Northern Michigan FruitNet 2014
Northwest Michigan Horticultural Research Center

Weekly Update
July 1, 2014

CALENDAR OF EVENTS

7/2	**IPM Update** Antrim Co. - Jack White Farms
7/2	**IPM Update** Benzie Co. – Blaine Christian Church
7/2	**IPM Updates End**
7/3	**RidgeFest 2014**
7/10	**MSU Clarksville Research Center Annual Tree Fruit Research Showcase Field Day**
7/12	**Household Hazardous Waste** Leelanau County Government Center
7/15	**Soils Health Workshop** Lansing, MI
7/22-24	**35TH Annual Ag Expo** **Michigan State University**
8/15	**Hops Field Day**
9/4	**NWMHRC Open House – 35th Anniversary**

GROWING DEGREE DAY ACCUMULATIONS AS OF June 30 AT THE NWMHRC

Year	2014	2013	2012	2011	2010	2009	24 Yr. Avg.
GDD42	1247	1286	1731	1200	1590	1218	1345.2
GDD50	751	794	1068	687	936	683	795.7

Growth Stages at NWMHRC (June 30, 2014, 3:00 p.m.)

Apple: Red Delicious – 32 mm fruit
Gala – No fruit
Yellow Delicious – 35 mm fruit
Pear: Bartlett: 17 mm fruit
Sweet Cherry: Hedelfingen: 18 mm fruit
Napoleon: 17 mm fruit
Gold: 15 mm fruit
Tart Cherry: 13 mm fruit
Balaton: 13 mm fruit
Apricot: 30 mm fruit
Grapes: Late bloom

NORTHWEST MICHIGAN REGIONAL REPORT
E. Pochubay, N. Rothwell, and D. Elsner, Extension Educators, MSU

Sweet and tart cherry orchards are looking clean despite weather conditions conducive for disease; strawberry harvest is underway throughout northwest Michigan.

Weather Report. As we head into the month of July, we look back at variable weather conditions for June 2014. We have seen temperatures swings—from fairly high temperatures in the 80s down to daytime highs in the 50s and 60s, high humidity, and varying amounts of rainfall. These weather conditions would seem to be conducive for disease development, but orchards are looking clean across the region. Last week, we experienced our first full week of summer-like temperatures. Daytime highs were up into the 70s and into the 80s, and nighttime temperatures fell into the 60s. These temperatures were coupled with higher than normal humidity, which added to the summer-like feel to the week. We have accumulated 1247GDD base 42 and 751GDD base 50. We are only 100GDD base 42 and 50GDD base 50 behind our average accumulations. Although conditions were humid last week, little rainfall was recorded at the NWMHRC. The NWMHRC recorded 0.02" on 24 June, 0.03" on 29 June, 0.17" on 30 June, and 0.06" of rain yesterday on 30 June. At the NWMHRC, the overall rainfall total for the month of June is 2.39".

Crop Report. As mentioned above, orchards appear to be clean across the region. Growers have been diligent about keeping new tissue covered, particularly as we have had spotty rainfall and high humidity. Sweet cherries are coloring, and early varieties appear red at this time. Birds have been infesting early varieties of sweet cherries, and bird damage is evident in blocks where fruit is substantially colored. The sweet cherry crop looks good across the region, and growers remain committed to keeping this crop in good shape as the demand for sweet cherries, particularly canners, is high this season. We have seen some cracked fruit in early ripening varieties here at the NWMHRC, but overall reports of cracking are low. Tart cherries are also starting to color, and many growers estimate to begin harvest during the third week of July. The tart cherry crop is variable, and at the Guestimate and the CIAB meeting, the estimate of the tart cherry crop was variable among meeting attendees. The estimate ranged from 110 million pounds up to 125 million pounds. For the Federal Marketing Order (FMO) formula, the CIAB board decided to use the USDA estimate for NW Michigan at 118 million pounds. Please see the attached documents on tart cherry estimates and the results from the CIAB meeting last week.

According to Perry Hedin, Executive Director of the CIAB, the following letter was distributed after the CIAB meeting in Grand Rapids: "At yesterday's meeting the CIAB met and to review various elements from the industry's positions and to project the "preliminary" percentages under the OSF. In doing this,

the CIAB considered the 2014 crop estimates, reviewed the 2013/14 sales data and considered the carry-over of product from 2013 to 2014.

As you will see in the attached, the crop estimates from the USDA, the MFFPA Guesstimate and the CIAB members were consistent with each other. The OSF sets as the USDA as the default estimate to use in the formulation of preliminary percentages. Given the similarity in the estimates, the USDA's estimate of 264 million pounds was used by the CIAB.

Sales of tart cherry products in 2013/14 were very good at 222 million pounds. This volume of sales following the 2012 crop failure was received as very good news. The sales were substantially better following the 2012 crop failure than were seen following the 2002 crop failure.

The reported carry-in of free inventories into the current crop year was 81.1 million pounds. This is based upon the actual reported inventories held at the end of May, 2014. Considering all of these factors and applying them to the OSF, the CIAB set the preliminary free percentage at ninety percent (90%) and the restriction percentage at ten percent (10%). (Please see the attached sheet.)

You will see two adjustments on the attached OSF calculation sheet. As it did last year, the CIAB adjusted the amount of cherries it projected were needed for sales. This adjustment was for 52 million pounds which, when added to the three year average of sales, yields a target sales volume of 250 million. The CIAB also adjusted the desired carry-out figure from the default of 20 million to 50 million pounds with a 30 million pound adjustment in the OSF.

As you all know, these figures are preliminary. The board reconvenes in September to review the OSF using actual production." Growers and processors were optimistic about the crop at last week's meeting.

The apple crop is also looking good at this time. Most growers are pleased with their thinning efforts, but some hand thinning may take place in orchards where fruit was difficult to thin. Apples are sizing well and jumped at least 10mm since last week. Growers are breathing a sigh of relief to end the primary scab season this week.

Strawberry harvest is underway in northwest Michigan. Size of the berries is good, and relatively cool temperatures for the remainder of the week will extend the harvest season. Hot temperatures are expected again on Sunday and Monday.

Pest Report. Again, cherry orchards are looking clean in terms of disease symptoms so far this season. However, we have received reports of a few isolated incidences of **powdery mildew** on tart cherry, and some **cherry leaf spot** lesions are beginning to appear on new leaves. Very low or no infection at this point is a very good sign because a healthy tree canopy will help ripen fruit which is particularly important this year as cherry harvest may be later and/or longer than usual in some areas. Growers who have leaf spot infection now will need to maintain good spray coverage to prevent the spread of conidia to new tissue. The warm and wet conditions have been worrisome for **American brown rot** infection and we have received more reports of ABR sporulating on sweet cherries injured by canker, birds, insects, etc. We found ABR sporulating on sweet cherries (var. Sams) at the station this week. Managing ABR can be problematic when cherries begin accumulating sugars, and growers should be diligent about controlling this disease.

Last week a handful of **obliquebanded leafroller** (OBLR) were found in traps in cherry blocks; OBLR numbers remain low this week – we found 7 moths per trap. As mentioned last week, a consistent catch of 20 or more moths per trap for two to three weeks usually indicates that OBLR may be a problem, and low-catch of less than 20 moths per flight period generally indicates a non-problematic pest density.

