Northern Michigan FruitNet 2017
Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – June 6, 2017

CALENDAR OF EVENTS

5/9 – 6/27	**Leelanau IPM Updates** Jim and Jan Bardenhagen's Farm, 12PM – 2PM
5/9 – 6/27	**Grand Traverse IPM Updates** Wunsch Farms Packing Shed, 3PM – 5PM
5/10 – 6/28	**Antrim IPM Updates** Jack White Farms, 10AM – 12PM
5/10 – 6/28	**Benzie IPM Updates** Blaine Christian Church, 2PM – 4PM

What's New?

- **Northwest Michigan fruit update – June 6, 2017**
- **NW MI SWD Trap Counts**
- **Photos from Emily and Nikki's Trip to Japan**

Northwest Michigan fruit update – June 6, 2017

Growers are thinning and protecting sizing fruit from insects as temperatures warm.

GROWING DEGREE DAY ACCUMULATIONS AS OF June 5, 2017 AT THE NWMHRC

Year	2017	2016	2015	2014	2013	2012	27 Yr. Avg.
GDD42	721	782	728	640	674	1028	727.9
GDD50	354	425	386	342	382	563	377.9

2017 Growth Stages as of 6/5/17

Bartlett Pear – 13 mm fruit
Potomac Pear – 13 mm fruit
Mac – 10 mm fruit
Gala – 10 mm fruit
Red Delicious – 9 mm fruit
HoneyCrisp – 11 mm fruit
Montmorency – 10 mm fruit
Balaton – 10 mm fruit
Hedelfingen – 12 mm fruit
Gold – 11 mm fruit
Napoleon – 13 mm fruit
Riesling – 4" – 8" shoots

Weather Report

Daytime temperatures remained relatively cool last week until the weekend when temperatures rose into the 70 and 80 degrees F—these temperatures really made it feel like summer was on its way. So far this season, we have accumulated 721GDD base 42 and 354GDD base 50, and these accumulations are almost spot-on with our long-term averages. The region received some much-needed rainfall in the past week. Last Sunday, 28 May, the NWMHRC Enviroweather station recorded 0.68" of rainfall. The cool temperatures on Memorial Day and early last week were coupled with dreary conditions that amounted to very little rainfall throughout the region. The next big rainfall came on Saturday, 3 June, and the NWMRHC station recorded just over ½" of rainfall. This rainfall event also had high winds and stormy conditions. We had few reports of hail with that event, and no reports of damage to fruit trees. We also have reports of hail with the rain events over the Memorial Day weekend, but no damage reports.

Crop Report

Fruit is sizing well, and the recent warm temperatures have hastened this process. The fruit has sized 2-6mm over the past week. Growers are concentrating management efforts for pests that attack developing fruitlets, and warm weather will likely increase insect activity, which has been low this season with the cool temperatures.

With the cool temperatures earlier this season, we may struggle to obtain good results with our plant growth regulators (PGRs) this season. To this end, we are currently working on multiple experiments to incorporate more PGR use in cherry systems in northern Michigan. We have an Apogee trial in sweet cherries underway, and we are working with ReTain in tart cherries. We also just began a demonstration-type trial to determine if we can remove excess fruit from small tart cherry trees with ethephon applications. We have received many calls and concerns from growers where young non-bearing tart cherries are setting too much fruit for their age. This situation seems to happening more often in the last three years, and it has many impacts on these systems. First, trees that set fruit and potentially overbear in the early years reduce tree growth and even have the potential to runt out. Secondly, trees that bear early are less likely to fill their space properly. Lastly, growers typically do not manage for insects that feed on fruits in these young orchards, particularly spotted wing drosophila (SWD). However, if young trees set a significant crop, these fruits could become a breeding ground for SWD and put undue pressure on adjacent blocks that will be harvested. We hypothesize that cool temperatures at the time of ProGibb applications may reduce the effectiveness of this PGR, and as a result, young trees may have increased fruit set. Winter stress and some have hypothesized that hail have also stressed young trees, which may increase the potential for young trees to set fruit. To address this issue, we are conducting a trial to determine how different timings and rates of ethephon applied to young tart cherries will remove fruit from these young trees.

This cool spring may have also influenced thinning efforts. Some growers are currently ramping up their next thinning application, particularly as most cultivars are at the optimal thinning time: 10-12mm at the NWMHRC. The forecast is predicting warm daytime temperatures, and these temperatures will increase thinning activity. However, the carbohydrate thinning model shows that the NWMHRC will have no stress, and the model recommends increasing thinning rates by 15%. We have been using precision orchard management tactics to help drive our thinning activities at the NWMHRC, and this strategy has been working effectively.

