

Northern Michigan FruitNet 2014

Northwest Michigan Horticultural Research Center

Weekly Update

September 30, 2014

CALENDAR OF EVENTS

- 11/10-12 **Farm Transition & Farm Succession Planning**
NWMHRC
- 12/4 **Pesticide Applicator Review & Certification/Recertification**
NWMHRC
- 12/5 **Pesticide Applicator Review & Certification/Recertification**
Ellsworth
- 12/9-11 **Great Lakes Fruit, Vegetable & Farm Market EXPO**
DeVos Place, Grand Rapids

2015

- 1/13-14 **NW Michigan Orchard & Vineyard Show**
Grand Traverse Resort, Acme, MI
- 3/4 **Winery Development Pre-Conference**
MSU – Kellogg Hotel & Conference Center
- 3/4-6 **Michigan Grape & Wine Conference**
MSU – Kellogg Hotel & Conference Center

KASUMIN REGISTERED BY EPA FOR FIRE BLIGHT CONTROL ON POME FRUIT

Kasumin 2L is now fully registered on pome fruit in the United States for control of fire blight. This product provides excellent control of blossom blight and is critically needed, especially in orchards impacted by streptomycin resistance.

Posted on **September 24, 2014**, **MSUE News**, by [George Sundin](#), Michigan State University Extension, Department of Plant, Soil, and Microbial Sciences

Kasumin 2L has been registered by the [Environmental Protection Agency](#) (EPA) for fire blight control on pome fruit crops in the United States. I anticipate that this material will be available in Michigan for the 2015 season. We have had [Kasumin available in Michigan via a Section 18 specific exemption](#) since 2010 in counties impacted by streptomycin resistance in the fire blight pathogen. The overall grower experience with this product has been excellent for fire blight control in orchards with streptomycin resistance, and [Michigan State University Extension](#) field trials continue to show excellent efficacy for blossom blight control.

What are the significant changes in the Section 3 label from the Section 18 label?

- Kasumin 2L can be used throughout Michigan, i.e., use is not restricted to counties with streptomycin resistance.
- Kasumin 2L can now be used on pears as well as apples.
- There is no longer a requirement for state experts to indicate potential epidemic conditions for fire blight prior to an application. However, I **strongly suggest** that growers continue to use the [fire blight disease prediction model](#) available on the [MSU Enviro-weather website](#) and only apply Kasumin when predicted EIP values are 100 or greater.

Similarities between the new Section 3 and previous Section 18 label:

- Do not apply Kasumin in orchards in which the soil has been fertilized with animal manure.
- Do not apply after petal fall.
- Do not use alternate row applications.

Information on the new Kasumin 2L label:

- The use rate is 64 fluid ounces (2 quarts) per acre. Using 64 fluid ounces in 100 gallons of water is optimal; reduced spray volumes can be used for smaller trees.
- Do not apply after petal fall. There is also a 90-day pre-harvest interval (PHI).
- A maximum of four applications can be made. I strongly suggest not applying more than three applications per season for resistance management purposes.

This is great news for the pome fruit industry in Michigan; however, we must always remain cognizant of how we got this material in the first place. The occurrence of streptomycin resistance in the 1990s in southwest Michigan and in the 2000s in the Fruit Ridge area and progressing northward has had severe impacts on the industry. Thus, it is critical that we protect Kasumin from the prospects of resistance development. **The first step in this regard is to not overuse the material.**

Throughout the state during the winter and early spring, I will be outlining use strategies and resistance management options for Kasumin leading into next season.

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

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APPLE MATURITY IN 2014 IS SLOWER THAN EXPECTED

An unusual weather year is leading to slower than expected apple maturity. Growers need to plan carefully to get the best conditioned fruit into controlled atmosphere storage.

Posted on **September 24, 2014**, **MSUE News**, by [Randy Beaudry](#), Michigan State University Extension, Department of Horticulture

Apple fruit across the state are slow to mature this year (2014). While color and size are good, percent soluble solids are about 1 percent lower than normal. In addition, ethylene levels are

significantly lower than what might be considered typical for the 10 or so varieties [Michigan State University Extension](#) has been tracking in the [apple maturity program](#). These low ethylene levels may be affecting the formation of the abscission zone for the fruit, resulting in apples that are less prone to drop or be knocked off during harvest.

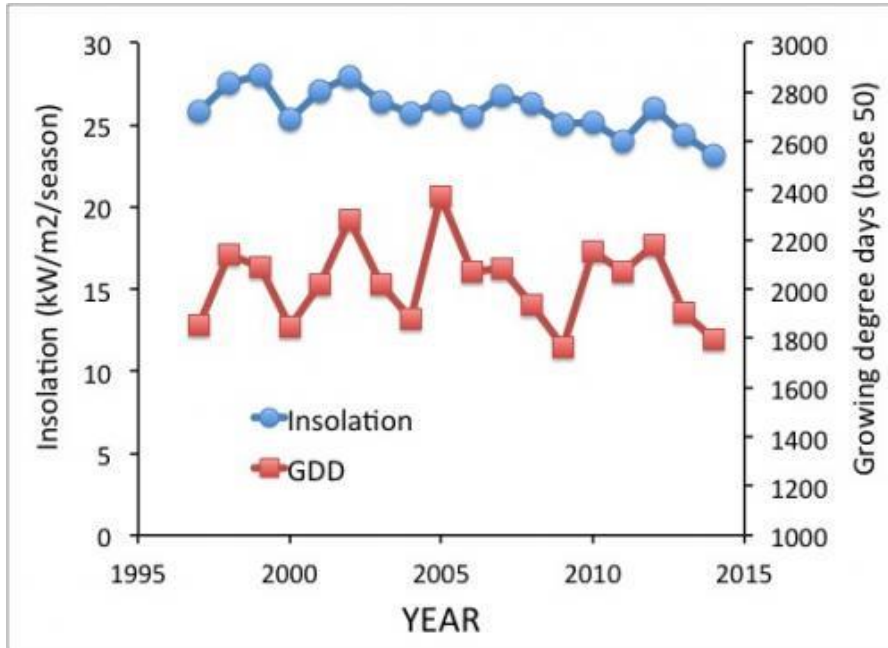
It seems reasonable to assume that the unusual weather we have had this year is somehow related to fruit condition, in both positive and negative ways. Cool nights have translated into intense color formation, but we are beginning to see the red pigment bleeding into the flesh in some locations. The relatively abundant rainfall has contributed to good fruit size, but “watery” fruit do not typically store well. In fact, the low brix noted may in part be due to the availability of water. Further, the cool season and low light levels during the season may have further limited photosynthesis, preventing the accumulation of sugars to their normal levels.

An analysis of the insolation, or incoming light from the sun, reveals that 2014 has the lowest level of accumulated sunlight, measured from June 1 to Sept. 22, 2014, in the 18 years the automated weather system has been acquiring data (see graphs at end of article). This year was also a low growing degree day (GDD) accumulation year, lower than any year except 2009 in the time period examined. Interestingly, the maximum amount of light reaching the fruit tree canopy for a given season seems to be declining over the last 18 years. That means the brightest day for 2014 was approximately 10 percent less bright than the late 90s.