We have not detected **cherry fruit fly** on traps at the research station and have not received reports of CFF on traps elsewhere in the region at this time. However, a single CFF was observed on a leaf at the research station on 16 June. Sweet cherry varieties are well on their way to ripening and will be susceptible to CFF damage when these pests emerge. In some areas, tart cherries that are ripening and will also need to be protected from CFF oviposition.

Spotted wing *Drosophila* (SWD) are emerging in northwest Michigan. The first SWD in northwest Michigan was captured Monday 30 June in Grand Traverse County; there was a single female in the trap. SWD can oviposit into ripening fruit, and growers will need to be diligent about controlling this pest to prevent larvae in fruit.

All three borer species**: lesser peach tree borer, greater peach tree borer**, and **American plum borer**, were found in low numbers at the station this week. According to our trap data, peak borer emergence was around 16 June. Birds have moved into early ripening sweet cherry blocks.

Most apple orchards are also very clean of diseases so far this season; we have received less than a handful of reports of **apple scab** lesions. Growers who have scab lesions will need to continue their scab program past primary to ensure scab free fruit at harvest. Rain on Sunday 29 June triggered the release of apple scab spores that were likely the last of the ascospores from last year's infected tissue. An average of one scab spore per spore rod was found following rain on Sunday morning. Apple scab spores were not found on spore rods following rain on Monday night 30 June. Thus, we are calling an end to primary apple scab infection. Apple trees damaged from winter injury are continuing to decline in orchards. Earlier this season, many of the trees that are now dying had pushed leaves and were using stored resources to grow. These winter-injured trees have now used up those resources and are collapsing.

No **codling moth** (CM) were caught at the station this week. However, CM adults are still active in the region and the number of CM found in traps has been variable from orchard to orchard. CM adults fly at dusk and prefer warm temperatures for flight. We had a few warm nights over the weekend some of which were also windy which could have inhibited CM flight in some areas. In orchards where growing degree-days have reached ~250 GDD base 50ºF since CM biofix, larvae maybe hatching at this time**. Obliquebanded leafroller** numbers in apples at the station are up from last week at 10.5 moths per trap; these numbers are still too low to set biofix. **Green apple aphids** have been active in the last few weeks and are feeding on new growth/terminal ends of shoots in orchards throughout the region.

Wine Grapes

Riesling and Chardonnay vines are in bloom to early fruit set at this time. Some early hybrid cultivars, like Frontenac and Brianna, already have berries approaching pea size. Sucker growth has been very rapid. On vines with only a few live suckers at the base, shoot size is already too large, on the path to be poor-quality bull canes for 2015. There are still a lot of stunted shoots higher in the canopy of vinifera varieties.

The critical period for protecting fruit from **powdery mildew** will last for another 2-3 weeks. I have not yet seen powdery mildew infections on unsprayed "sentinel" vines at the research center.

Rose chafers continue to feed on leaves and clusters, but their numbers have dropped off quickly this year. Adult **potato leafhoppers** are now in the area and nymphs may appear soon. The adult moths of the **hornworm caterpillars** are now flying, so small larvae may appear in the next couple of weeks.

Saskatoons

Saskatoons are beginning to ripen, with much red fruit showing in the research center plot. Berries that are very advanced in color can be found in the fruit clusters- these have been injured by the feeding by the larvae of **apple curculio**, **saskatoon sawfly** or **leafrollers**. Most of the injured fruit I inspected were hollow inside and the offending larva had vacated the berry.

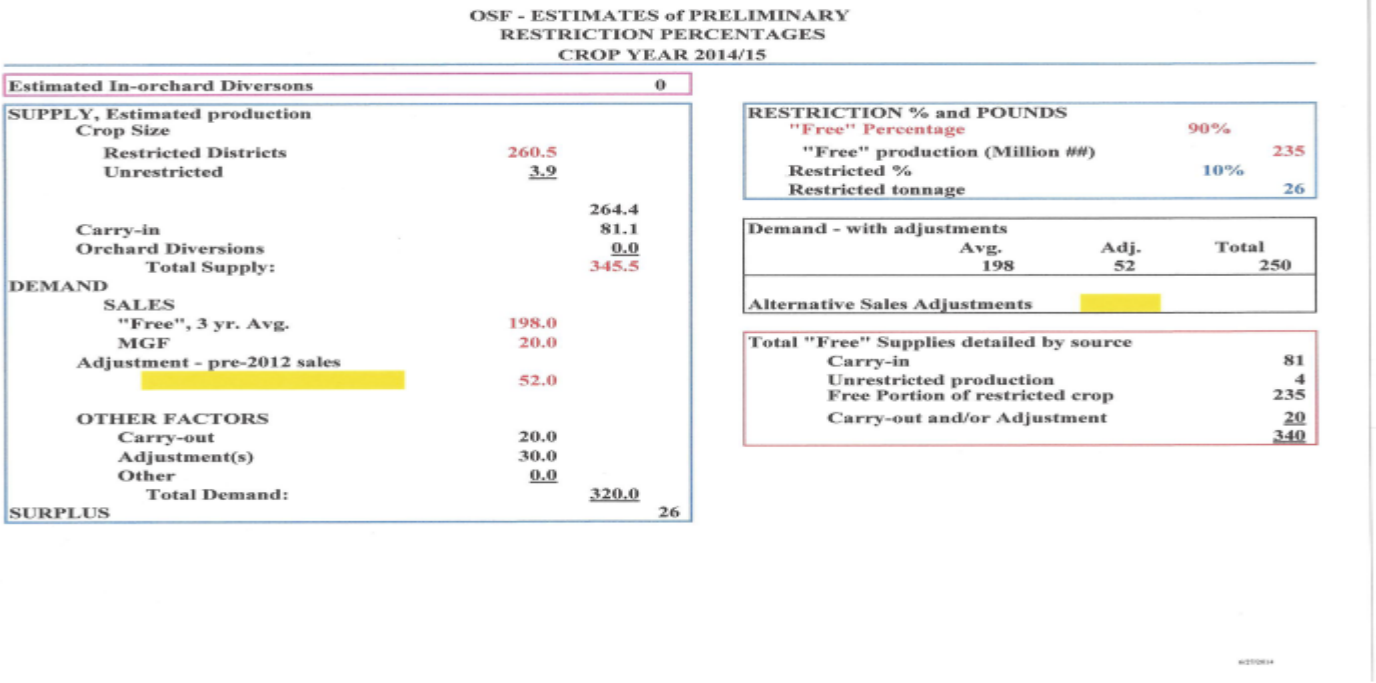
Saskatoon-juniper rust infections of fruit are now in the sporulation stage. It is getting late for treatments to defend against further fruit infections. Although Abound and Pristine have a zero day pre-harvest interval, they do not have sufficient back-action to stop active infections which will continue to show new berry symptoms from now through harvest.