Pest report

There have been several wet days in the last two weeks, and Enviroweather reported long disease infection periods throughout the region that resulted in moderate and heavy cherry leaf spot and apple scab infections. We have received isolated reports of cherry leaf spot lesions showing up likely from 22-25 May rain events. Growers will need to be diligent with leaf spot management moving forward into the season, particularly in orchards that already have conidial growth on the leaves to prevent the spread of infection. Fortunately the coming week is forecasted to be dry, which will be a welcomed break from disease pressure.

Primary apple scab is ongoing at this time and although spore catches have been low, we encourage growers to continue management programs. Primary apple scab is also ongoing in the Fruit Ridge area and the end of primary in northwest Michigan typically follows behind the Ridge. Recent wet conditions have resulted in several infection periods, and apple scab lesions are appearing on leaves likely as a result of long periods of wet weather from 22-26 May.

Many areas had tag bloom open over the weekend, and growers with orchards in bloom sprayed for fire blight in advance of the weekend rains and stormy conditions. Reports of fire blight symptoms are low so far this season. We are working with Dr. George Sundin's lab to continue monitoring for resistance, and we ask growers/consultants to contact the NWMHRC if fire blight infected shoots and ooze are present. We can collect samples and send them to the Sundin lab to test for fireblight resistance to streptomycin.

We have had two consecutive weeks of codling moth catches at the NWMHRC and have set our biofix for 31 May (Table 1). Conditions were cooler and windy prior to 31 May, which could have delayed the detection of this pest at the station. However, codling moth were detected in traps as early as three weeks ago in some areas, which could have resulted in an earlier biofix for those farms. Overall, codling moth numbers have been low, particularly in blocks with mating disruption. As a reminder, a cumulative catch of 5 or more moths in a block is the treatment threshold. Treatment targeting eggs should be applied 100 GDD base 50 after biofix, and treatment targeting larvae should be applied at 250 GDD base 50 which corresponds with codling moth egg hatch.

Growers concerned with San Jose scale began petal fall timed sprays of systemic insecticides last week. The NWMHRC saw a jump in male flight this week with an average of 19 male SJS per trap. Managing scale crawlers is also an option, but timing management for this life stage of scale is challenging because the crawlers are hard to see and/or to trap them. A rule of thumb has been to take management actions to target crawlers approximately two weeks after peak male crawlers. We will continue to monitor male flight to estimate peak flight.

Spotted wing drosophila have been detected in the region – please see the SWD table published in this week's FruitNet newsletter for more information. Plum curculio egg laying has begun, and overall reports suggest that plum curculio activity is low at this time.

American plum borer numbers were down this week and lesser peachtree borer activity increased (Table 1). Trunk sprays for borer management soon would be well-timed as American plum borer larvae should be present and lesser peach tree borer larvae are hatching. Greater peachtree borers have not been detected in NWMHRC traps at this time.

We have had reports that growers had good efficacy from petal fall sprays targeting small obliquebanded leafroller and green fruitworm larvae. Obliquebanded leafroller

pheromone traps have been deployed to monitor for adult flight to set biofix for second-generation management of larvae.

Table 1. NWMHRC Insect Trapline Data, 2017.

Cherry - NWMRHC	**25-Apr**	**2-May**	**9-May**	**16-May**	**23-May**	**30-May**	**6-Jun**
Green Fruitworm	14	1	6	2	14	0	0
American Plum Borer				2	5	14	1
Lesser Peachtree Borer						2	9
Apple - NWMHRC	**25-Apr**	**2-May**	**9-May**	**16-May**	**23-May**	**30-May**	**6-Jun**
Oriental Fruit Moth	0	0	0	0	0	0	0
Spotted Tentiform Leafminer				52	18	33	9
Codling Moth					0	1	2
San Jose Scale					1	0	19

NW MI SWD Trap Counts

	wk of 5/15	wk of 5/22	wk of 5/29
North Manistee	trap set	0	0
Benzie	trap set	3	2
Yuba	trap set	0	0
Central Lake	trap set	0	0
Old Mission	trap set	1	0
Bingham	trap set	0	0
Cedar	trap set	0	0
East Leland	trap set	0	0
Northport	trap set	0	0

As you know, we have begun to catch SWD in northwest Michigan. The first catch was from wild hosts adjacent to tart cherry blocks. However, we did catch SWD flies in commercial orchards last week. We caught only two flies: one male and one female. We remind growers that fruit is not susceptible to SWD egg laying at this time. Growers should not be making applications for SWD but concentrating efforts on other insect pests, particularly plum curculio (PC). We have reports of PC stings in cherries, but overall, the populations still seem low. Growers should be diligent with warming temperatures as PC become more active when overnight temperatures are warm and after rainfall events—activity may increase in the coming week. We will continue to trap for SWD throughout the season, and we will be sure to provide recommendations when to begin SWD control.

