Home
Background & Projects
Calendar
Directions
InfoVideos
Links
Extension Expert Search
Publications
Staff

Northern Michigan FRUITNET 2000
Weekly Update

James E. Nugent Gary E. Thornton William M. Klein
NW Michigan Horticultural Research Station
Michigan State University

May 1, 2000

WEATHER

April precipitation totaled only 1.2" at the NWMHRS, with an additional 0.24" on May 1. This is very low rainfall for the season.

GROWING DEGREE DAY ACCUMULATIONS as of May 1st at the NWMHRS

Year	2000	1999	1998	1997
GDD42	272	271	300	152
GDD50	101	107	129	53

GROWTH STAGES:
Apricot: Harcot – petal fall
Plum: Stanley – white bud
Pear: Bartlet -- green cluster
Apple: Red Delicious - early pink
Sweet Cherry: Napoleon – 70% bloom
Tart Cherry: Montmorency – early white bud
Grapes: Chardonnay - late bud swell

COMMODITY REPORTS

Apple growers should be on the alert for **spotted tentiform leafminers** this year. Trap catches were averaging 870 moths per trap this last week at the NWMHRS, which is very high for northern Michigan. Egg counts are as high as 10 per leaf, which is extremely high. Provado used in early petal fall is the ideal treatment. Asana at pink is another option, but it will disrupt predator mites. The wetting period on 5/1 was not long enough to result in an **apple scab** infection period. Because of concerns with developing apple scab resistance to sterol inhibitor fungicides, such as Nova, Rubigan and Procure, consider incorporating compounds with alternative chemistries into the scab control program. Following are some new non-sterol inhibitor options: Sovran and Flint are two strobilurin fungicides that provide excellent scab control. Vangard is in a different class called anilinopyrimidines; it is rated as good for controlling apple scab. Vangard does not provide powdery mildew control.

Apple growers with mature trees that have had **fireblight** problems should consider applying Apogee between full bloom and petal fall (ideally at king bloom petal fall) for suppressing secondary fireblight infections. Apogee is a newly labeled growth regulator that shuts down growth for four weeks, starting approximately one week after application.

Sweet cherries, plums and apricots are all susceptible to **brown rot**. Whenever it rains, temperatures in the 70's and high humidity create ideal conditions. Humidity after infection is extremely important in determining if the brown rot will be a threat. Tart and sweet cherries are not threatened by **cherry leafspot** until leaves are fully expanded.

Please note that Vangard is not labeled for use on sweet cherries. Vangard does have a label for control of brown rot blossom blight in other stone fruits (apricot, tart cherry, peach, nectarine, plum and prune). Because Vangard is in a new class of compounds, it provides another option for delaying brown rot resistance to sterol inhibiting fungicides. Vangard does not control cherry leaf spot.

Green fruitworm trap catches remain steady. Growers interested in lesser peach tree borer disruption should be getting out their disruption ties any time between now and petal fall of tart cherries. Apricot growers should watch out for plum curculio injury. Plum growers should protect plums from **black knot** infection. Bravo is the ideal material, if used on a protectant basis.

MISCELLANEOUS

Sweet Cherry Pollination
By Jim Nugent

Many blocks of sweet cherries in Michigan have been planted with the understanding that Ulster would cross pollinize Emperor Francis, Napoleon and other pollen compatible Group III varieties. This is not the case. An error in the original pollen categorization placed Ulster in Group XIII (S_2S_4 alleles). Due to observed pollination problems, researchers at Cornell University revisited the pollen classification of Ulster and found it actually to contain the S_3S_4 alleles, correctly placing it in Group III. Therefore, Ulster will not cross pollinize Emperor Francis, Napoleon, Bing, Kristin and other Group III varieties.

If an orchard has been planted with a combination of varieties that do not cross pollinize each other, consider these options:

As a long term solution, get trees planted into the block that will provide good pollen. Call me to discuss options. For the short term, get lots of bees into the block (at least 2 hives per acre). Purchase pollen (not Bing or Lambert) to place in the hive entrance. If not purchasing pollen, then cut lots of bouquets of bloom from a good pollen variety (anything other than Group III) and place in cans with water throughout the orchard.

