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Northern Michigan FruitNet 2008
Weekly Update
NW Michigan Horticultural Research Station

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June 3, 2008

GROWING DEGREE DAY ACCUMULATIONS AS OF JUNE 2nd AT THE NWMHRS

Year	2008	2007	2006	2005	2004	2003	18yr. Avg.
GDD42	575	827	841	690	578	604	662.9
GDD50	271	451	449	337	261	278	336.9

Growth Stages at NWMHRS (6/2/08—4:00 p.m.)
Apple: Late petal fall
Pear: Bartlett: 9 mm fruit
Sweet Cherry: Hedelfingen: 9 mm fruit
Napoleon: 10 mm fruit
Gold: 10 mm fruit
Tart Cherry: Montmorency: Late shuck split
Balaton: Late shuck split
Apricot: 15 mm fruit
Plum: Shuck split
Grape: 4-8" shoots

Weather Report
We are at 271DD base 50 at the NWMRHS. Temperatures warmed for the first time since April—the daytime high's reached into the low 70's on Thursday, Friday, Sunday, and Monday. We received 0.22 inches of rain on Friday evening, and last night the region received between 0.1 and 0.25 inches of rain.

Crop Report
Damage from last week's freeze event resulted in variable amounts of damage across the northwest. Unfortunately, we have observed that apples have been hit particularly hard as they are planted on some of our lower sites. We have also seen a lot of damage in sweet cherries, especially those fruits on the upper sides of the branches where cherries were not covered by foliage. Tart cherries in most places look fairly good as many orchards in the region were still in the shuck. Winegrapes have sustained some damage, even on sites that have been optimal for winegrape production in the past. Strawberries have moderate damage as most growers have been frost protecting in the past few weeks. All fruit in moderate to poor sites has been hit exceptionally hard. Benzie County and some southern parts of Leelanau, Antrim, and Grand Traverse counties were more vulnerable than their counterparts to the north as southern sites were further along in development.

Pest Report

Apples. Most of the NW region had an **apple scab** infection predicted over the weekend. The infection period ended overnight as temperatures and humidity levels dropped. The **fire blight** model is predicting EIP values to exceed 100 yesterday, today and tomorrow. Rain is in the forecast throughout the region over the next few days and into the weekend and with blossoms still vulnerable, streptomycin sprays should be applied. **Codling moths** have biofixed in the southern areas of the region and sporadically as far north as the research station. **Spotted tentiform leafminer** catches are decreasing, and we are catching our first few **Oriental fruit moths** in the station trap line.

Cherries. Most of the region had a **cherry leaf spot** infection period predicted over the weekend due to the warm, wet weather**. American plum borer** moths have been caught in increasingly larger numbers (about 12 per trap at the station), and **lesser peach tree borer** are beginning to emerge. **Green fruit worm** moths continue to fly, and we captured our first male **San Jose scale** in pheromone traps on Old Mission Peninsula in a sweet cherry block.

Grapes. Grapes have been slow in growth, but **grape berry moths** have been caught in one Leelanau County vineyard where 24 moths were trapped last Thursday.

USDA DRIED CHERRY PURCHASE

The USDA announced a purchase on May 27th of 44,352 cases of dried cherries under the bonus purchase process. (You will find this at http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateD&page=FVProcurementWeeklyPostings
This purchase amounts to a bit over 3.5 million RPE pounds of cherries.

In this crop year, the USDA has purchased 8.26 million pounds of finished tart cherry products. They had indicated their intent to purchase 8.1 million pounds of these products. The USDA's purchases translate to 19.3 million RPE pounds of cherries of which 18.2 million RPE pounds were bonus purchases allowing for releases from the reserves.

SCAB CONTROL RECOMMENDATIONS AND SCOUTING TECHNIQUES

Recommendations for early-season scab control (Dave Rosenberger, Cornell Univ.):

1. Start early! Plan to use contact fungicides beginning at the green tip bud stage and again 7-10 days later. Appropriate spray intervals will vary depending on temperature (i.e., tree growth rate), rainfall, and predicted infection periods. Delaying the first spray beyond green tip is risky except when apple scab ascospore maturity is considerably delayed compared with "average" years or where orchards had virtually no scab the previous season. The latter can be determined only by carefully observing terminal leaves for scab symptoms during October. Growers should not assume that they have "clean" orchards just because they failed to notice scab from the tractor seat.

Sprays between green tip and tight cluster can prevent early scab infections that would otherwise generate secondary inoculum for infecting leaves and fruit between bloom and first cover. In most cases where significant fruit scab is present at harvest, the origins of the problem can be traced to poor scab control during the prebloom period.

Even the best fungicides will often fail when the following three conditions occur simultaneously:

1. Trees are growing rapidly, thereby generating large quantities of susceptible tissue.
2. Extended rains favor scab and interfere with spraying during the period between late bloom and second cover.
3. Primary scab lesions are visible at petal fall, thereby providing huge quantities of inoculum.

The first condition occurs every year during the spring growth flush that begins near petal fall. The second condition is both unpredictable and uncontrollable. Therefore, the only fool-proof way to avoid a scab disaster is to prevent condition #3. Careful prebloom scab control is the key to ensuring that no secondary inoculum is available during the interval between petal fall and second cover.

Scouting for scab (NY IPM, Cornell Cooperative Extension)**:**

Determine the end of the primary scab season by using the apple scab ascospore maturity model. The supply of ascospores is considered depleted at the end of the first daytime rain event following accumulation of 760 DD (base 32°F) counting from bud break. Fungicide coverage should be maintained for at least another 14 days after the end of the primary scab season to allow time for an assessment of primary scab control.

Scout orchards for evidence of primary scab, beginning 10—14 days after the predicted depletion of the apple scab ascospores. Scout for apple scab by examining leaves and fruit on 50 clusters on each of 5 trees per block. If scab is found in two or more clusters, cover sprays of a protectant fungicide should be applied at 10—14-day intervals either until terminal leaves stop growing or until summer temperatures exceed 85°F for three or four days. High temperatures reduce the viability of conidia. The number and timing of subsequent summer sprays will depend on varietal susceptibility, weather conditions, market requirements for clean fruit, and other diseases of concern. Fruit becomes less susceptible to infection during July and August but can still become scabbed during long wetting periods, particularly if secondary inoculum is abundant. Keep scouting for the presence of scab lesions on later terminal leaves, especially if summer weather has been wet and summer fungicide programs have been relaxed.

Scab recommendations (George Sundin, Michigan State University):

If we control primary scab, then we will have good control for the rest of the season. To protect the trees from primary scab, a protectant fungicide must be used. A protectant acts as a shield, as it has residues that kill or inactivate spores preventing germination —the residue has to be present on the leaf or fruit prior to the infection period. A systemic fungicide is absorbed by the plant and translocated through the cuticle. An eradicant or curative fungicide stops the progression of the scab disease, and fungicides that kill fungus after infection do so within a fairly limited time period. For resistance management, growers should control the fungus with protectants because if scab is given a chance to grow, there is a higher chance of mutation during that growth. Mutations in fungal growth are the main sources of resistance development; hence, controlling fungus before growth occurs lowers the probability of developing resistance.

Chemical Classes

Anilinopyrimidines
-Vangard: 3 oz rate or 3oz tank-mixed with Captan or EBDC
-Scala: 10 oz rate is most effective
**Efficacy—good against primary scab; less effective against fruit scab*
**Best activity under cool conditions; early sprays (green tip-tight cluster)*
**Resistance concerns*

EBDC's
-Polyram, Dithan, Manzate, Mancozeb (6lb full rate or 3lb in mixture)
**Efficacy—very good at full rate against primary fruit and leaf scab*
**Broad-spectrum protectant, good retention, good redistribution, 77-day PHI*
**No resistance concerns*

Dodine
-Syllit, 24 oz rate
**Resistance is known in Michigan, not sure how widespread*
**Good activity with later sprays, early sprays do not work well*

Stobilurins
-Sovran: 6.4 oz rate
-Flint: 2 oz rate
**Efficacy—excellent against primary scab (fruit and leaf)*
**48 hour post-infection activity, but best used as protectant*
**Best chemistry for apple scab right now*
**Resistance concerns—2 sprays early in season, but not back to back*

Sterol Inhibitors
-Nova: 8 oz rate

-Elite:
-Rubigan: 12 oz rate
**Resistance in apple scab in Michigan, control failure risks*

Phthalimides
-Captan: 6-8lb rate
**Efficacy—good to very good scab control, especially secondary scab*
**No PHI concerns*
**Broadspectrum protectant, very good retention and redistribution*
**Not compatible with oil, can tank mix with Topsin-M for summer disease control*
**No resistance concerns*

CODLING MOTH MANAGEMENT

Erin Lizotte, IFP/IPM District Educator, NWMHRS
Larry Gut and John Wise, Dept of Entomology, MSU

We are beginning to reach biofix for codling moth as far north as the research station in Suttons Bay and biofix was reached in the Benzie area as of last Wednesday. Because biofix is location specific, all growers should be monitoring each of their apple blocks. Included below is a table to help time insecticide applications for optimal gain in terms of targeting multiple pests for maximum efficacy. Additionally, new recommendations were developed by Drs. John Wise and Larry Gut, Dept of Entomology, MSU, for first generation management and are explained based on the newer chemistries available.

Factors to Consider in Codling Moth Management

Pressure as measured by pheromone trapping
Efficacy of treatments in the past
The insecticides mode of action
The life stage an insecticide is active on

Chemical class, activity and timing of insecticides for codling moth and alternate pest control (J. Wise & L. Gut 2008).

Trade Name	Chemical Class	Life-stage activity	Optimal timing for codling moth	Other Pests Controlled at this Timing	Mite Flaring Potential
Asana, Warrior, Danitol, Decis, Bathyroid XL	Pyrethroids	Eggs, Larvae, Adult	Biofix + 250 DD_{50}	Tarnished plant bug, Oriental fruit moth	High
Guthion, Imidan	Organophosphates	Eggs, Larvae, Adult	Biofix + 250 DD_{50}	Plum curculio, leafrollers (not OBLR), Oriental fruit moth	low-medium
Rimon	Insect growth regulator	Eggs, Larvae	Biofix + 100-150 DD_{50} Residue under eggs	Oriental fruit moth, obliquebanded leafroller, spotted tentiform leafminer	Medium, in combination with pyrethroids
Delegate	Spinosyn	Larvae	Biofix + 250 DD_{50}	Obliquebanded leafrollers	
Altacor	Anthranilic diamide	Eggs, Larvae	Biofix + 250 DD_{50}	Obliquebanded leafrollers	
Assail, Calypso	Neonicotinoid	Eggs, Larvae, Adult (limited)	Biofix + 200-250 DD_{50} Residue over eggs	Sucking insects: leafhoppers, aphids, plum curculio, Oriental fruit moth and spotted tentiform leafminer	Medium
Intrepid	Insect growth regulator	Eggs, Larvae, Adult (sublethal)	Biofix + 150-200 DD_{50} Residue over eggs	Obliquebanded leafrollers	Low
Avaunt	Oxidiazine	Larvae	Biofix + 250 DD_{50}	Plum curculio	Low
Esteem	Insect growth regulator	Eggs, Larvae	Biofix + 100 DD50 Residue under eggs	Rosey apple aphid, San Jose scale	Low
			Biofix + 250		

Proclaim	Avermectin	Larvae	DD_{50}	Obliquebanded leafrollers	Low

New Recommendation for Early Codling Moth Management

Combining an early ovicide and delayed larvicide application
Rimon is applied as ovicide (100 DD_{50}) and then Assail, Calypso, or Altacor is applied as a larvicide (350-400 DD_{50}Post biofix)

Provided highly effective control of 1st generation in MI orchards
We can delay the larvicide because the early ovicide kills eggs that would have hatched in the period starting at 250 DD_{50}

The delayed larvicide also more effectively targets the timing when the majority of hatch occurs (50% hatch 2-3 weeks following 350 DD_{50})

Additional information about ovicide/larvicide based programs was developed at Washington State University and can be found at http://entomology.tfrec.wsu.edu/op-alternative/

PLUM CURCULIO BIOLOGY AND MANAGEMENT
Erin Lizotte, IFP/IPM District Educator

Lifecycle

Plum curculio typically migrates into orchards around bloom. Movement from overwintering sites to orchards is most reliably linked with either a maximum daily temperature of 75ºF for two to three days, or a mean daily temperature of 55-60ºF for three to six days. Peak activity and the critical time for control usually occur over 10 to 15 days beginning at petal fall. Females are mated before fruit set and are ready to lay eggs in fruit as soon as it becomes available. Egg laying can extend through June. The female deposits eggs under the skin of the fruit, leaving a crescent-shaped scar just below the egg-laying site. The hatching larva feeds inside the fruit. Mature larvae drop from fruit and pupate in the soil to complete development. They emerge as adults in late June through August and remain in the orchard until harvest. Adults prefer the dense shade of the tree's inner canopy. In Michigan, this summer generation does not lay eggs until the following spring. Early-season varieties are considered most susceptible to both feeding and oviposition damage. As fruit mature, older oviposition scars take on a broad, fanlike appearance.