2014 TART CHERRY ESTIMATE PROVIDED BY CIAB

ESTIMATES of PRODUCTION
Crop Year 2014/15

	Region	MFFPA Guestimate	USDA	Members
1	NW MI	125.0	118.0	115.0
2	WC MI	44.0	44.5	44.0
3	SW MI	22.0	19.0	21.0
4	NY	8.5	6.0	8.5
5	OR	2.0	3.0	2.5
6	PA	1.0	0.9	0.1
7	UT	35.0	36.0	35.0
8	WA	24.0	26.0	22.0
9	WI	9.5	11.0	10.0
	Total:	271.0	264.4	258.1
	Unrestricted	3.0	3.9	2.6
	Restricted pounds	268.0	260.5	255.5
	Net Restricted Pounds	268.0	260.5	255.5

6/27/2014



OSF - ESTIMATES of PRELIMINARY
RESTRICTION PERCENTAGES
CROP YEAR 2014/15

Estimated In-orchard Diversons		0
SUPPLY, Estimated production		
Crop Size		
Restricted Districts	260.5	
Unrestricted	3.9	
		264.4
Carry-in		81.1
Orchard Diversions		0.0
Total Supply:		345.5
DEMAND		
SALES		
"Free", 3 yr. Avg.	198.0	
MGF	20.0	
Adjustment - pre-2012 sales		
	52.0	
OTHER FACTORS		
Carry-out	20.0	
Adjustment(s)	30.0	
Other	0.0	
Total Demand:		320.0
SURPLUS		26

RESTRICTION % and POUNDS	
"Free" Percentage	90%
"Free" production (Million ##)	235
Restricted %	10%
Restricted tonnage	26

Demand - with adjustments			
	Avg.	Adj.	Total
	198	52	250
Alternative Sales Adjustments			

Total "Free" Supplies detailed by source	
Carry-in	81
Unrestricted production	4
Free Portion of restricted crop	235
Carry-out and/or Adjustment	20
	340

MICHIGAN SPOTTED WING DROSOPHILA REPORT FOR JUNE 24, 2014

First catches of spotted wing Drosophila are two weeks later than this time last year. Traps should be deployed already; protect ripening berries.

Posted on **June 24, 2014, MSUE News,** by **Julianna Wilson**, Michigan State University Extension, and Rufus Isaacs, Department of Entomology, Michigan State University Extension

This is the first weekly report of the Michigan State University Extension spotted wing Drosophila (SWD) statewide monitoring effort for 2014. Our network of traps across more than 80 sites was checked during the week of June 15 and has revealed the first activity of this pest in Michigan this year. These same traps were checked the week before and no SWD were found, but over the past week traps placed at the edge of berry crop plantings and in adjacent areas have detected some activity of male, 5 total, and female, 21 total, SWD in four southwest Michigan counties: Berrien, VanBuren, Allegan, and Ottawa. As of yet, no SWD has been reported in southeast, west central, or northern Michigan this year, but monitoring is underway in those regions as well.

This first catch is a few weeks later than in 2012 or 2013, however, at some of the sites where SWD were trapped the flies are somewhat more abundant than first captures in previous years. Scouts, crop consultants, and growers should be on alert for this pest as their susceptible fruit crops start to ripen. SWD can only infest berries when they are ripening or ripe, so currently the focus of SWD monitoring and management efforts should be on ripening strawberries and early summer raspberries. In addition to the use of monitoring traps to detect the adult flies, a simple salt solution (1 cup of salt per gallon of water) can be used to assess fruit for larval infestation. As blueberry, cherry and other susceptible crops ripen, growers will need to make management decisions based on fly activity and crop ripeness stage.

For more information on SWD monitoring and management strategies, and to read past reports, visit Michigan State University's spotted wing Drosophila website.

The weekly SWD statewide monitoring report has been funded through Project GREEEN and Michigan State University Extension. This output is generated through a network of MSU Extension field staff and campus specialists. We would like to acknowledge the following team members and thank them for their weekly scouting efforts and input into this report: Rufus Isaacs, Keith Mason, Steve VanTimmeren, Larry Gut, Peter McGhee, Michael Haas, Bob Tritten, Mark Longstroth, Brad Baughman, Carlos Garcia, Karen Powers and Nikki Rothwell.

Dr. Isaacs' work is funded in part by MSU's AgBioResearch.

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

MANAGING MITES IN APPLES

John Wise, Trevor Nichols Research Center
Nikki Rothwell, Northwest Michigan Horticultural Research Center
Amy Irish-Brown, MSUE Grand Rapids

European red mite (ERM) is the predominant mite pest species of Michigan apples, and without biological control, miticides are often needed to prevent economic injury. ERM causes injury to the plant by piercing the top layer of the apple leaf and extracting the content out of the epidermal cells, resulting in leaf bronzing and necrosis. Excessive ERM feeding can lead to leaf abscission, poor quality fruit and add overall stress on tree health. In addition to ERM, two-spotted spider mites (TSSM) can occasionally be a problem in hot, dry years.

Monitoring. Scouting for mites should begin early enough to determine if ERM populations are at a level that could cause economic injury. One method of monitoring motile populations of mites consists of sampling 25 intermediate-aged leaves at 3-5 sites within a block. Count the number of leaves that have one or more ERM or two or more TSSM motiles from each sample, and follow the binomial charts to estimate the number of mites per leaf. Treatment threshold for ERM is 5-7 mites per leaf through July, and then 10-15 mites per leaf in August.

Binomial Sampling Charts for Twospotted and European Red Mites

Twospotted Spider Mites			European Red Mites		
No. of leaves with 2 or more mites	% of leaves with 2 or more mites	Average No. mites per leaf	No. of leaves with 1 or more mites	% of leaves with 1 or more mites	Average No. mites per leaf
10	40	2.1	10	40	0.7
12	50	3.0	12	50	1.1
15	60	4.1	15	60	1.6
17	70	5.4	17	70	2.6
20	80	8.5	20	80	4.7
21	84	10.1	22	90	11.4
			24	95	15.3

Examine 25 leaves per site at each of 3 to 5 sites per block

Charts are adapted from "Orchard Pest Management" published by GOOD FRUIT GROWER, 1993

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Biological control. Conservation of predator mites in apple orchards is critical to control ERM. The three most predominant predaceous mites found in MI are *Neoseiulus fallacis* (Phytoseiidae), *Agistemus fleschneri* (Stigmaeidae), and *Zetzellia mali* (Stigmaeidae). Predaceous mites are small, but can be detected with a hand lens. Predaceous mites also move very quickly across the leaf surface compared to ERM. Carbamate and pyrethroid insecticides are highly toxic to mite predators, thus should be avoided if possible.

Chemical control. To control mites with acaricides, good coverage of the tree canopy is critical. Some miticides, like Savey, Apollo and Zeal are active primarily on egg and larval stages, thus should be applied before mite numbers build beyond thresholds. Agri-mek is active on motile stages but is also applied early because of its long in-plant residual. Other miticides, like Portal XLO, Nexter, Kanemite and Vendex have primarily contact activity on motiles and should be applied after threshold populations have been reached. Envidor is active by contact to all life stages but is not known to have as fast knock-down as some adulticidal materials. Because of resistance concerns, miticides of similar mode-of-action should not be applied consecutively or more than once per year. Please see table below for more information on miticides.

Compound Trade Name	Mode of Action	Life-stage Activity	Mite Species Controlled**	Residual Activity
Savey (28), Zeal (14) Apollo (45)	Mite growth inhibitors	egg/larvae	ERM, TSSM	8-10 weeks
Nexter (25), Portal (14)	Electron transport Inhibitors (METI I)	motiles*	ERM, TSSM, ARM	6-8 weeks
Acramite (7)	unknown	motiles*	ERM, TSSM	6-8 weeks
Kanemite (14)	Electron transport Inhibitors (METI III)	motiles*	ERM, TSSM	6-8 weeks
Agri-mek (28)	Chloride channel activator	motiles*	ERM, TSSM	8-12 weeks
Envidor (7)	Lipid synthesis inhibitor	eggs, motiles*	ERM, TSSM, ARM	8-10 weeks
Vendex (14)	ATP synthesis inhibitor	motiles*	ERM, TSSM	4-8 weeks

* Motile forms include mite larvae, nymph and adult stages.
** TSSM - two spotted spider mite, ERM – European red mite, ARM – apple rust mite.
Pre-harvest interval listed following each trade name (xx days).