Placing the flowers throughout the block should be more effective than placing them in front of the hives.

Information on sweet cherry pollination is available from the NW Michigan Horticultural Research Station.

ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE FEBRUARY 15, 2000 (*)

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Home
Background & Projects
Calendar
Directions
InfoVideos
Links
Extension Expert Search
Publications
Staff

Northern Michigan FRUITNET 2000
Weekly Update

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NW Michigan Horticultural Research Station
Michigan State University
May 9, 2000

WEATHER

Very warm weather occurred this past week causing very rapid crop development. Generally, little rainfall has occurred in NW Michigan, though localized thunderstorms resulted in spotty precipitation on 5/7 and 5/8. Rainfall at the NWMHRS totaled 0.63 inches (all on 5/7). Evaporation increased to 1.85" last week, from 1.29" the previous week, or an average of about 0.26" per day.

GROWING DEGREE DAY ACCUMULATIONS as of May 8th at the NWMHRS

Year	2000	1999	1998	1997
GDD42	437	412	423	202
GDD50	214	193	196	70

GROWTH STAGES:
Apricot: Harcot -- fruit set
Plum: Stanley -- fruit set
Pear: Bartlet -- petal fall
Apple: Red Delicious -- full bloom
Sweet Cherry: Napoleon -- early fruit set
Tart Cherry: Montmorency -- petal fall
Grapes: Chardonnay -- 1" - 3" shoots

COMMODITY REPORTS

Sweet cherries at the NWMHRS were in full bloom on 5/3 for mid-season blooming varieties. Many varieties and/or locations in the warmer areas of NW Michigan had a poor looking bloom. Tarts came into full bloom at the NWMHRS on 5/5. These are the same full bloom dates as in 1999 for both sweets and tarts. Sunday's rain resulted in a light infection period for **cherry leaf spot** and no infection for apple scab. **Green fruitworm** are 1/4" long, and the adults are still flying. **Climbing cutworms** are still a threat in new plantings. **Lesser peachtree borer** flight is expected to start this week, and LPTB pheromone disruption ties should be put out as soon as possible. **Plum curculio** are active in the orchards but are a very minor threat until shuck split.

In Red Delicious and Golden Delicious apples it is common to find weak or non-existent king blooms. Thinning will be a challenge where the king bloom is missing. **European red mites** are hatching. **Codling moth** traps should be hung as soon as possible, as flight is expected this week. Pheromone disruption ties should be put out as soon as possible for codling moth. The **spotted tentiform leafminer** trap catches remained high for the week, with the average catch being 797 per trap at the NWMHRS. If Provado is going to be used for control at petal fall, the application should not be delayed this year. Late sprays cannot control the tissue feeding stage. Rosy apple aphids can be found in the clusters.

FAX BACK SYSTEM
By Gary Thornton

An important component of the Code-A-Phone (PestNet hotline) is the fax back system. To access this, press "5" at the main menu. A listing of the available documents, based on the weather from the various weather stations, is listed in the "2000 Catalog of Fax-Back Document Numbers" in this FruitNet (except the web version). The following documents will be faxed back to you upon request:

21 day summary (previous 21 days and prediction for the next 7 days' scab spore maturity, wetting events and rainfall).
Codling moth (Chart to time sprays for egg hatch, You will need biofix date -- date when 5 moths per trap are caught).
Plum curculio (Chart to use if postponing insecticide use in tart cherry; you will need biofix date of full bloom).
Fireblight (Chart to use to determine and predict "Epiphytic Infection Potential" (EIP). You will need a biofix date, the date bloom opened in your apples or pears).
Be sure that you enter the three digit code listed under the weather station most appropriate for you.

NEW CODE-A-PHONE SYSTEM -- PESTNET HOTLINE
By Gary Thornton

Many growers are still not aware of all the changes in the code a phone (PestNet Hotline) this year. The following information is now available to all growers with a touch tone phone:

Stone fruit message
Pome fruit message
Grape message
Disease prediction (wetting events) from 12 weather stations
Fax Back system

Keep in mind that you will need to know the code for the weather station nearest to you. Beware: Only enter the three digits; do not enter the # symbol! The codes are listed in the "Catalog of Fax-Back Document Numbers" included in this FruitNet. For example: to hear wetting events summary for Elk Rapids South, you would press the number 200.

ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE FEBRUARY 15, 2000 (*)

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Home
Background & Projects
Calendar
Directions
InfoVideos
Links
Extension Expert Search
Publications
Staff

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James E. Nugent Gary E. Thornton William M. Klein
NW Michigan Horticultural Research Station
Michigan State University

May 16, 2000

WEATHER

Cool temperatures and some much needed rainfall occurred this past week. Unfortunately, rains on Friday evening, May 12, also brought some heavy and widespread hail to NW Michigan. Evaporation for the past week slowed dramatically from 1.85" for the week ending 5/9 to 0.86" for the week ending 5/16. Rainfall for the week at the NWMHRS totalled 1.04". Freezing temperatures occurred in many areas on the morning of 5/15.

GROWING DEGREE DAY ACCUMULATIONS as of May 15th at the NWMHRS

Year	2000	1999	1998	1997
GDD42	508	501	566	223
GDD50	239	239	285	77

GROWTH STAGES:
Apricot: Harcot -- 16mm
Plum: Stanley -- shuck split
Pear: Bartlet -- petal fall
Apple: Red Delicious -- petal fall
Sweet Cherry: Napoleon -- shuck split
Tart Cherry: Montmorency -- petal fall
Grapes: Chardonnay -- 1" - 3" shoots

COMMODITY REPORTS

Sweets: As the sweet crop comes out of the shuck, it is becoming increasingly apparent that many varieties and/or locations have a light crop. Freezing temperatures on 5/15 caused some additional damage, mainly in low areas. Some of this damage will show up as frost marks on the upper side of exposed fruit.

INSECT & DISEASE REPORTS

Last week's rain resulted in heavy infection periods for **apple scab, cherry leaf spot** and **brown rot**. Apple and cherry are susceptible to **powdery mildew** infections when it rains. **Fireblight** pressure has been low due to the cool temperatures.

Plum cucurlio egg laying has begun in stone fruits that are out of the shuck. **Lesser peach tree borer** adult first catch occurred yesterday at the NWMHRS. **American plum borer** trap catch averaged 7 per trap at the NWMHRS. Trunk sprays can go on if you are timing for **American plum borer**. Egg hatch of **lesser peach tree borer** won't happen for approximately 10 days; trunk sprays timed for them should go on between now and then, depending on the acreage that needs to be covered. **Green fruitworm** are 1/2" long and most reports indicate that populations are

low this year.

Codling moth first trap catch occurred Monday in Benzie and Leelanau Counties. **Spotted tentiform leafminer** trap catches declined this week to 169 per trap at the NWMHRS. **Rosy apple aphid** are curling up in the leaves, so if you are going to use Provado, it should go on as soon as possible. **European red mites** are mostly hatched out now.

A few **pear psylla** have hatched out and are in the first instar. **Grape berry moth** trap catches averaged 2 per trap at the NWMHRS. Grapes are not susceptible to powdery mildew yet. Early powdery mildew infections may occur with rain events, however the critical time is at bloom.

APPLE THINNING

By James E. Nugent
District Horticulturist, MSUE

Thinning apples properly is never easy, and 2000 appears to be no exception. The problem is always difficult to access because so many factors influence natural fruit set and the effect of thinners on that process. Some factors to be considered for 2000:

1. Cold injury to leaves makes thinning easier.

2. Most orchards carried a large crop last year, so trees are apt to have lower than normal stored reserves going into this year, a factor that should make thinning easier.

3. Heavy fruit set (hard to thin) is favored by warm, sunny conditions from pink to petal fall. This was the case for the early part of this period, but now we have cool, cloudy conditions, which favor easy thinning.

