

May 2011 Regional Fruit Grower Newsletter

CALENDAR OF EVENTS

2011

- 5/4-5 New Wine Fundamentals Conference**
East Lansing Marriott University Place
- 5/6 Parallel 45 “First Friday” Meeting**
Wine Grape Vine Training, Pruning & Tying Demo
NWMHRS
- 5/10 Antrim County IPM Updates Begin**
Jack White Farm
- 5/10 Benzie County IPM Updates Begin**
Loy Putney Farm
- 5/11 Leelanau County IPM Updates Begin**
Bardenhagen Farms
- 5/11 Grand Traverse County IPM Updates Begin**
Josh Wunsch Farm
- 5/12 Michigan Grape & Wine Industry Council Meeting**
Chateau Chantal Winery, 10:30 a.m.
15900 Rue de Vine, Traverse City
For more information, contact: Sherri at goodreaus@michigan.gov
- 5/14 Natural Shoreline Landscapes**
<http://agbioresearch.msu.edu/nwmihort/natshore411.pdf>
Trinity Lutheran Church
Frankfort
- 5/16 Michigan Medical Marihuana Act**
<http://agbioresearch.msu.edu/nwmihort/mmma.pdf>
Leelanau Co. Government Center
- 6/1 Experimental Winegrape Variety Tasting**
Spartan Cellars, East Lansing
For more information contact: Paul Jenkins, jenki132@msu.edu, 517-648-5099
Paolo Sabbatini, sabbatin@msu.edu, 517-355-5191, x 1302
- 6/3 Parallel 45 “First Friday” Meeting**
Crane Hill Vineyards, Leelanau Co.
Shoot thinning, leaf pulling
- 6/30 (Thurs.) Parallel 45 “First Friday” Meeting**
Location & Topic TBA
- 7/29 Supplemental Revenue Assistance Payments for 2009 Losses Deadline**
- 8/5 Parallel 45 “First Friday” Meeting**
Location & Topic TBA
- 8/8 FSA Emergency Loan Deadline**
- 8/25 NW Station Open House & Equipment Show**

2011 HANDS-ON TREE FRUIT IPM UPDATE SERIES

Erin Lizotte, MSUE

Please note the changes to meeting times!

Once again, we will host a series of hands-on IPM workshops that will be held throughout northwest Michigan during the 2011 growing season. Tree fruit growers are encouraged to bring examples of pests and damage found on the farm to the meetings for identification and discussion. Each week will characterize a different time in the season and distinct weather patterns, which in turn will present a unique set of pest problems and management strategies that will be discussed. These meetings are **free** and do not require registration. Pesticide recertification credits and certified crop advisor continuing education credits will be available. Feel free to attend the meetings at any location or time that is convenient for you!

Leelanau County

Location: Jim and Jan Bardenhagen Farm, 7881 Pertner Road, Suttons Bay

Dates: May 11, May 18, May 25, June 1, June 8, June 15, June 22, June 29

Time: 12-2 pm

Grand Traverse County

Location: Josh Wunsch Farm, Phelps Road Packing Shed, Old Mission

Dates: May 11, May 18, May 25, June 1, June 8, June 15, June 22, June 29

Time: 3-5 pm

Benzie County

Location: Loy Putney Farms, 4286 Raymond Road, Frankfort

Dates: May 10, May 24, June 7, June 21

Time: 2-4 pm

Antrim County

Location: Jack White Farm, M-31, south of Elk Rapids on the southeast side of M-31

Dates: May 10, May 24, June 7, June 21

Time: 10-12 pm

TRELLIS NEWSLETTER FOR GRAPE GROWERS TO END

Duke Elsner, Extension Educator

As they say, "it was a good run," but the end has come for the Trellis Newsletter. From this point on all articles, information, and event notifications pertinent to the grape and wine industry in the Grand Traverse region will be incorporated into the Michigan Grape & Wine Newsletter, which is produced by Paul Jenkins at Michigan State University. Paul and his staff, supported by contributors in the principal grape producing regions of the state, have developed this into a very high quality source of information for the state. Growing season editions contain crop development and pest scouting information. You will find it to be interesting, thorough, and very valuable. It is produced and distributed weekly during much of the growing season.

Those of you that have been receiving the Trellis Newsletter will be automatically added to the distribution list of the Michigan Grape & Wine Newsletter. Hopefully, you have already received an email with the April 21, 2011 edition as an attachment. If you did not, contact me as soon as possible and we will make sure the next one comes through. You can find back issues from 2010 at

<http://www.isaacslab.ent.msu.edu/2010.htm>.

2011 NW WINE GRAPE 'FIRST FRIDAY' MEETINGS

Sponsored by Parallel 45 Vines & Wines

Info: Jay Briggs, 231-499-0763; Duke Elsner, 231-357-8353

Please note that all meetings to not fall on a Friday this year due to holidays and schedule conflicts.

May 6

3-5PM

NWMHRS - Leelanau

Topics: Vine training, pruning, tying

June 3

3-5PM

Crane Hill Vineyards - Leelanau

Topics: Shoot thinning, leaf pulling

EXPERIMENTAL WINEGRAPE VARIETY TASTING

Sponsored by MSU Extension

Info: Paolo Sabbatini, 517-355-5191 X1302;

Paul Jenkins, 517-648-5099

In 2008, research trials were established in Southwest and Northwest Michigan to evaluate the potential for new winegrape varieties (National NE1020 Project). More than 20 experimental wines were made from these new varieties, and this is the first opportunity to critically examine their potential for commercial production. Please note this is not a consumer event; it is targeted to commercial winemakers and growers. June 1, 1-4:30PM Spartan Cellars - East Lansing. Cost - \$20 per person.

CHANGES TO THE CODE-A-PHONE

Due to high cost and limited use, the Code-A-Phone will not be available this season. Don't worry-- we still want to keep in touch and deliver the most accurate and timely information and recommendations! If you have been a devoted Code-A-Phone caller in the past, you have two options for receiving the information this year. We will be distributing the pest report and relevant seasonal data via email or fax. To sign up for either service, please contact Jackie Baase at (231)946-1510 or baase@msu.edu. Subscribers will receive a weekly report and additional information as needed throughout the week via email/fax.

CAT ALERTS ARE MOVING TO JOIN NEWS.MSUE.MSU.EDU

CAT Alerts are joining a new effort to bring you more timely information from MSU Extension.

Joy Landis, Crop Advisory Team Alert editor

Michigan State University Extension is launching a new website to bring all of its ag-based information into one location. This includes the articles written by the CAT Alert teams. The new site is:

news.msue.msu.edu

The concept behind the new web is to make it easier for readers to access a range of relevant information from MSUE. For example, a grower with a farm market can easily read the fruit, vegetable and business topics. A dairy farmer can read about milking equipment as well as field crop articles about pest management in forages. A landscaper can get additional ideas from our garden team. Crop farmers can find out what MSU research is reporting about the bioeconomy.

The CAT Alert websites will no longer post new articles as all new information will be at the new site (news.msue.msu.edu). In the near future, past articles from the CAT Alerts will be searchable at the new site. In the meantime, you can continue to search past articles here at the CAT Alert website. **If you currently receive email notification from us when new articles are posted, we will continue to provide that service for the new site.**

You'll note that the tan navigational bar on the left contains links to categories that match the names of the CAT Alerts (field crops, vegetables, etc.). I hope you will click around and explore several categories to learn the breadth of information that is at your fingertips. Note that the search function will improve as Google returns to index the site a few more times.

We value your input about the new site – your suggestions and feedback will help us improve and can be sent to this address: catalert@msu.edu.

SENATE AGRICULTURE COMMITTEE FIELD HEARING

Debbie Stabenow, Chairwoman

U.S. Senate Committee on Agriculture, Nutrition and Forestry

As the new Chair of the U.S. Senate Committee on Agriculture, Nutrition and Forestry, I am writing to invite you to the first official field hearing on the upcoming reauthorization of our nation's Farm Bill. Senator Pat Roberts from Kansas, who is the Ranking Member on the Committee, will be joining me for the hearing

Senate Agriculture Committee Field Hearing

Tuesday, May 31, 2011

9:00 am – 12:00 pm

Kellogg Center, Michigan State University, East Lansing, MI

<http://www.kelloggcenter.com/about/location.html>

Congress considers the Farm Bill only once every five years. As you know, this legislation has broad implications for agriculture as well as sweeping impact on our energy, conservation, rural development, research, forestry and nutrition policies. This is your opportunity to make your voice heard and to be a part of the official record of committee debate.

You may participate in the hearing by submitting written testimony which will be included in the official record of the hearing. Three copies of your testimony can be submitted at the hearing or can be sent to the Committee no later than June 7, 2011. You may also submit questions for possible consideration by the panel members during a limited question and answer period before May 26, 2011. Send your testimony or questions to aghearing@ag.senate.gov or to US Senate Committee on Agriculture, Nutrition and Forestry, 328A Russell Senate Office Bldg, Washington, D.C. 20510. If you previously submitted testimony and questions, there is no need to resubmit.

For up-to-date information on the hearing and Farm Bill process, you can visit the Senate Agriculture Committee website at ag.senate.gov.

To RSVP for the hearing, contact the Agriculture Committee Office at [202-224-2035](tel:202-224-2035) or email aghearing@ag.senate.gov.

FARM SERVICE AGENCY EMERGENCY LOANS

James L. Monroe, Farm Loan Manager
USDA, Farm Service Agency

Due to natural disasters in 2010, eligible family farmers in Northwestern Michigan may qualify for Farm Service Agency emergency loans. To be eligible, farmers in a designated disaster county or a contiguous county must have suffered a 30% loss in crop production due to the designated disaster weather conditions. The **deadline for filing** an emergency loan application is **August 8, 2011**.

Disaster designations:

1. Thirty two counties in Michigan have been designated as natural disaster areas due to frost and freezing weather that occurred March 1, 2010 and ended May 16, 2010. Antrim, Benzie, Grand Traverse, Leelanau, Manistee, and Otsego are designated as primary disaster counties; twenty five counties are contiguous including Charlevoix, Crawford, Kalkaska, and Wexford.
2. Thirty six Michigan counties have been designated as natural disaster due to the combined effects of various severe storms with excessive rain, high winds, hail, flooding, flash flooding, and lightning that occurred on or after January 22, 2010. Antrim, Grand Traverse, Kalkaska, and are primary disaster counties, thirty four counties are contiguous including Charlevoix, Crawford, Manistee, Roscommon, and Wexford.
3. Twenty one Michigan counties have been designated as natural disaster areas due to drought and excessive heat, including unseasonably warm late winter and early spring temperatures that occurred on or after January 1, 2010. Antrim, Benzie, Grand Traverse, Leelanau, and Otsego are primary disaster counties; twenty one counties are contiguous including Charlevoix, Crawford, Kalkaska, Manistee, Roscommon, and Wexford.

Please call your local FSA office to apply for disaster assistance:

Bellaire (231) 533-6450 x 2
Traverse City (231) 941-0951 x 2
Petoskey (231) 347-2133 x 2
Cadillac (231) 775-7681 x 2

Farm Loan Program staff headquartered in the Traverse City USDA Service Center (231) 941-0951 x 109.

FRUIT GROWERS: IF THE 2010 FREEZES CAUSED SIGNIFICANT LOSS, YOU MAY QUALIFY FOR DISASTER PAYMENTS

Curtis Talley, Jr., Michigan State University Extension

Growers in many Michigan counties suffered extensive, and sometimes total, crop loss during the spring of 2010 due to freezing temperatures that killed the fruit blossoms. The 2008 Farm Bill has built-in disaster aid called the supplemental revenue Program (SURE) that may provide disaster payments in those situations. SURE covers all crops, including fruits and vegetables, and makes payments to eligible producers that incurred crop production or crop-quality losses. This provides an economic safety net for losses caused by natural disasters such as freezes, hail, winds and other weather related damage.

The Farm Service Agency has declared all Michigan counties eligible for 2010 crop losses. To qualify, producers must have had some type of crop insurance coverage for all crops. SURE is disaster coverage if you purchase Catastrophic (CAT) insurance, NAP (Noninsured Assistance Program) or other crop insurance. SURE is bonus coverage and provides 15% additional coverage for those that already have some type of crop insurance.

The SURE payment is calculated using a formula that includes the SURE revenue guarantee, the SURE revenue cap and the actual revenue received from crop sales, crop insurance indemnities and direct payments for program crops such as corn, wheat and soybeans. The formula looks at revenue from all sources and all crops to determine if total farm revenue was below the SURE guarantee.

The SURE payment = SURE guarantee less all revenue received x 60%.

There is no fee to be covered under SURE, other than the fee for crop insurance or NAP insurance. Stay in contact with the Farm Service Agency in your county to determine when sign-up for 2010 crop losses begin. The deadline for sign-up for 2009 losses is **July 29, 2011**, so sign-up for 2010 crop losses may not begin until early 2012.

**USDA RURAL DEVELOPMENT ANNOUNCES 2011 FUNDING FOR
RURAL ENERGY FOR AMERICA PROGRAM (REAP)
AGRICULTURAL PRODUCERS IN NON-RURAL AREAS ARE NOW ELIGIBLE
FUNDING MAY BE USED FOR FLEX-FUEL PUMPS**

The United States Department of Agriculture is providing funding of \$42 million in grants and up to \$61 million in guaranteed loans nationally through the Rural Energy for America Program (REAP). Funds are available to help agricultural producers and rural small businesses develop renewable energy systems, make energy efficiency improvements and conduct studies to determine the feasibility of renewable energy systems.

New to this year's REAP program is flexible fuel pumps, sometimes referred to as "blender pumps." It is intended to provide fuel station owners with incentives to install flexible fuel pumps that will offer Americans more renewable energy options. The Obama administration has set a goal of installing 10,000 flexible fuel pumps nationwide within 5 years.