MANAGEMENT STRATEGIES FOR CHERRY FRUIT FLY AND SPOTTED WING DROSOPHILA

John Wise, MSU Trevor Nichols Research Center
Nikki Rothwell, MSU Northwest Horticulture Research Station
Larry Gut, MSU Department of Entomology
Emily Pochubay, MSU Extension

Much of the Michigan fruit-growing region has had above normal precipitation, relatively cool air temperatures, and high humidity over the growing season. Cherry fruit fly (CFF) emergence, although delayed, is well underway in many regions of the state. Solid catches of CFF adults on sticky traps have been detected at the MSU Trevor Nichols Research Center in Fennville over the last week. Growers should be aware that female flies will begin to deposit eggs in fruit approximately 10D after they emerge, which will be any time now. A single CFF was observed on a leaf at the Northwest Michigan Horticultural Research Station on 16 June. However, CFF adults have not yet been detected on traps in the northwest region.

Spotted wing *Drosophila* emergence was also delayed this season compared to previous years. However, higher numbers of SWD have been found at initial SWD detection compared to previous seasons. At this time, SWD have been detected in several fruit growing counties in southwest and west central Michigan; SWD have not yet been detected in southeast Michigan. A single SWD female was captured in Grand Traverse County on 30 June. SWD will begin ovipositing into susceptible fruits (most soft fruits including strawberries, raspberries, cherries, etc.) that are ripening or ripe. Growers should remember that cherries are susceptible to SWD as soon as they lose their green color, and most fruit in the state is now at straw color or turning red.

Control of the CFF has been traditionally achieved with organophosphate insecticides, such as Imidan (phytotoxic on sweet cherries), but some label and/or processor restrictions may limit its use near harvest. Growers need to communicate with processors to ensure they are applying acceptable compounds. Both CFF and SWD are on the Imidan label. Carbamate and synthetic pyrethroid compounds like Sevin and Asana are also toxic to CFF and SWD adults, but are generally viewed to be moderately effective because they have a shorter field residual. Synthetic pyrethroids have good to excellent efficacy against fruit flies and some have short PHIs which could be critical for pre-harvest fruit fly management this season. There are several new reduced-risk and OP-replacement insecticide products that include CFF on their labels. The neonicotinoids Actara, Provado/Admire, Calypso and Assail are labeled for CFF control. All three have performed well against CFF in small plot field-performance trials. The Spinosyn compounds Delegate and Entrust are active on CFF, but their need for ingestion by adult flies requires excellent spray coverage. Spinosyns also have excellent activity against obliquebanded leafroller larvae; a pre-harvest spinosyn application could prevent OBLR larvae contamination in tanks in cherries. Rimon has shown good sub-lethal activity on CFF, such that when adult flies contact foliar residues, subsequent eggs that are laid in fruit are non-viable. Growers should not rely on Rimon alone for CFF control. To reiterate, growers should check with processors prior to making applications to avoid rejection of fruit at harvest due to detectable limits.

The pre-mix insecticides Voliam flexi and Leverage are also labeled for CFF control. Voliam flexi combines the two active ingredients, thiamethoxam and chlorantraniliprole, as a pre-mix formulated compound. Leverage combines the two active ingredients, imidacloprid and cyfluthrin as a pre-mix formulated compound.

As a final management note, CFF and SWD populations that can infest fruit remaining on the tree after harvest may be problematic because resident populations represent a source of potential infestation the following year. Growers with known high fly captures or fruit infestation post-harvest should consider applying an insecticide at this time to combat the resident populations and maintain overall populations at low levels to minimize the threat of infestation prior to harvest next season. Our initial work on post-harvest CFF treatments has indicated that the critical time to apply an insecticide is within the first week after harvest. At this time, we also think a post-harvest application will reduce SWD populations.

Summary of insecticide efficacy for CFF and SWD

Compound trade name	Chemical class	Residual activity	Effectiveness on CFF**	Effectiveness on SWD***	PHI (days)
Imidan	Organophosphate	14+ days	E	E	7
Sevin	Carbamate	4-5 days	F-G	-	3
Asana, Warrior, Danitol, Baythroid Mustang Max	Pyrethroid	7-10 days	F-G	G-E	3-14
Delegate	Spinosyn	7-10 days	G	E	7
Entrust*			F	E	
Assail, Actara, Provado, Admire Calypso	Neonicotinoid	10-14 days	G-E	G (curative activity)	7-14
Altacor	Diamide	10-14 days	G	-	10
Exirel			E	E	3
Rimon	Insect Growth Regulator	10-14 days	G	G (sublethal activity)	8
Voliam flexi	Neonicotinoid and Diamides	10-14 days	E	G	14
Apta	METI Pyrazole	7 days	E	E	
Leverage	Neonicotinoid and Pyrethroid	10-14 days	G	-	7

*OMRI approved for organic production

** Effectiveness rating of insecticides (2014 Fruit Management Guide, MSUE bulletin E-154); E – excellent, G – good, F – fair.
*** SWD - spotted wing drosophila

MANAGING TWO-SPOTTED SPIDER MITES IN CHERRY

Nikki Rothwell, Northwest Michigan Horticultural Research Center
John Wise, Trevor Nichols Research Center

Two-spotted spider mites (TSSM) can be a problem on cherry in hot, dry years. We do not anticipate this season to be particularly problematic for TSSM with our cool temperatures and wet conditions, but we know that cherry growers are often faced with the crucial decision of applying a miticide before or after harvest. If growers intend to spray for mites before cherry harvest, the pre-harvest intervals (PHI's) of most miticides are 14 days or longer, which is an important factor in the decision making process. Another confounding factor of pre-harvest mite control is that often the mite count is low early in the season, and the numbers may not warrant a miticide at that time. Because of these issues, many cherry growers apply a miticide after harvest when the mite numbers are higher and when PHI's are no longer a concern.

Damage and Injury. Bronzing is the most common damage caused by high populations of TSSM; this phenomenon can cause a reduction in photosynthesis and fruit bud initiation. Bronzing caused by TSSM is often more gray in color than bronzing by European Red Mite (ERM). Although bronzing presents an obvious challenge, one of the biggest threats of mites in cherry in a hot, dry year is 'firing.' Firing is an immediate result of increased temperatures and droughty conditions, most often in combination with high mite populations. Firing results in a collapse of a portion of the tree; this malformed segment can be a branch, a terminal, or a whole section of the tree. The leaves of a fired part of a tree turn brown very quickly, with no prior wilting, and the overall effect is similar to fire blight in apple. Although firing may occur with low mite populations, it is found most commonly where mite numbers are high. At one time, it was reported that firing only occurred with plum nursery mite infestations, but more recent observations suggest TSSM play the major role in firing.

Monitoring. Scouting for mites should be begin prior to harvest, with enough time to determine if a miticide should be applied before harvest. This pre-harvest monitoring period should begin early enough to take the long miticide PHI's into consideration. One method of monitoring TSSM motile populations consists of sampling 25 intermediate-aged leaves at 3-5 sites within a block. Count the number of leaves that have two or more TSSM motiles from each sample, and follow the binomial charts to estimate the number of mites per leaf. Treatment thresholds for TSSM is 8-10 mites per leaf from July through post-harvest.