4. Thinning compounds are influenced by temperature. It appears more all the time that the critical time is not so much just the temperature at

the time of application, but the temperature for the first 48-72 hours after application. Therefore, try to apply thinners when daytime highs are predicted to be relatively warm (preferably 70's) for 2-3 days. Or stated another way, it's better to apply thinning compounds at the beginning or during the warm period rather than at the end of a warm period.

5. Blocks where apples were left unharvested last year would be expected to be particularly low on reserves and easy to thin.

6. Even in blocks where bloom was light may require light thinning to help break up clusters.

7. In blocks where the fruit appear to be mainly in the tops of the trees, be sure to get the thinner mainly into the tops.

8. Much of the above implies that light to moderate thinning strategy may be adequate. However, keep in mind that a smaller crop of large fruit is worth more in today's market than a large crop of small fruit. We still need to be more aggressive at thinning than we were a decade ago to get the large fruit size demanded by today's market.

9. Nearly all thinners are most effective when applied at 10-12 mm king fruit size. However, because temperature is so important at and following application of thinners and because our temps are often cool at this time of year, I suggest looking for a window of good weather beginning as early as petal fall or shortly thereafter to apply thinners. In blocks where fruit set is expected to be light, maybe this is a year to delay until the traditional 8-12 mm window to better assess what is happening in the block. If thinner is applied earlier than the 8-12 mm stage, I suggest using the same rate that would normally be applied as fruit is not easier to thin early -- actually it's a little more difficult.

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Home
Background & Projects
Calendar
Directions
InfoVideos
Links
Extension Expert Search
Publications
Staff

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Weekly Update

James E. Nugent Gary E. Thornton William M. Klein
NW Michigan Horticultural Research Station
Michigan State University

May 23, 2000

WEATHER

Frost occurred on the mornings of 5/20 and 5/21. NW Michigan received some much needed rain this week. Evaporation remained lower for a second week, at 1.06" per week, due to cooler temperatures and periods of rain. During the past 4 weeks, evaporation has totaled 5.25", and rainfall at the NWMHRS has totaled 3.09". Most of the rain occurred during the most recent two weeks, while most of the evaporation occurred during the prior two weeks.

GROWING DEGREE DAY ACCUMULATIONS as of May 23rd at the NWMHRS

Year	2000	1999	1998	1997
GDD42	586	631	727	252
GDD50	273	317	393	82

GROWTH STAGES:
Apricot: Harcot -- 23mm
Plum: Stanley -- 6mm
Pear: Bartlet -- 11mm
Apple: Red Delicious -- 5mm
Sweet Cherry: Napoleon -- 12mm
Tart Cherry: Montmorency -- 8mm
Grapes: Chardonnay -- 4"-8" shoots

COMMODITY REPORTS

Apples are entering the thinning time period. This season's apple bloom was variable by variety and block, making thinning decisions a greater challenge than usual. Continued generally cool, cloudy weather, combined with last year's large crop and other factors should result in conditions that make thinning relatively easy. Keep in mind that erring on the side of over thinning is more profitable in today's market than under thinning. **Codling moth** trap catches at the NWMHRS were zero, but codling moths have been caught elsewhere in low numbers. Growers should biofix when they reach an average of 5 moths per trap. If you have had difficulty in controlling codling moth, then biofix at the first sustained catch. **Spotted tentiform leafminer** trap catches were down to 140 per trap. The cool weather has slowed the progress of this pest, as well as others. No mines have been reported yet, but they should appear in the next week. **Rosy apple aphids** are curled up in the leaves now, making control difficult. Pear growers should apply Agri-Mek for **pear psylla** control now. Be sure to include the oil with the Agri-Mek.

The current wetting event has so far resulted in a light to heavy infection period for **cherry leaf spot** and **apple scab**, depending on location in NW Michigan. If apple growers applied Nova or Rubigan for the heavy infection period of May 12th, then a second application is needed as soon as possible, if it hasn't already been applied. Be sure to use a protectant in what could be the final spray.

If **fireblight** results from the hail on May 12th (causing trauma blight), then infections are 28% of the way to expressing symptoms. Based on Maryblyte, fireblight should not have occurred during this event because of the cool temperatures at that time. However, because the trauma occurred with large sized hail that could open wounds in the shoots, it is possible that symptoms may occur. If symptoms do occur, expect them to show up in about 10 days, depending on weather.