Monitoring

Traps can be used early in the season to capture curculios as they move into the orchard. After fruit is present, visually inspect several fruit per tree for signs of feeding or egg laying, specifically trees adjacent to hedgerows and woodlands, or other hot spots. Beating trays can also be used to detect adults and there is a forecast models for plum curculio available at www.enviroweather.msu.edu

Management

Although PC may be in the orchard before fruit is present, this is not the appropriate time for control with organophosphates, but different strategies must be used when applying the new, "softer" insecticides.

Traditional Pesticide Based Program

Organophosphate application usually occurs 2-3 weeks after shuck split as young fruit develops.
Use of a the tart cherry PC degree day model can delay organophosphate treatment until 375 GDD50 after full bloom (we were at full bloom on 5/16/2008, so we have only accumulated 79 DD50 so far). This model is not applicable for use with other insecticides.
Eggs laid prior to 375 GDD50 will produce larvae that develop and exit the fruit or die in the fruit and cause it to drop from the tree before harvest, essentially eliminating larvae in the tank at harvest.
Oviposition stings that occur at 375 GDD50 or later after bloom result in larvae in the fruit at harvest.
References: Epstein, D., L. Gut, and G. Sundin. 2004. A Pocket Guide for IPM Scouting in Michigan Apples, MSUExtension Bulletin E-2720.

CHERRY LEAF SPOT
Erin Lizotte, IFP/IPM District Educator, NWMHRS

Cherry leaf spot (CLS) is arguably the most damaging fungal pathogen of tart cherry. CLS primarily infects the foliage and as a result reduces the trees' photosynthetic ability. Infected leaves eventually defoliate. When significant defoliation occurs before harvest, the fruit is soft and immature, has low soluble solids, and ripens unevenly. Significant defoliation can be quantified based on the standard that at least two leaves are needed to effectively ripen each cherry on tart trees. Following severe defoliation, trees are susceptible to winter injury because of the loss of photosynthates and therefore stored carbohydrates in roots. Blossom production is also reduced for at least two subsequent years.

CLS overwinters on fallen leaves on the orchard floor and produces apothecia (sexual spore-bearing structures) in the spring. The primary infection period may last 2-6 weeks depending on conditions; low temperatures delay the maturation of apothecia. Ascospore release increases when drying occurs following a wetting event. Infection occurs through the leaf stomata, and leaves remain susceptible throughout the growing season. Following infection, acervuli (asexual spore-bearing structures) develop on the underside of the leaf and produce a visible mass of asexual spores called conidia. Spores are dispersed from leaf to leaf by wind or rain and this infection cycle can be repeated several times within a season, depending on conditions. All commercially acceptable cherry cultivars are susceptible to cherry leaf spot. CLS has confirmed resistance to sterol inhibitor fungicides (Indar, Elite, Orbit) in all the major fruit producing areas of Michigan.

The table below lists season-long recommendations for management; we are currently heading into the timing for a first cover application. To monitor for cherry leaf spot, visit www.enviroweather.msu.edu.

BORER DAMAGE SIGHTED IN MANY CHERRY ORCHARDS
N.L. Rothwell, District Horticulturist, MSU-E
L. Gut, Entomology, MSU

Background

Borers, broadly grouped as insects whose larval stages feed inside the bark of woody plants, are key pests of fruit tree systems. Researchers have found that these insects contribute significantly to the decline or reduced vigor of stone and pome fruits. In Michigan stone fruit, the borer pest complex consists of three primary species: 1) greater peachtree borer (PTB) (*Synanthedon exitiosa* (Say), 2) lesser peach tree borer (LPTB) (*Synanthedon pictipes* (Grote and Robinson), and 3) American plum borer (APB) (*Euzophera*

Cherry Leaf Spot Management Recommendations		
Timing	Fungicide	Notes
Petal fall	Bravo	
Shucksplit	Bravo	
Covers	Pristine*, Gem*, copper, Syllit or Adamant	*These strobilurins also provide powdery mildew control
Preharvest	See above list but be aware of the pre harvest intervals	Reminder: The SI application for ABR will not control CLS
Postharvest	Bravo	
Adapted from Cherry Leaf Spot Recommendations by G.W. Sundin		

semifuneralis (Walker)). LPTB and PTB have similar life cycles, and the larval stage of all species cause the primary damage in cherry and other stone fruits. LPTB moths are active May through September, with peak emergence from early June to mid-July. PTB adults are active in early July through September, and this egg-laying period overlaps with the Michigan cherry harvest season—July through early August. PTB larvae are mobile yet found primarily on the trunks, while LPTB larvae can be located in the trunks as well as in the scaffold limbs and branches. PTB can attack healthy tissue, but this pest has become much more prevalent with the onset of mechanical harvest. APB is also a problem in cherry, but the peak adult flight is mid-May, around white bud or into bloom—much earlier than LPTB and PTB. APB larvae also attack the cambium and can cause more severe damage or tree death due to their feeding habitats, and APB has two damaging generations per season while the other species only have one generation/year.

Prior to the discovery of APB, most borer damage in stone fruit orchards was attributed to PTB and LPTB. LPTB is a pest of all stone fruits in the eastern U.S. Similar to APB, female LPTB lay eggs in cracks or near injury and the onset of mechanical harvest has increased LPTB populations. LPTB are also capable of causing tree mortality if populations reach damaging levels, but often APB causes more damage than either LPTB or PTB as there are often more APB larvae per wound and APB only feeds horizontally, which girdles the trees more effectively than feeding in both horizontally and vertically. PTB are unique as females do not need damage to lay eggs, and these larvae feed on the cambium at or 6" below the soil line, which renders PTB damage difficult to diagnose if it is underground. Although PTB do not require tree damage for egg laying, it appears that trees previously infested with PTB larvae or damaged by mechanical harvesters may be more desirable for egg laying by females. These results are based on studies that show plant derived semiochemicals play a role PTB host recognition. Additionally, adult female GPTB respond to and deposit eggs more frequently on trees emitting gum, frass, and/or semiochemicals produced by larval feeding.

Recent Observations

Borer damage has been evident in many cherry and peach blocks throughout the northwest and west central regions of the state. We have observed many of the northwest infestations in Balaton orchards while in west central, peaches have been a main target. Infestation intensity seemed surprisingly high, so we conducted orchard walks to provide an initial qualitative assessment of damage. Based on 15 Balaton orchards in Leelanau County, we found borer damage that ranged from less than 2% to over 90% infestation (Table 1). Much of the damage was located in areas of the trunk with some type of injury, most likely shaker damage. However, we also observed damage at the soil line. Based on past information, we suspect the damage at the soil line was caused by PTB.

Infestations are located at the ground level or in areas with previous trunk damage. Soil line infestations can be difficult to see without removing the soil from around the trunk. Growers should be looking around the base of the trees (at the soil line) for gummosis and an orange colored frass (Figures 1 and 2). Frass can be seen in small piles, and its color contrast against a dark weed sprayed strip can be a good identifier of borer damage. For damage higher on the trunk, growers can peel back bark (much easier to do in damaged trees than in healthy ones) to find more gummosis, frass, and often larvae and/or pupae. This update is to alert growers to our recent findings and to be on the lookout for borer damage in his/her orchards, especially growers with Balatons. Based on our preliminary assessment, we think Balaton trees on Mahaleb rootstock may be particularly susceptible to borer infestations. However, we will continue to monitor trees and trap for all three stone fruit borers to give us a clearer picture of this emerging problem.

Lastly, we would add that although we have observed what seems like a lot of borer damage, the overall vigor of most of the surveyed cherry blocks looks good. Cherry trees appear to be more susceptible to borer damage in years 3-5, and based on recent findings, mature trees can withstand higher levels of infestation. This observation in cherry is unlike peaches where borers cause more outright tree mortality. As we investigate further, we will refine our initial conclusions.

Orchard 1	1.5
Orchard 2	2.0
Orchard 3	3.0
Orchard 4	4.8
Orchard 5	5.2
Orchard 6	8.0
Orchard 7	8.0
Orchard 8	9.3
Orchard 9	12.0
Orchard 10	14.0
Orchard 11	15.5
Orchard 12	16.6
Orchard 13	25.0
Orchard 14	45.5
Orchard 15	91

Table 1. Percent Balaton trunks with damage in 15 Leelanau County orchards.

Management

Most growers rely on *handgun applications of insecticides* for control of borers. The success of borer control using insecticides is

heavily dependent on the timing and precision of applications. Moth captures in pheromone traps can used to assess moth activity and to predict the time of egg hatch. Trunk sprays are most effective when applied at the start of egg hatch – generally 2 weeks after the start of adult flight. There are currently only two registered materials that provide adequate control of the borer complex. The most widely used material is the organophosphorous insecticide, chlorpyrifos. The other option is the lone chlorinated hydrocarbon registered for use in stone and pome fruits, endosulfan.

Mating disruption is another option for managing two of the borer species, PTB and LPTB. The development of mating disruption for control of PTB and LPTB began in the late 1970s. These efforts were based on the identification of (Z,Z)-3,13-octadecadien-1-ol acetate (ZZA) and (E,Z)-3,13-octadecadien-1-ol acetate (EZA) as the major component of the sex pheromone of PTB and LPTB, respectively. A series of studies have demonstrated that high levels of disruption of PTB or LPTB orientation to pheromone-baited traps, as well as reductions in pest densities can be achieved through the application of synthetic pheromone sources. However, deployment of two types of dispensers may be required to achieve control of LPTB and PTB, one releasing primarily ZZA and the other releasing primarily EZA. Purchasing and deploying a full label rate of hand-applied dispensers for both species may have limited utility. Thus, we have initiated a research project aimed at identifying effective and economical approaches to disruption of LPTB and PTB. Currently, there is not a commercially available, APB disruption product.

The hand-applied formulations being tested are three types of polyethylene 'rope' dispensers, Isomate PTB, LPTB and PTB Dual (ShinEtsu Fine Chemical Co., Ltd, Japan). Isomate-P is loaded with a 96:4 blend of ZZA:EZA and is specifically designed for control of PTB. Isomate-LPTB is filled with a 73:27 blend of EZA:ZZA, and is designed primarily for control of LPTB. Although pure EZA is the actual sex pheromone of this species, the blend is used because of the high cost of the pure pheromone. Additionally, ZZA is the major component of PTB pheromone and thus, using a blend in the LPTB dispenser allows for control of LPTB and suppression PTB. Isomate-PTB Dual is filled with a 50:50 blend of EZA:ZZA, and is designed for control of both species. Our studies will primarily focus on demonstrating the effectiveness of either using the dual product, or using low rates of one or both single-species products. The strategies, if effective, would greatly improve the practicality of this control technique.

