# Northern Michigan FruitNet 2005
## *Weekly Update*

**NW Michigan Horticultural Research Station**

Jim Nugent, District Horticulturist
Nikki Rothwell, District Fruit IPM Agent
Bill Klein, Farm Mgr, NWMHRS
Duke Elsner, Agricultural Agent
Jim Bardenhagen, Leelanau Extension Director

**May 3, 2005**

**GROWING DEGREE DAY ACCUMULATIONS as of May 2, 2005 at the NWMHRS**

| Year | 2005 | 2004 | 2003 | 2002 | 2001 | 15 yr. Avg. |
|---|---|---|---|---|---|---|
| GDD42 | 274 | 204 | 214 | 203 | 266 | 215.6 |
| GDD50 | 115 | 76 | 87 | 105 | 134 | 91.0 |

**GROWTH STAGES AT NWMHRS (5/2/05 – 9 a.m.)**

**Apple:** Tight cluster
**Pear: Bartlett:** Open cluster
**Sweet Cherry: Hedelfingen:** First bloom; **Gold:** white bud; **Napoleon:** 25% bloom
**Tart Cherry: Montmorency:** bud burst; **Balaton:** late bud burst
**Apricot:** Petal fall
**Plum:** Early white bud
**Grapes: Chardonay:** Late scale crack

**WEATHER**

Cold weather persisted throughout last week. Degree day accumulation, base 42º F, slipped in one week from being the most advanced since 1990 to the 6th most advanced. Still, degree day accumulation remains well ahead of normal. Precipitation was much below normal in April. Inversion (conventional) frost events occurred this past week on the mornings of April 29 and 30. Highs for the week were only in the mid 40's to low 50's.

**COMMODITY REPORTS**

Temperatures have been too cold to provide conditions for pollination of the sweet cherries that have been slowly opening this past week. There is some bud damage in both tarts and sweets – most prevalent in tarts in lower sites. Overall bud damage does not appear very significant at this time.

**IPM REPORT**

A wetting event was reported for Thursday, April 28th that resulted in a light scab infection period in Bear Lake and on Old Mission. As of today, May 3, we have an ongoing wetting event that has not yet resulted in disease infection. Due to weather, we have nothing to report on insects. A small number of two-spotted spider mites were seen in one location, but no action was taken. A few apple rust mites were also out and about, but again, no one should sound the alarms.

**Horn-Faced Bees (*Osmia cornifrons*)**

If you have picked up some *O. cornifrons* to test in your orchards, we will have empty straws (housing tubes) available at the station at the end of the week. A company in Ohio has manufactured the tubes for us, and they have promised to have them here in northern Michigan this Friday (May 6th). If you would like extra tubes to propagate your colonies, please give us a call on Friday (946-1510) to determine a pick-up time. I would recommend that all nesting tubes should be out in the orchard by this weekend, as we are expecting warm temperatures this weekend (finally!). Once the *O. cornifrons* buckets go out into the orchard, the females will begin to search for nesting sites, so all empty nesting tubes should be on hand for egg laying.

If you haven't already done so, a $5 per bucket donation would be greatly appreciated. These funds will help support this exciting new project.

**New beekeeping primer available**

A new beekeeping primer developed by Roger Sutherland of the Southeast Michigan Beekeepers' Association provides valuable information and suggestions for the beginner.

If you are thinking about keeping honeybees, you may wish to order *Starting and Keeping Bees in Michigan, Information and Suggestions for the Beginning Beekeeper*.

The booklet can be obtained from the Southeastern Michigan Beekeepers' Association web site at: http://www.sembabees.org for information on how to receive an E-mail copy, or write to: SEMBA, 5488 Warren Road, Ann Arbor, MI 48105 for information on obtaining a printed copy by postal mail. There is a cost for the booklet and mailing.

