

# **Northern Michigan FruitNet 2013 Northwest Michigan Horticultural Research Center**

## Weekly Update

September 17, 2013

### CALENDAR OF EVENTS

#### 2013

- |                 |  |
|-----------------|--|
| <b>9/24</b>     | <b>Trevor Nichols Field Day</b><br>Fennville, MI                       |
| <b>11/12</b>    | <b>Making It In Michigan Conference</b><br>Lansing Center, Lansing, MI |
| <b>12/10-13</b> | <b>Great Lakes Expo</b><br>Amway Grand Plaza, Grand Rapids, MI         |

#### 2014

- |                |   |
|----------------|---|
| <b>1/14-15</b> | <b>NW Michigan Orchard &amp; Vineyard Show</b><br>Grand Traverse Resort |
| <b>2/18-19</b> | <b>IPM Academy</b>  |

## GROWING DEGREE DAY ACCUMULATIONS AS OF Sept 16 AT THE NWMHRC

| Year         | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 23yr. Avg. |
|--------------|------|------|------|------|------|------|------------|
| <b>GDD42</b> | 3342 | 4019 | 3404 | 3791 | 3053 | 3280 | 3411.0     |
| <b>GDD50</b> | 2230 | 2732 | 2273 | 2515 | 1896 | 2129 | 2236.3     |

### Wine Grapes Report

Duke Elsner, Grand Traverse County MSUE

NW Michigan vineyards look very good in general and harvest of early cultivars is approaching. Cool weather has kept the ripening pace a bit slow and we are a week to two weeks behind the pace of 2012 depending on specific locations and cultivars.

**Powdery mildew** incidence has increased over the past two weeks, but there are few sights where this disease is at significant levels. **Cluster rots** have begun to appear on very susceptible cultivars.

Some of the earliest experimental cultivars at the Northwest Michigan Horticultural Research Center are going to be harvested this week. The hybrids Frontenac and LaCrescent are over 21 brix; a very early vinifera cultivar called Siegerrebe is at 20 brix.

### WHY DOES APPLE FRUIT DROP PREMATURELY?

*There's more going on than simply gravity when apples fall prematurely.*

Posted on **September 11, 2013, MSUE News**, by **Amy Irish-Brown**, Phil Schwallier, Bill Shane and Bob Tritten, Michigan State University Extension

Unexpected apple drop just prior to harvest is a serious threat for some varieties grown in Michigan. We have some tools to help prevent premature apple drop such as NAA and Retain, but [Michigan State University Extension](#) will go over some of the *reasons* for premature drop. All apple cultivars have some fruit drop as they move through the ripening process. Some varieties, such as McIntosh, are very prone to pre-harvest fruit drop. This problem is exasperated when fruits are left to hang for better red color to meet market demands and fruit drop often occurs when waiting for red color to develop.

As apples begin to ripen they produce large amounts of ethylene, the ripening hormone. Ethylene stimulates softening of fruits and the formation of an abscission layer in the stem. Ethylene enhances the production of enzymes that break down the cell walls and the complex sugars that hold cell walls together in the abscission zone of the stem. As these glue-like substances break down, they leave the fruit connected only by the vascular strands, which are easily broken.

The role of ethylene is well understood by commercial apple growers. There are other stress factors that might come into play with pre-harvest apple drop and can be related to the severity of drop from one year to the next. These include orchard and climatic factors such as fruit load, nutrition imbalance, summer pruning, insect or disease issues, water and weather extremes during the growing season.

**Fruit load.** A large crop of a short-stemmed apple variety, particularly those that set in clusters, will “push off” each other close to harvest. Good, early season thinning, especially reducing clustered fruits, will help prevent this type of drop. When fruit are pushed off, it stimulates ethylene which can cause even more pre-mature drop in fruits remaining on the tree.

**Tree nutrition and soil type.** Drop is often worse in orchards where soils have incorrect nutrient levels, in particular low magnesium (Mg), high potassium (K) and high boron (B). Also, the variations in soil type can play a part. For instance, sandy areas will ripen early and drop ahead of heavier soil types.

