

Northern Michigan FruitNet 2013

Northwest Michigan Horticultural Research Center

Weekly Update

January 23, 2013

TREE FRUIT IRRIGATION/FERTIGATION/FROST 2013 WORKSHOPS

Sponsors: Michigan Pomesters, Michigan State Horticulture Society, Trickl-Eez, MSUE

Dates: Feb. 4, 5, and 6

Locations:

Monday, 4th Trickl-Eez, 4266 Hollywood Road, St Joseph

Tuesday, 5th NWMHRC, 6686 S. Center Highway, Traverse City

Wednesday, 6th Mamrelund Lutheran Church, 4085 Lutheran Church Rd., Kent City

*Local meetings may have slightly different speakers (see dates after speaker names).

RSVP: By Feb 1st to

Trickl-Eez,

(269)429-8200

info@trickl-eez.com

Philip Schwallier

(616) 490-7917

schwalli@msu.edu

9:00 a.m. Registration and Coffee

Welcome and Introduction

Climate Changes & Trends, Growth Stages Changes, Enviroweather

Ridge: Amy Irish-Brown, Philip Schwallier, SW: Bill Shane, Mark Longstroth, NW: Nikki Rothwell

9:45 Combining irrigation and frost control using under-the-tree micro sprinklers.
Engineering information, water requirements, orchard layout, etc.

John Nye, Trickl-Eez Company, Saint Joseph, MI (*Feb. 4, 5, 6*)

10:15 Break

10:30 Netafim's pressure compensating micro sprinklers for frost control

Johan Oostenbrink, Netafim Irrigation, Fresno, CA (*Feb. 4, 5, 6*)

11:00 How Nelson Irrigation's under-the tree sprinklers have helped Washington growers
with a return crop every year

John Rowley, Director of Rotator Division, Nelson Irrigation,
Walla Walla, WA (*Feb. 4, 5, 6*)

11:40 My 8 years of experience with under-the-tree micro sprinklers for frost control
Mike Wittenbach, Belding, MI (*Feb 4 & 6; Information presented on Feb. 5 by P.
Schwallier*)

11:55 How under-the-tree micro sprinkling gave me a crop in 2012 but soaked my ground
after 14 nights of sprinkling Tom Heffron, Belding, MI (*Feb 6 only*)

12:05 Meal (Courtesy of Trickl-Eez, Nelson, Netafim)

1:00 New technologies and methods in tree crop irrigation and fertigation

John Rowley, Director of Rotator Division, Nelson Irrigation,

Walla Walla, WA (*Feb. 4, 5, 6*)

- 1:45 The principles of fertilizing tree fruit through our irrigation systems
John Nye, Trickl-Eez Company, Saint Joseph, MI (*Feb. 4, 5, 6*)
- 2:15 Irrigation field trial result in cherry at the NW Research Center
Nikki Rothwell, District Extension Horticulturist and NWMHRC Coordinator (*Feb 5 only*)
- 2:40 How I have increased fruit color and firmness by injecting potash through my trickle
irrigation system
Ron Rasch, Grand Rapids, MI (*Feb 5 & 6*)
- 3:00 Adjourn

2013 MSU TREE FRUIT SCHOOL

Posted on **January 4, 2013, MSU-E News**, by **Julianna Wilson**, Michigan State University Extension, Department of Entomology

The [2013 MSU Tree Fruit School](#) will be held at the [Eberhard Center](#) in downtown Grand Rapids, Mich., on Feb. 13-15. The motto for the 2013 MSU Tree Fruit School is *be nimble*. Faced with new pests, new restrictions on old management tools and climate instability, nimble orchard managers rely on technology to help stay on top. This two and a half day program will explore the use of current and innovative technologies for improving pest management control strategies, harvesting, orchard maintenance and laborsaving tools.

Included in the program will be two hands-on workshops: one on the [spotted wing Drosophila](#) fly and another on the [brown marmorated stink bug](#). Participants will learn how to identify, monitor and manage these important emerging pests. Participants will be able to earn [MDARD](#) pesticide applicator recertification credits for both private and 1C commercial applicators.