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, 2005

**Please send any comments or suggestions regarding this site to:**

Bill Klein, kleinw@msu.edu
Last Revised: 5-03-05

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## *Weekly Update*

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**May 10, 2005**

**GROWING DEGREE DAY ACCUMULATIONS as of May 9, 2005 at the NWMHRS**

| Year | 2005 | 2004 | 2003 | 2002 | 2001 | 15 yr. Avg. |
|---|---|---|---|---|---|---|
| GDD42 | 361 | 250 | 287 | 256 | 386 | 296.6 |
| GDD50 | 164 | 94 | 120 | 125 | 201 | 132.9 |

**GROWTH STAGES AT NWMHRS (5/9/05 – 9 a.m.)**

**Apple:** Pink
**Pear:** First bloom
**Sweet Cherry: Hedelfingen:** full bloom; **Gold:** 80% bloom
**Tart Cherry: Montmorency:** 50% bloom
**Apricot:** Fruit in shuck
**Plum:** Full bloom
**Grapes:** Early bud swell

**WEATHER**

Warm weather finally returned this week, but not until another frost event on the morning of May 4. Rain occurred a couple of days, but amounts were generally very low. Precipitation for April and May is well below normal. Degree-day accumulations remain ahead of normal despite below normal temperatures from April 20 through May 4.

**CROP REPORTS**

**Tart cherries –** Spring frost events have caused enough bud damage to reduce crop size in low pockets, but most sites are looking good at this time. Warmer areas of NW Michigan have reached full bloom as of this writing. Pollination conditions have been excellent to date for tarts. Cooler areas of NW Michigan are not yet in bloom or are in partial bloom.

**Sweet cherries** began blooming during the recent very cold period in the more advanced areas of NW Michigan. Expect pollination problems in these areas to significantly reduce crop. Sweet acreage in cooler areas did not bloom until the recent warm period when pollination conditions were good. Frost damage appears quite limited in sweets.

**Apple** crop potential looks good this time.

**PEST REPORT**
By Nikki Rothwell

A wetting event was reported for Monday, May 9th that resulted in a light **apple scab** infection period in the Northport and Eastport areas.

There was **fire blight** potential in warmer areas with the increased heat and moisture on May 9th if bloom was open on or before May 8. Check the *PestNet Apple Fire Blight* assist chart to determine probability of fire blight in a particular orchard http://www.mifruit.com/Reports/NWMHRS%20Apple%20Fire%20Blight.pdf. Streptomycin is the material of choice if back action is required. However, remember that fire blight has wide spread resistance in southern Michigan to streptomycin. Mycoshield has no resistance issues to date, but must go on prior to a fire blight infection period. While Mycoshield is not as versatile or effective as strep, its use as a prevention strategy when appropriate will decrease strep use and hence delay resistance development to streptomycin.

The wetting event on May 9th provided conditions for a light infection period for **cherry leaf spot** (CLS) in sweet cherry. The wetting event has also resulted in light CLS infection in tarts, but minimal susceptible leaf surface is present. Leaves are not susceptible to CLS infection

until stomata mature, which occurs approximately when leaves are unfolded. So at full bloom, about all that is susceptible are the very small bract leaves. The first regular leaves begin unfolding in Montmorency during late bloom. Keep in mind that chlorothalonil (Bravo/Echo) does not have back action so must be applied prior to infection.

**Brown rot blossom blight** is a concern in many sweet orchards, as most are in bloom. Rovral is an excellent choice for brown rot blossom blight at bloom due to SI resistance (we want to save SI's for brown rot control later in the season). Another reason to apply Rovral is that this material can **only** be used during bloom, and it also has some effectiveness on CLS.

**European brown rot** is a concern with cool wet weather, and these conditions are predicted for the next few days. This disease is more prevalent in Balaton than Montmorency. If Balaton are in bloom, be sure to protect them from European brown rot.

Insects in the orchard are still in low numbers, but we have spotted a few different bugs in the past week. **European red mite** nymphs just showed up in Leelanau County, but they have been bopping around the Elk Rapids area for 4 or 5 days. **Two-spotted spider mite** eggs have been laid, and a few nymphs are noticeable. We are still seeing low levels of **apple rust mites. Tarnished plant bugs** have made their debut this week. **Spotted tentiform leaf miner** eggs were detected yesterday, but they eggs numbers seem lower than normal. A few **oblique banded leafroller** (OBLR) have been recorded in Antrim County. **Plum curculio** has been captured in baited traps in sweet cherries, but no egg laying has been detected. **June beetle** (*Phyllophaga* spp.) adults are emerging now. Overall, the insect levels are pretty low considering the tree phenology.