**Summer pruning.** Pre-harvest drop can be more severe in orchards that are heavily summer-pruned. It is thought that this problem is likely associated with a limitation or deficit of carbohydrate supply from too many leaves being removed, especially younger, more functional leaves. Drop will be increased if pruning reduces the leaf to fruit ratio below 20:1.

**Insects and mites.** When leaf-infecting insects are high in number, they can reduce the photosynthate produced by leaves. This limits carbohydrate availability and can lead to pre-mature fruit drop.

**Water availability.** Pre-harvest drop is more severe in dry seasons, where irrigation is not available.

**Growing season temperatures.** Some apple varieties are affected by hot temperatures more than others, particularly in the early formation of ethylene which promotes early drop.

**Harvest season weather and cultivar characteristics.** Windy weather close to harvest also impacts fruit drop and can be worse in some varieties, especially those naturally prone to drop. Below is a summary of some varietal characteristic when it comes to drop.

### **Less prone**

- Akane
- Empire
- Gala
- Gingergold

- Goldrush
- Fuji
- Idared
- Jonathan
- Jonamac
- Paulared
- Pinova
- Sabina

### **Intermediate**

- Blondee
- Braeburn
- Cameo
- Cortland
- Jonagold

### **More prone**

- Arlet (Swiss Gourmet)
- Autumn Gold
- Early Golden
- Gravenstein
- Honeycrisp
- Jerseymac
- Lodi
- Golden Delicious
- Golden Supreme
- Gravenstein
- Hampshire
- Liberty
- Lodi
- McIntosh
- Princess
- Pristine
- Spartan
- Red Delicious
- Stayman
- Zestar

Alone, each of these factors can influence pre-mature drop to some degree, however, when they occur in combinations, severe drop can be the result. This is especially true in very drop-prone varieties such as McIntosh. Every grower knows his or her own blocks best including those that tend to have a history with early drop. Perhaps looking a little more closely at some of the other factors mentioned above can also help prevent early apple drop from occurring.

For more detailed reading, read the following sources:

- [Factors Affecting Preharvest Fruit Drop of Apples](#), Daniel Lee Ward, Virginia Polytechnic Institute and State University
- [The Physiology of Apple Pre-harvest Fruit Drop](#), Terence Robinson, Cornell University

This article was published by [Michigan State University Extension](#). For more information, visit <http://www.msue.msu.edu>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

## BROWN MARMORATED STINK BUG IN MICHIGAN – FALL 2013 UPDATE

*Captures of an invasive pest, the brown marmorated stink bug, increase in Michigan.*

Posted on **September 11, 2013, MSUE News**, by **Peter McGhee**, Mike Haas, Larry Gut and Mark Whalon, Michigan State University Extension, Department of Entomology



The [brown marmorated stink bug](#) (BMSB), *Halyomorpha halys* (Stål), is a major nuisance pest of homeowners and a serious economic pest of many commercial crops in the eastern United States, including apples, cherries and peaches. It is an invasive stink bug from Asia that was first introduced into the Middle Atlantic States of Pennsylvania and New Jersey in mid-1990. It has since spread to most of the Atlantic states: inland to Ohio, Indiana, Iowa and west to Oregon and Washington. Brown marmorated stink bugs were officially identified in Michigan from Berrien County in 2010 and they have since been recorded in 12 additional counties including Eaton, Genesee, Ingham, Lenawee, Monroe counties in 2011, and Allegan, Clinton, Kent, Oakland, Oceana and Wayne counties in 2012. No detections have been reported from the Upper Peninsula.

Statewide surveys for this pest began in 2011-2012 using black light traps and visual scouting of known preferred habitats. In 2013, the survey program expanded to include more counties and also incorporated traps baited with a pheromone for this insect recently identified by [USDA](#) researchers. Four new sites along the Michigan and Ohio border produced 20 positively identified individuals this spring. Trapping with pheromone-baited traps and black light traps has been ongoing this summer at more than 50 sites and will continue into fall throughout the Lower Peninsula in fruit growing regions.