Registration is \$210 per person, or **\$310 after January 29**, which includes breakfast, lunch and snack breaks on Wednesday and Thursday (Feb. 13-14), breakfast and snack break on Friday (Feb. 15), a binder with all course materials, classroom facilities in the Eberhard Center and speaker expenses. Dinner is on your own and lodging is separate.

To pay by check or money order, please download and complete the [registration form](#) and be sure to send it with your payment post-marked by January 29. To pay by credit card over the phone, please call Carolyn Devereaux at 517-884-0392.

A block of rooms is being offered at a special rate at the [Holiday Inn Downtown Grand Rapids](#), just across from the Eberhard Center. Please call the hotel directly to make your reservation **by January 29** and be sure to ask for the MSU Tree Fruit School room rate. Room rates are \$100/night for a double or \$110/night for a triple quad plus applicable taxes. Call the hotel directly at 616-235-7611.

For more information about the program, please contact [Julianna Wilson](#) at 517-432-4766 or visit the [program webpage](#).

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).

ANNUAL SOUTHWEST MICHIGAN HORTICULTURAL DAYS SLATED FOR FEB. 6-7

Sessions include a presentation about farm safety for fruit and vegetable operations, programs for grape and winegrape growers, as well as weather impacts on fruit production in southwest Michigan.

Posted on **January 16, 2013, MSUE News**, by **Diane Brown**, Michigan State University Extension

Winter brings many opportunities for grower education. A perennial favorite is the [Southwest Michigan Horticultural Days](#), held annually at [Lake Michigan College's Mendel Center](#), 2755 East Napier Avenue, Benton Harbor, Mich. ([view map](#)). This meeting is sponsored by the Michigan Grape Society, [Michigan State University Extension](#) and [Lake Michigan College](#).

Registration is open at 8 a.m. both days (Feb. 6-7) and programs begin at 9 a.m. A trade show with vendors and door prizes is open each day and is included in the registration cost. There are programs for grapes, winegrapes, vegetables, tree fruits and blueberries, with several featured out-of-state speakers.

The general session begins at 9 a.m. on Feb. 6 and features [Michigan Farm Bureau's](#) Craig Anderson with a presentation about farm safety for fruit and vegetable operations, and state meteorologist Dr. [Jeff Andresen](#) who will speak on weather impacts on fruit production in southwest Michigan.

Restricted-use pesticide recertification credits have been requested for all sessions. [Pre-registration](#) cost is \$25 per person and includes lunch for both days. Deadline for pre-registration is postmarked Jan. 30. Mail [registration](#) to:

ATTN: Allan Zelmer
Michigan Grape Society
P.O. Box 151
Baroda, MI 49101

Make checks payable to Michigan Grape Society. Registrations postmarked after Jan. 30 and at the door will be \$30 per person.

For additional registration information, contact Allan Zelmar at 1-269-870-5265 or info@fruitfulvinetours.com. In case of severe weather, please phone 1-269-944-1477 to check the status of Southwest Horticulture Days.

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).

GET FARMING! ANNOUNCES WHOLESALE SUCCESS WORKSHOP

The Michigan Land Use Institute's *Get Farming!* program has partnered with MSU Extension, USDA, the NW Michigan Council of Governments and FamilyFarmed.org to offer a workshop on succeeding in the wholesale marketplace.

Wholesale Success is scheduled for **Monday, February 11, 8:30 a.m. - 5:30 p.m. at the NW Michigan Horticultural Research Center** near Traverse City, Michigan.

This intensive seminar covers topics of interest to producers seeking to enter or enhance their success in the wholesale marketplace. Much of the information will be useful at any scale of production or marketing strategy. Participating producers receive a free copy of FamilyFarmed.org's *Wholesale Success* Manual. A \$70 value, this 312 page manual includes more than 100 crop profiles with crop-specific information on harvesting, cooling, storing, and packing according to industry standards. For information or to register contact Jim Sluyter, 231-889-0199 or email jimsluyter@mlui.org. Information and registration is available online at www.mlui.org.