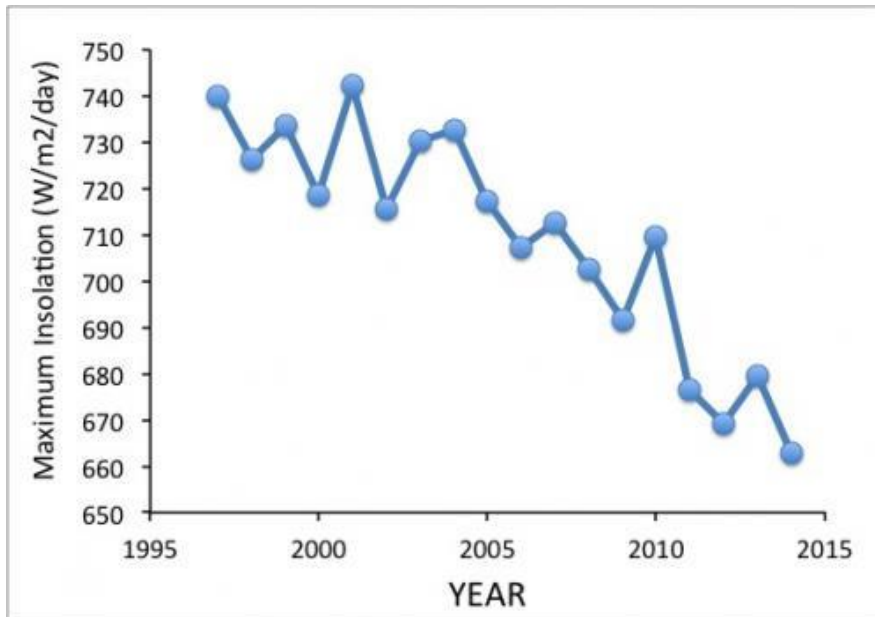
Finally, the relative amount of light for 2014 is about 12 percent less than the average for the last 18 years. Taken together, the data suggests that this was a tough year for fruit trees to accumulate photosynthate; it was cool and cloudy. The tree must make decisions about how to allocate the carbon it takes up, so as some of it is put away for next year, there is less to spare for the fruit, leading to low sugar levels. It may well be that these low sugar levels are also slowing development of the fruit as measured by our low ethylene levels.

In any case, this is an unusual year, so it is best to be prepared to handle the fruit as carefully as possible. My recommendation would be to plan for earlier rather than later harvests, monitor and control CO₂ levels for sensitive varieties, and make sure that temperatures are elevated for chilling sensitive varieties.

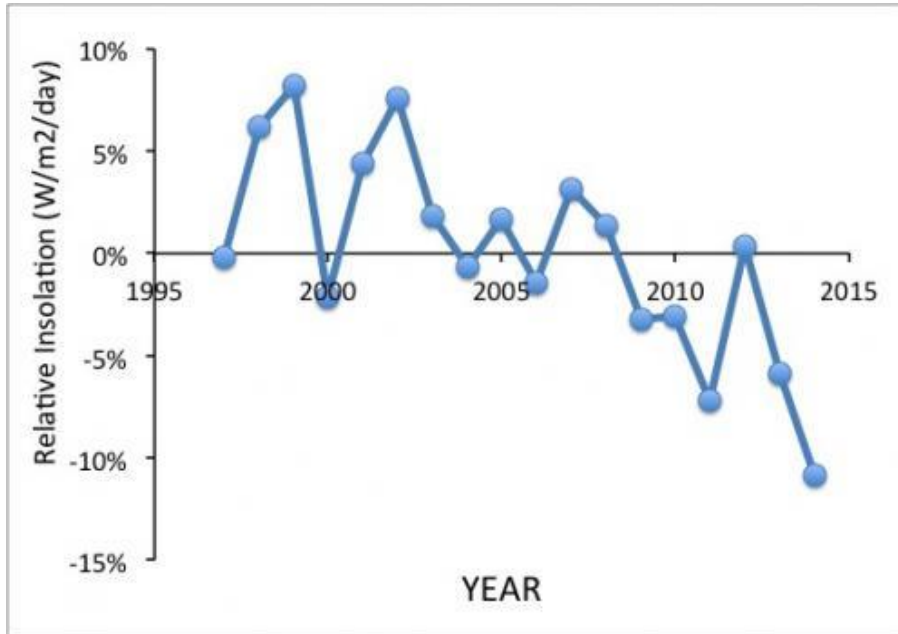
Insolation and GDD for Sparta, Michigan since 1997