Photos from Emily and Nikki's Trip to Japan

Image 1: Cherry products on display in Japan

Image 2: Japanese logo featuring cherries

Image 3: Japanese cherry marketing

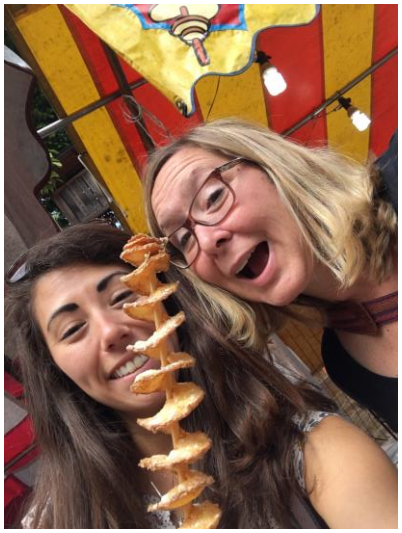
Image 4: Nikki and Emily enjoying a Japanese snack

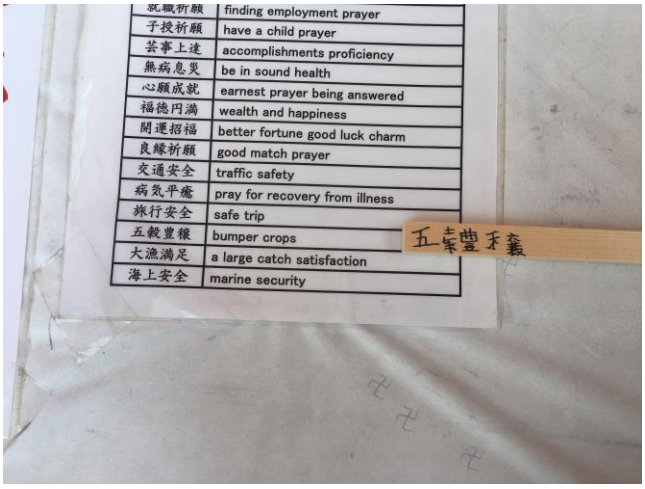

Image 5 and 6: Prayer at a temple……for bumper crops!

Image 7: 100 Yen = $1. Stemless cherries are selling for $45 - $55/box

Image 8: 100 Yen = $1. Cherries with stems are $60-105/box depending on size.

Announcement regarding June 6th and 7th IPM Updates

This is a reminder that IPM Updates will be held at all usual locations and times this week on June 6th (Tuesday) and June 7th (Wednesday). Because MSU Extension Educators, Emily Pochubay and Nikki Rothwell are still in Japan, Eric McCumber from Michigan Department of Agriculture and Rural Development will attend IPM updates for a discussion on Worker Protection Standards with a focus on decontamination station requirements. Eric will also bring an example of a central posting location for those who may have missed the previous WPS meeting's discussion. Although Eric will discuss decontamination stations, we invite growers to please bring questions on any WPS topics to this meeting. Pesticide recertification credits (2) will be available.

We are looking forward to returning for regular IPM Update meetings with discussions on pest and disease topics on June 13th and June 14th.

Benzie-Leelanau District Health Department scheduling respirator fit tests at the NWMHRC – June 9, 2017 openings available!

The Leelanau County Health Department will be available June 9th from 9am - 2:00p at the Northwest Michigan Horticultural Research Center. Each fit test will be 20 minutes long.

Cost for the fit test is $35/person.

If you are interested in signing up to receive the fit test, please contact Jenn at the research center, at goodr100@msu.edu or 231-946-1510, and she will send over paperwork to be filled out before the fit test. People will be given a time slot for the June 9, 2017 fit tests on a first come, first serve basis.

Widespread Detections of San Jose Scale in NW Michigan Tree Fruit Crops

Growers are reporting increased damage from San Jose scale this spring, and this article provides life cycle information and control strategies

Nikki Rothwell and Emily Pochubay, NW MI Horticultural Research Center
John Wise, Dept. of Entomology, MSU

In past seasons, we have observed large populations of San Jose scale (SJS) on sweet cherries in the northwest Michigan, and more recent reports show that this pest is increasing in tree fruit crops in the state. Ten years ago, we were not able to readily identify SJS damage in sweet cherry because sweet cherry branches and tree dieback were masked by ethephon damage due to hot and dry weather prior to harvest. Additionally, SJS had been deemed a key pest of apple trees and fruit and received little attention as a key pest of sweet cherry in Michigan as SJS we have not documented SJS damage to cherry fruit in this state. Prior to the 2007 documentation of SJS damage in sweet cherry trees, this type of SJS epidemic had not been seen in Michigan.