Figure 1. Borer frass near Balaton tree trunk

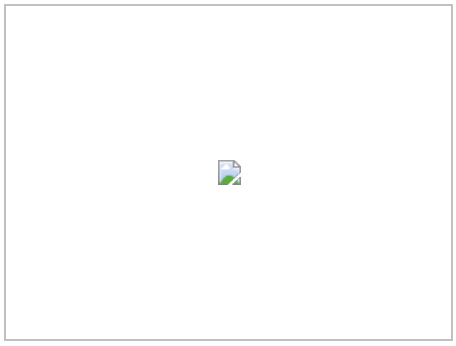

Figure 2. Borer larvae feeding under Balaton bark

SAN JOSE SCALE UPDATE
N.L. Rothwell, District Horticulturist, MSU-E

Many growers have placed San Jose scale (SJS) traps in sweet cherry orchards to monitor SJS populations. Pheromone traps work for SJS in the same way as other pheromone traps: pheromone lures mimic females, and males fly to the trap with the intention of encountering a female. As a rule of thumb, when male SJS are flying, this timing signifies that they are mating with females. As growers catch males in traps, they can assume SJS are mating and the insecticide-vulnerable crawlers will be present in the orchard within two-three weeks. Although these pheromone-baited traps are good indicators of SJS presence in an orchard, they should not be used as a stand-alone tool because of the following reasons: 1) male scales are not good fliers and 2) male scales can be easily confused with a scale predator.

Conditions have been windy this spring, and male scales may have difficulty flying into traps. Therefore, we may be observing fewer males in traps due to their inability to fly in windy conditions. Secondly, male scales come out in late May to early June according to Gus Howitt. Most likely, this timing is based on southern locales in Michigan. We suspect emergence of males in the north is a week or two later, and in this cool year, we may not see peak male emergence for another week or more. Once SJS males emerge in the spring, predators follow, and both of these insects look similar stuck to sticky trap liners. Growers that are keeping track of male emergence should begin trapping in late May (or as soon as possible if traps are not already in orchards). Male SJS emerge first and will fly into baited traps. Approximately one to two weeks later, predators will emerge, and traps will be overrun with these insects rather than or in addition to SJS males. Therefore, deploying traps earlier than later is optimal as preliminary counts will provide additional information as to the true flight of SJS rather than the false trail of the scale predators.

Double-sided black tape is another way to monitor for SJS. This tool will tell growers when the 'crawler' or immature stage of SJS is present in the orchard. As most insecticide applications are targeted at the crawler stage, the tape is a good way to know when to spray. However, there may be some confusion of crawler timing as some growers have reported crawlers stuck to the tape. It is way too early in the season to be seeing crawlers, and we believe that these stuck insects may insects other than SJS. We initially believed those stuck insects to be female SJS, but at this time, the literature states that SJS females remain under their scales throughout their lives. We are currently monitoring with tape and will report back on our findings as we have more information.

To summarize, we have captured one male SJS in four pheromone traps in an orchard with a heavy SJS infestation last season. Growers should not be applying insecticides that target the SJS crawler stage at this time.

Information on cherries is available at the new cherry website: http://www.cherries.msu.edu/
Insect and disease predictive information is available at:
http://www.enviroweather.msu.edu/home.asp

This issue and past issues of the weekly FruitNet report are posted on our website at: http://www.maes.msu.edu/nwmihort/faxnet.htm

ACTUAL AND PREDICTED DEGREE-DAY ACCUMULATIONS SINCE MARCH 1, 2008

Please send any comments or suggestions regarding this site to:
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June 10, 2008

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Tart Cherry: Montmorency: 12 mm
Balaton: 13 mm
Apricot: 24 mm fruit
Plum: 10 mm
Grape: 10-16" shoots

Weather Report

The northwest region has had some unusual weather as has been observed across the rest of the state. The latter part of last week temperatures increased to the high 70's and into the low 80's. Storms moved in for the weekend, where we received 1.25 inches of rain in three days. The June rainfall total is 1.6 inches here at the NWMHRS. Winds have been intense over the past week, and growers have had difficulty applying pesticide applications. The humidity has also been high, often over 90%, which has caused continuous wetting events.

Crop Report

The results of the late May freeze are becoming evident across the region. Areas in the

southern locales of the northwest sustained more damage than many northern sites. At this time, the apple crop is light throughout the northwest, and Benzie and Manistee counties seem particularly hard hit. Many apple growers are reporting low yields in many blocks. The

sweet cherry crop is looking better than once anticipated; frost fruit on the tops of branches is falling off and the remaining crop is sizable. However, quality will be the issue as frost scars are evident on the hanging fruit. Sweet cherries are in the 11-12mm size range. The tart cherry crop is far less than we reported last week. Estimates for the northwest range from 90 million pounds down to 55 million pounds, and many growers believe they have only ¼ to 1/3 of a crop. The Balaton crop is extremely low in the northwest, and we believe this small crop load is due to lack of pollination.

Bee activity was at a minimum during much of cherry bloom, and past research has indicated Balatons have other pollination issues.

Pest Report

Apple

Fire blight and **apple scab** infection periods continue to be forecasted in the northwest region. Almost two weeks of infection periods are predicted with the wet and warm weather last week and into this week. Apple scab sexual spores are all mature at this time, but only 80% are estimated to have been discharged. Based on this model, we are still in the primary scab season and recommend protectant fungicide applications**.** We have biofixed for **codling moths** in the southern areas of the region and sporadically as far north as the NWMHRS. Biofix for codling moths vary greatly by block and monitoring should be done in individual orchards. **Spotted tentiform leafminer** catches are decreasing, and we are continuing to catch **Oriental fruit moths** in the station trap line (15-20 per trap). **Plum curculio** is still active and laying eggs.

Cherry

Cherry leaf spot infections have been predicted at moderate to high levels throughout the NW region. **American plum borer** have been caught in increasingly larger numbers (about 12 per trap at the NWMHRS) and **lesser peach tree borer** moth trap counts have increased numbers (28 per trap). The first **greater peach tree borer** was caught at the station on Monday. **Green fruit worm** moths continue to be caught in the station trap line, and larva feeding damage is visible on fruit. One male **San Jose scale** has been caught on Old Mission Peninsula in a sweet cherry block. The warm, humid weather is likely to cause increased **plum curculio** activity. Lastly, we are beginning to see the results of the weather with high levels of **European brown rot** infections particularly in Balaton orchards and **American brown rot** is sporulating on mummy berries in the NWMHRS pathology block.

Grape

Not much is moving in grapes, but **grape berry moths** have been caught in increasingly high numbers at the research station. The impact of the freeze has been seen in vineyards around the region. **Phomopsis** is visible on canes, which is a little unusual for the NW region.

USING GIBBERELLIC ACID TO ADJUST CROPPING IN CHERRIES

N.L. Rothwell, District Horticulturist, NWMHRS
Jim Nugent, Retired District Horticulturist, NWMHRS

Gibberellic acid (GA) is a plant hormone that promotes growth and elongation of cells. In tart and sweet cherries, GA has been used successfully to reduce flowering during the early years of an orchard's life. The reduced flowering and subsequent reduced fruiting helps young trees increase vegetative growth. In addition, minimizing flowering in early years slows the transmission of pollen-borne viruses in young trees. We have also shown that GA used in mature tart cherry orchards can increase fruiting capacity by stimulating the formation of lateral shoots and spurs. This technique can be particularly advantageous on Balaton blocks where trees have a tendency to produce blind wood (branches without leaves or blossoms).

When GA is applied to cherry trees in late spring, a percentage of the flower buds forming

When GA is applied to cherry trees in late spring, a percentage of the flower buds forming for the following season will be converted to vegetative buds. Therefore, GA application in 2008 influences flowering in 2009. The effectiveness of GA is dependent on rate, timing and temperature. Figure 1 (below) demonstrates the importance of rate for GA applications. Surfactants have also been shown to influence GA applications. As a rule of thumb, high GA rates are required to keep a young tree from fruiting, whereas much lower rates are used to keep bearing trees in a good balance between vegetative and fruit production. GA applications should be made when daily high temperatures are expected to be above 70° F for two to three days, if possible. We have observed poor results when applications are made when daily high temperatures are below 60° F.

Non-bearing trees

GA is typically applied to non-bearing cherries with a hand gun, so rates are based on a dilute basis. The best results are generally achieved with two applications of 50 ppm (20 fl. oz. of 4% formulated product per 100 gallons of water). The first application should occur 3 to 3 ½ weeks after full bloom, followed by a second application 2 ½ to 3 weeks later. An alternative method, though slightly less effective, is to apply a single treatment of 100 ppm (40 fl. oz. per 100) at about 3 to 4 weeks after bloom. GA should not be applied to trees during the year of planting, due to possible phytotoxicity. Vigorously growing trees in their second leaf do not need GA, as these trees naturally produce little fruit the following year. GA application often starts in year three, but may be desirable in year two if trees start off poorly. These high rates should continue until the year prior to first harvest/year of production.

Early bearing trees

To bring young cherries into bearing following GA treatments with high rates, growers should phase down GA rates rather than discontinuing GA use all at once. A sudden drop of GA from high rates to nothing will result in oversetting of fruit and potential tree stunting. Trees that have been kept vegetative with GA use have a tremendous capacity to set (overset) fruit. The year prior to when growers first desire fruiting, they should apply GA at 30 to 40 ppm if spraying dilute (12-16 fl oz./100 gal.) or 20-24 fl. oz./acre if applied at a concentrated rate. This rate per acre for concentrate spraying already takes into account the average tree size of this age tree, therefore do not reduce the rate further based on tree row volume. The next year, decrease this rate to 15 to 20 ppm applied dilute (6-8 fl. oz./100 gal.) or 10-12 fl. oz./acre concentrate. The following year, 10 ppm is optional but often not required. In orchards where growth is weak, growers should continue annual GA applications at 10-15 ppm as described for bearing trees.

Bearing trees

Growers should apply GA 3 to 4 weeks after bloom (full bloom for Montomorency was 5/16/08 at the NWMHRS) or when trees have 5 to 7 leaves (3 to 5 fully expanded) on terminal growth. GA should be used at rates of 10 to 20 ppm or 4 to 8 oz/100 gallons of ProGibb 4% (or equivalent) when applied dilute. For concentrate application to full-sized tart cherries, use 6 oz./a of product to achieve a 10 ppm response or 12 oz./a for a 20 ppm response. Lower rates are typically used on more vigorous orchards or those with previous successful use of GA. Adding surfactants has caused varied responses—everything from increased phytotoxicity to no GA-related effects. Therefore, adding a surfactant is not suggested unless a grower has enough experience with a product to have confidence in the response.

GA Use on Balaton

Balaton appears to have less need for GA during non-bearing years to maintain good tree growth, but as it matures, the variety produces a lot of blind wood. Therefore, using GA is strongly encouraged on bearing Balaton trees. Figure 1 shows the successful use of GA to increase lateral shoots and spurs in a Balaton orchard at the NWMHRS. However, we cannot conclude that GA applications improve Balaton yields based on 2007 data (Figure 2). We will continue this trial this season.