Binomial Sampling Charts for Twospotted and European Red Mites

Twospotted Spider Mites			European Red Mites		
No. of leaves with 2 or more mites	% of leaves with 2 or more mites	Average No. mites per leaf	No. of leaves with 1 or more mites	% of leaves with 1 or more mites	Average No. mites per leaf
10	40	2.1	10	40	0.7
12	50	3.0	12	50	1.1
15	60	4.1	15	60	1.6
17	70	5.4	17	70	2.6
20	80	8.5	20	80	4.7
21	84	10.1	22	90	11.4
			24	95	15.3

Examine 25 leaves per site at each of 3 to 5 sites per block

Charts are adapted from "Orchard Pest Management" published by

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Biological control. Conservation of predator mites in cherry orchards is critical to control TSSM. The three most predominant predaceous mites found in MI are *Neoseiulus fallacis* (Phytoseiidae), *Agistemus fleschneri* (Stigmaeidae), and *Zetzellia mali* (Stigmaeidae). Predaceous mites are small, but can be detected with a hand lens. Predaceous mites also move very quickly across the leaf surface compared to sedentary TSSM. Carbamate and pyrethroid insecticides are highly toxic to mite predators, thus should be avoided if possible. Phytoseiid mites (*A.fallacis*) respond more quickly (reproductively) to increasing populations of TSSM, but stigmaeid mites (*Z mali*) can survive and are more effective predators at lower TSSM population densities. Herbicide sprays also affect the number of predator mites within a cherry orchard. Clean, weed-free areas under the trees in fall and early spring eliminate optimal overwintering habitat for predaceous mites, and without predator mite presence early in the season, TSSM populations can grow unchecked.

Chemical control. Two-spotted spider mite infestations may be controlled with a pre- or post-harvest miticide. When using chemical control, good coverage of the tree canopy is critical. Some miticides, like Onager, Apollo and Zeal are active primarily on egg and larval stages, thus should be applied before mite numbers build beyond thresholds. Agri-mek is active on motile stages, but is also applied early because of its long in-plant residual. Other miticides, like Portal XLO, Nexter, Kanemite and Vendex have primarily contact activity on motiles and should be applied after threshold populations have been reached. Envidor is active by contact to all life stages, but is not known to have as fast knock-down as some adulticidal materials. Because of resistance concerns, miticides of similar mode-of-action should not be applied consecutively or more than once per year. Please see table below for more information on miticides.

Compound Trade Name	Mode of Action	Life-stage Activity	Mite Species Controlled**	Residual Activity
Onager (28), Zeal (7) Apollo (21)	Mite growth inhibitors	egg/larvae	TSSM, ERM	8-10 weeks
Nexter (300), Portal (7)	Electron transport Inhibitors (METI I)	motiles*	TSSM, ERM, PNM	6-8 weeks
Acramite (3)	unknown	motiles*	TSSM, ERM	6-8 weeks
Kanemite (7)	Electron transport Inhibitors (METI III)	motiles*	TSSM, ERM	6-8 weeks
Agri-mek (21)	Chloride channel activator	motiles*	TSSM, ERM	8-12 weeks

Envidor (7)	Lipid synthesis inhibitor	eggs, motiles*	TSSM, ERM, PNM	8-10 weeks
Vendex (14)	ATP synthesis inhibitor	motiles*	TSSM, ERM	4-8 weeks

* Motile forms include mite larvae, nymph and adult stages.
** TSSM - two spotted spider mite, ERM – European red mite, PNM – plum nursery mite.
Pre-harvest interval listed following each trade name (xx days).

SDHI FUNGICIDES FOR PROTECTION OF FRUIT FROM BROWN ROT INFECTION

George Sundin, Dept. of Plant, Soil, and Microbial Sciences, MSU
Nikki Rothwell, Northwest Michigan Horticultural Research Center

The use of fungicides for protection of fruit from American brown rot will be critical if weather conditions favor disease. In Michigan, isolates of the brown rot fungus Monilinia fructicola are shifting towards resistance to Indar and other SI fungicides. Thus, the SDHI fungicides represent the most effective current class of fungicides for protecting ripening fruit from brown rot.

American brown rot (ABR) is caused by the fungus *Monilinia fructicola*. This fast-growing fungus is an important pathogen on cherry (sweet cherry in particular), peach, apricot, nectarine, and plum. The fungus attacks fruit, blossoms, spurs, and shoots; under ideal infection conditions, the fungus can rot individual cherry fruit within 24 hr (see figure). The fungus sporulates from infected fruit, continually increasing inoculum for further infections to other fruit on the tree. Under ideal conditions, sporulation can be initiated within three days after infection. ABR causes fruit rot before and after harvest, greatly reducing the quality and quantity of the crop, particularly in heavily bunching sweet cherry varieties.

Factors that contribute to ABR infection before harvest include warm, wet conditions as the fruit begin to ripen and increase in sugar content. The optimal temperature for infection is between 67 and 77°F, and spore production is greatest between 59 and 74°F. Although fruit injury may lead to increased infection, the ABR fungus can cause infections when no wounds are present. Other factors influencing increased infection are fruit-to-fruit or fruit-to-branch contact on trees.

The ABR fungus is a prolific sporulator; each infected fruit is a ready source of large numbers of new spores. As stated above, initial fruit infection to sporulation occurs in as little as 3 days; thus, growers need to keep fruit surfaces covered when conditions are optimal for infection. Also, if growers are scouting and observe fruit infected with ABR, it is likely that there are many other fruit that are infected but not showing symptoms yet. It is not possible to stop brown rot infections on fruit once they are initiated; however, fungicide applications will protect other fruit that have not been infected.

The two most important issues in ABR control of fruit infection are use of an effective fungicide and fungicide coverage of fruit surfaces.

Although this article focuses on the SDHI fungicides, there are three main classes of fungicides with effectiveness against ABR:

Sterol inhibitors (SIs): Indar, Elite, Orbit, Quash

Succinate dehydrogenase inhibitors (SDHIs): Merivon, Luna Sensation, Fontelis
Strobilurins: Gem

The SIs, Indar in particular, have been the most effective fungicide class to protect fruit from ABR since the late 1980s. However, based on orchard surveys conducted over the previous three years, our results have shown that the sensitivity of the *M. fructicola* isolates to Indar has been declining. Fungal sensitivity/resistance to SI fungicides acts in a quantitative manner, meaning that a fungus with a decreased sensitivity to one rate can be controlled by a higher rate of the same fungicide. Results from orchard surveys conducted by the Sundin lab from 2007-2013 have indicated that there is clear shifting in the ABR population, and that approximately 5% of the ABR isolates in Michigan are resistant, and 50-75% of all isolates are shifted, which indicates reduced sensitivity. Our work has shown that the 12 fl. oz./A rate of Indar does not affect many of the SI-resistant isolates at all; at best, this rate of Indar will only limit growth of reduced sensitive isolates for 4-5 days maximum.

Thus, to ensure effective control of ABR this year especially on sweet cherry and peach, if SIs are used, they should be rapidly alternated with fungicides from other classes, including Merivon, Luna Sensation, or Gem. All ABR applications should be tank-mixed with Captan for resistance management, as Captan has some activity against ABR and will be critical for protection of the SDHIs and strobilurin fungicides from future resistance development.

Merivon. Merivon is a premix of the SDHI fluxapyroxad and the strobilurin pyraclostrobin and has shown excellent activity against fruit ABR in tests conducted on peach in orchards in Georgia with SI-resistant *M. fructicola*. The rate range on the label for Merivon is broad, 4 to 6.7 fl. oz./A. In studies conducted in Georgia and North Carolina, similar results were obtained using 5.5 or 6.5 fl. oz./A. For Michigan in 2014, a tank mix of Merivon at 5.5 fl. oz./A + Captan 80WDG at 2.5 lbs./A should provide excellent control of fruit brown rot.

Luna Sensation. Luna Sensation is a premix of the SDHI fluopyram and the strobilurin trifloxystrobin. Trifloxystrobin is also sold individually as Gem. Luna Sensation has also shown excellent activity against fruit ABR and should be used in a tank mix with Luna Sensation at 5.5 fl. oz./A + Captan 80WDG at 2.5 lbs./A. Luna Sensation is not registered on peach.

Fontelis. The active ingredient of Fontelis is the SDHI penthiopyrad. Fontelis has good activity against ABR fruit infection and should be used at the high label rate of 20 fl. oz./A + Captan 80WDG at 2.5 lbs./A. On cherry, remember that Fontelis has no activity against cherry leaf spot.

Summary. Staying ahead of fruit brown rot infection means keeping fruit surfaces covered with effective fungicides, especially when weather conditions favor ABR infection (as we have seen for the majority of the 2014 growing season). Use the best fungicide combinations (Merivon or Luna Sensation + Captan) on the most susceptible crops (sweet cherry and peach). For less susceptible crops such as tart cherries, Indar (12 fl.oz./A) plus Captan application may be more effective. Gem + Captan can also be used.

The 24(c) SLN label for Indar calls for applications at 7-10 day intervals. Thus, an alternative fungicide must be applied within 4-5 days of an Indar application, particularly if weather conditions are warm (highs in the 70s-low 80s) with rain. The best alternative to Indar for ABR fruit rot control are the new SDHI premixes Merivon and Luna Sensation. An alternating fungicide approach of Indar + Captan, SDHI + Captan, Indar + Captan, SDHI + Captan would represent our current, best strategy for ABR control. Also, the use of the SDHI as the last spray before harvest would ensure the longest effective control of ABR postharvest.

TREE DEATH AND DIEBACK ARE EVIDENT IN APPLE FOLLOWING MICHIGAN'S HARD WINTER

Winter-killed and winter-injured apple trees exhibiting dieback symptoms have been observed throughout Michigan. Dead and dying apple trees and branches should be removed and burned as this tissue can be colonized by secondary fungal pathogens.

Posted on **June 24, 2014, MSUE News,** by **George Sundin**, Michigan State University Extension, Department of Plant, Soil and Microbial Sciences, Amy Irish-Brown, Phil Schwallier and Nikki Rothwell, Michigan State University Extension

Winter injury or cold damage on apple trees is evident throughout Michigan as a result of the abnormally cold and long winter of 2013-2014. In the most severe cases, winter injury has resulted in tree death that became apparent when trees began to leaf out this spring. In other, less severe situations, affected trees look generally unhealthy as they head into the season—these trees may die later this summer, and if they survive, will remain weak for the remainder of their lives. We have commonly observed orchard blocks with collapsed, dying, or whole dead trees in orchards across the state. These trees collapse as the winter-killed stem tissue loses its ability to keep up with the physiological demands of the tree (Photos 1 and 2).

Photo 1, left, Winter-killed McIntosh trees in Northwest Michigan. **Photo 2**, right, Winter-killed Empire tree in Northwest Michigan.

The other common symptom we have observed is when a portion of the tree is dead, and in many cases, the bottom scaffolds of the tree that were under the snow survived and any tissue above the snowline has died back (Photo 3). Winter-killed stem tissue appears discolored, can appear as an external "bruise", and can be soft to the touch. Peeling away the bark tissue reveals brown, dead tissue in the inner stem (Photo 4), which is the source of the dieback above the killed area.

Photo 3. Dieback of Fuji trees above winter-killed stem tissue.

Many unique and interrelated factors have contributed to the winter injury this year. Because very cold minimum temperatures were common this winter, the tendency to isolate cold injury in traditionally low and "frosty" spots in orchards is not applicable this season. All trees in an orchard experienced extremely cold temperatures multiple times this past winter, which is likely why we are observing tree mortality throughout the block rather than just in the low spots. The worst problems may be associated with specific cultivars, as we have seen higher amounts of damage in Fuji and McIntosh on the Ridge and Jonagold, Mutsu, and Empire in Northwest Michigan. The dieback is also showing up at different times within blocks; this is likely the result of the injury within individual trees or the health of each tree as they headed into the winter. In cases where the injury was more severe, tree dieback has occurred earlier in the season. In orchards where the damage appears to be less severe, trees have leafed out and even flowered before they collapse. Over time, trees that were less severely impacted by cold temperatures will exhibit a general feature of declining health that can continue over the next few seasons and can still result in tree death.

Photo 4. Examination of winter-killed stem tissue revealing internal brown, winter-killed tissue in the inner stem.

There are other factors contributing to the winter injury issues we have observed this year First, the heavy crop of 2013 weakened trees as they headed into the winter. Another potential issue is the late hardening off or lack of hardening off of trees going into winter. This is evident by the presence of 2013 leaves still clinging to the terminals. Trees that have been heavily fertilized, or over-fertilized, may have dormancy issues going into winter that are ultimately observed as winter injury. Also, last year there were numerous areas with a long summer drought contributing to the tree stress going into 2013's fall dormancy.

Winter-killed tissue is an optimal habitat for secondary fungal pathogens, but we remind growers that these secondary fungi are not the primary cause of the dieback. Although these secondary pathogens are widespread in Michigan, we do not want to increase their establishment in Michigan orchards. For example, the black rot pathogen Botryosphaeria can be problematic if it is a constant presence in orchards because we can have later problems with black rot infection and rot in maturing fruit on particular cultivars. Therefore, we are recommending that winter-injured trees, or impacted branches, should be removed and burned to minimize infection by these secondary fungi.

Winter-damaged trees need additional care this 2014 season to reduce the current tree stress. Michigan State University Extension recommends applying additional early summer fertilizer, reducing the crop load, keeping trees watered and pruning trees to a more open canopy. We predict fruit trees will continue to show new symptoms and dieback the next two years. Trees might struggle with secondary fungal infections for a couple of years.

Drs. Sundin and Rothwell's work is funded in part by MSU's AgBioResearch.

ENSURING HIVE SUCCESS THIS JULY 2014

Swarming and splitting season is closing, honey flow is starting.

Posted on **June 24, 2014, MSUE** News, by **Ben Phillips**, Michigan State University Extension, Walter Pett, Michigan State

Weeds to some, sweets to the rest. White dutch clover is an extremely valuable honey plant that happens to coexist with turf grasses. Photo credit: genieinthegarden.com

This is a recap of Michigan State University Extension visits with commercial and hobby beekeepers over the last month, with a look to the future. The honey flow is just beginning, and a large proportion of the nectar that is brought back to the hives right now is from this one sneaky little lawn flower, the white

dutch clover. Catulpas have been blooming, and it looks like Basswood is just coming on. Here are some things beekeepers should be wise to right now, going into July.