Maximum daily recorded insolation for the year for years 1997 to 2014



Insolation relative to the 18-year average for the period 1997 to 2014



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

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MICHIGAN BROWN MARMORATED STINK BUG REPORT FOR SEPTEMBER 22, 2014

Berrien County continues to be a hotspot for brown marmorated stink bug activity, but detections have been reported in Van Buren, Ottawa, Ingham and Lenawee counties. Also, peach damage from BMSB has been confirmed in Ottawa County.

Posted on **September 25, 2014, MSUE News**, by [Julianna Wilson](#), and Larry Gut, Michigan State University Extension, Department of Entomology

This is the eleventh weekly report of the [Michigan State University Extension brown marmorated stink bug](#) (BMSB) statewide monitoring program for 2014. This monitoring network has been set up to provide early warning should BMSB start showing up in greater numbers in fruit and vegetable production areas.

A total of 13 nymph and 19 adult BMSB were captured in traps at eight out of the 63 sites being monitored during the week of Sept. 15-22, 2014. This is slightly down from the previous week, but new areas are reporting activity. Sites where we captured BMSB this week include one peach orchard in Van Buren County, one peach orchard and one urban site in Berrien County, and roadside sites near soybean fields in Lenawee and Ingham counties. Homeowners near

Stevensville, Michigan in Berrien County continue to report BMSB aggregating on the sides of their houses this week.

Also this week, we received the first confirmed report of brown marmorated stink bug damage to late peaches in a commercial orchard in eastern Ottawa County. The grower who reported the damage found a single BMSB adult in the orchard where the damaged fruit was found.

The monitoring network uses pyramid-style, pheromone-baited traps set up at sites that favor BMSB, near riparian areas and along major transportation corridors in the following counties: Monroe, Lenawee, Oakland, Macomb, Livingston, Ingham, Lapeer, Saginaw and Bay on the east side of the state, and Antrim, Grand Traverse, Leelanau, Benzie, Oceana, Newaygo, Kent, Ionia, Ottawa, Allegan, Van Buren and Berrien on the west side of the state. The majority of the sites in the network include farms that grow a variety of fruit and vegetable crops including apples, tart cherries, sweet cherries, peaches, blueberries, raspberries, tomatoes, peppers and sweet corn. In addition, some of our traps have been placed along roadsides next to field crops, or in urban and suburban areas where homeowners have reported seeing BMSB in the past. To learn more about how to monitor for the brown marmorated stink bug, distinguish it from other similar-looking stink bugs, what crops it favors, and management strategies should populations reach the threshold where management is necessary, visit [MSU's Brown Marmorated Stink Bug website](#).

The weekly BMSB statewide monitoring report has been funded through [Project GREEN](#) and [Michigan State University Extension](#). This output is generated through a network of MSU Extension field staff and campus specialists. We would like to acknowledge the following team members and thank them for their weekly scouting efforts and input into this report: Peter McGhee, Michael Haas, Bob Tritten, Mark Longstroth, Brad Baughman, Carlos Garcia, Amy Irish-Brown, Lina Rodriguez Salamanca, Ben Philips, Ben Werling, Mark Whalon, Karen Powers, and Nikki Rothwell.

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

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POST-HARVEST HOPYARD MANAGEMENT FOR 2014

As growers wrap up hop harvest this 2014 season, they can follow these post-harvest tips to help prepare for next year.

Posted on **September 24, 2014**, MSUE News, by [Erin Lizotte](#), Michigan State University Extension

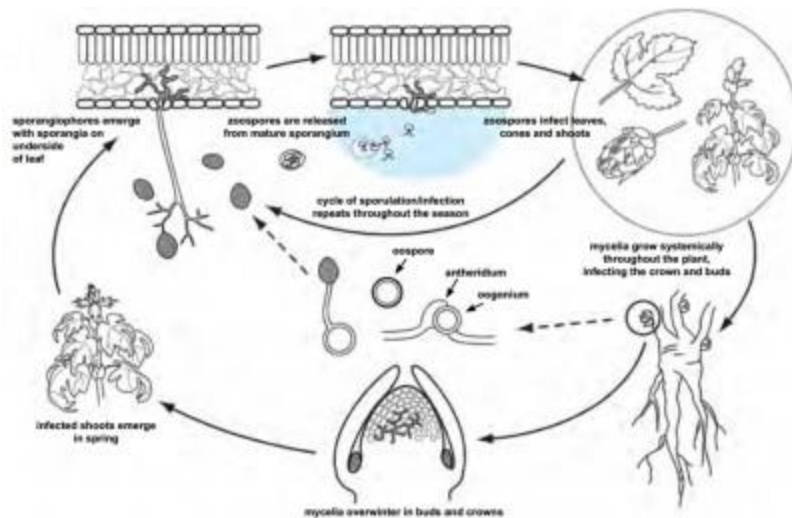


Figure 1. The disease cycle of *Pseudoperonospora humuli*, the causal agent of downy mildew in hop. Photo credit: V. Brewster, Compendium of Hop Diseases and Pests.

For the most part, the work of the 2014 season is complete. However, growers can still consider pest management practices that may impact next year, post-harvest irrigation, compost application and record keeping.

Controlling downy mildew

Many growers struggled to control downy mildew this year due to challenging weather conditions. Growers cultivating particularly susceptible varieties faced a particularly difficult season and may be wondering what can be done post-harvest to combat this important and damaging disease. To properly answer this question, we need to fully understand the disease cycle of *Pseudoperonospora humuli*, the causal agent of downy mildew of hops ([Figure 1](#)) and how growing conditions in Michigan can affect the efficacy of late season treatments.

Mycelium, the vegetative part of the downy mildew pathogen, overwinters in buds and crowns or plant debris (infected leaves, stems) left on the field. As shoots emerge in the spring, they may already be infected with this overwintering mycelium. As the hop bine begins to grow, the mycelium produces a microscopic spore-bearing structure (sporangiophore) on the underside of leaves, giving the underside a gray, fuzzy appearance. These structures give rise to an asexual type of spore called zoospores. Zoospores move via wind and rain and act as the major cause of disease spread during the season, infecting new leaves, shoots and eventually even cones. The reproductive cycle that produces zoospores may repeat multiple times over the season, depending on temperature and moisture availability.

Alternately, mycelium may also yield a resting spore (oospore) that it produces through sexual recombination. Oospores are typically more resistant to environmental changes and are often referred to as resting spores. It is unclear at this time if Michigan's climate provides environmental conditions conducive to oospore production.

When considering a post-harvest treatment, it is important to remember that the downy mildew fungus will overwinter in the plant itself and is protected by the plant epidermis. While there are no data to suggest that post-harvest treatments are beneficial in terms of a reduction in disease

next season, there is a general correlation between disease presence and severity from season to season that warrants further research. If growers want to try an experimental post-harvest application, they should focus on utilizing systemic fungicides that move downward in the plant tissue and might disrupt the mycelium that will be the source of next year's infection.

Systemic fungicides are typically described as locally systemic, acropetal systemic (moving upward), or basipetal systemic (moving downward). Locally systemic materials are not useful for the treatment of downy mildew at this time because they do not move far from the site of application and don't reach the sites where the pathogen overwinters. Truly systemic fungicides are taken up by the xylem or phloem tissue of the plant and moved to new tissues. Many of the systemic materials today are only translocated outward via the xylem or water-conducting tissues. Distribution of a systemic fungicide in the phloem or carbohydrate-conducting tissue tissues (basipetal translocation or downward movement) would include translocation into the crown and roots where downy mildew overwinters.