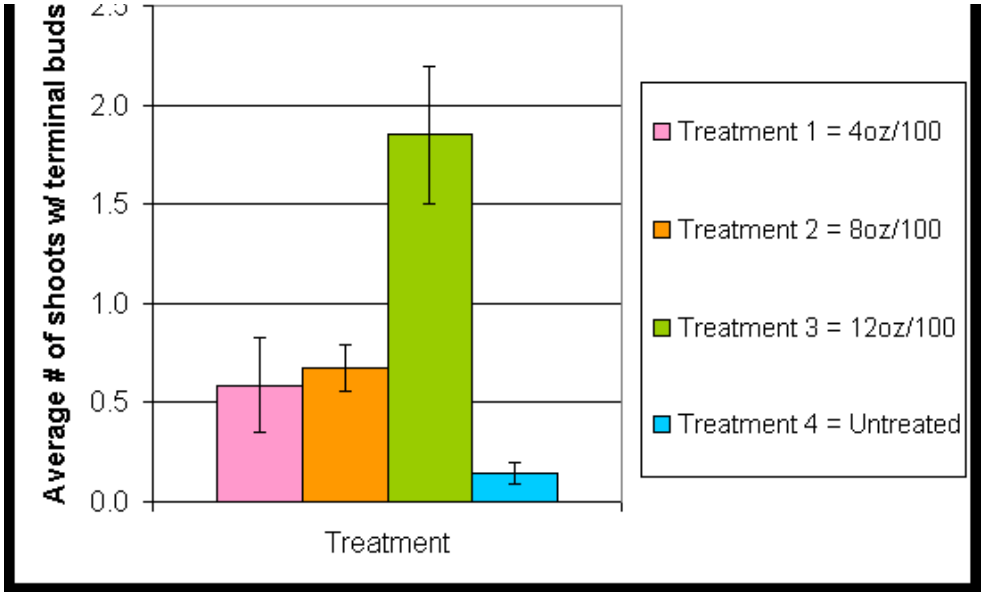

Figure 1. The average number of shoots with terminal buds with different rates of GA in a Balaton orchard.

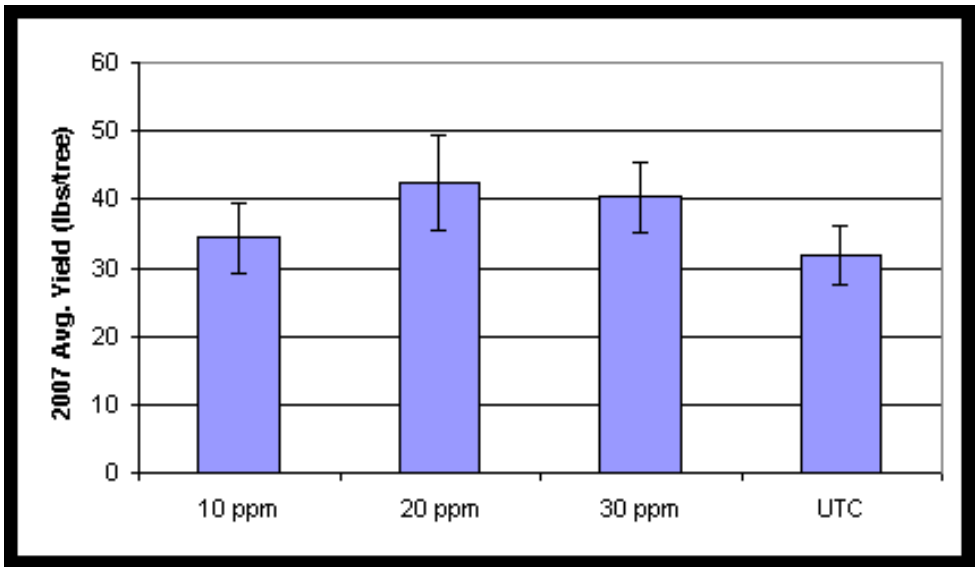

Figure 2. Average yield of Balatons with different rates of GA.

HOW TO MINIMIZE COSTS IN FROST DAMAGED CHERRY ORCHARDS
N.L. Rothwell, District Horticulturist, NWMHRS

The initial step in determining how to manage cherry orchards with frost damage is first assessing the amount of damage. Enough time has elapsed that cherries not damaged by frost or those that were successfully pollinated are starting to properly size. Cherries that are still in the shuck, brown in color, or very small in size are not likely to develop this season. The second decision is whether growers will harvest a particular block. If growers do intend to harvest, minimizing costs is probably not the best strategy.

If growers do indeed have too few cherries to shake a block, a few management strategies are still necessary for this season. First and foremost, cherry leaf spot (CLS) control is vital. This pathogen infects the leaves, and even with no fruit, trees are still susceptible. Brown rot control, on the other hand, becomes a minimal concern as this pathogen infects the fruit. If no fruit is visible on the tree, brown rot control can be reduced. However, growers should keep in mind that even a small number of fruit on the tree can result in a brown rot infection, and these infected fruits can increase inoculum in subsequent years. The same type of minimal control is warranted for powdery mildew in orchards with little fruit.

Blocks where cherries will be harvested will need insecticide sprays to ensure marketable fruit. Trees with minimal fruit are more likely to be infested as there are simply fewer fruit in which plum curculio (PC) or cherry fruit fly (CFF) females can lay eggs. If growers do not intend to harvest a particular block, insecticide sprays for PC and CFF can be eliminated. Growers should keep in mind that reducing or eliminating insecticide sprays for these pests could result in higher insect populations the following season.

Borers—lesser peachtree, peachtree, and American plum borer—are all still potential problems for cherry orchards with minimal fruit. Borers do not feed or depend on the cherry fruit for their life cycle, and trees without fruit will still be susceptible to borer infestations. Trunk sprays are still recommended in orchards with little or no fruit.

For other management strategies, we offer the following recommendations: 1) miticide applications could be reduced or eliminated in blocks with no fruit as trees with no crop have a higher tolerance for mites, 2) gibberllic acid is necessary this season to ensure that the trees will not overset next year, 3) weed control can be minimized, but not eliminated, as trees without fruit will require less water, 4) micronutirents can be reduced unless growers observe a deficiency, and 5) lastly, nitrogen applications could also be reduced but more than likely spring applications have already been made this season.

MINIMAL SPRAY STRATEGY FOR FROSTED APPLE TREES

Nikki Rothwell, District Horticulturalist, MSU Extension
Amy Irish-Brown, District Fruit IPM Educator, MSU Extension
Jim Nugent, Former District Horticulturist, MSU Extension

After the freeze, many apples in the northwest region were affected. After growers determine the damage on their farms, if they find their trees suffered a lot of frost damage, they may want to opt for a minimal management program. This program is designed to keep the trees healthy for next year, but also to reduce input costs on acreage with no expected returns.

Fire Blight – Fire blight is still an issue for a lot of the region, especially with this recent wet weather, and the big question is whether we can still become infected from fire blight with so many dead blossoms. There has been little work done on this topic, but we know that dead pistils on frosted blossoms cannot support a population of *Erwinia amylovora*, the causal agent of fire blight; hence, the more dead blossoms there are in the orchard, the lower the potential of fire blight infection. We are in essence reducing our fire blight inoculum in the orchard by eliminating the number of viable fire blight infection areas (flower pistils). Although most growers fear the worst, ie. 100% destruction, we cannot assume all flowers in the orchard are dead. Therefore, we must continue to monitor and potentially spray for fire blight because we may have some viable flowers still in the block. We especially cannot assume we have a total wipe out in blocks with susceptible varieties. In addition, trauma blight situations still may occur with high winds and hail, and these events can still cause devastation to orchards. Trauma blight situations should still be managed with applications of streptomycin, Mycoshield, Serenade, or copper. Streptomycin is the best material to use and will give the best management of fire blight in a post-trauma blight situation where resistance is not an issue. Mycoshield, Serenade, and copper applications should be made ahead of a trauma blight situation, and this option is not always the most economical choice as growers attempt to stay one step ahead of the weather forecast, which we all know is virtually impossible.

Apple Scab – As for all blocks, those with and without a crop, apple scab is best controlled if growers stayed ahead of primary scab. The best method to control scab blocks with little crop would be to control these initial scab lesions before growers reduce or eliminate fungicide applications from the block. If blocks have scab in them now, these blocks could defoliate early and have reduced winter hardiness and a high potential inoculum level for 2009. As we are still in primary scab (approximately 85% of ascospores have been discharged), growers should not cut back on fungicides at this time. If an orchard makes it through primary scab this season **without infection**, we could reduce and potentially eliminate all other fungicide applications for the season.

Powdery Mildew (PM) – Just as with apple scab, powdery mildew left uncontrolled can

lead to reduced vigor and winter hardiness. Again, as with apple scab, most commercial blocks have had some mildewcides in their programs already this year, so mildew will not probably be a concern in most blocks with no crop. If you have a mildew problem now, treat it soon in order to reduce the inoculum potential for the 2009 season.

Plum Curculio (PC) – If there is no crop, there is no reason to spray for PC (or for other fruit feeders like apple maggot). However, growers should keep in mind that PC are good fliers, and if one block has no apples, those buggers can move from the no-apple block to an orchard with fruit in a short amount of time. Growers should be keeping an eye for PC in the orchard as well as on their neighbors' crops to determine if PC may be migrating from one orchard to another. Under light fruit load conditions, plum curculio will compete heavily for the fruit that is present. If the remaining fruit are left unprotected, these weevils can oviposit many times in one fruit, and ultimately may result in a much higher percent damage level per fruit than normal. The good news is that most of this fruit will drop, but the larvae that emerge could be the source of next year's "resident" population. Next season, growers will need to account for the difference in managing a resident population versus the predominant situation of controlling immigrants moving in from outside wild hosts. The other factor to consider is the amount of freeze damage you have, and this issue remains true for other fruit insect pests: the fewer fruits per block, the less food insects will have to consume. Growers should know in the next weeks how many fruits are left in their blocks, and this information can be considered for fruit insect pest control strategy.

Potato leafhopper (PLH) – PLH is normally controlled when broad-spectrum insecticide programs are used to control primary pests like plum curculio, codling moth, and oriental fruit moth. If growers reduce or eliminate insecticides for these key pests because of little or no crop, PLH should not be ignored. The PLH first arrives in late May with southerly-based weather fronts (this past week for this year). Those adults lay eggs, which hatch and begin feeding on the phloem of foliage and shoot tips of actively growing terminals in mid-June. Populations vary greatly year to year. PLH often reach high populations by early July. The resulting damage appears as necrotic cupped-leaf margins and can stunt growth significantly. Apple growers should check for potato leafhopper during weekly orchard monitoring beginning in early June. Look for curled leaves and shoots that are not growing as vigorously as they should. Check the undersides of leaves for nymphs and adults. As leafhoppers are easily disturbed, and move off the leaf, it is important to do assessments in the field. Turn the leaf over slowly when monitoring to assess how many leafhoppers are on the lower leaf surface. In apples, one or two nymphs per leaf can cause leaf curling if they are allowed to feed for a prolonged period of time (four to seven days). Control will be particularly important in young blocks that still have space to fill.

Obliquebanded leafroller (OBLR) – The OBLR is largely a foliage feeder, but can do significant damage to fruit. Fruit damage from the summer generation of OBLR is often related to when terminal growth slows or buds set, forcing larvae from the preferable young foliage to fruit. Fruit damage is also common under conditions of heavy fruit set where full clusters and adjacent foliage prevent adequate penetration of targeted insecticides. Light fruit-load conditions like this year should reduce the risk of OBLR damage compared to normal years.

Codling Moth (CM) – No control is required in blocks with no fruit. If growers have a few fruits on the trees – perhaps as few as 10 or 20 fruits on a dwarf tree – codling moth will easily infest these fruits in their first generation if you eliminate cover sprays for CM. Eliminating early sprays can lead to very high CM numbers and increases the potential damage for the 2009 season. Growers should also be aware of CM moving in from an orchard with little fruit to a neighboring orchard with fruit. This movement can happen with the first generation but will be more of a concern for second generation CM. If growers have orchards **with** a crop, they should be conscious of any nearby orchards that may be on a reduced insecticide program because of no crop. If a neighboring block has no crop, the CM that are residents in those apple trees will most likely move to nearby blocks with fruit to lay their eggs. If a neighboring block has a few fruits and the first generation CM is not controlled, then the second generation CM will most likely move to neighboring blocks to look for more favorable egg-laying sites. Older orchards generally have higher resident populations than younger blocks.

populations than younger blocks.