Scales are insects with a unique life cycle that makes them difficult to control. Immature female and male scale overwinter underneath a waxy, turtle-like covering. When sap begins to run in the spring, the overwintering scales grow, and reach maturity in mid- to late May. At this time of the year, male scales come out from under the scale to mate with females. Females give birth to live young rather than laying eggs—these nymphs are the crawler stage of the life cycle. Each female is capable of bearing 150-500 offspring. These crawlers start to suck sap with their needle-like mouthparts, and within three weeks, the crawlers molt and lose their old skins, legs, and antennae to become a flattened sac with waxy caps. They remain attached to the trees with their mouthparts and protective covering. Weather permitting, immature scales will continue to feed, develop, and mature, and depending on location can have two to five generations. In northwest Michigan, there are typically two generations of SJS.

San Jose scale feeds on sap of trees, and on healthy trees, large populations are needed to cause economic injury. Depending on the size of the population, SJS can kill young trees in two to three years. Older trees can also be killed by scale, but they do withstand more feeding damage than young trees. In many cases, we have observed damage in older sweet cherries, and there is considerable die back in the tops of the trees; in these

situations, trees are not killed but the cropping potential is considerably reduced. In addition to feeding on bark, San Jose scales can also feed on the fruit and leaves. Feeding on fruit causes bright red spots and is most commonly seen on apple. As mentioned previously, we have not identified SJS feeding injury on sweet cherry fruit in Michigan.

Because these insects typically have two generations per year in our area, we have three optimal timings for control. An oil application during pre-bloom is highly effective for targeting adults by suffocating the overwintering scale. Insecticides applied mid-June and mid-August target crawlers before they produce their protective waxy covering. Targeting the first generation crawlers will prevent mating and reproduction thereby minimizing the population of the second generation.

We conducted two SJS trials in apple at the MSU Trevor Nichols Research Center in Fennville, MI (Tables 1-2 and 3-4). The results of these trials will show the efficacy of the different scale materials, some of which are new insecticides. Growers can apply these results to sweet cherry as best they are able—unfortunately, we have not conducted replicated SJS efficacy trials in sweet cherries. We intend to initiate these trials in 2018.

All treatments except those with Sivanto-alone provided significant levels of control compared to the untreated check (Table 2). Lorsban, Movento and Centaur treatments provided the highest level of control, but only the Centaur delayed-dormant and pink timings resulted in 100% clean fruit. The EPA re-registered the product, Closer, but only post bloom applications are permitted. As a reminder, review all insecticide labels for additional information on restrictions for application, mixing, etc. From the 2016 data, he Sivanto (1/2 green), Sivanto/Movento and Lorsban treatments all significantly reduced the incidence of SJS injury to fruit (Table 4).

The results from both sets of data show that the tested materials provide good control of SJS in apple. However, results were based on percent damaged fruit and number of scales per fruit; the number of scales or levels of damage to woody tissue were not measured. It is possible that SJS may behave differently on apple and cherry. Hence, we encourage consultants, scouts, and\or growers to trap for males to better predict when crawlers will emerge to best time spray applications. Furthermore, growers should be mindful that these chemistries have different mechanisms for their efficacy against SJS. For example, products such as Lorsban (Note: phytotoxic on sweet cherry foliage and not to be used past petal fall in tart cherry) and those that were not tested but are recommended in the Michigan Fruit Management Guide (ex. Warrior, Assail) are contact poisons that will have the best efficacy against crawlers if the spray material comes in contact with the pest. The newer unique chemistries such as Sivanto and Movento are taken up by plant tissue and have different movement characteristics within the tree tissue. Sivanto displays translaminar movement and is xylem mobile meaning that the spray material will move in the foliage. On the other hand, Movento is phloem and xylem mobile meaning that this chemistry can move from foliage all the way to the tree's roots. Because the tree takes up these materials, they are most effective against scale when the material is present in the tree prior to substantial feeding. Therefore, these materials

should be applied prior to crawler emergence (~roughly two weeks after peak male flight or petal fall timing). Sivanto is not labeled for stone fruits, and Movento is labeled for both pome and stone fruit. Lastly, Table 5 shows the speed of activity of the chemistries on the crawler stage and the potential for the insecticide to flare mites.