Fungicides labeled for hops that move systemically downward include Aliette and phosphite fungicides. Given the overwintering location of the fungus a systemic fungicide with downward movement would be the best option. That being said, with little remaining leaf area and vines shutting down from shorter day length, there may be limited value to a fungicide application at this time. Based on the lack of supporting data, post-harvest treatments for downy mildew are not recommended as a general practice at this time. Growers with high levels of downy in their hopyards should instead focus on developing an early and aggressive protectant treatment program for next spring. Refer to the article "[Battling downy mildew as hop harvest approaches](#)" from [Michigan State University Extension](#) for more information.

Post-harvest insect pests

Now let's consider some of the problematic insect pests still lingering after harvest. Potato leafhoppers, damson hop aphids and two-spotted spider mites were all reported at significant levels in hopyards, and growers are considering what treatment strategies are available post-harvest.

Potato leafhoppers (Photos 1-2) were a real issue for some growers, but a treatment now would not affect populations next season because potato leafhoppers currently in hopyards will not survive the winter. Potato leafhoppers move north on spring storms and reinfest each year. Once potato leafhoppers arrive, they reproduce in the hopyards and can cause significant damage. However, their inability to survive the winter wipes out the entire population in Michigan each year.



Photos 1-2. Potato leafhopper nymph (left) and hop leaf covered in nymphs and showing signs of feeding damage with necrotic leaf margins (right). Photo credit: Erin Lizotte, MSU Extension

Damson hop aphids were observed in higher numbers as harvest approached and some growers had problem infestations at harvest (Photo 3). Again, we must look at the lifecycle of the pest to determine if a post-harvest treatment could help keep numbers down next season. Hop aphids overwinter as eggs on *Prunus* species, genus of trees and shrubs that includes plums, cherries, peaches, nectarines, apricots and almonds. In early spring, eggs hatch into stem mothers that give birth to wingless females that feed on the *Prunus* host. In May, winged females are produced and travel to hop plants where additional generations of wingless females are produced. As cold weather approaches, winged females and males are produced, move back onto a *Prunus* host, mate and lay eggs for before winter. We expect that this migration away from hops and onto plants in the *Prunus* genus occurs sometime in September.

Growers with particularly high populations could apply a post-harvest insecticide to limit the overwintering populations, but only if they are still present in the hopyard. Growers considering an application should scout their fields and confirm the presence of aphids before applications are made. Refer to the article "[Aphids on hop reported in significant numbers](#)" for more information on management.



Photo 3. A wingless damson hop aphid on hop. Photo credit: Erin Lizotte, MSU Extension

Finally, **two-spotted spider mites** (Photo 4) were an issue for some growers this season. Again, if we examine the lifecycle of the pest we can make better decisions about the potential impact of post-harvest management. Hops are a unique situation when it comes to mite management. Many horticultural crops use post-harvest treatments in infested sites to reduce overwintering populations, but hop growers remove the plant itself quite early in the season, likely removing a large portion of the mites with it. Two-spotted spider mites that remain overwinter as mated females on plant debris and trellis structures in the hopyard.

Mites remaining in the hopyard are susceptible to miticide applications, but likely account for a relatively small number in fall when they are beginning to migrate to overwintering sites. Unless the infestations were at an economically significant level, miticide applications should be avoided if possible. Often, one mite treatment leads to continued mite treatments as the natural balance of predators and beneficials is upset. For these reasons, two-spotted spider mite post-harvest treatments are not recommended unless hopyards were left unharvested and experienced extremely high populations. Refer to the article "[Michigan hop update - July 31, 2014](#)" for more information on managing two-spotted spider mites.



Figure 4. Two-spotted spider mite, eggs and cast skins. Photo credit: Erin Lizotte, MSU Extension

Sanitize and fertilize in the fall

Growers should also consider the importance of sanitation at this time. Removal of all bines and leaves from the hopyard is recommended after the first hard freeze. Plant tissues can harbor insects and disease and should be removed, buried or burned. Growers who did not harvest this year (as in first year hops) are advised to remove the plants after a hard frost to prevent increased pest and disease pressure next season.