Stop feeding

Your bees are finding everything they need right now, however, feeding a newly split colony is warranted to boost populations as their workers are busy drawing new comb out instead of foraging.

Wait for control of varroa mites

Most varroa mite control products are legally restricted from use while honey supers are on. If you still have ApiGuard or ApiVar strips or something like that in the hive, you should take them out as you add honey supers until you harvest in the fall. However, the Michigan Department of Agriculture and Rural Development has approved an emergency section 18 exemption for the use of Hopguard and Hopguard II that allows the use of those products in the brood chamber even if the honey supers are on. But, you cannot harvest wax or honey from the brood chambers. The Section 18 label needs to be printed, followed, and kept with your records if you are using it.

Vent

Tilt the top cover to allow better airflow through the colony, or add holes on the handle ends of one of your supers. Avoid putting a hole right around where you would grab!

Super with deeps or mediums

Queens are going to run out of room to lay eggs as workers fill frames with nectar and pollen. Look for lots of frames of sealed brood to indicate high hive populations. Adding supers on top will expand the area for honey storage above the brood chamber and relieve some of the pressure. Medium sized supers are a good idea if your stacks are getting high, but using deeps for honey is a good way to cycle out old full-sized brood comb. Placing an empty super above the brood boxes, but below the current honey super, is called “bottom-supering.” It’s a good way for hobbyists with more time on their hands to encourage more rapid honey storage.

Sealed brood (center) is identified by its opaque capping and is usually tended by bees more heavily than the translucent capped honey (corners). Photo credit: greenroadfarm.com

Catching a swarm

“A swarm in May is worth a bale of hay. A swarm in June is worth a silver spoon. A swarm in July ain’t worth a fly.” Economics was a different animal when that quote was coined, but the sentiment remains the same. A July swarm isn’t worth your time or money, because it likely won’t accrue enough honey stores for itself to survive the winter. But, you still have some time to capture or trap one with a bait hive. Despite the popular view of swarms as dangerous, it is one of the most docile behaviors to observe of honey bees. They eat so much honey before they leave that they can’t sting you very easily. It’s like doing sit-ups after a Thanksgiving dinner: they just don’t even try. One exception to that rule is if it’s rainy.

A large hanging swarm. Photo credit: Walter Pett, MSU Extension

To capture a swarm, they key is to get the queen and the rest will follow. She’s usually smack-dab in the middle of the cluster, closest to where it attaches to an object. But you may not need to see her to know that you’ve been successful. A hanging swarm can be shaken into a fresh hive box with some frames removed, or snipped from its perch and leaned against the bottom board. The bee’s natural inclination will be to travel up and into the dark hive. Swarms that wrap around vertical objects, like vehicles or tree

trunks, require brushing. You will need to patiently observe their behavior to determine if the queen is drawing them into your box, back to the swarm point, or someplace else.

Once you've captured a queen and swarm, the flyers that were searching for a new colony site will return to the swarm point and wonder where everyone went. If you watch the new hive you will observe bees wagging their abdomens and fanning their wings around the outside of the hive. They are calling those flyers to the new home, and the flyers will make ever-widening circles around the swarm point until they catch the scent and follow it. That fanning is another good sign that the queen has accepted the hive. Here's a YouTube video of a recent capture at a Macomb County vegetable farm that shows a swarm crawling up a snipped branch to enter a hive where fanning bees are indicating successful adoption.

Research collaboration opportunity

The Conservation Technology Information Center has a new research collaboration opportunity for farmers to document the benefits of cover crops as habitat and nutritional sources for pollinators. To become involved in or learn more about the Economic, Agronomic and Environmental Benefits of Cover Crops project, visit www.ctic.org/CoverCropMath, or contact Sara Hagmann at 765-494-9555 or hagmann@ctic.org .

Upcoming events

The 3rd Annual Michigan Honey Festival is occurring at the Harvey Kern Pavilion in Frankenmuth, Michigan this year on July 12 from 10 a.m. to 5 p.m. The cost is five dollars for adults, and free for children. There will be lots of fun stuff going on, including a bee beard demo, mead tasting and hive decorating contest.

The Michigan Beekeepers Association summer picnic is being hosted this year by the Saginaw Valley Beekeepers Association at the Thumb Octagon Barn Agricultural Museum, located at 6948 Richie Rd, Gagetown, MI 48735, on July 26 from 12 p.m. to 4 p.m. There will be a white elephant gift exchange, 50:50 raffle and a demonstration on scouting for varroa mites. There will be some meat dishes provided, but the SVBA asks that attendees also bring a dish to pass.

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

MSU CLARKSVILLE RESEARCH CENTER (CRC) WILL BE HOLDING ITS 2014 TREE FRUIT RESEARCH SHOWCASE

The MSU Clarksville Research Center (CRC) will be holding its 2014 tree fruit research showcase and field day on **July 10** from **9AM to 5PM**. Come join us to see the latest, cutting edge research from the MSU tree fruit team. Phil Schwallier and Dr. Ron Perry will discuss and demonstrate hedging systems for high density fruit and discuss new thinners. Dr. Amy Iezzoni will show and discuss some of the latest tart cherry selections being developed and tested at CRC including selections resistant to leaf spot and the strategy for breeding for Armillaria resistance. Dr. Greg Lang will showcase high density training systems for sweet cherry and other stone fruits and the use of protective covering systems, such as high tunnels, for fruit production. Drs. Ron Perry, Matt Grieshop and others will demonstrate Solid Set Canopy Delivery Systems in apples and cherries and highlight the innovative applications of these systems for pest

management and microclimate modification. Lunch will be provided and the event is free to the public. More information, an event flyer and a (free) registration form will be released in mid-June.

2014 HOPS FIELD DAY & TOUR – August 15

MSU Extension is offering a **Hops Field Day and Tour** on **Friday, August 15 from 8 a.m. – 5 p.m**. Participants will meet at the MSU Horticultural Research Center (6686 South Center Highway, Traverse City, MI 49684), board a chartered bus and travel to **Empire Hop Farm** on the Leelanau Peninsula to tour one of the largest hop yards in Michigan and a new hop processing facility. The group will then travel to **Northport Brewing Company**, for lunch and a tour. In the afternoon participants will travel by bus to tour **New Mission Organic's** hop yard and processing operation near Omena and then onto **K & K Farm** south of Suttons Bay.

Throughout the tour hop growers will be on site to discuss all aspects of hop production; initial costs, plant care, disease and insect management, short and tall trellis systems, trellis construction, and organic and conventional growing practices. The group will then return to the Research Center for an educational beer tasting led by Executive Director, **Scott Graham**, of the Michigan Brewers Guild, along with several Michigan brewers.

The cost is $85 per person which includes lunch, charter bus transportation and handouts. **Pre-registration is required by debit/credit card online and space is limited**. **Due to the popularity of this event, payment is due at the time of online registration. Because of liability issues and space, participants will NOT be allowed to drive their personal vehicle on this tour; please don't ask.**

To register, go online to **hops.msu.edu**.

Once you are registered, you will receive confirmation immediately by email, and an agenda and directions the week prior to the event by email.

Don't delay, this tour fills quickly! If you have any questions, contact **Rob Sirrine**, or **Annette Kleinschmit** at the Leelanau MSU Extension office at 231-256-9888 or msue45@msu.edu.