Michigan USDA Rural Development will have approximately \$800,000 for grant requests greater than \$20,000; approximately \$482,000 available for grants less than \$20,000; and \$1.6 million available for REAP guaranteed loans. Once the state allocation has been exhausted, unfunded applications will then compete nationally.

Eligible projects in the 12 technology areas include:

- anaerobic digesters,
- biomass / biofuels,
- flex-fuel pumps
- geothermal (including electric generation and direct use),
- hydrogen
- solar (small and large)
- small hydropower projects (30 megawatts or less),
- wind (small and large), and
- energy efficiency improvements.

Examples of energy efficiency projects include, but are not limited to: the installation of more energy efficient motors, pumps, fans, blowers, compressors, grain dryers, irrigation projects, refrigeration units, ventilation systems, windows, insulation, heating systems, lighting systems, and plumbing fixtures. Please note, costs associated with increases in capacity will be reduced from total eligible project costs.

Grants can cover up to 25 percent of total eligible costs. The minimum energy efficiency grant is \$1,500 and maximum is \$250,000. The minimum renewable energy grant is \$2,500 and maximum is \$500,000. For feasibility study grants, the maximum award is \$50,000 or 25 percent of eligible study costs, whichever is less. Guaranteed loans can cover up to 75 percent of total eligible cost. Loan limits are a minimum of \$5000 and a maximum of \$25 Million.

Applications will be evaluated and selected based on the highest scoring projects and will be funded until all funds have been awarded. To be considered for any 2011 funding, all applications must be completed and received to the USDA Rural Development State Office or Area Offices, no later than June 15, 2011. Neither complete nor incomplete applications received after this date will be considered for fiscal year 2011 funding.

For further program information contact the USDA Rural Development Business Programs Division in the East Lansing State Office at (517) 324-5157.

USDA, through its Rural Development mission area, administers and manages housing, business and community infrastructure and facility programs through a national network of state and local offices. These programs are designed to improve the economic stability of rural communities, businesses, residents, farmers and ranchers and improve the quality of life in rural America. Rural Development has an existing portfolio of more than \$149 billion in loans and loan guarantees. Visit <http://www.rurdev.usda.gov> for additional information about the agency's programs or to locate the USDA Rural Development office nearest you.

USDA is an equal opportunity provider, employer and lender. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 795-3272 (voice), or (202) 720-6382 (TDD).

NEW FACTSHEET COVERS THE WAYS GROWERS CAN AUTOMATICALLY FAIL AN AUDIT AND SUGGESTS WAYS OF AVOIDING THEM

Phil Tocco, Michigan State University Extension

There are some situations that stop an audit in its tracks. These situations force the auditor to assess a farm as automatically unsatisfactory and can spell disaster for a grower. It's important for growers to understand these situations so as not to be caught off guard.

Situations that can cause an automatic unsatisfactory are:

- The presence of an immediate food safety risk
- The presence or evidence of rodents or excessive insects during packing or storing
- Observations of employee practices that may jeopardize food safety
- Falsification of records
- Not having a designated food safety person on staff
- Not having a GAP Manual.

By making sure these major components to food safety are in place, you can avoid a very short, unsuccessful audit. Avoiding these major hurdles will not guarantee that you will pass an audit, but they do get you one step closer.

If a grower has specific questions or has difficulty tailoring GAPs to their farm, they are welcome to contact the **Agrifood Safety Work Group** at gaps@msu.edu or 517-788-4292. For more information on an automatic unsatisfactory, ask for bulletin AFSM032-01 in your email or phone conversation. For more pesticide and fertilizer application policy information, check out the **Agrifood Safety Minute**.

GET NOTIFIED OF FREEZING CONDITIONS, 24 HOURS A DAY, SEVEN DAYS A WEEK

Beth Bishop, Michigan State University Extension, Enviro-weather

If you'd like to receive advanced warning of potential frost-freezes, **Enviro-weather's** new Frost Alarm may be just what you are looking for. This new, premium service is available by subscription. For \$100 per year, you can monitor weather at one or more **Enviro-weather** stations and choose the exact weather conditions you wish to be notified for. If the selected station(s) records weather data

meeting specified conditions, an alarm is generated and you are notified by phone call, text message, or email.

For each station chosen, users can select a combination of temperature, dew point, wind speed and temperature drop (Figure 1).

The screenshot shows a web form titled "Set up your new Frost Alarm". It contains several sections: "I want to monitor the weather at:" with a dropdown menu showing "East Lansing (MSUHort)"; "Start my alerts on:" with a date picker set to "Mar 15 2011"; "End my alerts on:" with a date picker set to "Mar 29 2011"; "I would like to be contacted by:" with three checkboxes for "E-mail", "Text messaging", and "Phone call"; and "Alert me when" which includes a section for "Situation 1:" with a dropdown menu showing "Temperature" selected, a "less than" operator, and a text input field followed by "* F". Below the situation section are buttons for "Add situation" and "Review and confirm".

Figure 1. Setting up your frost alarm; selecting weather stations and conditions to generate the alarm.

Users can combine as many weather conditions, such as temperature, temperature drop, wind speed and dew point, as they wish for one alarm. For example, users can choose to be notified if the temperature is less than 35°F and the dew point is less than 32°F. In that case, an alarm would be generated if the temperature was 34°F and the dew point was 29°F. But it would not be generated if the temperature was 34°F and the dew point was 33°F.

Users can also create multiple situations, or unique combination of conditions, for a station. Each situation will generate a separate alarm when conditions are met. They can choose to monitor conditions at as many stations as they want (Figure 2).

View/Edit my Frost Alarms

Station	Start Date	End Date	Contact by	Situations that raise alert
Service #1: Active				
Bath	3/15 2011	3/19 2011	E-mail, Phone	1. Dew point < 30 ° F, and Temperature < 34 ° F
View past alerts		Edit this service		Suspend alerts
Service #2: Active				
East Lansing (MSUHort)	3/15 2011	3/29 2011	E-mail	1. Temperature < 34 ° F, and Windspeed < 3 miles/hour
View past alerts		Edit this service		Suspend alerts
Service #3: Active				
East Lansing (MSUHort)	3/15 2011	5/29 2011	E-mail	1. Temperature < 32 ° F
View past alerts		Edit this service		Suspend alerts

Figure 2. This user has set conditions for three different situations that could generate a frost alarm. He has chosen to be notified by email and by phone if the Bath weather station registers dew points less than 30°F and temperatures less than 34°F. He will also receive an email notice if the temperature at the East Lansing MSU Horticulture station is less than 34°F with a windspeed of less than three miles per hour. He will receive an email alarm if the temperature at this station is less than 32°F.

To sign up, visit Enviro-weather and view the [Frost Alarm Service information](#). Click on the bold link in green text that says “can sign up beginning March 1”, then click on “Data and Service Subscriptions.”

Please contact me, Beth Bishop, at bishopb@msu.edu or 517-432-6520 with your questions, comments and suggestions.

DRIFTWATCH WEBSITE NOW AVAILABLE IN MICHIGAN TO REGISTER PESTICIDE SENSITIVE SITES

Diane Brown, Michigan State University Extension

If you are a grower who has had problems from herbicide or other pesticide drift onto sensitive crops, or a commercial applicator wishing to avoid pesticide drift issues, this information should be of interest to you.