Oriental Fruit Moth (OFM) – OFM larvae bore into new growing terminals and cause the terminals to look ragged and flagged over. This injury is most apparent in first generation OFM, but second generation will appear as the fruit sizes and become more desirable to OFM. Populations of OFM are generally very low in NW Michigan, so reducing or eliminating spray for other pests will not likely lead to an OFM problem. However, if OFM is present, then a light fruit set will likely increase the incidence of terminal flagging during the second-generation OFM egg hatch period (July). Also, if insecticide cover sprays are eliminated from apple blocks, OFM and some other insects may build in number, likely increasing pest pressure the following year.

Apple Maggot (AM) – As this insect pest can be found on other trees outside of commercial apple blocks, ie. hawthorns, crabapples, and abandoned blocks, they move into a block to infest fruit. If no fruit is present then there is no need for an insecticide, in which case the adult will seek egg laying sites elsewhere. There is evidence of AM building up in orchards that remain unsprayed, so we may potentially increase AM in blocks that have some fruit but do not have insecticides. However, in a year with little fruit, there will be few oviposition sites (apples) in which AM will lay their eggs. So, if a grower plans to harvest a block with a light crop, keep in mind that the apples that do remain will be a haven for many AM larvae. Again, growers should monitor their apple crop in order to make the decision to spray for AM.

European Red Mites (ERM) and **Two-spotted Spider Mites** (TSSM) – Left uncontrolled, ERM's and TSSM's can reduce photosynthesis and overwintering carbohydrate reserves. These reserves provide the tree with its winter hardiness, as well as help set the next year's crop. They can cause severe bronzing, but if this occurs in a year without a crop, the damage will not be as severe, due to the lack of competition for the carbohydrates from fruits. In other words, the tree can tolerate more mites. Plus, if certain broad-spectrum insecticides are left out of an orchard system (for codling moth, for example), then mite predators will have a chance to build their populations to help curb the ERM. This season may be one to save some money by eliminating a miticide spray!

****Some grower may find they may have to spray more than these general rules of thumb while other growers may not need as many applications. One important thing growers can do to reduce the number of chemical applications is to diligently monitor for insects and diseases throughout the season. This scouting could be the difference between spraying and not spraying based on the pests in the field.**

Other concerns

Benefits of Beneficials: One possible benefit of reducing broad-spectrum insecticide sprays would be a potential increase in biological control organisms such as beneficial insects. By eliminating the number of insecticide applications could be helpful for the future of an orchard system.

Return Bloom for 2009: Next year will most likely have a tremendous return bloom. With little crop, the vegetative growth should be at a maximum for 2008, which will lead to extra pruning for the dormant season. A strong dormant pruning program will help regulate the 2009 crop. Apogee applications will help reduce terminal growth and could reduce pruning costs by as much as 30%. Apogee applications are not inexpensive, and a grower should weigh the costs of the applications against the costs of dormant pruning. Also, Apogee is best timed when the king bloom is starting to drop petals, so you may be out of the window for good growth control with Apogee for this current season.

Eliminating fruit: If you have a small crop, you might want to consider eliminating fruit completely from the trees. You can limit the infestation from the apple insects like codling moth and apple maggot, by eliminating the fruits on the trees. Chemical fruit removal may be done with high labeled rates of spray thinners, such as NAA and Sevin XLR pus a spray oil. The best program would be to make two applications. If weather is warm (favorable for thinning), the first chemical thinners should be applied as soon as the flower petals are 80% fallen (not too soon in bloom or you can harm pollinators). A second application, 10 to 14

fallen (not too soon in bloom or you can harm pollinators). A second application, 10 to 14 days later, may be needed to remove more fruit. Even with two applications of chemical thinners, there may be some fruit remaining that may need to be removed by hand. If only one application is planned, then suggest applying when the first period of warm weather occurs after petal fall. Suggested fruit removal program:

15-20 PPM NAA (6-8 oz. NAA in 100 gallons of water) PLUS 1 quart Sevin XLR plus 1 quart spray oil/100 gal.

Large Fruits: Fruit size will most likely be large on trees with a light to moderate crop set. Large fruits have some potential inherent problems such as bitter pit, water core, and cracking, which can cause storage and marketing problems. Calcium sprays can help and might be justified in certain higher value varieties that commonly have problems such as bitter pit.

Scarred Fruits: There may be a lot of surface damage on apples this year due to the cold weather during bloom. Growers should evaluate crop quality – if it is poor, eliminating the fruit and using a reduced spray schedule should be considered.

Nutrition: Trees with little to no crop do not need as much nitrogen. If a split application was planned, the second application should be reduced or eliminated. If no apples will be harvested, apply only foliar nutrients where a known deficiency exists. For example, if N was applied to the soil prior to the freeze, then there should be no need for foliar N this season. As noted above, if a light crop will be harvested, then foliar calcium will be especially important on bitter pit susceptible varieties.

In Conclusion

Be sure of your crop situation before you decide to eliminate cover sprays entirely from an apple block. Apple fruit set can fool the eye sometimes, especially now that the foliage if growing so rapidly. One week may look like a total loss and the next week, the fruit will start to show up more readily. Also, if you have crop insurance, be sure to check with your insurance representative of the details that they may require of your pest management program so that you are not disqualified in any way.

FRUIT TREE WORKSHOP OFFERED

DATE: Saturday, June 28, 2008
LOCATION: 2651 Crimson King Dr., Interlochen, for more information, call 231/882-0025
TIME: 9 - 11 am

COST: $40 per person
SPONSOR: Michigan State University Extension-Benzie County. This is open to the public.
Workshop will be taught by Stephen Fouch, Director, MSU Extension-Benzie Co

SCHEDULE:
9:00 - 9:30 am Coffee, rolls, questions, and answers

9:30 - 11:00 . Discuss handouts, hands-on planting and discussion on pruning, pest control, organic techniques, and controlling deer

11:00 - 11:30 .. Final questions

11:30 .. Take home free potted semi dwarf apple tree
(bring a large, plastic bag)

Cost is $40 per person and includes: all handouts, materials, and a potted fruit tree to take home.

Please bring a vehicle to accommodate your trees.

REGISTRATION FORM

(Registration Deadline: Wednesday, June 25th)

NAME: _____
ADDRESS: _____
CITY, STATE, ZIP: _____
PHONE NUMBER: _____
CELL NUMBER: _____
What type and number of fruit trees do you currently have? _____

_____

NUMBER ATTENDING _____ X $40 = _____
TOTAL DUE = _____

PLEASE MAKE CHECKS PAYABLE TO: MSU Extension-Benzie County
AND MAIL TO: P.O. Box 349
Beulah, MI 49617-0809

Farm Service Agency
1501 Cass Rd, Suite A
Traverse City, Mi. 49684
http://www.fsa.usda.gov

FOR IMMEDIATE RELEASE June 6, 2008

DEADLINE FOR FILING FARM SERVICE AGENCY EMERGENCY LOAN APPLICATIONS IS FAST APPROACHING

Traverse City, MI, November 14, 2007 -- In a continuing effort to assist the agricultural industry in Michigan, the ***Farm Service Agency (FSA)*** reminds farmers of the July deadlines for filing Emergency Loan applications for 2007 disasters.

Last year Eighty-three Michigan Counties were designated as primary natural disaster areas making farmers immediately eligible for USDA / FSA production loss emergency loans. The designations provided farmers eight months to file loan applications

- July 7, 2008 is the deadline to file Emergency loan applications for losses caused by drought in 2007
- July 14, 2008 is the deadline to file Emergency loan applications for losses caused by frost and or freezing temperature that occurred between April 4, 2007 and June 13, 2007
- July 21, 2008 is the deadline to file Emergency loan applications for losses caused by hail, excessive rain, and high winds that occurred between May 15, 2007 and ending September 11, 2007.

James Monroe, Farm Loan Manager indicates that Emergency loan assistance can aide farmers devastated by these weather events.

Last years designations makes qualified farm operators in primary disaster counties eligible for low-interest production loss EM loans from the ***Farm Service Agency***, provided eligibility requirements are met. Farmers in eligible counties have eight months from the time of the designation to apply for the loans to help cover part of their losses. FSA will consider each loan application on its own merit, taking into account the extent of loss, ability to obtain other credit, security available and repayment ability.

Information on cherries is available at the new cherry website: http://www.cherries.msu.edu/

Insect and disease predictive information is available at:
http://www.enviroweather.msu.edu/home.asp

This issue and past issues of the weekly FruitNet report are posted on our website at:
http://www.maes.msu.edu/nwmihort/faxnet.htm

ACTUAL AND PREDICTED DEGREE-DAY ACCUMULATIONS SINCE MARCH 1, 2008

Please send any comments or suggestions regarding this site to:
Bill Klein, **kleinw@msu.edu**

Last Revised: 6-10-08

MAES Home | **Field Stations** | **Station Home** | **Contact**
Northwest Michigan Horticultural Research Station
6686 S. Center Hwy • Traverse City, Michigan 49684
Tel: 231/946-1510 Fax: 231/946-1404

Last Updated: June 10, 2008

Northern Michigan FruitNet 2008
Weekly Update
NW Michigan Horticultural Research Station

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June 17, 2008

GROWING DEGREE DAY ACCUMULATIONS THROUGH JUNE 16th AT THE NWMHRS

Year	2008	2007	2006	2005	2004	2003	18yr. Avg.
GDD42	906	1193	1124	1105	895	874	972.2
GDD50	490	709	624	640	471	437	538.2

Growth Stages at NWMHRS (6/16/08 - 5:00 p.m.)

Apple: 16-18 mm
Pear: Bartlett: 16 mm fruit
Sweet Cherry Hedelfingen: 13 mm fruit
Napoleon: 13 mm fruit
Gold: 12 mm fruit
Tart Cherry: Montmorency: 13 mm
Balaton: 13 mm

Apricot: 28 mm fruit
Plum: 15 mm
Grape: 10"-16" shoots

WEATHER REPORT

The weather continues to surprise us again this week. Despite the meteorologists' best efforts, we never know what to expect with the current weather conditions. Last week, temperatures were more seasonable as daytime highs were in the mid to upper 70's, and nighttime temperatures were in the mid 50's to the 60's. Growing degree accumulations are behind where we were at this time last year, and at base 42 and 50, we have accumulated 906 and 490 GDD respectively.

We received significant rainfall in the region in the past week. Here at the NWMHRS, we accumulated 0.4 inches of rain on Thursday, 0.95 inches on Friday, and another 0.12 inches on Sunday. The rain continues this Tuesday morning. We also have reports of significant hail in southern Leelanau County on Sunday evening. In fact, from 5/30 to 6/17, a 19-day period we have had only 5 days without some recorded precipitation. Overall, we have had good moisture this season, which is much needed after droughty summer conditions in the past three seasons.

CROP REPORT

The final verdict on the cherry crop report is still out as much of the region is experiencing June drop. Sweet cherry orchards with what initially appeared as a healthy crop have dropped a lot of fruit in the past week. The surprisingly sizable June drop may be attributed to poor pollination, freeze/frost damage, or to the past years' droughty conditions. Additionally, many sweet cherry orchards do not appear to be as healthy as we would expect with all the good moisture; we have observed tattered foliage, yellowish leaves, and symptoms of bacterial canker. Tart cherries continue to size, and the crop is estimated at 60 million lbs in northwest Michigan. Gibberellic acid has been applied in cherries during the warm weather last week. Growers have been thinning apples in locations not impacted by the freeze damage. Windy and rainy conditions have presented tremendous difficulty for application of sprays.

PEST REPORT

Apple
We are still in the grips of the primary scab season, but it is winding down with 90% of the ascospores (sexual spores) estimated to have been released from their overwintering structures. The rain we received over the weekend caused a predicted light to moderate infection period in most of the region. Protectants to prevent apple scab should continue to be applied. The fire blight model has slowed EIP accumulation due to the cooler weather, which is predicted to last through Wednesday. Most varieties have finished blooming, but we have been seeing a great deal of tag bloom which needs continued protection for fire blight. Strep applications are recommended to treat fire blight in northwest Michigan where resistance is not yet present. Plum curculio continues to be caught in orchards around the region. Spotted tentiform leafminer numbers are down, and we are well beyond peak emergence. We are catching approximately 30 codling moth per trap at the research station, and oriental fruit moth are emerging in elevated numbers (19-22 per trap).