There have been low numbers of **climbing cutworm** and **grape flea beetle** reported in grapes.

Just a reminder— **Avoid insecticide sprays during the pollination period!**

**Horn-Face Bees**
By Nikki Rothwell

For growers that have picked up horn-faced bees, a few suggestions on what to now that you have them out in the orchard. First, all bees should be out in the orchard **ASAP**. We had a hard time knowing when to place these bees into the different orchards due to the crazy weather and sudden bloom but hopefully everyone has them out, and they are doing their duty! Here is a list of suggested observations to gather valuable information on our new friends:

Record *the number of buckets* you received.
Please determine the *numbers of bees in each bucket*. This number can be achieved by counting the numbers of full tubes. A tube is considered 'full' when the outer portion of the tube is sealed with a complete cover of mud. Because counting the total of capped tubes in each bucket would take you till 2006, you can approximate the number of full tubes. Chose a representative area of the tubes in the bucket (i.e. if the bucket looks 50% 'full', then chose ¼ of the total area that has 50% capped tubes). Count the number of capped tubes in that area, then multiple by that area to make one total bucket. For example, if you count the full tubes in ¼ of the bucket, then multiple by 4 to find the total number of full tubes in the bucket. Repeat this process for each bucket.
*Type of crop* where bees were placed.
*Number of bees/acre*. (Remember **250** nesting females/acre is recommended. See *Number of bees* above). If you put more bees than the recommended rate, we will not be able to determine if these bees are actually better pollinators. **No honey bees should be placed into blocks with *O. cornifrons*.**
*Control blocks*. An adjacent one-acre block of the same crop as #4 without an *O. cornifrons* nesting bucket should be selected as a control. The location of the control block should be similar to the experimental block in terms of soil type, growing site, past yields, and age of trees. The control block should contain the recommended rate of honeybees. In order to keep far-foraging honeybees from entering the experimental blocks, the control block should be far enough away from the experimental (*O. cornifrons*) block. Optimally, the control and experiment blocks should be placed at least ½ mile apart.
*Location of nesting buckets within each block*. Record where you placed the bucket.
*Propagation information*. First record the number of empty tubes. We need this information if we are to determine the numbers of bees for the following generation. Again, you can approximate the number of empty straws (following method under #2) when you obtain your buckets of bees. In the fall you will have to count the number of empty straws. By knowing the numbers of empty tubes in the spring and the number of empty tubes in the fall, we can determine if the population has increased over the season. For propagation purposes, a minimum of 500-750 empty nesting sites are needed to increase the population.
*Yield information*. Record the last three years' yields in both the control block (without *O. cornifrons*) and the experimental block (with *O. cornifrons*). This information will help us determine if your yield increased in blocks with *O. cornifrons*. This information can be 'collected' by visual observations, processor sheets, or more advanced techniques, if you are so inclined.
We would also love any other information you have to offer… When do they fly during the day (early, late, all the time)? How long before your bees emerged from the tubes? Do you see them pollinating? Are they using the mud? Are they mating? Do they seem active? How far away from the colony are they pollinating? How long do they spend on each flower? What is the pollinating behavior (flitting, slow, erratic in flight, busy, etc.)?
We will take any information growers have to offer. We appreciate all of your hard work in caring for these new bees!

**Irrigation**
Trees and vines have not pulled much moisture from the soil to date, but they are now entering the period when foliage will be rapidly developing. The demand for water increases as the foliage develops, so given the dry start for this growing season; suggest getting irrigation systems ready for use. The need will occur first in plants with smaller root systems, i.e., young trees/vines and apple and cherry trees on dwarfing rootstocks.

If no irrigation is available, try to mulch newly planted trees as soon as possible. Mulching early will reduce evaporative soil moisture loss and suppress weed growth, both of which will help conserve existing moisture.

**Michigan Senate Bill on Operating an Agricultural Labor Camp Without License Passed**

By Vera Bitsch, Dept of Ag Economics, MSU

Lansing (MI): The Michigan Senate passed a bill on Operating an Agricultural Labor Camp without Licence on May 3, 2005. It now goes to the Michigan House for action.

The bill sets an administrative civil fine of not more than $1,000 for operating an agricultural labor camp without licence. Each day of operation without licence is a separate violation. However, the total fine for continued noncompliance shall not exceed $10,000. All fines collected under this bill shall be credited to a newly to create Migratory Labor Housing Fund. The fund will provide grants to employers for extensive remodeling of up to 50% of costs not exceeding $10,000.

*FAQs*

*What is an "agricultural labor camp"?*

An "agricultural labor camp" in Michigan is defined as housing 5 or more migratory laborers engaged in agricultural activities, including related food processing. Therefore, employers who house less than 5 workers or whose workers are not transient, that is they have taken to move their primary residence to their employment site are NOT included.

I have hired a family of 6, with 4 of them working for me and two children attending summer school. Am I operating an agricultural labor camp? The size of the family occupying the housing is not relevant. An employer could house a family of 10 persons, if only 4 or fewer are agricultural workers, the bill would not apply.

I do not hire migrant workers, but I do have more than 4 students coming from different parts of Michigan to work for me over the summer. Does the bill apply to me?
Employers whose workers come from a different part of Michigan and are housed while doing agricultural activities (e.g., a student residing in East Lansing and operating a cherry harvester in the Traverse City area over the summer) are covered by the bill.

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ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2005

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Last Revised: 5-10-05

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**May 17, 2005**

**Growing Degree Day Accumulations at NWMHRS as of May 16, 2005**

| Year | 2005 | 2004 | 2003 | 2002 | 2001 | 15 yr. Avg. |
|---|---|---|---|---|---|---|
| **GDD42** | 409 | 351 | 369 | 294 | 473 | 384.4 |
| **GDD50** | 183 | 152 | 158 | 135 | 245 | 180.3 |

**GROWTH STAGES AT NWMHRS (5/16/05)**

**Apple:** King bloom
**Pear:** Early petal fall
**Sweet Cherry:** Hedelfingen: fruit set; Gold: petal fall
**Tart Cherry:** Early petal fall
**Apricot:** Shuck split
**Plum:** Petal fall
**Grapes:** Late bud swell

**WEATHER**

The past week has been cold and often wet, though there was not a lot of total precipitation. High temperatures for the past 6 days have ranged from 48-55ºF, so conditions during this period have not been good for pollination. Frost events occurred May 12 and 17.

**CROP REPORTS**

**Apple** . A wetting event was reported for Wednesday and Thursday, May 11 and 12, that resulted in a heavy **scab infection** period in Northport. On Saturday, May 14, we had another wetting period that resulted in a light to moderate apple scab infection period throughout the northwest. Yesterday, Monday, May 16, Northport and East Leland had another wetting event, and a light scab infection period resulted. Temperatures have been too low for **fire blight** infection, but as temperatures warm up in the next week, growers should be aware of this disease potential. There have been minimal changes in the pest insect status since last week, and overall numbers are still low. We are seeing a few **European red mite** nymphs, **two-spotted spider mite** nymphs, **spotted tentiform leaf miners**, and **oblique banded leaf rollers**.

**Sweet cherries**. The wetting event on May 11th provided conditions for a heavy infection period for **cherry leaf spot (CLS)** in the Northport area. We have trapped **plum curculio** in sweet cherries, but we attribute these catches to new more effective baits than we have had in previous years. We have not yet observed plum curculio egg-laying activity.

We have detected some **bacterial canker** on some blossoms of sweet cherry. This disease is favored when we have prolonged cool, wet weather during bloom and is most prevalent if a frost event occurs during this type of weather. The most susceptible trees will be located in low areas where frost may have predisposed these blossoms to invasion by the bacterial canker pathogen. The flowers that have been infected prior to bloom with bacterial canker often do not open, and little cankers grow at the bases of these flowers. If the canker spreads, whole cluster of flowers could die back. Eventually the disease will move into the spurs. If you notice many dead blossom clusters on a branch, clip the branch and place it in a plastic bag with a little moisture. After 24-48 hours, inspect the branches and look for bacterial ooze at the flower bases. If ooze is evident, there is a good chance that bacterial canker is also present.

**Tart cherries** in the warmer growing areas of NW Michigan came into bloom during a period of warm weather from May 5-10 with good conditions for pollination. Tarts will likely not fair as well in cooler areas where bloom has been slowly progressing the past week during the recent cold period. The very latest blooming areas are actually just beginning to bloom and may pollinate well when warmer temperatures arrive later this week. The May 11th wetting

may pollinate well when warmer temperatures arrive later this week. This May 14th wetting event resulted in heavy **cherry leaf spot** infection in Northport, but very little leaf area was present at that time. The first **green fruit worm** was detected in cherry.

Overall insect pests in both cherries and apples have been low. However, if temperatures do rise as they are expected to do in the next week, we could see a jump in insect numbers. We will be checking our traps on Monday, May 23rd, so we will keep you posted on the insect front. However, if we come under siege prior to next Monday, I will be sure to inform you of necessary steps to protect the fort.

**Plum curculio** is a primary insect that has already emerged from overwintering sites. Generally these weevils move into orchards one to two weeks after overwintering emergence. Throughout the overwintering period, females become reproductively mature, and they mate as soon as they emerge in spring. Egg-laying will begin when fruit reaches the shuck split or fruit set stage and warm weather occurs. In spring, plum curculio activity is often concentrated in trees along orchard borders, especially in areas with adjacent woodlots. Plum curculio hot spots are often found in the same locales year after year; these spots should be monitored intensely to gain a better understanding of populations in the orchard. To determine if an orchard has plum curculio, fruit should be visually monitored on a weekly schedule for egg-laying scars beginning at fruit set/shuck split. Remember that these insects can cause considerable damage in a short time period if night temperatures are above 60°F.

**NOTE TO LEELANAU COUNTY GROWERS**: The weekly IPM Update for Wednesday, May 25, will be changed from 1pm to **5pm**. All other Wednesday sessions will remain at 1:00 p.m. as previously.

**AVOID STUNTING IN DWARF SWEET CHERRIES**
Jim Nugent, Greg Lang and Bill Shane

Producing sweet cherries on dwarfing rootstocks has both advantages and challenges. One of the challenges is that trees will sometimes become prematurely stunted, or "runt out." This results in trees that do not fill their space and do not come close to reaching their yield potential. The problem is much more prevalent on sandy soils than on heavier soils.

The typical growth pattern we observe in dwarf sweets is that trees begin life in the orchard with good growth in year 1. Terminal growth continues strong in year 2, with a high level of spur production in first year growth. The spurs on first year growth begin producing cherries in year 3, which may begin suppressing terminal growth a little. The problem really doesn't show up, however, until years 4 or 5. By the fifth growing season, the spurs produced on growth in years 1, 2 and 3 are all fruiting, plus some fruit on year 4 terminal growth. This heavy fruit load, particularly when combined with sandy soils or insufficient irrigation, can cause a major reduction in vegetative terminal growth and lead to severe stunting of future growth (both shoot growth and leaf size). Fruit size at this point is greatly reduced because the trees accumulate diminished levels of storage reserves as well as develop insufficient leaf area to produce the carbon for good fruit growth and development.

Typical vigorous new growth is 18 inches or more per year. If new terminal growth is less than 15 inches, or especially down to 12 inches or less per year, stunting is occurring.

Reinvigorating stunted trees

It is very difficult to reinvigorate stunted trees. Spur removal alone is not adequate. The best results have been obtained by severe pruning in the dormant period. Limbs are headed back into two or three-year-old wood. This removes a lot of tree canopy and fruiting capacity, thus increasing the relative levels of storage reserves to growing points and encouraging strong re-growth. It may also be beneficial to use a high rate of gibberellic acid to reduce flower formation (and hence, crop load) the following year, but this has not yet been tested directly.

Avoiding stunted trees

It is a far superior strategy to avoid the stunting problem in the first place, rather than trying to correct the problem once it has occurred. The challenge is to know when to expect the problem and when it's not likely to occur. In other words, how do I best manage my trees? Following are our suggestions:

<u>Irrigation</u>
Cherry trees on Gisela (Gi) rootstocks are highly sensitive to drought, which can definitely contribute to stunted trees. All dwarf sweet cherries planted on sand, loamy sand and sandy loam soils in Michigan need irrigation. If irrigation is not available on a droughty soil, don't plant a dwarf or precocious rootstock. Dwarf rootstocks probably can be grown successfully on heavy soils without irrigation where rainfall during the growing season is regular and adequate, but a couple of drought periods in the early years could have serious consequences.
The irrigation system should be designed with multiple emitters per tree or micro sprinklers rather than one emitter per tree to better disperse the water.

Management of irrigation also changes for trees on Gisela rootstocks. Water should be applied more frequently and in greater volume than necessary with conventional rootstocks.

<u>Pruning</u>

Trees need fairly aggressive pruning during the early years to better balance fruiting with vegetative growth. Here is where one program does not fit all conditions. Pruning needs to be more aggressive in lower vigor situations and less aggressive when higher vigor is expected.

Vigor is strongly influenced by soil type and water availability. Vigor is also influenced by nutrition, weed management, climate (lower vigor in north), rootstock (G5 less vigorous than G6) and precocity of varieties. The combination of precocious varieties with dwarfing rootstocks may result in overproduction that causes both tree growth and fruit size problems.

Partial debudding of the leader for the first three years or so works well for all vigor situations. In lower vigor situations, also consider: a) techniques such as nub-whipping after year one; b) heading scaffolds for the first three years or so to reduce early crop loads, and maintain strong terminal growth; and/or c) removal of a portion of the spurs. Spur removal can be conducted quickly by raking off the spurs from the underside of the limb. Regular heading of new growth even during the mature bearing years has been found to help keep tree vigor and crop load more in balance.

Use of GA

Gibberellic acid (GA) is also a tool that can be used to avoid overcropping during the early years. It is typically applied 3 to 4 weeks after full bloom, or when the tree has 5 to 7 leaves (3-5 leaves fully expanded) on terminal growth. This causes a portion of next year's buds to shift from fruit to vegetative. Application rate greatly influences the portion of buds that are affected.

Unfortunately, not much research has been done on this technique in dwarf sweet cherries. GA has been used successfully for many years on both tart and sweet cherries on standard rootstocks to help delay fruiting and hence increase vegetative growth. It is a tactic that is often employed to improve growth until the tree can reach a size that is suitable for mechanical harvesting. The use of GA on dwarf sweets should help to avoid overcropping in the early years, but the rates need to be worked out.

GA is never applied to first year trees and there is rarely a need to apply during year two as mostly vegetative buds are produced naturally at that time. The greatest advantage may be gained when used during the third and probably fourth growing seasons. This could increase vegetative growth and reduce crops in years 4 and 5 when trees seem most negatively affected by overcropping.
The problem at this time is that the rate for this purpose has not been determined. We know the rate for keeping young trees from producing much fruit is 100 ppm (40 fl.oz of ProGibb 4% per 100 gal), while the rate used on mature tart cherries to help minimize blind wood is 10 to 20 ppm. So to delay fruiting by a year, we would recommend the full rate, followed by a reduced rate the following year. To accomplish a reduction, but not elimination of fruiting, will likely require rates closer to those used on bearing tarts.
Knowledge will rapidly expand during the next few years as we learn how to best manage orchards with various combinations of cherry varieties and dwarf rootstocks planted in our wide array of Michigan soils.
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**May 24, 2005**

**Growing Degree Day Accumulations at NWMHRS as of May 23, 2005**

| