compact mass of the fungus covered with the remnants
of the fruit skin. They overwinter on the ground below blueberry bushes, and require a certain amount of moisture and chilling hours before they can germinate the following spring.

Fig. 2. Mummy berry apothecia just opening up (12 April 2010, photo: T. Miles).

In the spring, small trumpet-shaped apothecia develop on the overwintered mummies and start to release ascospores which infect young leaves. Previous research has shown that the optimum temperature for formation of apothecia is 50 to 57ºF (10 to 14ºC). These temperatures are also very conducive to leaf infection, which requires at least 6 hours of continuous leaf wetness under those conditions (Table 1). Leaf wetness can result from rainfall, dew formation (usually at night) or overhead irrigation. Infection can occur at temperatures as low as 36ºF (2.2 ºC), but a wetness period of at least 10 hours is required for infection at that temperature. In general, longer wetness periods lead to more severe infection. Growers should scout for mummy berry and consider fungicide treatment if leaf tissue is exposed and apothecia are found.

Table 1. Risk of mummy berry shoot infection under different temperatures and leaf wetness durations in lowbush blueberry.

Wetness Duration (hours)	Mean temperature during wet period				
	35F	43F	50F	57F	65F
2	0	0	0	0	0
4	0	0	0	0	0
6	0	Low	Low	High	High
8	0	Moderate	High	High	High
10	Moderate	High	High	High	High
15	Moderate	High	High	High	High
24	High	High	High	High	High

Data courtesy of Paul Hildebrand, Ag Canada, Nova Scotia

On April 5, 2010, mummies were found in all four scouted blueberry fields and had apothecia at early stages of development (Table 2). The mummies appeared about two weeks ahead in their development compared to last year, most likely due to higher temperatures. The number of mummies on the ground and the percent germination varied between sites but was as high as 15% in the West Olive site. Overall, infection risk in early April was deemed fairly low because most apothecia were less than 1-2 mm in diameter and 2 mm is the minimum size for release of ascospores. Also, the number of ascospores released is low when apothecia are still small, but increases with expansion of the apothecial cup.

On April 12, 2010, significantly more mummies with apothecia were detected than a week earlier, and germination rates were over 30% at two of the sites. This is a fairly high germination rate for mummies of this pathogen. In addition, apothecia were larger (up to ½ inch) than the week before. This suggests that the infection risk will be high this week and the next. If extended leaf wetness occurs (more than 6 hours at 57-65 F) this presents a high infection risk. Frost injury can exacerbate the situation.

Continued next page

Table 2. Mummy berry scouting results in Michigan, April 2010.

Farm	Date	Avg number of mummies on the ground*	% Germinated mummies	Avg number of apothecia on the ground*	Max apothecia cup diameter (mm)
		VAN BUREN COUNTY			
Covert	4/5	0.7	0.0	0.0	0
	4/12	0.9	33.3	0.7	3
Grand Junction	4/5	75.6	4.2	4.4	3
	4/12	112.4	31.7	54.5	5
		OTTAWA COUNTY			
Holland	4/5	5.0	0.0	0.0	0
	4/12	6.4	11.3	2.6	4
West Olive	4/5	35.9	15.0	8.1	4
	4/12	41.6	28.1	29.3	12

**Average of 10 bushes*

Fig. 3. Fully open mummy berry apothecium (½ inch diameter!) as seen in a blueberry field in Ottawa County. It appears a little dry and cracked (12 April 2010, photo: T. Miles)

If mummies are present in your blueberry field and apothecia are at least 2 mm in diameter and green leaf tissue is present, a fungicide application is recommended to prevent shoot strike infections if wet weather is in the forecast. Indar (fenbuconazole) and Orbit (propiconazole) are effective systemic fungicides that can be applied as a protectant or within 24 hours after an infection period). Protectant fungicides are rated as follows for efficacy against shoot strikes: Serenade + Nu-Film-P adjuvant (good), Sulforix (good), Ziram (fair), Bravo (fair), Omega (fair), CaptEvate (fair), Captan (poor). Use of strobilurins (e.g., Abound, Cabrio, Pristine) is not recommended early in the season to control shoot strikes, partially because they are rated as poor to fair and also because they are prone to fungicide resistance development. They are used more cost-effectively when used as a broad-spectrum application against mummy berry and other fungal infections during bloom.

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

2010 grower meetings

Five twilight grower meetings are planned for 2010. These meetings will emphasize the variety of tools available to growers for pest control and discuss timely options for the current growing season. These meetings are designed for growers, consultants, scouts, chemical company field reps and others that need current in-depth, practical information about blueberry culture and management.

Presenters will include members of the MSU Blueberry Team: Mark Longstroth, Carlos Garcia, Rufus Isaacs, Eric Hanson, Annemiek Schilder, Bernie Zandstra, and Paul Jenkins. All meetings are planned from 6 to 8 PM, and will include dinner and presentations. One to two RUP credits should be available for private and fruit (1C) certifications.

Mark Longstroth and Carlos Garcia
Michigan State University Extension

2010 SCHEDULE

APRIL 29 6:00PM
Pre-bloom meeting - Van Buren County
Location: Cornerstone Ag.
01240 57th Street, Grand Junction
Information: Mark Longstroth, 269-330-2790

MAY 6 6:00PM
Pre-bloom meeting - Ottawa county
Location: Carini Farms
15039 Port Sheldon Rd., West Olive
Information: Carlos Garcia, 269-260-0671

JUNE 10 6:00PM
Pre-harvest meeting - Van Buren County
Location: to be determined
Information: Mark Longstroth, 269-330-2790

JUNE 17 6:00PM
Pre-harvest meeting - Ottawa County
Location: Carini Farms
15039 Port Sheldon Rd., West Olive
Information: Carlos Garcia, 269-260-0671

JUNE 24 6:00PM
Weed Control Demo - Allegan County
Location: Getzoff Farm
7093 116th St., Fennville
Information: Paul Jenkins, 517-648-5099

Funding for this newsletter is provided by grants from the USDA, EPA and Project GREEEN.