



# Blueberry Newsletter

A newsletter from Michigan State University for the Michigan blueberry industry

April 6, 2010

Volume 4, Issue 1

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## 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.

**Insect management**

Scout fields for spanworm and cutworm feeding.

**Weed management**

April is an important time to apply pre-emergent herbicides.

**Pre-Bloom Blueberry Meeting April 29, 6 to 8 PM, at Cornerstone Ag**

A pre-bloom blueberry grower meeting is scheduled for the evening of April 29. The meeting will be from 6 to 8 PM at Cornerstone Ag's packing facility. Cornerstone Ag is located at 01240 57<sup>th</sup> 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. Presenters will include

members of the MSU Blueberry Team: Mark Longstroth, Carlos Garcia, Rufus Isaacs, Eric Hanson, and Annemiek Schilder. Look for full agenda meeting details in next week's newsletter.

**2010 Schedule for the Michigan Blueberry Newsletter**

This newsletter will be published on Tuesdays of every week through July, and biweekly through August and September. Please send all inquiries to

Paul Jenkins, [jenki132@msu.edu](mailto:jenki132@msu.edu) or 517-432-7751.

**Funding for this newsletter**

This newsletter is in its 4th year, and has always been published free of charge thanks to funding from external grants. Starting in 2011, there will be an annual subscription fee. More details to come.

	GROWING DEGREE DAYS		From March 1	
	2010		Last Year	
	Base 42	Base 50	Base 42	Base 50
<b>Grand Junction, MI</b>				
3/29	122	41	123	52
4/5	245	119	152	59
Projected for 4/12	328	164	174	65
<b>West Olive, MI</b>				
3/29	100	25	77	26
4/5	221	102	94	29
Projected for 4/12	293	136	111	32

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

## Remember to scout for mummy berry

It's the time of year to start looking for overwintered mummy berry mummies on the ground underneath blueberry bushes. It may require some crawling around on your hands and knees to see them. Mummy berry mummies look like tiny black pumpkins (about ¼ to ⅜ inch in diameter) and may be partially embedded in the soil or hiding underneath leaf litter. Germinated mummies have small, brown, finger-like projections (initials) that eventually develop into apothecia which look like small brown trumpets. The number of apothecia is the best predictor of the number of shoot strikes. There can be anywhere from one to seven apothecia produced by a mummy. The germination percentage increases with increasing soil moisture, which is also affected by the amount of snow cover during the winter. It is therefore advisable to scout in "hot spots" first, especially in low/wet areas and rows close to the woods. You can also gather mummies and create a mummy berry "nursery" by placing 50-100 mummies in a moist location which will facilitate monitoring. This is best done in the fall, as germinated mummies are fragile.

As of the end of March, germinated mummies had been found in multiple locations, mostly at very wet sites with a history of mummy berry disease. In drier locations, mummies were harder to find or if they were present, showed

limited germination. Even at the wetter sites, the apothecia were generally immature, with occasional apothecia with openings 1-2 mm in diameter. This is in contrast to last year when apothecial development was ahead of development of the blueberry plant. Apothecia start discharging ascospores into the air when the cups are about 2



mm in diameter, and most spores are released when the cups are between ¼ and ⅜ inch (6-10 mm) wide, as many as 1 million spores per day. The spores are dispersed by wind and are discharged when the mushrooms are disturbed or the air pressure changes. If any green leaf tissue is visible at that time, there is a risk of infection. The risk of infection increases with increasing number and size of apothecia. During cool wet conditions, the apothecia may last up to 3-4 weeks. Under warm dry conditions, they may last only 1 week. Prolonged cool, wet weather is conducive to infection. At the optimum temperature

(57°F), only 6 hours of leaf wetness are required for infection. Frost (28-30°F) can also predispose shoots to infection.

## Generic fungicide options

Following the trend in human medicines, "generic" versions are now available for some common fungicides used to treat plant diseases. This is due to the expiration of patents on various proprietary fungicide products. Generic products by law have to have the same amount of active ingredient as the original fungicides. However, there may be differences in inert ingredients or formulations.

Generic products tend to be more economical than brand name products, but most have not have been separately evaluated for disease control efficacy in Michigan and may not be mentioned in the crop sections of E-154 (Michigan Fruit Management Guide). However, most of them are briefly described in the "Fungicides and Bactericides for Fruit Crops" section of the guide. For more information on individual products, check out their labels or material safety data sheets on the following website: [www.cdms.net](http://www.cdms.net). Generic products are presumed to be similar in disease control efficacy to their brand name counterparts. However, minor variations in efficacy, behavior or even phytotoxicity may occur due to formulation differences.