Driftwatch, also used to protect sensitive habitats, was originally devised at Purdue University for use in the state of Indiana, but is now available for other Midwestern state, including Michigan. The Driftwatch website has been created to help avoid pesticide spray drift problems in unintended areas by connecting growers of pesticide-sensitive or organic crops with commercial applicators and companies that apply crop protection materials to nearby fields. Locations of bee colonies can also be registered by apiaries.

This site is not intended for homeowners. It is only for registration of commercial fields and ecologically sensitive areas that are at least one-half of an acre in size. The site uses Google maps to find a specific area. Registered sites appear as a pop-up balloon on the map with a letter designation signifying the type of crop at the site. Clicking on the balloon brings up the crop registered and the registrant's name. Complete directions for registering as either a producer or an applicator can be found on the Driftwatch site.

This web-based program allows growers of pesticide adverse crops or organic crops to register the locations of their fields in a database maintained by a central agency. Applicators can also register and check the website's database for registered field areas before spraying operations take place. Registered

applicators also receive email messages alerting them to new drift-sensitive fields that have been added to the database.

The Driftwatch program can only be successful if growers take the time to register and list the location of their fields and applicators register and use the website to locate no-drift locations before beginning spray operations. Growers who have registered their fields as sensitive sites can order and post highly visible "no-drift zone" signs at the Driftwatch website.

LARGE QUANTITY WATER WITHDRAWALS REQUIREMENTS

Lyndon Kelley, Michigan State University Extension

Large quantity water withdrawals – those with capacity of 70 gallons per minute or greater – are common features on many Michigan farms. We all think about irrigation and processing water, but many cooling systems in fruit, vegetable and dairy production are larger than the 70 gpm or greater threshold for registration and reporting. Many new livestock and greenhouse expansions will raise water needs to where a producer needs to be aware of the law's requirements.

Large quantity water withdrawals proposed after June 8, 2009, must receive a favorable assessment from Michigan's Water Withdrawal Assessment Tool or an approval from a requested site-specific review by the Michigan Department of Environmental Quality (MDEQ) and be registered before proceeding. If a site-specific review by the MDEQ or an evaluation by the Water Withdrawal Assessment Tool determines that a proposed withdrawal is a Zone A or a Zone B withdrawal, there is a rebuttable presumption that the withdrawal, as specified in the review or tool, will not cause an adverse resource impact. Beginning February 28, 2006, a person shall not make a new or increased large quantity withdrawal that causes an adverse resource impact. A person who knowingly makes a new or increased large quantity withdrawal that causes an adverse resource impact may be subject to a civil fine of not more than \$10,000 per day of violation. Falsifying a record submitted in this process may result in a civil fine of not more than \$1,000.

Here is an overview of what you need to do to legally get LV water withdrawal:

- Determine need pumping capacity and probable location for the new withdrawal.
- Work through the Michigan Large Volume Water Withdrawal Assessment Tool (MiWWAT) for a determination.
- If the MiWWAT assessment is green (Zone A) or yellow (Zone B), you can proceed to register your purposed water withdrawal. Building can happen in the following 18 months and any small modification can be noted by returning to the tool and modifying your original request.
- If the MiWWAT assessment is orange (Zone C) or red (Zone D), try to modify location or well depth to reduce stream flow impact. If more favorable assessment cannot be achieved, a Site Specific Review may be requested from the Michigan Department of Environmental Quality through the MiWWAT tool.
- If the MDEQ Site Specific Review does not provide a favorable registration to proceed, the landowner may initiate a meeting of large volume water users to investigate reduction in water use by fellow large volume water users. MDEQ would like to be kept informed during the process. Resolutions resulting in reduced water use by current large volume water users making water available to a new user would need to be approved and documented by MDEQ.

If the meeting of large volume water users does not provide MDEQ with sufficient reductions in use by other riparian to allow your proposed water, civil court action may be necessary to establish the riparian right to water use for the parcel.

COPPER FORMULATIONS FOR FRUIT CROPS

Bill Shane and George Sundin, MSU Extension, Department of Plant Pathology

Copper is a metal widely used in agrichemical products to control a wide range of fungal, bacterial, and other pests. This article provides a general summary of copper compounds, many of which are used in fruit growing. Copper is toxic when the dissolved form penetrates into plant tissue. In general,

growers should avoid the use of spray additives such as foliar nutrients, and any surfactants with penetrating characteristics when applying coppers. Fixed copper and lime should not be used with Guthion, Imidan, Sevin, Thiodan, Bayleton, captan, carbamate (Ferbam), syllit, or phosphorus acid-type compounds (Fosphite, ProPhyt, Phostrol, Agri-Fos, Aliette). Check product labels for further details.

Commercial copper products differ in the copper form, the amount of formulated copper compound in the product, the amount of metallic copper (active ingredient), and whether it is liquid or a dry formulation. Copper compounds can be compared on the basis of how much metallic copper is contained in a gallon or pound of product. More metallic copper means more phytotoxicity potential, but this is not the whole story. Copper forms differ greatly in the availability of free copper ions released on wet plant surfaces, as indicated by the three major groups as follows.

Copper sulfate is highly soluble in water, and compatible with lime and oil if mixed properly. Copper sulfate has a greater potential for phytotoxicity than “fixed” coppers and thus is generally combined with lime to help tie up the copper ions. Compounds labeled as basic copper sulfate and copper sulfate pentahydrate are generally highly soluble forms, although chemical companies may include components such as gypsum that help to tie up copper ions on plant surfaces.

Copper hydroxide, copper oxychloride sulfate (COCS), and tribasic copper sulfate (cupric sulfate, tricupric hydroxide, hemihydrate) are all “fixed” coppers that are less soluble than copper sulfate forms.

Copper salts of fatty and/or rosin acid are not compatible with lime, but have some of the “fixed” copper characteristics of less copper ion burn potential on plant surfaces.

Copper compounds with finely ground copper components are more “active” against pathogens and are potentially more phytotoxic because of the better distribution and greater tendency to go into solution compared to coarser formulations.

Table 1. Copper product summary – check label for allowed use on crop.