WINTER COLD HARDINESS IN MICHIGAN FRUIT CROPS

Michigan fruit plants are well adapted to withstand a Michigan winter.

Posted on **January 16, 2013, MSUE News**, by **Mark Longstroth**, Michigan State University Extension

The perennial fruits grown in Michigan can withstand most of the conditions of a Michigan winter. They withstand several months of temperatures below freezing and generally show little injury to the winter cold. They do this by becoming dormant and cold hardy.

In the fall, plants enter a dormant period called endo-dormancy (see the [Michigan State University Extension](#) article, "[Fall color show and winter dormancy in woody plants](#)"). During endo-dormancy, plants slowly accumulate chilling units to track the passage of time in the winter (see the MSU Extension article "[Winter dormancy and chilling in woody plants](#)"). When the plants are in endo-dormancy they acclimate to the cold conditions around them. The plant's basic cellular components and metabolism change to withstand cold and freezing. As colder temperatures become more common, the plants acclimate to the increased cold. Extreme winter cold will cause little or no damage if the plants, including trees, vines or bushes, are acclimated. Most acclimated fruit plants can easily withstand cold temperatures 10 to 20 degrees Fahrenheit colder than the temperatures they are experiencing. The maximum cold hardiness of Michigan fruit crops ranges from about 0 or -5 F for cold tender wine grapes to -35 F for cold hardy apples.

One of the reasons Michigan is such an outstanding fruit production region is Lake Michigan. One of the effects of Lake Michigan in the winter is to moderate the temperature of the cold air passing over it. Temperatures close to the lake are seldom below zero while temperatures down to -10 or -20 F are common inland away from the lake. This is why cold tender fruits like wine grapes, peaches, blueberries and cherries are grown in the so called Michigan Fruit Belt along Lake Michigan's eastern shore. Under the moderating influence of Lake Michigan, winter cold seldom damages the crop, assuring regular harvests.

Sudden drops in temperature of 20 degrees or more may cause damage or winter injury (i.e., when the low temperature one night is 20 degrees colder than the night before). This is especially true if the cold snap is preceded by warm weather. When warm weather with temperatures above freezing occurs in the winter, the plants lose the extra cold hardiness they have accumulated. If warm temperatures occur before a cold snap, injury is more likely. Plants lose their enhanced cold hardiness and revert to what I call the base cold hardiness. This is the minimum hardiness that a plant has during endo-dormancy. The minimum cold hardiness of most Michigan plants is around 10 to 0 F, depending on the plant. My rule of thumb is that if we have one day when the temperature stays above freezing, we have lost a lot of our cold hardiness, and if we have 48 hours or more of warm weather above freezing, then most plants are at their minimum cold hardiness.

Renewed cold will cause the plant to reacquire its lost cold hardiness. Plants acclimate to the cold much more slowly than they lose their cold hardiness. While they can lose all their cold hardiness in a day or two, they only acquire 1 to 4 degrees of enhanced cold hardiness for every day below freezing. There is a maximum cold hardiness that a plant can attain and temperatures below this are damaging or fatal to the plant. There are also different levels of cold hardiness for different plant parts. Often flower buds are more susceptible to winter cold injury. For example, peach flower buds begin to freeze and die at -13 to -15 F and most are gone by the time the temperatures are below -16 F, but the tree itself is not damaged until the temperature drops below -20 or -25 F. This relatively wide range of injury varies for each plant species.



The peaches in the foreground of this picture were damaged by winter cold that collected in the cold pocket in the low areas of the orchard. The temperatures were cold enough to kill the flower buds, but left the tree relatively undamaged. Photo credit: Mark Longstroth, MSUE

During the winter, a plant in Michigan will gain and lose cold hardiness several times. The temperatures before a freeze are very important in determining if a given plant will be damaged. The worst conditions are when we have several days above freezing followed by a cold snap with temperatures dropping into the single digits or below zero. It is even worse if a second cold snap drops low temperatures well below zero. Temperatures into the negative teens make many growers nervous. Temperatures to -20 F or lower worry all fruit growers.