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### Generic fungicide options for 2010

Brand Name	Active Ingredient	Generic Version(s)
Aliette	fosetyl-Al	Legion
Aliette	phosphites (same breakdown product as fosetyl-Al)	ProPhyt, Phostrol, Agri-Fos, Rampart, Fosphite, Fungi-Phite, Topaz
Elite	tebuconazole	Orius, Tebuzol, TebuStar, AmTide Tebuconazole
Rally/Nova	myclobutanil	AgriStar Sonoma
Orbit	propiconazole	Bumper, PropiMax, Propiconazole E-AG, AmTide Propiconazole,
Ridomil	metalaxyl	MetaStar, Metalaxyl
Bravo	chlorothalonil	Chlorothalonil, Echo, Equus
Rovral	iprodione	Iprodione, Nevado
Topsin M	thiophanate methyl	Thiophanate Methyl, T-Methyl
Agri-Mycin	streptomycin	Ag Streptomycin, FireWall
MycoShield	tetracycline	FlameOut

Do **not** assume that the labels of generic products are exactly the same as the brand name fungicides that you are used to. Sometimes there are differences in the crops that the product is labeled for or in the label instructions or restrictions. An example is Iprodione (iprodione), which is labeled for blueberries, whereas the brand name product Rovral (iprodione) is not. Also, Tebuzol (tebuconazole) is labeled for apples and pears, but other tebuconazole products such as Elite, Tebustar, and Orius are not. The table below lists generic versions of common fungicides. Read the fungicide label carefully before use as you would for any new product.

*Annemiek Schilder*

*Department of Plant Pathology*

*Michigan State University*

## Blueberry insect management overview for 2010

As blueberry growers prepare for pollination and for keeping their berries free of insect pests during the 2010 growing season, it is a good time to review the available insect management options, consider integrating some new tools into your IPM program, and making plans for the coming season.

If you missed the various MSU Extension talks this winter at the Great Lakes Expo or Southwest Hort Days, or even if you attended these programs, you should make plans to attend one of the four in-season blueberry meetings organized by MSU Extension this year (details in this newsletter). These meetings are a chance to update growers on the new developments in blueberry culture, report on our research trials, and provide timely updates on recent crop scouting. The meetings are free, open to all, and I hope to see you at one or more of these.

This article is a chance to provide some food for thought about your 2010 insect management program based on our research projects, demonstration trials at farms, and discussions with growers and extension colleagues. As always, I welcome your feedback on this article, at [isaacsr@msu.edu](mailto:isaacsr@msu.edu).

**Scouting.** This is an essential component of blueberry production, so

you know what is in your field during the period from now until harvest. Investing in a knowledgeable pair of eyes who can visit your fields each week to look for various potential problem issues (insect, diseases, and weeds) makes good business sense to protect your investment. Whether you do it yourself, or have a scout from a cooperative visit your farm, or you hire an independent scout, or work with a consultant, this is time or money well spent. To help with scouting, MSU has developed a Pocket Blueberry Scouting Guide that is available in both English and Spanish (Publications E2928/E2928SP) and we have the same information posted online at [www.blueberries.msu.edu](http://www.blueberries.msu.edu). We will be scouting blueberry fields this summer in a few locations in SW Michigan and will report the findings in this newsletter each week. But, there's no substitute for your own information from your own fields.

**Spotted Wing Drosophila.** If you haven't heard about SWD yet, you'll be hearing about it this summer because we want to be vigilant against this invasive pest. This small fly infests many fruit crops (including blueberries) and it is now in west coast fruit production regions from California to British Columbia. It has also recently been detected in Florida. The fly is different from our typical vinegar flies because it can lay eggs in intact fruit. We have not seen it in Michigan yet, but there has not been focused monitoring.

That will change this month with the establishment of a multi-agency group focused on early detection. See the detailed article in this newsletter for more, or come to our MSU Extension meetings to learn more about it. If this fly is detected, an industry-wide effort will be needed to ensure it's impact is minimized.

**Guthion update.** The EPA's phaseout plan for Guthion continues to reduce the availability of this highly effective pest management tool. Aerial application of Guthion is now banned in blueberry. Growers can apply up to a seasonal maximum of 1.5 pounds of product/acre for the next three seasons, but Guthion will be banned completely by the end of September 2012. This rate restriction effectively means that growers have one application of Guthion remaining in their toolbox, because rates lower than 1 pound/acre do not provide the longevity of residual activity growers expect in their fruitworm program. The REI remains at 7 days, with the PHI of 7 days in commercial farms and up to 30 days re-entry interval for U-pick fields. If Guthion is still a cornerstone of your insect IPM program, there are effective alternatives available that should be considered for 2010. The next newsletter will contain a fruitworm management article to cover this topic in detail.