Table 1. San Jose scale treatments for the 2013 San Jose scale efficacy trial conducted at the Trevor Nichols Research Center

Treatments

	Treatment/ Formulation	Rate Product/Acre	Application Code
1	Untreated		
2	LORSBAN 75 WG	1 lb/a	A
	Damoil	1 % v/v	A
3	Closer SC	3 fl oz/a	B
	R-11	0.125 % v/v	B
4	Sivanto 200 SL	14 fl oz/a	B
	Damoil	1 % v/v	B
5	Sivanto 200 SL	10.5 fl oz/a	D
	R-11	0.125 % v/v	D
6	Sivanto 200 SL	10.5 fl oz/a	B
	Damoil	1 % v/v	B
	Movento 240 SC	6 fl oz/a	E
	R-11	0.25 % v/v	E
7	Movento 240 SC	9 fl oz/a	E
	R-11	0.25 % v/v	E
8	Centaur WDG	46 oz/a	A
	Damoil	1 % v/v	A
9	Centaur 40SC	71.5 fl oz/a	A
	Damoil	1 % v/v	A
10	Centaur WDG	46 oz/a	C
	Damoil	1 % v/v	C
11	Centaur 40SC	71.5 fl oz/a	C
	Damoil	1 % v/v	C

Legend

App. Code	Application Target	Spray Date
A	Delayed Dormant	30-April
B	Tight Cluster	6-May
C	Pink	7-May
D	Bloom	13-May
E	Petal Fall	23-May

Table 2. 2013 San Jose scale efficacy results in apple from Trevor Nichols Research Center

	Treatment/ Formulation	Rate Product/acre	Application Timing	Average # Scales / Fruit 3 Oct[a]	% Fruit Infested 3 Oct[b]
1	Untreated			1.0 ab	16.5 a
2	LORSBAN 75 WG	1 lb/a	A	0.2 cd	2.5 bcd
	Damoil	1 % v/v	A		
3	Closer SC	3 fl oz/a	B	0.6 bcd	6.1 bc
	R-11	0.125 % v/v	B		
4	Sivanto 200 SL	14 fl oz/a	B	0.9 bc	9.0 ab
	Damoil	1 % v/v	B		
5	Sivanto 200 SL	10.5 fl oz/a	D	1.8 a	19.0 a
	R-11	0.125 % v/v	D		
6	Sivanto 200 SL	10.5 fl oz/a	B	0.2 cd	3.5 bcd
	Damoil	1 % v/v	B		
	Movento 240 SC	6 fl oz/a	E		
	R-11	0.25 % v/v	E		
7	Movento 240 SC	9 fl oz/a	E	0.1 cd	1.5 cd
	R-11	0.25 % v/v	E		
8	Centaur WDG	46 oz/a	A	0.0 d	0.0 d
	Damoil	1 % v/v	A		

9	Centaur 40 SC Damoil	71.5 fl oz/a 1 % v/v	A A	0.0 d	1.0 cd
10	Centaur WDG Damoil	46 oz/a 1 % v/v	C C	0.0 d	0.5 cd
11	Centaur 40 SC Damoil	71.5 fl oz/a 1 % v/v	C C	0.0 d	0.0 d

Means followed by same letter do not significantly differ (*P*=0.05, Duncan's New MRT)
[a] ANOVA performed on square-root transformed data; data presented are actual counts
[b] ANOVA performed on arcsine square-root transformed data; data presented are actual counts

Table 3. San Jose scale treatments for the 2016 San Jose scale efficacy trial conducted at the Trevor Nichols Research Center

Treatments

Treatment/ Formulation	Rate Product/ acre	Appl. Timing
1 Untreated Check		
2 Sivanto Prime SL	14 fl oz/a	A
Damoil 90 EC	1 % v/v	A
3 Sivanto Prime SL	14 fl oz/a	B
R-11 90 EC	0.125 % v/v	B
4 Movento 240 SC	9 fl oz/a	C
R-11 90 EC	0.250 % v/v	C
5 Sivanto Prime SL	14 fl oz/a	B
R-11 90 EC	0.125 % v/v	B
Movento 240 SC	9 fl oz/a	D
R-11 90 EC	0.250 % v/v	D
6 Lorsban Advanced EW	64 fl oz/a	A
Damoil 90 EC	1 % v/v	A

Legend

Appl. Code	Appl. Target	Appl. Date
A	Half inch green	19-Apr
B	pink	26-Apr
C	petal fall	19-May
D	1C(CM bio+250DD)	8-Jun

Table 4. 2013 San Jose scale efficacy results in apple from Trevor Nichols Research Center

Treatment/ Formulation	Rate Product/ acre	Appl. Timing	San Jose Scale % damaged fruit 6/20/2016
1 Untreated Check			7.3 a
2 Sivanto Prime SL	14 fl oz/a	A	1.3 b
Damoil 90 EC	1 % v/v	A	
3 Sivanto Prime SL	14 fl oz/a	B	3.3 ab
R-11 90 EC	0.125 % v/v	B	
4 Movento 240 SC	9 fl oz/a	C	2.5 ab
R-11 90 EC	0.250 % v/v	C	
5 Sivanto Prime SL	14 fl oz/a	B	1.5 b
R-11 90 EC	0.125 % v/v	B	
Movento 240 SC	9 fl oz/a	D	