In almost 20 years of working with the Michigan fruit industries, I have seen widespread damage due to extreme winter cold only once in the winter of 1993-94 when temperatures fell -20 F and below. Injury is more likely to occur in the late winter after the chilling requirement has been met and growth begins. Once growth begins, the cold tolerance to the buds and shoots is dependent on their stage of development.

Related MSU Extension articles

- ["Forcing cuttings to determine the end of dormancy in fruits and other plants"](#)
- ["Winter dormancy and chilling in woody plants"](#)
- ["Fall color show and winter dormancy in woody plants"](#)
- ["Freeze damage depends on tree fruit stage of development"](#)

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).

WINTER DORMANCY AND CHILLING IN WOODY PLANTS

A warm winter means woody plants will be ready to grow when the weather warms up.

Posted on **January 16, 2013, MSUE News**, by **Mark Longstroth**, Michigan State University Extension

Since most plants do not grow during the winter, we say they are dormant. There are actually two types of dormancy during the winter. One is called endo-dormancy. In endo-dormancy, the plant will not grow even under good, warm, growing conditions. Endo is a Greek word meaning inside. In endo-dormancy, something inside the plants is inhibiting growth. The other is called eco-dormancy and occurs when the plant is ready to grow but the environmental conditions are not right, usually too cold. Endo-dormancy occurs first. Short days and freezing temperatures in the fall induce endo-dormancy in the plant. (See the [Michigan State University Extension](#) article, "[Fall color show and winter dormancy in woody plants](#).")

As the plant enters endo-dormancy, it tracks chilling units to track the passage of the winter. Chilling units are hours of time spent above freezing. The number of hours required for chilling varies for different plants from less than 500 to 1,500 hours or more. Many people think the plant is tracking hours below freezing. It is not. Hours below freezing have no effect on chilling, but will increase cold hardiness. If warm weather occurs before the plant completes its chilling requirement, no growth occurs. Chilling and endo-dormancy normally prevent plants from beginning growth during warm spells in the middle of the winter. Not all hours above freezing are equal. Temperatures between 40 and 50 degrees Fahrenheit (5 to 10 degrees Celsius) are most effective. Temperatures just above freezing and above 50 F are less effective and temperatures above 60 F often have a negative effect on chilling.



These peach buds appear dormant, but have completed their chilling requirement and are waiting for warmer weather to begin growth.

Photo credit: Mark Longstroth, MSUE

Plants from the south or far north have relatively short chilling requirements. In the far north, it is below freezing for a long time and the spring warm-up is relatively short. Likewise winters in the south are short and mild. Plants from the middle temperate regions like Michigan have relatively long chilling requirements that keep them dormant through the long stretches when the temperatures cycle above and below freezing in a Michigan winter. Most of the fruit crops we grow in Michigan have chilling requirements of 700 to 1,300 chilling units. We normally complete endo-dormancy here in Michigan in January, early January in the south and late January in the north. Of course, there are big differences between winters. Some are long and cold, others are warmer. The relatively warm winter we are experiencing in 2013 is allowing many plants to accumulate their chilling earlier than normal.

Another important thing happens during endo-dormancy. The plants are cold hardy. As long as the trees, bushes or vines are in endo-dormancy, they have the ability to acclimate to cold weather; we call this cold hardiness. As long as the temperatures are below freezing, the plants are ready for really cold temperatures. Maximum cold hardiness occurs when plants have been subject to cold,

subfreezing temperatures for several days or more. As long as the plants are in endo-dormancy they have the ability to acclimate to colder temperatures and withstand winter cold.