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**Insecticides – many options to fit into your IPM program.** The blueberry industry has a number of established and effective broad-spectrum insecticides for use against key pests including Guthion, Imidan, Lannate, Sevin, etc. Grower's IPM programs should also include rotating to new chemical classes, using selective insecticides to reduce impacts on natural enemies, and minimizing impacts on pollinators. With the blueberry industry receiving many new insecticides in recent years, including Intrepid, Delegate, Assail, Asana, Danitol, Mustang Max, Provado, and Actara, growers now have a range of insecticides with different pest spectrums and properties that can provide effective insect control. Each of these has a fit for components of the pest spectrum in Michigan blueberries, and grower's decision of which of these to use will be guided by efficacy, spectrum of activity, price, and resistance management considerations.

Addressing the recently-registered insecticides in turn... Intrepid is an insect growth regulator that has proved to be a highly-effective insecticide for fruitworm control. Growers who applied Intrepid in 2009 using the MSU degree day model for fruitworms (available through [www.enviroweather.msu.edu](http://www.enviroweather.msu.edu)) reported very low levels of fruitworm infestation. Intrepid is safe to bees allowing application during bloom when fruitworm egg-laying starts, plus it is soft on beneficials. We have been testing programs with commercial growers who apply Intrepid during bloom then switch to Delegate after bloom for the next fruitworm spray (also controls maggot), or switch to Assail for control of fruitworms, maggot, and aphids. These programs are providing equivalent control to an Intrepid-Guthion program, or an Intrepid-Asana program. Asana has provided excellent control of fruitworms and Japanese beetle, and gives good control of blueberry maggot. The 14 day PHI for this product can make it challenging to

fit in the postbloom timing for fruitworm control, especially in early harvested cultivars. Growers now have two other pyrethroids available: Danitol and Mustang Max. These both provide high levels of control of key insect pests similar to Asana, but with much shorter PHIs. Pyrethroids are toxic to natural enemies and will not provide long-term control because aphid populations can rebound in the absence of biological control. Aphid control, if needed, is best achieved using members of the neonicotinoid chemical class such as Assail, Provado, and Actara. Each of these products is highly effective on aphids, with a broader spectrum of control that can help control other pests at the same time. Assail also provides fruitworm and maggot control, and Provado also controls maggot and Japanese beetle. The Actara label has aphids and Japanese beetle listed.

A new registration for 2010 is Avaunt 30WDG insecticide now labeled for fruitworm and plum curculio control in blueberry. This provides a new chemical class, the oxadiazines, with activity at the sodium channel that leads to insect paralysis and death. It is considered "reduced-risk" by the EPA, with a 12 hour REI and 7 day PHI. Rates are up to 6 oz/ acre. Do not apply during bloom.

**Blueberry gall wasp.** In the past few years, grower reports of problems with blueberry gall wasp have increased. Some Jersey fields were hit hard by gall wasp in 2009, and this was even in fields where growers applied Assail immediately pre-bloom to try and stop the wasps infecting the shoots. Clearly, we need a new approach and my lab will be working this summer on some examination of the biology and control of gall wasp. We hope to have some clearer answers for you later this year.

**Preparing for pollination.** Make sure you are getting strong hives for your pollination rental fee by checking colonies with the beekeeper. This is an important part of the pollination puzzle because bees from weak hives do not work hard and this may reduce the level

of yield you can achieve if you are stocking fields based only on the number of hives. Bumble bees are another option or can be used in combination with honey bees, but large orders for those need to be placed in January and February to guarantee bloom-time delivery. Still, you may consider calling Koppert Biologicals near Detroit to enquire about availability.

If you are interested in learning more about beekeeping and about inspecting bee hives for their strength, the Kalamazoo Bee Club will host a meeting on April 15 titled "How to Inspect Your Hives". This will be held from 7 to 9 pm at the Comstock Community Center. The program will be taught by Dr. Larry Conner, a highly knowledgeable "Bee-Guy". The meeting is free and you can learn more about it at [www.michiganbeekeepers.com/](http://www.michiganbeekeepers.com/)

Best wishes for a productive, profitable, and pest-free season!

*Rufus Isaacs*  
*Department of Entomology*  
*Michigan State University*

# Spotted Wing Drosophila

*A potential pest of Michigan blueberries*

Rufus Isaacs  
Department of Entomology  
Michigan State University



Photo: Adult male fly of Spotted Wing Drosophila (University of California), showing the distinctive wing pattern.

Spotted Wing Drosophila (*Drosophila suzukii*) is an insect pest of fruit that has spread from California in the past two years to Oregon, Washington, British Columbia, and Florida. The greatest potential impact is expected to be in blueberry, cherry, strawberry, raspberry, and blackberry crops; soft-fleshed fruit that are easier for the flies to lay eggs in and for larvae to develop. This pest has also been reared out of other fruit crops, and from berries of wild plants.

Spotted Wing Drosophila flies are small, around 2.6-2.8 mm in length, with light brown bodies and darker brown bands on the abdomen. Adults have characteristic bright red eyes, and the males have a prominent dark spot on each wing that can be easily seen with a hand lens. Females are less distinctive, but the serrated surface of the ovipositor is a distinguishing feature. This fly is native to Asia and is also reported in Spain and Hawaii.