Product	Copper form	Amount of formulation	Metallic copper equivalent	Unit type	metallic copper per unit
Dry formulations					
Copper sulfate = bluestone = blue vitriol	Copper sulfate pentahydrate*	99%	25%	1 lb	0.25 lb
Kocide 101	Copper hydroxide	77.0%	50%	1 lb	0.50 lb
Champ WP	Copper hydroxide	77.0%	50%	1 lb	0.50 lb
Nu-Cop 50DF	Copper hydroxide	77.0%	50%	1 lb	0.50 lb
Kocide 2000	Copper hydroxide	53.8%	35%	1 lb	0.35 lb
Kocide DF	Copper hydroxide	61.4%	40%	1 lb	0.40 lb
Kocide 3000	Copper hydroxide	46.1%	30%	1 lb	0.30 lb
Basic Copper 53	Basic copper sulfate	95%	53%	1 lb	0.53 lb
Cuprofix Ultra 40D	Basic copper sulfate= $\text{CuSO}_4 \cdot 3\text{Cu}(\text{OH})_2 \cdot \text{H}_2\text{O}$	71.1%	40%	1 lb	0.40 lb
Basicop	Basic copper sulfate	95%	53%	1 lb	0.53 lb
Cuprofix Disperss *	Basic copper sulfate	36.9%	20%	1 lb	0.20 lb
C-O-C-S WDG	Copper oxychloride sulfate	79%	50%	1 lb	0.50 lb
Copper oxychloride + basic copper	53%	53%	1 lb	0.53 lb	

Product	Copper form	Amount of formulation	Metallic copper equivalent	Unit type	metallic copper per unit
sulfate					
Liquid formulations					
Champ 2F = Champ liquid copper = Champium Formula 2	Copper hydroxide	37.5%	24.4%	1 gal	3.00 lb
Cueva Fungicide Concentrate**	Copper octanoate (copper salt of fatty acid)	10%	1.8%	1 gal	0.15 lb
Tenn-Cop 5E**	Copper salts of fatty and rosin acids	58.0%	5.14%	1 gal	0.43 lb
Copper-Count-N	Copper ammonium carbonate	31.4%	8%	1 gal	0.784 lb
CS 2005	Copper sulfate pentahydrate	19.9%	5%	1 gal	0.418 lb

Note: Check labels for crops listed. Copper sulfate formulations are generally more soluble than other types and thus are more prone to phytotoxicity and washoff unless combined with lime as a safening agent. *Cuprofix Disperss, a copper sulfate formulation, also contains gypsum, a calcium containing compound which provides some safening of the copper, much like the lime in Bordeaux. ** Fatty and rosin acid forms are not compatible with lime.

Credits and further information

Spring copper sprays for fruit diseases by Dr. Dave Rosenberger, Cornell University, Scaffolds Newsletter, Vol. 20, No. 2, March 28, 2011.

<http://www.scaffolds.entomology.cornell.edu/2011/110328.pdf>

Ritchie, David. Copper-containing fungicides/bactericides and their use in management of bacterial spot on peaches. Southeast Regional Newsletter. Vol. 4, No. 1, March 2004.

<http://www.caes.uga.edu/commodities/fruits/gapeach/pdf/copperformulations.pdf>

STAY AHEAD OF APPLE SCAB IN 2011

George W. Sundin, MSU Extension, Department of Plant Pathology

With the warm (I would say hot) weather this past weekend, orchards in Southwest Michigan should all be at or approaching green tip and other regions will not be too far behind. Although we are well behind last year in terms of development, the party is over and apple scab season 2011 is ready to fire up. During this spring and even under snowcover, the apple scab fungus has been undergoing its sexual cycle and producing primary ascospores in infected leaves that have overwintered on the orchard floor. Spore release is triggered by wetting events and occurs mostly during daylight hours. The number of hours of wetting it takes for an infection event to occur (spore release, landing on green tissue, spore germination, growth, and infection) decreases as temperatures warm, to a minimum of 9 hours when temperatures average between 61 and 75°F (see page 84 of the 2011 *Michigan Fruit Management Guide* for the infection period table). It is always good to review the table as a reminder that more extended wetting periods at cooler and cold temperatures still qualify as apple scab infection periods.

If you had scab in your orchard last year, hopefully you have made some effort at reducing overwintering inoculum via urea application to fallen leaves or leaf shredding by flail mowing ([see a previous article from September 21, 2010](#)). This is a proven practice in inoculum reduction that has become more and more important each year due to our issues with fungicide resistance.

As we were in 2010, we continue to be limited in the availability of fungicide modes of action for apple scab control. Accompanying this fact is the realization that scab is much more difficult to control if inoculum levels are high compared to low. One factor that can strongly influence the amount of scab inoculum in an orchard is early infection. If primary scab infections occur early, at green tip for example, those lesions will be producing secondary spores (conidia) at a timing between pink and petal fall that coincides with what is typically the period of highest primary spore concentration. Thus, early infections can be a killer because they compound the spore load in an orchard, which can lead to significant fruit infection. Yes, there is not a lot of green tissue present in orchards at green tip. But, be certain that spores of the scab fungus can find that tissue; for any spores released at this timing, that is their primary function. And once they land on that susceptible tissue, infection, producing a lesion and conidia becomes the primary function.

When spore loads are high in an orchard, excellent fungicide coverage is essential. *The best tactic to use to maximize fungicide coverage is to spray all middles.*

We have been intensively sampling the scab population in Michigan for the past several years. Most scab isolates are resistant to strobilurin fungicides and also are resistant to SI fungicides. Thus, both of these fungicide classes will be ineffective in scab control. If you are using these classes of fungicides to control other diseases (powdery mildew, black rot, summer diseases), you must remember they will not be effective against scab.

All fungicides used in 2011 should be used as protectants, i.e. sprayed ahead of infection periods. The “blanket” concept is critical here; the protectant spray blankets the orchard providing a barrier on green tissue that kills spores that land there. *Killing spores and minimizing any growth of the scab fungus is the best way to prevent the occurrence of mutations that can lead to fungicide resistance.*

What fungicide choices are still effective in 2011?

EBDCs, Captan. These fungicides are referred to as “contact” or protectant fungicides as they provide a surface barrier on leaves and fruit that kills scab spores and germinating spores. These fungicides include Dithane, Penncozeb, Manzate, Polyram and Captan. These scab protectants typically provide five to six days of protectant activity when used at full rates.

Combinations of Mancozeb fungicides (Dithane, Penncozeb, Manzate) with Captan are especially effective because they combine the excellent retention properties of Mancozeb with the better redistribution properties of Captan. Remember that Captan is not compatible with oil. Redistribution is critical when we experience periods of warmer weather leading to rapid leaf expansion between spray applications.

Anilinopyrimidines – include Vanguard and Scala. These are effective scab materials, but at risk for resistance development. At a minimum, these fungicides should be tank-mixed with a 3 lbs/acre rate of EBDC for resistance management. This class of fungicide is more effective in colder weather. This is a highly systemic material that doesn't redistribute well and is not as effective in controlling scab on fruit. It is a good choice for early-season scab control.

Copper. This is a good green tip spray material for scab control. Copper, at 2 lbs. metallic equivalent per acre represents a separate mode of action that is not at risk of resistance development. Also, copper at this timing will provide some control of fire blight, killing bacteria as they emerge from cankers, unless we receive over 3 inches of rain following the application.

Sterol Inhibitors. Resistance to sterol inhibitors (SI's) in the scab fungus is widely distributed in Michigan orchards. This resistance affects the so-called 1st-generation SI's including Rally, Rubigan, Procure, and Topguard. There are 2nd-generation SI's available including Inspire Super and Indar. The 2nd-generation SI's are more effective against scab than the 1st-generation SI's, and also can control scab in orchards with known SI resistance. However, I would caution against reliance on these materials, particularly with SI resistance at very high levels in Michigan. At a minimum, either Inspire Super or Indar should be tank-mixed with an EBDC to help control SI-resistant scab strains.

Also remember that Inspire Super is actually a combination of two fungicides (the 2nd-generation SI difenoconazole and Vanguard). Thus, there are two modes of action in there, but the Vanguard component is more effective under cooler conditions. An EBDC should still be tank-mixed with Inspire Super because both components of Inspire Super are at risk of resistance development.

Finally, remember that continued use of 2nd-generation SI fungicides is predicted to increase the overall level of SI resistance in orchards.

Sulfur, Ziram. These are weaker protectants. Their shorter duration of protectant activity means more applications are required.

Increasing problems with fungicide resistance in Michigan are requiring alterations in the management of apple scab for 2011 and beyond. I anticipate that management programs will be costly, tiring, and perhaps exasperating. I remember that this was the case last year. Unfortunately, it will be the case for the foreseeable future. We need to realize that the scab fungus does not get “tired.” The nature of this fungus is to produce large quantities of spores that can be wind and rain-dispersed to green tissue and fruit of apples. With high inoculum, multiply those numbers many times over. This is why complete and consistent fungicide coverage is essential. Because of the high numbers of spores, there will always be another spore during the primary scab season that can find unprotected tissue. Keep that tissue protected!

FERTILIZING ORCHARDS WITH LIVESTOCK MANURE

Allen Krizek, Michigan State University Extension

Livestock manure applied in bearing orchards that is not properly composted may contain harmful pathogens that pose a risk of food-borne illness. Fruit can become contaminated with manure in many ways: from containers placed on manured ground, by picker's hands from ladder rungs, by windblown dust from manure application or storage, from dropped fruit and other means.

Growers are advised to check with their buyers to determine if livestock manure can be used in bearing orchards and still meet the buyer's specifications. Some buyers require certified food safety farm audits that do not allow manure applications. Buyers that accept the USDA Good Agricultural Practices (GAP) farm audit, specify raw or un-composted manure should be incorporated into the soil and not applied within 120 days of harvest.

When livestock manure application is allowed by the buyer and the grower wishes to use manure, fall application immediately after harvest and before the ground freezes is suggested. Orchard applications should be made when soils are still warm, not saturated with water and with an actively growing orchard cover crop.

Orchards that are located on sandy soils are discouraged from receiving fall manure application due to the risk of nitrate leaching to the groundwater. Orchards located on sloped sites (greater than 6% slope) must be managed to prevent the runoff of manure to ditches and other bodies of water. Vegetated buffers and a minimum 150 feet setback from surface waters are most effective.

Fruit growers who decide to use livestock manure on bearing orchards should follow additional management practices (listed below) to prevent the loss of manure to both surface and groundwater.

It may be wise to restrict manure applications to non-bearing orchards or new areas to be planted to an orchard. Take special precautions to prevent manure loss to nearby bearing orchards.

Summary tips:

- **Determine if fruit buyer or market will allow** manure applications.
- **Analyze manures** to determine accurate nutrient levels and application rates.

- **Do not exceed nutrient application rates** recommended by MSU.
- **Avoid manure applications where soil P levels are high** (greater than 75 ppm P Bray P1 test).
- **Prevent manure losses** to surface and ground water.

Bearing fruit orchards

Nutrients used in fruit tree and crop production can come from manufactured fertilizers and/or naturally occurring sources such as livestock manures and legume crops. All nutrients, whether synthetic or naturally occurring, can be lost from the orchard system by natural processes such as runoff to surface water, or leaching to groundwater. Managers must minimize nutrient losses to maximize economic production and to protect water resources from contamination.

Livestock manures vary considerably in their nutrient content, depending on their source and handling. The nutrient content of manure needs to be known to calculate appropriate application rates. Nutrient concentrations commonly found in manures are provided in Extension Bulletin E- 852, Fertilizing Fruit Crops (\$2.00 - available from the MSU Extension Bookstore), but specific manures should be analyzed to determine accurate nutrient levels and application rates.

Request manure nutrient content from your supplier, or have the manure analyzed by a reliable laboratory prior to application. A listing of manure testing laboratory is available at: <http://web2.canr.msu.edu/manure/labsites.cfm>

Caution: Fresh manure or manures that are not composted are high in nutrients and can injure tree roots if applied at excessive rates.

Nitrogen (N)

Although optimum N rates for bearing orchards vary considerably from site to site, use rates of 50 pounds N per acres for in the tree row applications and 100 pounds N (broadcast) of N as an initial guide. Be conservative with N rates until you are familiar with the planting. It is much easier to apply additional N than to manage excessive vigor caused by too high rates. Excessive vigor is particularly damaging in new, high-density apple plantings.

Under Michigan conditions, spring and fall applications have been equally effective. Spring applications are suggested on sandy soils because fall applications may result in nitrogen leaching and potential groundwater contamination.

Spring application of manure should be made more than 120 days before harvest, and when soils are warm, not saturated with water and preferably with an actively growing orchard cover crop.

Manure contains ammonium N and organic N. Generally, all of the ammonium N and 25 to 50 percent of the organic N is available to plants during the year of application. Manure analysis reports usually include total N, available N, P205 and K2O.

Manure must be applied so that rates of available N do not exceed those recommended by Michigan State University, to be in conformance with Michigan Right-to-Farm guidelines. In orchards with high testing phosphorus levels (where soils contain greater than 75 ppm P Bray P1 test), manure rates should not supply more P than is typically removed by the crop (about 50 lbs P205 per acre for a bearing orchard).

Manure should not be applied in orchards where soil P levels are very high (greater than 150 ppm P Bray P1 test), to be in conformance with Right to Farm guidelines.

Table 1. Manure application rates to provide a total of 50 pounds of N per acre.

Manure type	N-P ₂ O ₅ -K ₂ O lbs/ton	N available first year	Manure Application Rate	Total N applied
Poultry with litter	56-45-34	42 lbs/ton	1.2 tons /A	50 lbs N
Poultry w/o litter	33-48-34	28 lbs/ton	1.8tons/A	50 lbs N
Dairy with or w/o bedding	9-4-10	6 lbs/ton	8.33 tons/A	50 lbs N

Three factors that have the greatest effect on N requirements are soil type, orchard floor

management and pruning. Orchards on fertile loam soils may require N at only half the recommended rates, whereas those on very sandy soils may require 50 percent more N. Sites previously used for alfalfa may contain high soil N levels and require much less fertilizer. Heavily sodded orchards may require 20 to 50 percent more N than clean cultivated plantings. Similarly, orchards heavily infested with weeds may require higher rates.

Heavy pruning stimulates vegetative growth and can reduce or replace N requirements. Heavily pruned trees should be fertilized lightly if at all.

Phosphorus (P)

Do not apply phosphorus (P) containing materials (manure or commercial fertilizer) unless soil or tissue tests indicate a need exists. Phosphorus is best applied at the time of orchard establishment by incorporating P into the orchard soil. Always prevent soil erosion to bodies of water, as water and wind erosion are the primary transport mechanism for P. Phosphorus enriched waters result in excessive algal growth, decreased water quality and harm to aquatic life.

If soil or tissue test indicate a need for P, apply 200 to 400 lb of P₂O₅/acre. Because P moves very slowly in soil, these rates will sustain most fruit crops for many years.

If the Bray P1 soil test level for P reaches 75 ppm, manure applications should be managed at an horticultural rate where manure P added does not exceed the P removed by the harvested

crop (50 lbs of P₂O₅/A for a bearing orchard). If the Bray P1 soil test reaches 150 ppm or higher, manure applications should be discontinued until nutrient harvest by the orchard reduces P test levels to less than 150 ppm. To protect surface water quality against discharges of P, adequate soil and water conservation practices should be used to control runoff, erosion and leaching to drain tiles from fields where manure is applied.

Potassium (K)

Potassium (K) does not pose a threat to surface or groundwater resources. Apply K when soil or tissue analyses indicate a deficiency exists. Applications of 150 to 300 lb K₂O/acre will correct most deficiencies. Stone fruit plantings on light, sandy soils may require these rates as a maintenance program every 3 to 5 years.

Michigan Right-to-Farm Guidelines for manure applications in the orchard

When followed by producers, the Michigan Right to Farm generally accepted agricultural and management practices (GAAMPs) help protect the waters of the state from the release of pollutants in

quantities or concentrations that violate established water quality standards. Conformance with GAAMPs provides farmers with protection from nuisance lawsuits.

In addition to the management practices recommended previously in this article, other GAAMPs for manure application in the orchard include:

- The amount of manure applied should be known, so manure nutrients can be effectively managed.
- Manures should not be applied within 150 feet of surface water.
- If manure is temporarily stacked in the field/orchard:
 - Keep stockpiles at least 150 feet away from surface waters
 - Keep stockpiles at least 150 feet away from non-farm homes
 - Spread manure as soon as orchard and weather conditions allow
- Application of manure to frozen or snow-covered soils should be avoided.
- Keep records of manure analysis, soil tests and rates of application.

For more information on the Right to Farm GAAMPs, go to: <http://michigan.gov/mda>

HOW TO OPTIMIZE PLACEMENT OF PHEROMONE TRAPS IN YOUR ORCHARD

Diane Brown, Michigan State University Extension

Pheromone traps are an important IPM tool to track moth catches and evaluate pest pressure. Well-placed and maintained traps can greatly improve decision making when it comes to timing insecticide applications, and determining the need for insecticide applications to control codling moth (CM) and oriental fruit moth (OFM). Keep in mind however, that the traps are not a substitute for visual inspection of fruit to look for signs of infestation. Rather, trapping should be used in conjunction with inspecting fruit for injury.

MSU Extension's *Pocket Guide for IPM Scouting in Michigan Apples* (E-2720 – [purchase](#) or [view on-line](#)) has information about scouting for both CM and OFM in apples. The *Pocket Guide for IPM Scouting in Stone Fruits* (E-2840 – [purchase](#) or [view on-line](#)) has detailed information about scouting for OFM in peaches.

There are several types of traps that can be used for monitoring CM and OFM including wing, diamond and delta traps. The plastic delta trap, discussed here, is probably the best option because it is reusable through several seasons, has a large trapping surface, and a removable sticky insert that is easy to replace when the adhesive surface becomes too dirty to catch moths. Traps are available in orange or white. The orange traps are less likely to attract and trap pollinators and other beneficial insects. If you decide to keep the traps to use for additional seasons, remove the spent lures, store traps that have been used for a particular pest species together and be sure that you reuse them for that same species the next year to avoid cross-contamination.

Never place more than one kind of lure in a trap, and avoid re-using the trap with a lure for another species. The pheromones penetrate the trap material, and using a different lure will cause failure of the lure.

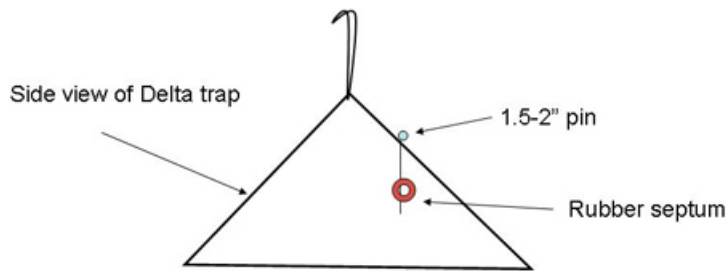


Diagram for mounting lure in pheromone trap

One of the most common lures is a red rubber septum, which resembles a pencil tip eraser. The septum is pre-loaded with pheromone. After assembling the trap, an ingenious way of mounting the lure is to stick a 1.5 to 2 inch plastic-headed sewing pin straight down through one of the top sides, equal distance from both ends. Wearing disposable gloves, pick up the septum, reach inside the trap and stick the pin through the septum widthwise so it hangs horizontally above the bottom of the trap. Then mount all the lures of a single type, change gloves, and switch to the next lure you will need. Wear disposable gloves when handling the lures, and change gloves before you switch to mounting lures for a different species to avoid cross contamination. The sticky bottom can then be slid into the trap, and the side snapped into place.

OFM traps can be placed at a comfortable height for visual inspection. Avoid using outside tree rows for pheromone traps. Place OFM traps 3 to 4 rows in, at least 25 feet apart and at a density of 1 trap per ten acres.

Remove moths, other insects and debris from the trap each time you check it. Trap bottoms should be changed when they are dirty. Follow manufacturer's directions for changing lures, but in general for OFM, change lures each generation. Used lures and lure packaging should be removed from the orchard, not dropped on the ground. Keep trap entrances clear of foliage. Hang bright, colored flagging tape (fluorescent pink works well) on the trees where the traps are located, on the end of the row and make a written reference or map for yourself so you can find the traps again as the season progresses.



Coding moth trap placement

Traps for CM should be hung in the upper third of the tree canopy, on the periphery of the tree with the trap entrances oriented so moths can fly through. A bamboo pole or PVC pole can be used to position the trap high in the canopy. The length of pole needed will depend on the tree height and how high you can comfortably reach. For small to medium-sized trees a 5-6 foot pole should be long enough, but 8-foot or longer poles may be needed for taller trees. Drill a hole near the end of the pole to use for securing the trap. Compress the end of the trap's wire hanger with a sturdy pair of pliers to enable it to slide through the hole in the bamboo pole, and then wrap the wire back around itself to secure the trap. Traps for CM are now ready to hang.

Find a branch high in the canopy to slip the trap over, and adjust it with the pole so that the trap hangs straight down. Once the trap is in place, hang bright, colored flagging tape (fluorescent pink works well) on

the trees where the traps are located, and on the end of the row. Make a written reference or map for yourself in case the tapes get pruned off so you can find the traps again as the season progresses. Keep the trap entrances free of foliage so that moths can follow the odor plume and be lured into the trap. Leaves can be periodically pruned away as the foliage grows.

Traps for CM should be placed at a density of 1 trap/2.5 acres. Place CM traps 3 to 4 rows in and at least 25 feet apart. Remove moths, other insects and debris from the trap each time you check it. Trap bottoms should be changed when they are dirty. When lures are changed, remove both the old lures and the packaging for the new lures from the orchard. Follow manufacturer's recommendations for frequency of changing lures.

There are several lures available that will last for different lengths of time. Some work better in pheromone disrupted orchards than others. High load lures, containing more pheromone, will need to be changed less frequently than standard lures. For codling moth, a combination lure has been developed that contains both pheromones and an ester present in the odor of ripe Bartlett pears. Called the CM/DA lure, it attracts both male and female CM, and has been found by MSU researchers to be useful in monitoring CM in orchards that have been treated with a mating disruption product. Either pheromone based CM lures or CM/DA lures can be used in non- mating disrupted blocks.

References

A Pocket Guide for IPM Scouting in Michigan Apples, D. Epstein and L. Gut, MSU Extension Bulletin, E-2720
A Pocket Guide for IPM Scouting in Stone Fruits, D. Epstein, L. Gut, A. Jones, and K. Maxon-Stein MSU Extension Bulletin, E-2840
Using pheromone traps to monitor moth activity in orchards. ipmnews.msu.edu/fruit May 19, 2009. Larry Gut, David Epstein and Peter McGhee

SECTION 18 SPECIFIC EXEMPTION FOR KASUMIN FOR FIRE BLIGHT CONTROL FOR 2011

George W. Sundin, MSU Extension, Department of Plant Pathology

EPA has granted a **Section 18 Specific Exemption** for the use of Kasumin 2L (kasugamycin) for the control of the blossom blight phase of fire blight in 2011. This use is for orchards where streptomycin-resistant fire blight bacteria are present. The Section 18 is applicable to Berrien, Cass, Grand Traverse, Ionia, Kent, Montcalm, Newaygo, Oceana, Ottawa, and Van Buren counties.

This Section 18 exemption *applies only* to counties where we have detected streptomycin-resistant isolates of the fire blight pathogen *Erwinia amylovora*. We currently have not yet detected any streptomycin resistance in Antrim or Leelanau counties or in eastern Michigan.

Kasumin 2L should be available in each region this year in time for bloom sprays. I want to publicly thank EPA for working quickly to grant the Section 18 this year so that product will be available even in Southwest Michigan in time. Make sure you have the Section 18 label in hand when you are applying Kasumin 2L. Do not apply Kasumin through any irrigation system.

The conditions and restrictions of the Section 18 specific exemption are as follows:

1. Apply Kasumin only when the pathogen is resistant to streptomycin. We have documented streptomycin resistance in all of the counties listed in the first paragraph above.
2. Kasumin 2L may only be applied when the following condition is met: only when the disease forecasting model and/or fire blight state expert determine that the weather conditions favor a disease epidemic.

This condition differs from previous years in that MSU Extension specialists do not have to call for a Kasumin application prior to growers using it. In the past, we have called for Kasumin applications when the Epiphytic Infection Potential (EIP) number from the MaryBlyt model reaches or exceeds 100. This model is available on the Enviroweather website; use the weather station closest to your orchard location

to get local conditions. Make sure to document the MaryBlyt EIP prediction (by printout or screen capture) to include in your spray records.

In summary, the use of Kasumin 2L is limited to epidemic conditions; if these conditions are not present this year, other fire blight control materials such as Mycoshield should be used.

Authorization for use will also come from Michigan State University Extension fruit educators and tree fruit disease specialists via web, radio, recorded message, telephone, email, and handout. **Code-a-phone messages (see numbers below) are the preferred method to get information on use authorizations from MSU.** Code-a-phone numbers are as follows:

- Berrien, Cass, and Van Buren counties (269-657-6380 or 269-944-1477 x805);
- Ionia, Kent, Montcalm, Newaygo, and Ottawa counties (616-451-8065);
- Oceana County (888-345-0515).

Authorizations will be specific to county affected.

3. A maximum of **two sequential applications** of Kasumin can be made at a rate of 2 quarts (64 fl. oz.)/acre. Applications are restricted to ground equipment and cannot be made through any type of irrigation system.

4. A maximum of **three applications** of Kasumin can be used (64 fl. oz. per acre), if authorized. Treatments can be made no later than petal fall.

5. Do not apply Kasumin as the first spray of the season. It should be applied only after the first spray of registered alternatives (usually oxytetracycline or Serenade MAX).

6. Do not use in orchards in which the soil has been fertilized with animal manure. This restriction addresses concerns that kasugamycin resistance could be transferred to *E. coli* bacteria present in animal manure.

7. Upon expiration of the exemption, all unopened and unused product must be returned to the dealer where purchased or to the manufacturer or disposed of in accordance with Resource Conservation and Recovery Act regulations following the expiration of the Section 18 exemption.

Kasumin 2L (kasugamycin), from Arysta, is an alternative antibiotic for fire blight management. Kasumin 2L will work equally on streptomycin-resistant and streptomycin-sensitive strains. The label rate is 2 quarts/acre. I am not aware of any potential issues such as pH sensitivities of Kasumin or possible incompatibilities with other spray materials at this time.

Please note that my lab will also be conducting resistance monitoring in selected orchards this year that use Kasumin. This is to satisfy an EPA directive that we monitor for the occurrence of kasugamycin resistance, and also the potential for resistance to other related antibiotics. We will be taking leaf and soil samples from approximately 10 orchards throughout the state. These monitoring experiments will be conducted after petal fall.

As always, I want to thank Brian Verhougstraete, Pesticide Registration Manager of the Michigan Department of Agriculture for his support of this Section 18 request. Brian submits our request each year and serves as our liaison to EPA.

NATURAL SHORELINE LANDSCAPES PROGRAM

Attached is a flyer on a Natural Shoreline Landscapes Program being offered through Plant It Wild on Saturday, May 14 from 9-1 at Trinity Lutheran Church, Frankfort.

This program has been developed cooperatively between the DNR and MSU Extension. Presenters in Frankfort will also include Mike Jones from the Benzie Conservation District and Carolyn Thayer of Designs in Bloom and Plant It Wild's President. A manual to accompany the class is available as well.

The subject of shoreline protection is an important one. First, many of us live along water, including both rivers and lakes. Second, the shoreline creates an opportunity for us to protect water quality from run-off while also protecting the land from erosion.

If you live on or by the waters edge, we encourage you to attend this class. Further, we hope you will share this flyer with your friends, neighbors and acquaintances who live on the water's edge and encourage them to attend. There will be two classes in our region, one in Traverse City and one in Frankfort. The Frankfort class has a lower participation fee as the event is being underwritten by Plant It Wild. We believe the program is worthwhile and we wanted to assure it was accessible to all.

Contact Roberta Dow, Groundwater Stewardship through MSU Extension for further information and to register. Her information is on the flyer.

Plant It Wild is an independent, non-profit, native plant group based in Benzie and Manistee Counties. Our mission is to foster greater awareness and appreciation of the fragile natural environment in our region. Toward that end we provide educational programming and materials, staff display booths at local events, provide program speakers to clubs and organizations, and maintain a web site. To learn more about Plant It Wild, visit our website: www.plantitwild.org