Growers planning to utilize compost fertilizer can apply it this fall. Recommendations from the west suggest applying a couple of shovels full directly onto and around the crown. Conventional wisdom also suggests watering the bines just before shutting down the irrigation for the year, particularly in areas without good snow cover where desiccation might be an issue this winter. Growers are advised to not fully saturate the soils, but keep the final watering moderate, particularly on heavier soils where rot could become an issue. Growers may also consider sub-soiling between rows in areas in need of better drainage, applying herbicides for perennial weed control, and removing unproductive or diseased crowns.

Take time to evaluate the season

Lastly, it is well worth a grower's time to set aside a moment to reflect on the season. Take note of trouble areas in the hopyard and consider planning how to address pest or nutrient issues in the following season. It is also recommended that growers review their spray records and ensure they are complete.

For more information on record keeping, visit the [resources page](#) of the [MSU Pesticide Safety program](#). For more information about growing hops in Michigan and the Great Lakes region, visit hops.msu.edu.

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inbox, visit <http://bit.ly/MSUENews>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

MICHIGAN CERTIFIED PESTICIDE APPLICATORS: TIME TO RENEW YOUR RECERTIFICATION ?

Now is the time to renew your pesticide certification if it expires Dec. 31, 2014.

Posted on **September 26, 2014** by **John Stone**, MSUE News, MSU Pesticide Safety Education Program

It is certification renewal package mailing time for those of you having Dec. 31, 2014 expiration dates on your certificates, also known as your purple or green cards. The renewal notice and other important information will arrive by mail the first week of October. The mailing address the [Michigan Department of Agriculture and Rural Development](#) (MDARD) uses is the one given at last renewal. Applicators who moved since October 2011 and did not change their address with MDARD might not receive the renewal notice. The MDARD Call Center, 1-800-292-3939, can assist you if you do not receive the mailing.

For applicators renewing by exam, the renewal package will have a schedule of where and when exam sessions will be in your area. Many of these will have a Core Manual review class in the morning and exams in the afternoon. The reviews are done by [Michigan State University Extension](#) educators or MSU Pesticide Safety. The [MSU Pesticide Safety Education Program](#) posts information and costs of programs it conducts on their website, www.pested.msu.edu. Extension programs are posted on the [MSU Extension Events page](#). Save time and expenses of traveling to the regional exam locations by taking advantage of these sessions in your area. Applicators renewing by exam must reserve a seat online at www.michigan.gov/pestexam, or by phone with the Call Center, 1-800-292-3939. This insures all of the exams you need are available that day.

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SAVE THE DATE - FARM TRANSITION AND FARM SUCCESSION PLANNING

Date: November 10, 2014 - November 12, 2014

Time: 8 a.m. - 12:30 p.m.

Location: Northwest Research Station, 6686 South Center Highway Traverse, City, Michigan 49684-9550

Contact: Northwest Research Station, 231-946-1510

An attorney, MSU Extension educators and industry experts with a specialization in farm business succession and estate planning will discuss how to meet the challenges to transfer the farm business to the next generation, and other options to transfer a farm business as part of an estate plan.

This series of three-half day sessions will take business owners through the steps to plan transitioning the farm to a new successor or successors. Participants will learn the building

blocks of a transition plan, communicating goals, how to determine if the business is financially viable enough to take on a new partner, building and implementing the plan, how to effectively work with a qualified attorney, how to evaluate what is fair for the successor(s) versus what is equal, options if there is no family successor, different business arrangements and more.

More details will be provided closer to the program.

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WEB SITES 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/>

Information on apples:

<http://apples.msu.edu/>

Fruit CAT Alert Reports has moved to MSU News

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

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