After chilling is completed the plants are no longer in endo-dormancy. They are now in eco-dormancy. The plants are dormant only because of cold or cool weather. Warmer temperatures into the mid-40s will cause them to begin growth. Once the plants start to grow, they lose the ability to readjust to colder temperatures. There is usually a slow progression of development when the plant begins to grow as the temperatures slowly rise. Growth first becomes apparent when buds swell and then green tissue emerges from the bud. The plants actually begin growing before we notice the buds swelling.

Related MSU Extension articles

- ["Forcing cuttings to determine the end of dormancy in fruits and other plants"](#)
- ["Winter cold hardiness in Michigan fruit crops"](#)
- ["Fall color show and winter dormancy in woody plants"](#)
- ["Freeze damage depends on tree fruit stage of development"](#)

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).

FORCING CUTTINGS TO DETERMINE THE END OF DORMANCY IN FRUITS AND OTHER PLANTS

Woody plants may be ready to grow. Forcing cuttings can tell you when dormancy is completed.

Posted on **January 16, 2013, MSUE News**, by **Mark Longstroth**, Michigan State University Extension

Since most plants do not grow during the winter, we say they are dormant. There are actually two types of winter dormancy. One is often called endo-dormancy and is when the plants will not grow even if the conditions are warm enough for growth. The other is eco-dormancy and is when the plant does not grow because the conditions are too cold. Endo-dormancy typically prevents plants from growing during winter warm spells.

During endo-dormancy, plants accumulate chilling units when air temperatures generally are above 35 degrees Fahrenheit and below 50 F. Temperatures below freezing or warm temperatures above 55 or 60 F have little effect on chilling hour accumulation. The chilling hours required varies for different plants from 700 to 1,300 hours or more. Chilling and endo-dormancy normally prevent plants from beginning growth during warm spells in the middle of the winter.

The mild weather we have had this winter makes me think that some plants may have already completed their chilling requirement and are ready to start growing. The return of seasonably cold temperatures may keep growth from occurring. Once growth begins, the plant cannot increase its ability to withstand cold and can be injured by very cold weather. In the deep winter when plants are in endo-dormancy, they can become cold hardy to -10 or -20 F or below. Once growth begins, they lose the ability to withstand these extreme cold events.



There is no doubt these buds are swollen and the plant is growing. Photo credit: Mark Longstroth, MSUE

According to [Michigan State University Extension](https://www.maes.msue.edu/extension/2018/01/24/forcing-buds-to-grow/), there is one very easy way to know if endo-dormancy has been completed. You can take cuttings from the plants you are interested in and bring them inside to see if they will grow under warmer conditions. Collect several healthy shoots from the plants and place them in a vase or glass of water to provide consistent warm temperatures. If the buds begin to swell and grow within a week to 10 days, then you know the plants have completed their chilling requirement and warm weather will cause them to grow. You may need to do this several weeks in a row. I usually start collecting shoots in early to mid-January and generally see growth here in southwest Michigan in mid- to late January. Often the first time I see growth, the growth is ragged and not all the buds break and start to grow. This indicates that not all the buds have completed their chilling requirement, but several have and are ready to grow.



It is hard to tell if these buds are swollen or not. Forcing them will give you an answer in a few days. Photo credit: Mark Longstroth, MSUE

Once the plants have completed their chilling and moved into eco-dormancy, growth depends on the heat units they accumulate. If we get warm temperatures and growth begins, then the temperatures

falling into the teens or below might cause damage. If you force some cuttings, you will have a good idea of how worried about winter cold you need to be.

Related MSU Extension articles

- ["Winter dormancy and chilling in woody plants"](#)
- ["Winter cold hardiness in Michigan fruit crops"](#)
- ["Fall color show and winter dormancy in woody plants"](#)
- ["Freeze damage depends on tree fruit stage of development"](#)

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).

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

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

60 Hour Forecast

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

Information on cherries is available at the new cherry website:

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

Fruit CAT Alert Reports have moved to MSU News

<http://news.msue.msu.edu>