Cherry
Cherry leaf spot is still predicted in the region based on Saturday and Sunday's rainfall. If growers applied a protective fungicide, such as Pristine or Gem, these are locally systemic and rain fast after two hours. Foliage in these cases should be protected. If fungicides have been applied on alternate rows, then the interval between sprays should be shortened by 2-3 days. We are seeing a great deal of **bacterial canker** in sweet cherries at the NW Station, particularly on those in low-lying sites that were hit hard by the freeze after Memorial Day Weekend. **Powdery mildew** is also showing up on tarts at the station. We continue to see **plum curculio** stings on cherries. We are continuing to catch **American plum borer** and **lesser peach tree borer** (approximately 15/trap). We are also catching low levels of **greater peach tree borer** in our station traps.

Grape

We have been seeing **potato leaf hopper** and an unusual insect, **grape plume moth**.

Grape phylloxera, Daktulosphaira vitifoliae (Fitch) was sited in one of our commercial vineyards. These insects rarely make serious pest status in areas with our sandy soils; they are considered to be more problematic in regions with heavier clay soils. Despite the fact we rarely see damaging numbers of phylloxera in the north, we remind growers to be vigilant about control. This caution should be particularly noted in choosing a phylloxera-resistant/tolerant rootstock for newly planted vines. If populations reach high enough levels, the foliar or aerial part of the phylloxera life cycle can result in premature defoliation, reduced shoot growth, and reduced yield and quality of the crop. We often observe foliar damage on wild grape, labrusca and some vinifera vineyards as raised galls on the undersides of leaves in the eastern part of the U.S. The root form of phylloxera stunts growth of susceptible vines and can kill them, but this form prefers vines grown in heavy clay soils. Phylloxera damages the roots by feeding on growing rootlets, which then swell and turn yellowish; dead areas eventually develop at the feeding sites.

WEIRD SIGHTS IN SWEET CHERRY ORCHARDS

N.L. Rothwell, District Horticulturist, MSU-E

After all of this unusual weather, sweet cherry orchards have been displaying some atypical signs and symptoms of the season. First, many blocks are starting 'June drop', and cherries in clusters are anywhere from firm and yellow to shriveled and red. Those coloring soft cherries are likely to be the victims of June drop. The number of cherries participating in June drop is variable depending on the location and health of the tree. In the variety trial at the NWMHRS, we have variable amounts of June drop throughout the orchard. Additionally, growers that had once

reported a 'good' crop of sweets have seen many cherries abort in the past week. The sizable June drop could be attributed to many factors: poor pollination, freeze damage, last season's drought or a healthy combination of all.

Secondly, we see some pretty poor looking foliage in many sweet cherry blocks. Leaves on new growth have a particularly yellowish cast. At this point in time, we suspect trees are growing quickly with all the rain, and the new terminal growth has not greened up as of yet. This rapid growth gives the trees a yellow rather than lush green appearance. Bacterial canker has also been found, and this pathogen causes leaves to turn yellow, and they are covered with large brown lesions (please see Erin's article below for more bacterial canker information). Sometimes the symptoms of bacterial canker on the leaf are hard to distinguish from areas that sustained freeze damage. Foliage that suffered frost/freeze looks tattered, dry and crispy on the edge, and do not have the green color we would expect with all the moisture. Again, many orchards could have an assortment of these issues, and growers may have a hard time pinpointing a specific cause as to why the trees look a bit unhealthy as this time.

A GOOD YEAR FOR BACTERIAL CANKER
Erin Lizotte, IFP/IPM District Educator, MSU-E

Bacterial canker is most commonly seen on sweet cherries and this year in our region is no exception. The unprecedented rainfall and cool temperatures have provided the perfect conditions for major outbreaks of bacterial canker. The bacteria survive from one season to the next within the bark tissue in cankers, in asymptomatic buds, and internally in the vascular system of the tree. Bacteria multiply in these areas and are disseminated by wind and rain, which there has been no shortage of this spring. The bacteria land on blossoms and young leaves where they remain until their populations reach the threshold necessary to cause infection. The factors that commonly predispose trees to canker include cold springs, wet weather late in the spring, severe storms that injure emerging blossoms and leaf tissue, and freezing temperatures.

Symptoms of bacterial canker include gummosis from cankers on trunks and branches as well as wilting leaves on the terminal portion of cankered limbs. Leaf and fruit infections usually occur sporadically, but appear to be more prevalent given the weather this year. Leaf spots are dark brown and may be circular or angular and surrounded by yellow halos. The spots may blend together over time causing large areas of dead tissue on the leaves. Lesions on green fruit are brown and look water-soaked around the edges. Affected tissues will collapse, leaving deep black depressions in the flesh as the margins turn from yellow to red.

To manage bacterial canker, newly infected tissue should be removed. If cankers are forming on a side branch and it is pruned out quickly enough, the tree might survive. If the pathogen has spread throughout the main trunk of the tree, there is no treatment. Copper compounds may be of limited value for the control of bacterial canker earlier in the year (we are past that window). Also, copper injures some stone fruit crops; even the more tolerant varieties are susceptible when repeated applications are made.

Resource: Jones, A. L., and Sutton, T. B. 1996. Diseases of Tree Fruits in the East. NCR 45. Michigan State Univ. Extension, East Lansing, MI.

MANAGING CHERRY LEAF SPOT IN POOR SPRAYING WEATHER
Erin Lizotte, IFP/IPM District Educator, MSU-E
George Sundin, Dept of Plant Pathology, MSU

With an almost constant barrage of wind and rain, getting into the orchards has been difficult to say the least. When managing cherry leaf spot, conventional wisdom has shown that protectant management strategies that keep leaves protected during infection periods are the most effective treatments. Unfortunately, it has been almost impossible for growers to get their sprays on when necessary. Due to the weather, there have also been a lot of questions regarding how often to apply fungicides, how long the fungicides are providing protection when exposed to rain, and what to apply if an application was missed.

The fungicides Gem (strobilurin) and Pristine (strobilurin and boscalid) are excellent options

The fungicides Gem (strobilurin) and Pristine (strobilurin and boscalid) are excellent options for application at the first cover timing. These products are often used at first cover because they control both cherry leaf spot and powdery mildew. Both fungicides are rain fast within 2 hours and move locally within leaves. This means that if you applied a strobilurin 2 hours before rainfall then the leaves are protected despite the rain. If you are applying a strobilurin on alternate rows then the spray interval should be tightened by 2-3 days as long as the rainy warm weather continues.

If a spray was missed because of high winds or rain, there is little compelling evidence that post infection treatments are effective. The best shot at getting any back action against cherry leaf spot is a full cover of Syllit FL (27 oz), tank mixed with Captan (3-4 lb). This should be followed by an application of Pristine or copper (1.2 lbs. metallic copper per acre) for the next cover. The key to controlling cherry leaf spot is to minimize infection and disease spread early in the season in order to help the trees retain leaves until later into the fall.

AZOXYSTROBIN CAUSES PHYTOTOXICITY IN APPLES
Erin Lizotte, IFP/IPM District Educator, MSU-E

Last week Megan Kennelly, a faculty member at Kansas State University, confirmed a case of azoxystrobin fungicide toxicity in a central Kentucky apple orchard. This incident could be of particular importance to Michigan growers this year as the weather has made pesticide application during dry, calm weather impossible, hence the risk of drift is greater this season than in most years. In this case, the phytotoxicity was the result of a sprayer being used to apply azoxystrobin on grapes and then being used to spray apples. This occurred despite the tank being emptied and rinsed between applications. Azoxystrobin is the active ingredient in the fungicide Abound, a fungicide used widely on grapes for management of black rot, powdery mildew and downy mildew. This fungicide is also sold as Quadris, which is used on vegetables, tobacco, and soybeans, and Heritage, which is used on landscape ornamentals. The label on these products includes a precautionary statement regarding phytotoxicity to apples.

Phytotoxicity symptoms observed on the apple trees included leaf distortion and chlorotic (yellow) blotches as well as fruit russeting. In more severe cases, leaf and twig necrosis (dead tissue), leaf drop and fruit drop can also occur. Chlorotic spots can also occur when tiny spray droplets drifted into the orchard from an adjacent vineyard.

Not all apple varieties were affected; some trees in the orchard located adjacent to affected trees showed no effect. The affected trees put out new shoot growth with normal leaves just a few weeks after the initial damage. Nevertheless, for the sensitive varieties, the injury could adversely affect fruit production.

As a rule of thumbs, only apple varieties genetically related to the variety MacIntosh are affected, including: Akane, Asahi, Bramley, Cortland, Cox's Orange Pippin, Cox, Delbarestival, Discovery, Gala, Galaxy, Grimes, Imperial Gala, Kent, Kizashi, Lurared, McCoun, MacIntosh, Molly Delicious, Mondial Gala, Ontario, Queen Cox, Royal Gala, Spartan, Stark Gala, Starkspur Mac, Summared, Warabi, Worcester, and Pearmain (information from Ohio State University sources). They also observed phytotoxicity on the variety Honeycrisp.

This problem could be particularly important this year as weather patterns are forcing growers to spray in less than perfect circumstances. Growers should be aware of the risk of drift damage in apple orchards adjacent to vineyards and of using the same sprayer for both grape and apple applications.

DISEASE CONTROL IN GRAPES CRITICAL DURING AND AFTER BLOOM
Annemiek Schilder, Dept of Plant Pathology, MSU

As bloom is approaching in grapes, we should remember that this period as well as the post-bloom period is critical for disease control in grapes. During these growth stages, the young clusters are highly susceptible to diseases, including black rot, downy mildew, powdery mildew, and Phomopsis and most of the fungi are active at this time of year (they

powdery mildew, and Phomopsis and most of the fungi are active at this time of year (they are no dummies!). The risk is especially great if we have a lot of rain and moderate to warm temperatures during this time. Prolonged wet conditions during bloom can also allow Botrytis to get a foothold in the clusters of susceptible varieties by promoting growth on senescing flower parts.

The main aim for fungicide sprays at this time is to protect the clusters from infection by these pathogens while simultaneously protecting the foliage as well. Some infections that occur during this period may remain dormant (invisible) until the berries are close to veraison (black rot) or ripen (Phomopsis, Botrytis). As the berries grow and mature, they become naturally resistant to black rot, downy mildew, and powdery mildew infections and the need for protection diminishes. This happens quite rapidly (two to three weeks after bloom) for downy mildew, three to four weeks after bloom for powdery mildew and four to five weeks after bloom for black rot in Concord grapes. Some wine grape varieties may remain susceptible to black rot for up to eight weeks, however.

However, be aware that the cluster stem (rachis) and berry stems can remain susceptible longer than the berries in most cases. The only disease to which berries remain susceptible throughout their development is Phomopsis, but the risk of infection diminishes after bunch closing because inoculum levels drop off then. Botrytis is just the opposite in that berries actually become more susceptible as they get closer to harvest, especially in tight-clustered varieties. In general, aim to protect the clusters from the major diseases from immediate pre-bloom until four to five weeks after bloom. If cluster development is variable (e.g., as the result of a spring freeze or variable weather conditions), make sure that the slowest-developing clusters have caught up before easing up on the spray program.