In cherries, frost damage to developing fruit on the mornings of 5/15, 5/20 and 5/21 has caused a limited loss in crop, but more importantly, it will result in "frost marks" on sweets. These areas of damaged tissue nearly always result in cracking later in the season. Tarts are less likely to show external marking. The tart cherry crop size is looking significantly lighter than anticipated. A good deal of variability exists in the crop load, but overall, this crop is not coming out of the shuck as well as expected.

Plum curculio is active on warm days in sweet cherries, apricots and Japanese plums. The NWMHRS has accumulated 136 degree days base 50, with 375 DD base 50 needed before an insecticide has to go on tart cherries that have low plum curculio pressure. **Lesser peachtree borer** activity averaged 6 per trap at the NWMHRS, so trunk sprays should be going on. **Green fruitworms** are low in numbers this year; larvae are 3/4" long.

Grape berry moth trap catches are at 1.5 per trap. Primary infections of **powdery mildew** can occur with rain periods, although the temperatures have been cool and not ideal for mildew.

Tarnished plant bugs are active in strawberries.

Gibberellic Acid on Cherries
By Jim Nugent

The proper application timing for GA on tart cherries is typically 3-4 weeks after full bloom, or when trees have 5 to 7 leaves (3 to 5 leaves fully

expanded) on terminal growth. Here at the NWMHRS, we are not quite at this stage, but will be shortly (probably next week if temperatures warm up). Conditions since bloom have generally been cool this year, which should result in approximately a four-week interval from bloom to application. Orchards further north will be later.

Tips for use:

1. Apply when high temperatures are expected to be above 70 ° F for a couple of days, if possible. Applications made when high temps are expected to be below 60 ° F have given poor results.

2. Leaves expanding under low temperatures are less efficient at uptake than leaves growing under normal to above normal temperatures.

3. For mature trees:
a) Use 10-20 ppm of gibberellic acid (GA). Lower rates are typically used on more vigorous orchards or where GA was used successfully last year; higher rates are used on low vigor orchards. Rates of about 15 ppm are most common.

b) Rates of Pro-Gibb 4% on mature trees are as follows:
10 ppm response = 6 fl oz/acre
15 ppm response = 9 fl oz/acre
20 ppm response = 12 fl oz/acre
c) Research with surfactants has given results varying from no effect to over-response with phytotoxicity. (The phytotoxicity occurred with silicon based surfactants). Therefore, we suggest not using a surfactant with GA unless you have enough experience with a particular surfactant to have confidence in the response. Never use a silicon-based surfactant.

4. In non-bearing tart and sweet cherries -- used to greatly reduce flowering and fruiting to achieve faster growth and delay pollen-transmitted virus infection.
a) Apply with a handgun either 100 ppm (40 fl. oz. of Pro-Gibb 4% per 100 gallons of water) in a single application 3-4 weeks after full bloom (slightly later if temperatures are exceptionally cool); or

b) 50 ppm (20 fl. oz./100 gal) applied about 3 weeks after full bloom + a second application at 50 ppm 2½ - 3 weeks later. This two-application system at 50 ppm nearly always is more effective than a single application at 100 ppm.

c) Do not apply to trees the year of planting.

5. Bringing young trees into bearing following treatment with high rates during non-bearing years. It is very important to not discontinue GA as this results in oversetting of fruit and stunting of trees. In the past, we have suggested decreasing the rate to 15 ppm. This is not enough GA! There

are probably two reasons why trees still tend to overset. First, trees that have been kept vegetative have tremendous capacity to set fruit. Second, often at this time growers are switching from handgun application to airblast and may be underestimating the amount of GA needed on these young trees. Based on recent experience (but unfortunately not on research), I suggest that approximately 30 ppm be applied if spraying dilute (18 fl oz Pro-Gibb/100 gal), or about 20-24 fl. oz./acre if applied concentrate. This rate per acre for concentrate spraying already takes into account the average tree size of this age tree; i.e., do not reduce the rate further based on tree row volume.

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