R-11 90 EC	0.250 % v/v	D	
6 Lorsban Advanced EW	64 fl oz/a	A	1.8 b
Damoil 90 EC	1 % v/v	A	

Means followed by same letter do not significantly differ (*P*=0.05, Tukey's HSD)
ANOVA performed on square-root transformed data; data presented are actual counts

Table 5. Insecticidal Activity on crawler stage of Scale insects

Compound	**Labeled Crops**	**Speed of Activity**	**Mite flaring potential**
Esteem	All fruits	slow	low
Movento	Pome and stone fruits	slow	low
Warrior/Asana	Pome fruit (not on stone fruit label)	fast	high
Assail*	Pome and stone fruits (not on blueberry label)	moderate	moderate
Sivanto	Pome fruits (not on blueberry label)	moderate	low
Closer*	Pome and stone fruits	moderate	low
Centaur	Pome and stone fruits	slow	low

* suppression only.

Clarifications on Worker Protection Standards: Central Posting for Pesticide Application Information versus Decontamination Station Requirements for Agricultural Workers

Eric McCumber, MDARD
Emily Pochubay and Nikki Rothwell, MSU Extension

Both MDARD and MSU have received recent questions about the requirements to display pesticide application information at a central posting area. Growers also have questions about what should be included at designated decontamination stations. This article is intended to clarify such questions because we have heard misinformation that pesticide application information should be posted within a ¼ mile of where agricultural workers are working in a treated block—this type of posting is *not* required to meet WPS regulations. This confusion may be related to regulations for decontamination stations; according to WPS, **decontamination stations** are required with ¼ mile from where

agricultural workers will be working during the REI or for 30 days thereafter of the application of a WPS-labeled pesticide. Although we will cover the key points for these two issues in this article, more detailed information can be found in the How To Comply Manual (HTCM) at www.pesticideresources.org. In the HTCM, central posting location information is on page 21 and decontamination station information can be found on page 48. The information presented below is relevant to agricultural employers of agricultural workers. Supplies needed for handlers' decontamination sites are different and we encourage employers and handlers to review this information as needed (page 74-75 of the HTCM).

Central Posting

Central posting locations serve as the hub for pesticide application information, and this central posting location is the *only* location on the farm that is required to contain the information outlined below. *According to MDARD, central posting locations* are areas where all farm employees can find any information related to pesticide applications. If a WPS-labeled pesticide has been applied, or if a restricted-entry interval (REI) has been in effect within the past 30 days, then the agricultural employer must display the required information (see below) at a central posting location whenever any agricultural worker is on the agricultural establishment. The location of the central posting is determined by the agricultural employer, but it should be placed in a location where employees congregate such as the workshop, office, break room, or an area where they check in for work. Agricultural workers must be informed where the designated central posting location is located and must be allowed unrestricted access to the posted information during employment hours.

Agricultural producers are required to display at the central posting area the following information. Again, agricultural workers must have unimpeded access to the information during work hours.

- **Pesticide application information including:**
    - ✓ Brand name of the pesticide(s) applied.
    - ✓ Active ingredient(s).
    - ✓ EPA Reg. No.
    - ✓ REI.
    - ✓ Crop/site treated.
    - ✓ Location and description of treated area(s).
    - ✓ Date(s) and time(s) application started and ended.

- **Safety Data Sheets** (SDS) for each pesticide product.

- **Pesticide Safety Information**. Prior to the updated WPS, this information was required to be displayed in a poster format (known as pesticide safety poster). Agricultural employers are no longer required to display a poster, but must

provide information about certain WPS safety concepts about preventing pesticides from entering the body. The required 7 safety concepts include:

- ✓ Avoid getting pesticides on your skin or into your body. Pesticides may be on plants, soil, irrigation water, equipment, or may drift from nearby applications.
- ✓ Wash before eating, drinking, using chewing gum or tobacco, or using the toilet.
- ✓ Wear work clothing that protects your body from pesticides, such as long-sleeved shirts, long pants, shoes, socks, and a hat or scarf.
- ✓ Wash or shower with soap and water, shampoo hair and put on clean clothes after work.
- ✓ Wash work clothes separately from other clothes before wearing them again.
- ✓ If your body is contaminated by pesticides wash immediately, and as soon as possible, wash or shower with soap and water and change into clean clothing.
- ✓ Follow directions about keeping out of treated or restricted areas.