Black rot

Temperatures in the high 70s and low 80s are perfect for black rot. At these temperatures, only six to seven hours of wetness are needed for infection. Black rot is a tricky disease in that infections can remain latent (dormant) for a long period of time, so you won't know that you have the disease until is it too late to do anything about it. However, one can scout for leaf lesions – a lot of black rot leaf lesions indicate high disease pressure from ascospore inoculum and also contribute to fruit infections. In a field with a history of black rot, old fruit cluster remnants left hanging in the trellis are major contributors to infection. Fruit infections can take place anytime from bloom onwards, but only become apparent sometime between bunch closure and veraison. As mentioned above, grape berries are highly susceptible to black rot infection for the first two to three weeks after bloom. Then they become progressively less susceptible as they develop. In general, Concord berries become resistant to infection about four to five weeks after bloom, while some *V. vinifera* cultivars don't become fully resistant until eight weeks after bloom. Thus, the period from immediate pre-bloom through early fruit development is crucial to protect grapes against black rot infection.

In five years of trials in New York, good black rot control was achieved with one immediate pre-bloom and one to two post-bloom fungicide sprays. The second post-bloom application is strongly advised if black rot has been a problem in the vineyard the previous year, and should be considered prudent if wet weather is anticipated. During three years of fungicide trials in a 'Concord' vineyard in Fennville, Michigan, just two post-bloom applications of SI fungicides have provided very good control under high black rot pressure. An immediate pre-bloom application is advised only if black rot was severe in the vineyard in question in previous years.

Sterol-inhibitor fungicides (e.g., Nova and Elite) continue to provide outstanding control of black rot, and provide several days of post-infection activity. Currently, there are various "generic" tebuconazole products on the market, e.g., Orius and Tebuzol, that may be more cost-effective. When using SI fungicides on a post-infection schedule, use the highest label rates, because post-infection activity is strongly rate-dependent, particularly when extended "kickback" activity is required. The strobilurin fungicides (Abound, Flint, Sovran, Pristine) are excellent protectants, but provide only limited post-infection activity (probably <24 h). Flint and Pristine should not be used on Concord grapes because of potential phytotoxicity.

Phomopsis

Cane and leaf lesions have been showing up in vineyards. Each rainfall event now will lead to spore dispersal and can also lead to successful infection if the tissue remains wet for a sufficient amount of time. The optimum temperature for infection is 59-68ºF, at which time about six to10 hours of wetness are needed for infection. The longer the tissue stays wet, the more severe the symptoms will be. Since rachis and flower clusters are now fully exposed, we should be concerned with preventing Phomopsis infection of the rachis and fruit, especially in mechanically pruned vineyards and vineyards with a history of the disease. Rachis infections are most closely correlated with yield losses at harvest.

If at this time you find a lot of lesions on the leaves and canes, infection pressure will be high for the fruit also. Best fungicide options for control of Phomopsis during and after bloom will be Abound, Sovran or Pristine (do not use Pristine on Concord grapes). Phosphorous acid fungicides such as ProPhyt and Phostrol area also good and cost-effective alternatives. These are systemic and will most likely provide some kick-back activity. In trials done in Michigan, ProPhyt provided very good control of Phomopsis when sprayed on a 14-day schedule. Tighten the schedule and increase the rate if disease pressure is high. Ziram is a moderate to good protectant against Phomopsis and can be a tank-mix partner with any of the phosphorous acid fungicides. EBDC fungicides are good protectants but cannot be applied after bloom has started in grapes grown for the National Grape Cooperative. EBDC's have a 66-day pre-harvest interval.

Powdery mildew

No powdery mildew has been sighted in vineyards yet. However, we have had several occasions for primary ascospore release this spring. Ascospore discharge is initiated in the spring if 0.10-inch or rain occurs at an average temperature of 50ºF or more. This results in thorough wetting of the bark where the cleistothecia have overwintered. When the cleistothecia are sufficiently wetted, infectious ascospores are discharged within four to eight hours and are carried by wind to susceptible plant tissues. They can infect any green surface on the developing vine and do not need water for infection. The fungus then grows on the plant surface and produces a second type of spore (conidia) which are windborne and cause secondary infections. Under optimal conditions, the disease can spread rapidly, as the time from infection to production of conidia can be as short as seven days. Although infections can occur at temperatures from 59 to 90ºF, temperatures between 68ºF and 77ºF are optimal for disease development. Temperatures above 95ºF inhibit spore germination, and the fungus may be killed at temperatures above 104ºF.

Berry age has a marked effect on susceptibility to powdery mildew. Researchers in New York showed that when clusters of 'Chardonnay', 'Riesling', 'Gewürtztraminer', and 'Pinot noir' were inoculated from pre-bloom to six weeks post-bloom, only fruit inoculated within two weeks of bloom developed severe powdery mildew. Berries became substantially resistant to infection by three to four weeks after bloom, resulting in diffuse, non-sporulating

colonies on berries, and were virtually immune at six to eight weeks after bloom. Therefore, early sprays (from immediate pre-bloom until three to four weeks after bloom) are critical for preventing powdery mildew on the clusters. This usually coincides with critical sprays for black rot. For wine grapes, control of diffuse infections is also important as these can predispose the grapes Botrytis bunch rot and sour rot later in the season.

Sulfur remains an effective and inexpensive protectant fungicide for powdery mildew control in non-sulfur-sensitive grape varieties. The most effective systemic fungicides for powdery mildew control are the sterol inhibitors (Nova, Elite, Vintage, etc.) and the strobilurin fungicides (Pristine, Sovran, Abound and Flint). Luckily, we do not have any reports of fungicide resistance to strobilurins in the powdery mildew fungus in Michigan, but in some vineyards where sterol inhibitors have been heavily used for many years, they appear to be less effective than they used to be. New fungicide options that provide excellent control of powdery mildew are Quintec and Endura. Therefore it would be best to not entirely rely on SI's during the most critical period for fruit infection (immediate pre-bloom until three weeks after bloom) but alternate or tank mix with other effective fungicides. Last year, we did notice that Ziram as a tank-mix partner did improve control of powdery mildew in a spray

notice that Ziram as a tank mix partner did improve control of powdery mildew in a spray program.

Downy mildew

Downy mildew primary infections start if rains occur (at least 0.4 inches) and temperatures are above 50ºF over a 24-hour period. Check the recent weather conditions at or near your location on the Enviro-weather website (**www.enviroweather.msu.edu/**). It takes seven to 12 days for the lesions to form after infection has taken place, so keep an eye out for downy mildew. Early in the season, downy mildew lesions may be confused with low-concentration Gramoxone and possibly Chateau herbicide injury, which also cause yellow spots on leaves. However, if no herbicide was used and no herbicide spots are present on lower leaves, the spots may be downy mildew. To confirm that you can enclose a leaf with lesion in a ziplock bag with a moist paper towel and leave it out in the dark overnight. If white sporulation appears on the underside of the leaf, it is downy mildew.

A spray for downy mildew before or just after bloom is recommended for susceptible varieties, especially in vineyards with a history of disease. Early infections can lead to severe downy mildew infection and premature defoliation of the vine. Ridomil Gold MZ and Ridomil Gold Copper have excellent curative and protectant activity against downy mildew. Under moderate infection pressure, they will provide three to four weeks of protection. Of the strobilurins, Pristine, Abound, and Sovran are good choices. Other effective fungicides are mancozeb, ziram, and fixed coppers. ProPhyt and Phostrol are also good alternatives: they provide excellent curative and about seven to 10 days of protective activity. Under high disease pressure or when spraying after an infection period, use higher rates.

STORM & FLOOD DAMAGED TREES
Russell P. Kidd District Extension Forestry Agent & Roscommon C.E.D.

The tremendous (as in ferocious...) storms of the past week brought both heavy winds and torrential rains to the region. With it has come a lot of storm damage (broken limbs, partially blown over trees, etc.) as well as flooded soil in many areas with trees submerged under water.

The long term effect of this could be deadly to some trees - even if it is not already apparent. You may be wondering what can be done and what the effects will be.

It will depend on severity of damage, tree species involved and how long the event (in the case of flooding) exists.

Broken branches can be trimmed off and if coupled with some other pruning, can sometimes bring a shade tree back to some type of decent shape. However, some times damage is so severe, no amount of pruning will ever make a tree look "good" again. Since a tree plays an ornamental as well as functional role (shade, etc.), a homeowner will have to decide whether saving is the best option or cutting it down and replanting is the better choice.

Leaning, partially pushed over trees are a problem as it really depends upon how much root damage was done and whether it's possible to push a tree back up. In many cases it's not possible. Extensive root damage may lead to dieback of branches in the crown and the tree just may not be stable or very well anchored in place thereafter.

And SAFETY is the #1 concern. Are homeowners capable of doing the work to safely remove storm damaged trees? When local tree services are busy doing other jobs, many people won't want to wait and may be tackling jobs with a chain saw that they are not really prepared to handle - especially if power lines and /or trees are leaning against each other (spring poles and the like). It's a recipe for a trip to the hospital...

With flooding, it really depends upon how long the root zone stays submerged. In the dormant season (late winter/early spring), flooding usually does not have much effect as trees are still largely dormant when snow melt, etc. typically occurs. However, flooding

during the active growing season is an entirely different problem and is a much bigger problem. Many tree species will not be able to handle that situation for long. Again, some species of trees can handle this stress better than others.

Below are listed a few Internet links where you can direct and/or download some fact sheet type information to disseminate.

http://www.kbs.msu.edu/extension/storm/

Effects of Flooding:

http://www.caes.uga.edu/topics/disasters/flood/articles/treedamage.html#flood
http://www.ipm.iastate.edu/ipm/hortnews/1993/7-14-1993/flood.html

Information on cherries is available at the new cherry website: http://www.cherries.msu.edu/

Insect and disease predictive information is available at:
http://www.enviroweather.msu.edu/home.asp

This issue and past issues of the weekly FruitNet report are posted on our website at:
http://www.maes.msu.edu/nwmihort/faxnet.htm

ACTUAL AND PREDICTED DEGREE-DAY ACCUMULATIONS SINCE MARCH 1, 2008

Please send any comments or suggestions regarding this site to:
Bill Klein, **kleinw@msu.edu**

Last Revised: 6-17-08

Northern Michigan FruitNet 2008
Special Update
NW Michigan Horticultural Research Station

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June 19, 2008

FIRST CHERRY FRUIT FLY TRAPPED AT NWMHRS
N.L. Rothwell, District Horticulturist, MSU-E

We trapped our first cherry fruit fly (CFF) at the NWMHRS on Tuesday, June 17th. As we have mentioned in the past, the NWMHRS has a huge population of CFF in the unsprayed entomology block, and based on some recent work from Dr. Larry Gut's lab at MSU, we know that this population differs genetically from others around the state. Hopefully, most growers are trapping for CFF at their farms and will know the status of CFF populations in individual blocks. Additionally, most CFF populations in managed cherry blocks most likely have much more 'normal' emergence timing, and growers should be timing insecticide applications around catches on commercial farms, not the NWMRHS. At this time, we have not trapped a CFF in a managed cherry block. This notice is meant to be a heads' up for future management of CFF and to remind growers to hang yellow sticky traps in orchards as soon as possible.

USDA ESTIMATES, 2008
N.L. Rothwell, District Horticulturist, MSU-E

The USDA estimate for the Michigan tart cherry crop is 135 million pounds. The USDA does not break down by region, but the Cherry Industry's Cherry Industry Administrative Board (CIAB) provides this breakdown for the state:

Northwest: 75 million pounds
West Central: 40 million pounds
Southwest: 20 million pounds

Last year, the overall Michigan crop was 195.5 million pounds, and northwest Michigan picked out at 134 million pounds. We are currently looking at the smallest crop since 2002 in Michigan and nationwide. The national tart cherry crop estimate for 2008 is 177.3 million pounds, and last year, we picked 249.2 million pounds of tart cherries. The following estimates are for other tart cherry growing states:

New York: 9.2 million pounds
Wisconsin: 0.2 million pounds
Pennsylvania: 3 million pounds
Utah: 12 million pounds
Washington: 16.5 million pounds
Oregon: 1.4 million pounds

Information on cherries is available at the new cherry website: **http://www.cherries.msu.edu/**

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ACTUAL AND PREDICTED DEGREE-DAY ACCUMULATIONS SINCE MARCH 1, 2008

Please send any comments or suggestions regarding this site to:
Bill Klein, kleinw@msu.edu

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Last Updated: June 19, 2008

Northern Michigan FruitNet 2008
Weekly Update
NW Michigan Horticultural Research Station

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June 24, 2008

GROWING DEGREE DAY ACCUMULATIONS THROUGH JUNE 23rd AT THE NWMHRS

Year	2008	2007	2006	2005	2004	2003	18yr. Avg.
GDD42	1037	1374	1312	1281	1027	1039	1145.3
GDD50	565	834	756	761	548	546	656.4

Growth Stages at NWMHRS (6/23/08 - 3:30 p.m.)