The first captures of BMSB this season occurred during late July in Holt, Mich., at a site previously identified with overwintering adults last fall. Approximately 60 adults were captured

over three weeks in a trap containing the pheromone plus an added synergist being investigated in a cooperative effort with the [USDA Agricultural Research Service \(ARS\)](#). Captures of BMSB also occurred at another previously identified site in southwest Michigan. Nine adults were collected in the black light trap at about the same time in July and adults and nymphs have been captured since late August. The numbers of captured insects continues to fluctuate at both of these sites with the majority of captures found in pheromone baited traps; 57 adults in Holt, Mich., and 39 adults and nymphs in southwest Michigan. A preferred BMSB host, Russian olive, is present at both of these hot spots. Interestingly, individuals have not been captured in any of our other trapping sites.

Brown marmorated stink bugs aggregate in the fall frequently in large numbers to overwinter and will gather inside of houses, sheds and barns to overwinter. This is the same behavior exhibited by Asian ladybird beetles, chinch bugs, boxelder bugs and western conifer seed bugs. Standing dead timber with loose bark still attached has been reported as the favored overwintering of habitat of BMSB by researchers in the eastern United States. Indeed this is the predominant habitat at the Holt, Mich., site.

Surveying for BMSB continues, but thus far BMSB have not been recovered this year from light or pheromone-baited traps deployed in Allegan, Van Buren, Kent, Ottawa, Newaygo, Oceana, Monroe, Macomb, Oakland, Genesee, Lenawee, Hillside, Branch, Montcalm, Ionia, Leelanau, Benzie or Grand Traverse counties. Most importantly, it has not been found in commercial orchards nor has stink bug damage been detected during our fruit inspections.

Given the numerous reports of stink bugs from the Holt and Stevensville, Mich., areas, it is likely the BMSB population is established in these locations. It's not possible to predict the spread of this pest or when it might become a pest to crops, but it's a good idea for growers in south central and southwest Michigan to be on the alert for this pest and knowledgeable about management options. An overview of BMSB biology and management can be found on pages 66-67 in the [Michigan State University Extension](#) bulletin, "[2013 Michigan Fruit Management Guide](#)" (E-154).

Ideally, growers and consultants should be able to identify BMSB. It will require using magnification to see important characters. Read the MSU Tree Fruit [Brown Marmorated Stink Bug fact sheet](#) to become familiar with what to look for. There are some native stink bugs that could be confused with BMSB. Use this [BMSB key](#) to assist in differentiating them from BMSB. Specimens should be kept in a container in a freezer or placed in a container with isopropyl alcohol to preserve them until they can be passed along to an expert for positive identification. A routine of regularly checking for these pests in orchards, buildings and woodlots is very important. Aggregations of overwintering infestations will begin at any time and continue to increase as cool weather advances into the fall. Researchers are currently trying to understand what factors influence the movement of this pest. Repeated infestations of the same orchard occurring within the same field season are not unusual with this insect.

We will continue to trap and monitor for BMSB through fall 2013 in many areas of the state. Updates regarding this pest will be reported through [MSU Extension's Fruit and Nuts page](#) and the [MSU Brown Marmorated Stink Bug website](#). If you find BMSB in your orchard, you should let your [local MSU Extension educator](#) know and email Mike Hass at [haasm@msu.edu](mailto:haasm@msu.edu) or Peter McGhee at [mcghee@msu.edu](mailto:mcghee@msu.edu) with "BMSB report" in the subject area.

**Photo credit: David R. Lance, USDA APHIS PPQ, Bugwood.org**

*Dr. Gut's work is funded in part by [MSU's AgBioResearch](#).*

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## **WEBSITES OF INTEREST**

Insect and disease predictive information is available at:

<http://enviroweather.msu.edu/homeMap.php>

This issue and past issues of the weekly FruitNet report are posted on our website

<http://agbioresearch.msu.edu/nwmihort/faxnet.htm>

60 Hour Forecast

<http://www.agweather.geo.msu.edu/agwx/forecasts/fcst.asp?fileid=fous46ktvc>

Information on cherries is available at the new cherry website:

<http://www.cherries.msu.edu/>

**Fruit CAT Alert Reports has moved to MSU News**     <http://news.msue.msu.edu>

**Tart Cherry Raw Product Reports – 2013**

<http://www.cherryboard.org/Week82013.pdf>