**So far, there are no reports of Spotted Wing Drosophila anywhere in the Midwest.** However, there has been no organized monitoring yet. Our climate is suitable for development of this fly and we have large fruit industries including the nations' largest acreages of some susceptible crops, so MSU entomologists and MSU Extension are currently establishing an Early Detection-Rapid Response plan with state agencies and commodity groups. We will be monitoring fruit crops this summer (primarily in West Michigan) to determine whether Spotted Wing Drosophila is present in our

region. If this fly is detected, information will be released immediately to guide growers on how to respond.

Spotted Wing Drosophila is not a true fruit fly like blueberry maggot or cherry fruit fly. It is a vinegar fly similar to the other small flies that infest ripe fruit during the summer, but with some important differences. This species attacks intact fruit, using a saw-like ovipositor to lay eggs under the skin. Also, female flies can lay hundreds of eggs and this species develops quickly, completing a life cycle in about three weeks during our typical summer temperatures, and allowing buildup of the populations through the season. Although these facts make the *potential* impact high, our fruit crops are managed already using IPM programs for other pre-harvest insect pests such as blueberry maggot. This, coupled with our cold winters, is expected to provide some level of resilience against Spotted Wing Drosophila.

Looking forward to the 2010 season, I would request that growers and processors become educated about Spotted Wing Drosophila and what signs to look for in ripe fruit. A good central source for information on this pest has been developed by Oregon State University and is available online at [swd.hort.oregonstate.edu](http://swd.hort.oregonstate.edu). If larvae are found in fruit that are suspected of being Spotted Wing Drosophila, samples should be sent to the MSU Diagnostic Services at MSU for verification ([www.pestid.msu.edu](http://www.pestid.msu.edu)).

Through this newsletter and our Extension program, we will keep the industry informed of developments as they occur through 2010. During the Blueberry IPM extension meetings planned for Van Buren and Ottawa counties this spring and summer, I will show (dead!) samples of the flies and demonstrate trap designs that growers, scouts, and consultants can use to increase our network of monitoring this year.

## Blueberry weed management choices

There are several numerous preemergent herbicide choices for blueberries. To control weeds and avoid injury to bushes, become familiar with these products by reading the labels and consulting MSU Bulletin E-154, Fruit Management Guide, which contain current recommendations.

Most growers have two general weed control questions. First is choosing the early season preemergent program. The goal here is to choose an herbicide or combination of products that are strong on the dominant weeds. An effective choice will control most annuals and some perennials through the summer. The second consideration is how to manage established perennial weeds that are not effectively controlled by available preemergent products. This often requires careful use of glyphosate late in the season.

### Preemergent programs

Princep ( simazine), Karmex (diuron), Sinbar (terbacil), and Solicam

(norflurazon) are the most common preemergent herbicides in established blueberries. They are moderately priced and control many germinating annual weeds for 1-3 months. These products can potentially injure blueberries so be familiar with the label precautions regarding sandy soils and young plants. Princep and Karmex tend to be stronger on broadleaf weeds, whereas Sinbar and Solicam are effective on grasses. Combining broadleaf and grass materials controls a broader spectrum of annual weeds.

Callisto and Chateau were recently labeled for use on blueberries. Callisto provides preemergent and postemergent control of several pigweed species, chickweeds, horsenettle, lambsquarters, marestail, eastern black nightshade, ragweed, and smartweed, but is very weak on grasses. Apply Callisto before bloom, either in one 6 fl. oz. per acre application, or two 3 oz. applications at least 14 days apart. Crop oil concentrate (COC) improves postemergent activity, but Callisto with COC may injure blueberry leaves and young stems. Avoid plant contact as much as possible. Callisto is labeled for

young, non-bearing and bearing blueberries. Chateau is primarily a preemergent product with some postemergent activity if applied with surfactant or COC. Chickweeds, dandelion, common groundsel, lambsquarters, eastern black nightshade, several pigweeds, ragweed, and most annual grasses are controlled. Apply Chateau before bud break (getting late now) at 6 to 12 oz product per acre. Bushes need to have been in the field for 2 years.

Growers should work with Callisto and Chateau to learn how they perform on their farms. These herbicides have different modes of action in plants than the traditional blueberry herbicides such as Princep, Karmex, and Sinbar. As a result, they should be helpful in discouraging development of herbicide resistant weed populations.

Want to know how these products work in a commercial blueberry field? Join us for a weed control demonstration on June 24th. See meeting details below.

*Eric Hanson*

*Department of Horticulture  
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 57<sup>th</sup> 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 116<sup>th</sup> St., Fennville  
Information: Paul Jenkins, 517-648-5099