Apple: 21-24 mm
Pear: Bartlett: 22 mm fruit
Sweet Cherry: Hedelfingen: 16 mm fruit
Napoleon: 15 mm fruit
Gold: 13 mm fruit
Tart Cherry: Montmorency: 13 mm
Balaton: 13 mm
Apricot: 28 mm fruit
Plum: 20 mm
Grape: 10" - 16" shoots

PEST REPORT
Erin Lizotte, IFP/IPM District Educator, MSU-E

Cherry: Wetting events ending last Thursday and Friday caused **cherry leaf spot** infections to be predicted at low to high levels in the northwest region. **Bacterial canker** is being observed at high levels in sweet cherries around the station and **American brown rot** has arrived earlier than usual, with active infections on green fruit. The cool temperatures have caused trees to retain damaged fruit for a longer period increasing the likelihood of brown rot spreading through clustered fruit. We have accumulated 327 DD50 since full bloom, biofix for **plum curculio.**

Insecticides to Control Plum Curculio and/or Cherry Fruit Fly	
	Efficacy

Trade name	Chemical class	Rate/Ac	Plum curculio	Cherry fruit fly	PHI
Actara	Neonicotinoid	4.5-5.5 oz	Good	Good	14
Assail	Neonicotinoid	5.3-8 oz	Good	Excellent	7
Imidan	Organophosphate	2.25 lbs	Excellent	Excellent	7
Provado	Neonicotinoid	8 oz	Poor	Good	7

Compiled from the 2008 Michigan Fruit management Guide.

There have been a lot of oviposition scars on fruit, and we are able to easily beat weevils out of unsprayed trees at the research station. We are catching **oblique-banded leafroller** at about 12/trap and observed our first **cherry fruit fly** last week at the station. The station often catches the first fruit fly well ahead of orchards throughout the region and should not be used to determine emergence for the entire region. The slow accumulation of degree days may have led to some early applications of Guthion, the table above includes alternative insecticides that can be used to target both plum curculio and/or cherry fruit fly. *Note that Imidan is only registered for use in tart cherry*. **Lesser peach tree borer** continue to be caught in significant numbers, at an average of 10/trap at the research station. The number of **American plum borers** is decreasing to around 5/trap and **greater peach tree borer** are emerging at slightly higher numbers with 4 in one trap this week.

Apple: We are at the tail end of the primary **apple scab** season with less than 10% of mature spores yet to be discharged. Scab infections were predicted in the region at light to heavy levels based on rain last Thursday and Friday, symptoms of this infections period are predicted to appear around June 27-29. We biofixed for **codling moth** on June 3, and since then we have accumulated 248 DD50. The 250 DD50 mark is a good target for many insecticide applications for codling moth. Codling moths are averaging 18/trap at the station, and **oriental fruit moth** numbers are down from last week with trap catches dipping below 10.

Grape: An interesting, but usually minor pest, **grape plume moth**, is appearing in higher than anticipated levels at area vineyards. **Rose chafers** have also arrived in the region, and at the station we are seeing high numbers in unsprayed sweet cherry blocks.

THE CHALLENGES OF DISEASE CONTROL DURING RAINY SPELLS
Annemiek Schilder, Small Fruit Pathologist, MSU

Extended periods of wet weather spell feast for fungal plant pathogens, since they are highly dependent on moisture for spore dispersal and plant infection. While dry spells earlier this spring might have threatened to create a "famine" year for fungi, the tables have indeed turned. Repeated or continuous wetting of infected tissues over several days is particularly conducive to spore production as it allows thorough wetting of infected canes or other overwintering plant parts and promotes spore release. In addition, heavy rains assist rain-splash-dispersed pathogens in getting the spores to susceptible plant tissues. Furthermore, extended wetness periods (12-48 hours) provide ample moisture for spore germination and infection of plant tissues. Diseases in small fruit crops that are promoted by warm wet weather include Phomopsis diseases; black rot, downy mildew, and anthracnose of grapes; leaf spot, spur blight, and anthracnose of raspberries; common leaf spot, Phomopsis leaf blight, scorch, and fruit rots in strawberry; and rusts in raspberries and blueberries. While powdery mildew generally thrives under warm-dry conditions, it does need rainfall in the spring and early summer to release ascospores from overwintered cleistothecia. So, rainfall at this time will increase powdery mildew disease risk later this season.

The challenge is to apply sprays before rainfall events – with as much rain as we've had it is likely that most protectant fungicides have been washed off. A study by Xu et al. (2008) showed that when Captan was applied to apple leaves, Captan loss was primarily due to wash-off by rain. In fact, as little as one mm of rain washed off about 50 percent of Captan. Subsequent rainfall did not result in much more loss of the fungicide. The results may be explained by the fact that most of the Captan on fruit/leaf surfaces following an application can be washed off easily, but the remaining deposit is more tenacious. This has to be taken into account and the application rate may be adjusted accordingly. During periods like these, especially when followed or accompanied by windy conditions, it is very difficult to

these, especially when followed or accompanied by windy conditions, it is very difficult to get the fungicides on at the right time, e.g., before an infection. This may be further complicated by fields being flooded preventing access with sprayers. Systemic fungicides should be used to get: 1) better coverage, 2) better rain-fastness, and 3) kick-back (curative) activity. They generally provide better disease control during or after extended rainy periods. If relying on post-infection activity, use them at the highest labeled rate for the crop. Do consider that even systemic fungicides work better when thorough coverage is strived for by increasing spray volume and spraying every row or every other row. The pre-harvest interval and re-entry interval should also be considered.

Examples of Systemic fungicides: Elite, Gem, Indar, Nova, Pristine, Procure, Vangard

RAINFAST CHARACTERISTICS OF INSECTICIDES
John Wise, MSU Trevor Nichols Research Complex

The heavy rainfall events experienced in Michigan over the last several weeks has prompted many questions about the relative "rainfastness" of the insecticides used in fruit production. Very little research has been done on this subject in recent years, leaving growers to wonder whether or not they need to spray after a rain event. In 2006, MAES provided funds to purchase and install a state-of-the-art rainfall simulation chamber at the MSU Trevor Nichols Research Complex. In our first field season (2007), we focused our efforts on calibrating the new equipment to simulate various precipitation patterns relevant to Michigan's spring production season. We were able to run some initial trials in apples (funded by Michigan Apple Research Committee) that can provide some preliminary insights, although it is important to complete the study before final conclusions are made.

In the 2007 apple study, we compared the performance of Azinphosmethyl (Guthion), Phosmet (Imidan), Esfenvalerate (Asana), Indoxacarb (Avaunt), Novaluron (Rimon), Emamectin Benzoate (Proclaim) and two neonoctinoids, Acetamiprid (Assail) and Thiacloprid (Calypso) on the codling moth. We sprayed all treatments on Red Delicious apple trees using labeled field rates, harvested fruit clusters 24 hours after sprays had dried and simulated half-inch of rain. These fruit clusters were then exposed to codling moth larvae in the laboratory, comparing fruit protection to untreated samples with no simulated rainfall. Parallel fruit samples were analyzed for their surface and sub-surface residue levels by the MSU Pesticide Analytical Laboratory to document the resulting chemical wash-off under the simulated rainfall event.

All treatments that were exposed to the half-inch of rain after 24 hours of drying provided good control of codling moth, even though residue losses to wash-off ranged from 10 to 50 percent. This suggests that even with significant residue wash-off, fruit protection is maintained from insecticides in the first few days after a spray. When fruit clusters were collected from the same field treated plots eight days later, some differences in performance became visible. Whereas performance of Calypso, Avaunt. Imidan and Guthion remained relatively equal between the rainfall and no-rain fruit, the activity of Rimon, Assail, Proclaim and Asana on codling moth was reduced from the half-inch of simulated rain. For the conventional insecticides Asana, Imidan and Guthion that have primarily surface residues, the amount of chemical lost from half-inch simulated rainfall ranged from 30 to 50 percent. This suggests that pyrethroid and organophosphate insecticides are similarly susceptible to wash-off from precipitation, but that the OPs' higher toxicity to codling moth larvae maintained performance, though this may not occur in commercial orchards where OP resistance exists. Assail and Calypso, being neonicotinoids, have systemic movement into plant tissue. The residue data showed that even though losses of surface residues were similar to that of the OPs, the residues that had moved in and below the plant cuticle were protected from wash-off. For Avaunt, Rimon and Proclaim the residue wash-off from fruit was significant, but residues in leaf tissues appeared to be quite resistant to rainfall wash-off.

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FARM SERVICE AGENCY ANNOUNCES ACREAGE REPORTING REQUIREMENTS AND DEADLINE

East Lansing, MI, June 19, 2008 -- In a continuing effort to assist the agricultural industry in Michigan, the Farm Service Agency (FSA) announces the acreage reporting deadline. Please remember that filing an accurate acreage report for all crops and land uses, including failed acreage and prevented planting acreage, can prevent the loss of benefits for a variety of programs. Farms where the acreage is not timely reported will be assessed a late-filing fee in order to retain program benefits.

Producers are required to report all of their cropland, ***including the field planting date,*** in order to qualify for several program benefits. These benefits include:

- Direct and Counter-Cyclical Program **(DCP)** payments;
- Commodity Loans and Loan Deficiency Payments **(LDP)**;
- Conservation Reserve Program **(CRP)** Annual Rental Payments;
- Noninsured Crop Disaster Assistance Program **(NAP)** Payments.

The **acreage reporting deadline** has been extended to August 15, 2008.

Failed acreage must be reported within 15 days of the disaster event and before disposition of the crop. Prevented planting must be reported no later than 15 days after the final planting date to ensure eligibility and to maintain crop history.

Reminder:

- All disaster-affected crops must be reported before the crop is destroyed.

USDA ESTIMATES, 2008

N.L. Rothwell, District Horticulturist, MSU-E

The USDA estimate for the Michigan tart cherry crop is 135 million pounds. The USDA does not break down by region, but the Cherry Industry's Cherry Industry Administrative Board (CIAB) provides this breakdown for the state:

Northwest: 75 million pounds
West Central: 40 million pounds
Southwest: 20 million pounds

Last year, the overall Michigan crop was 195.5 million pounds, and northwest Michigan picked out at 134 million pounds. We are currently looking at the smallest crop since 2002 in Michigan and nationwide. The national tart cherry crop estimate for 2008 is 177.3 million pounds, and last year, we picked 249.2 million pounds of tart cherries. The following estimates are for other tart cherry growing states:

New York: 9.2 million pounds
Wisconsin: 0.2 million pounds
Pennsylvania: 3 million pounds
Utah: 12 million pounds
Washington: 16.5 million pounds
Oregon: 1.4 million pounds

Information on cherries is available at the new cherry website: **http://www.cherries.msu.edu/**

Insect and disease predictive information is available at:
http://www.enviroweather.msu.edu/home.asp

This issue and past issues of the weekly FruitNet report are posted on our website at:
http://www.maes.msu.edu/nwmihort/faxnet.htm

ACTUAL AND PREDICTED DEGREE-DAY ACCUMULATIONS SINCE MARCH 1, 2008

Please send any comments or suggestions regarding this site to:
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