We thank our gracious program sponsors: Empire Hop Farm, Michigan Brewers Guild, Michigan Hop Alliance, New Mission Organics, K & K Farm and Northport Brewing Company.

Hoppy day,

Annette

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status, family status, or veteran status. Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities.

WEB SITES OF INTEREST:

Insect and disease predictive information is available at:

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

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

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

60 Hour Forecast

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

Information on cherries is available at the new cherry website:

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

http://apples.msu.edu/

Fruit CAT Alert Reports has moved to MSU News

http://news.msue.msu.edu

MICHIGAN STATE UNIVERSITY | Extension

SOIL HEALTH WORKSHOP

Tuesday, July 15, 2014

9:00 a.m. – 3:00 p.m.

NRCS Rose Lake Plant Materials Center
(7472 Stoll Road, East Lansing, MI 48823)

This hands-on soil health training will focus on measuring soil health using the NRCS Soil Health Kits, using a rain simulator to demonstrate how various management practices impact water movement in soils, and a soil pit to view root profiles of various cover crops below ground.

The workshop will include some classroom training with most of the focus being hands-on in the field activities. Participants will learn about the principles of soil health and the tools to measure them. Discussion will focus on agronomic practices that can improve soil health and how to assist farmers in implementing these practices.

There is no cost for attending this workshop. Lunch will be provided.

Please register for this workshop by contacting:

John Leif, Rose Lake Plant Materials Center
(517) 641-6300
john.leif@mi.usda.gov

Paul Gross, MSU Extension
(989) 317-4079
grossp@anr.msu.edu

Christina Curell, MSU Extension
(231) 745-2732
curellc@anr.msu.edu

AGENDA ITEMS INCLUDE:

- Healthy Soils & Why It Matters
- Characteristics of Healthy Soils
- Soil Health Management Systems - Planning for Healthy Soils
- How Management Impacts Soils - Rainfall Simulator Demonstration
- Testing for Healthy Soils - Soil Test Kits In The Field
- Soil From a Worms Perspective - Soil Pit, Matt Bromley, NRCS

Isabella County MSU Extension
200 N. Main St.
Mt. Pleasant, MI 48858
Phone: (989) 317-4079

Cherry Production

ISSN: 1948-9072

Released June 25, 2014, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, United States Department of Agriculture (USDA).

Tart Cherry Production Down 10 Percent

United States tart cherry production is forecast at 264.4 million pounds, down 10 percent from the 2013 production.

In Michigan, the largest producing State, the crop is widely varied this year due to colder than normal weather leading to reports of winterkill and freeze damage.

New York and Pennsylvania growers expect smaller than average crops this year. Many growers reported damage due to freezing temperatures during bloom.

In Wisconsin, some respondents reported damage to trees from harsh winter weather.

Oregon growers expect an average crop this year.

Utah growers are expecting high yields this year.

In Washington, growers reported very good weather and are expecting a significant increase in production from last year.

Tart Cherry Production – States and United States: 2012, 2013, and Forecasted 2014

State	Total production		
	2012	2013	2014
	(million pounds)	(million pounds)	(million pounds)
Michigan	11.6	217.9	181.5
New York	2.7	12.0	6.0
Oregon	1.0	3.8	3.0
Pennsylvania	3.3	2.2	0.9
Utah	40.0	27.5	36.0
Washington	24.8	17.9	26.0
Wisconsin	1.7	12.4	11.0
United States	85.1	293.7	264.4

Sweet Cherry Production Down 2 Percent

United States sweet cherry production is forecast at 326,240 tons, down 2 percent from 2013.

In California, warm and dry winter weather reduced chilling hours. Poor pollination resulted in minimal set and record-low yields. The harvest ended mid-June.

In Michigan, development is behind normal due to the long winter and delayed spring. Yield is highly variable throughout the state.

New York growers expect a smaller than average crop. Many growers indicated that production potential was reduced due to freeze and frost at the time of bloom.

Growers in Idaho, Oregon, and Washington reported excellent weather this year. Winter conditions were moderate and warm spring conditions resulted in an excellent bloom and good pollination levels.

Utah growers also reported favorable growing conditions.

Sweet Cherry Production – States and United States: 2012, 2013, and Forecasted 2014

[Blank cells indicate estimation period has not yet begun]

State	Total production		
	2012	2013	2014
	(tons)	(tons)	(tons)
California	92,300	82,000	30,000
Idaho	3,600	2,300	2,900
Michigan	4,250	22,900	25,800
Montana [1]	2,250	1,665	
New York	300	1,225	1,690
Oregon	56,000	52,000	65,000
Utah	1,300	430	850
Washington	264,000	169,000	200,000
United States	424,000	331,520	326,240

[1] The first estimate for 2014 sweet cherries in Montana will be published in the January 2015 *Noncitrus Fruits and Nuts 2014 Preliminary Summary.*

Statistical Methodology

Survey Procedures: Grower surveys were conducted in 9 cherry estimating States. Producers were contacted to obtain expected yield or production and their assessment of the current crop relative to a full crop. Telephone follow-up of mail survey non-respondents was used to ensure adequate coverage.

Estimating Procedures: Information obtained from the cherry grower surveys were used to establish estimates of sweet and tart cherries. These estimates were reviewed for errors, reasonableness, and consistency with historical estimates and industry check data.

Revision Policy: All sweet and tart cherry estimates are subject to revision the following year based on a thorough review of all available data.

Reliability: Survey results are subject to non-sampling errors such as omission, duplication, imputation for missing data, and mistakes in reporting, recording, and processing the data. These errors cannot be measured directly, but are minimized through rigid quality controls in the data collection process and a careful review of all reported data for consistency and reasonableness.

Information Contacts

Listed below are the commodity statisticians in the Crops Branch of the National Agricultural Statistics Service to contact for additional information. E-mail inquiries may be sent to nass@nass.usda.gov

Lance Honig, Chief, Crops Branch ..... (202) 720-2127

Jorge Garcia-Pratts, Head, Fruits, Vegetables and Special Crops Section ..... (202) 720-2127
- Vincent Davis – Fresh and Processing Vegetables, Onions, Strawberries ..... (202) 720-2157
- Fred Granja – Apples, Apricots, Cherries, Plums, Prunes, Tobacco ..... (202) 720-9085
- LaKeya Jones – Citrus, Coffee, Grapes, Sugar Crops, Tropical Fruits ..... (202) 720-5412
- Greg Lemmons – Berries, Cranberries, Potatoes, Sweet Potatoes ..... (202) 720-4285
- Dave Losh – Hops ..... (360) 709-2400
- Dan Norris – Austrian Winter Peas, Dry Edible Peas, Lentils, Mint, Mushrooms, Peaches, Pears, Wrinkled Seed Peas, Dry Beans ..... (202) 720-3250
- Daphne Schauber – Floriculture, Maple Syrup, Nursery, Tree Nuts ..... (202) 720-4215

Access to NASS Reports

For your convenience, you may access NASS reports and products the following ways:

- All reports are available electronically, at no cost, on the NASS web site: http://www.nass.usda.gov
- Both national and state specific reports are available via a free e-mail subscription. To set-up this free subscription, visit http://www.nass.usda.gov and in the "Follow NASS" box under "Receive reports by Email," click on "National" or "State" to select the reports you would like to receive.

For more information on NASS surveys and reports, call the NASS Agricultural Statistics Hotline at (800) 727-9540, 7:30 a.m. to 4:00 p.m. ET, or e-mail: nass@nass.usda.gov.