In addition, the updated safety information that will be required in the future must include:

- ✓ Instructions for seeking medical attention as soon as possible after being poisoned, injured or made ill by pesticides.
- ✓ Name, address and telephone number of state or tribal pesticide regulatory authority. In Michigan, the agency is the Michigan Department of Agriculture and Rural Development, 525 West Allegan Street, P.O. Box 30017, Lansing, MI. The phone number is 800-292-3939.
- ✓ If pesticides are spilled or sprayed on the body use decontamination supplies to wash immediately, or rinse off in the nearest clean water, including springs, streams, lakes or other sources if more readily available than decontamination supplies, and as soon as possible, wash or shower with soap and water, shampoo hair, and change into clean clothes.
- ✓ Follow directions about keeping out of treated areas and application exclusion zones.
- ✓ The term “emergency medical facility” should be revised to “a nearby operating medical care facility.” Include name, address, and telephone number for the medical facility. This information should be clearly identified as emergency medical contact information on the display.
- ✓ The point that there are federal rules to protect workers and handlers is self-evident and is no longer required to be part of the safety information

NOTE: The updated pesticide safety information content is not required until 1/4/18, but employers can begin using the updated version immediately. Details are shown on page 23 of the How To Comply Manual. The EPA is in the process of developing a poster version of the pesticide safety information.

Agricultural producers are only required to have *one central posting area*, but must provide unrestricted access to agricultural workers during work hours. It can be impractical for farms that are many miles apart to give unrestricted access, so agricultural producers may set up different central posting areas for distinctly different farm locations at their discretion. Agricultural employers may also provide the central posting information electronically, as long as content, accessibility, display, legibility, location, and retention requirements are met. Employers would need to ensure that agricultural workers have access to the information, such as through a smart phone or dedicated computer, and are instructed in how to access the information.

Decontamination sites

Agricultural employers must make sure that decontamination supplies are provided to workers doing tasks that involved contact with anything that has been treated with the pesticide including soil, water, or plants in a pesticide-treated area where, within the last 30 days, a WPS-labeled pesticide product has been used or a REI for such pesticide has been in effect.

Decontamination supplies that must be provided include:

- ✓ Water – the employer must provide at least 1 gal of water per worker at the beginning of the work period and at a quality and temperature that will not cause injury or illness if it contacts skin or eyes, or is swallowed.
- ✓ An adequate supply of soap and single use towels. Hand sanitizers or wet towelettes *do not* meet the requirement for soap or towels.

Duration of the Decontamination Site

If the REI of an applied pesticide is greater than 4 hours, decontamination supplies must be provided until 30 days after the end of the REI expires. If the REI is less than 4 hours, decontamination supplies must be provided until 7 days after the REI expires.

Location of Decontamination Sites

All decontamination supplies for agricultural workers must be located together and be reasonably accessible to where the workers are working (generally within ¼ miles of the workers) and be outside of any treated area or an area under a REI. For worker tasks performed more than ¼ mile from the nearest point reachable by vehicles or more than ¼ mile from a non-treated area, the decontamination supplies may be at the nearest vehicular access point outside any treated area or area under REI (page 48 of the HTCM).

Remember that in addition, the Pesticide Safety Information (formerly referred to as the Pesticide Safety Poster) must be displayed at any permanent decontamination site, or any decontamination site that services 11 or more workers (page 21, HTCM).

In summary, central posting locations are the main hub for pesticide application information, and the information that must be displayed at the central posting locations is not required in other agricultural areas (i.e. ¼ mile from workers working in treated fields, or at decontamination stations). It is the responsibility of the employer to train employees on how and where to access the central posting information. Although not required, some growers may choose to provide additional pesticide application information to their workers by having additional posting sites or virtual access to this information. Potable water, and an adequate supply of soap and single use towels, and possibly pesticide safety information (if the decontamination site is a permanent location or services more than 11 workers) must be provided at decontamination

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Respirator Guidelines to Meet New Worker Protection Standards

Growers will need a medical evaluation and respirator fit test to handle and apply some pesticides this season.

Emily Pochubay and Amy Irish-Brown, MSU Extension

Requirements for a medical evaluation, fit testing, and specific training for use of respirators and the associated record keeping became effective on January 2, 2017. At this time, most growers are aware of this revision to the Worker Protection Standard (WPS) regulation that requires pesticide handlers and applicators to wear a respirator during mixing/handling, spray applications, and potential other uses as outlined on pesticide labels. Additionally, those who use pesticides with respirator requirements must receive documentation from a physician or licensed health care professional (PLHCP) that has 'respirator evaluation' as part of his/her license to ensure that the pesticide handler is medically able to use a respirator. Not all PLHCPs are qualified to provide the respirator evaluation, but primary care physicians should be able to refer patients to appropriate medical personnel. Alternatively, growers can contact local occupation and environmental health professionals who are more likely to have the credentials needed to provide the appropriate respirator medical evaluation and documentation. Please review the following guidelines to help address some of the recent questions we have received from growers.

Who needs to receive a medical evaluation and how often?

Employees that could be exposed to hazardous airborne contaminants may be required to wear a respirator; respirators and respirator use requirements will be outlined on individual pesticide labels. Some pesticides may require respirators for employees that mix spray material and/or require applicators to wear a respirator during applications of certain pesticides. Employers are responsible for ensuring that employees receive the appropriate equipment, evaluation, respirator fit test, training, and record keeping that conforms to OSHA standards.

According to the EPA, the medical evaluation is required one time per employee unless another evaluation is required due to one of the following reasons:

- The medical determination is only good for a specified length of time.
- The employee reports medical signs or symptoms related to respirator use.
- The PLHCP, supervisor, or program administrator recommends a re-evaluation.
- Fit-test or other program information indicates a need for re-evaluation.
- When changes in the workplace increase respirator stress on an employee.
- The initial medical examination demonstrates the need for a follow-up medical examination.

Who provides the evaluation? What kind of evaluation and documentation are needed?

A physician or licensed health care professional (PLHCP) with respirator evaluation as part of their license will provide the appropriate evaluation using a medical questionnaire or exam that conforms to the OSHA standard. Contact the PLHCP to determine whether a questionnaire or exam will be used and to receive appropriate paperwork. Prior to completing the questionnaire or exam, employers must provide employees with:

- The type and weight of the respirator that the handler will use.
- How long and how frequently the handler will use the respirator.
- How much physical work the handler will do while using the respirator.
- Other PPE the handler will use.
- The temperature and humidity extremes of the working environment.

Contact a primary care physician to receive a referral for a licensed professional, if necessary. Another low-cost (~$25) and fast alternative for a medical evaluation is OshaMedCert (http://www.oshamedcert.com/Default.aspx), an online service that involves filling out a form and sending it for approval or denial by a PLHCP; individual's health information remains confidential throughout the process. A respirator fit test (see below) will be needed after receiving the medical determination from OshaMedCert.

A written medical determination of the respirator evaluation for each employee is required before the employee can use the respirator. The employer must keep the medical determination documentation for two years. According to the EPA, the required written information to be provided by the PLCHP to the employer must only include:

- Whether or not the employee is medically able to use a respirator.
- Any limitations on respirator use in relation to the medical conditions (if any) of the employee or workplace conditions.
- Need for any follow-up medical evaluations.
- A statement that PLCHP provided the employee with written recommendation; in some cases, this recommendations may simply state that the applicator/person that will use the respirator is capable of wearing a respirator.

Again, the information outlined above is the *only* information that should be provided in the PLHCP's recommendation to the employer to protect the employee's private medical information and avoid violation of HIPAA laws.

What's Next? Respirator Fit Tests.

After receiving a medical evaluation, a fit test is needed to ensure that the respirator forms an adequate seal with an employee's face to provide appropriate inhalation exposure protection. A new fit test is required annually or whenever there is a change to the respirator or a physiological change to the employee that could affect the seal between the respirator and the user's face. Furthermore, fit tests are required for each type of respirator that will be used as indicated by pesticide labels. Finally, employees must undergo the fit test using a respirator with the exact specifications of the respirator that will be used on the job.

Fit tests must follow OSHA protocols, and there are two methods for fit testing. The quantitative fit test (QNFT) requires special equipment and a trained person to conduct the testing. Fit test kits are also available to perform qualitative fit tests (QLFT) by a person that can accurately prepare test solutions, calibrate equipment, perform the test properly, recognize invalid tests and ensure test equipment is working properly. Sources for fit tests include pesticide suppliers or companies such as Gempler's or Grainger.

A primary care physician may be able to provide additional options and referrals for fit test providers in the area. We confirmed that Munson Medical Center's Occupational Health and Medicine Clinic (550 Munson Ave. Traverse City, MI 49686; Ph: 231-935-8590) is equipped to perform the appropriate respirator exam (~$80.00) and the fit test (~$25.00) in one visit by appointment only. Spectrum Health Services in other areas of Michigan provide similar services. Patients that wish to only receive a fit test need to provide appropriate respirator exam result documentation prior to the test.

Additional information regarding respirator requirements and other WPS revisions can be found in the EPA's *How to Comply with the 2015 Revised Worker Protection Standards for Agricultural Pesticides* (https://www.epa.gov/sites/production/files/2016-10/documents/htcmanual-oct16.pdf).

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

Information on apples:
http://apples.msu.edu/

Information on grapes:
http://grapes.msu.edu

Fruit CAT Alert Reports:
http://news.msue.msu.edu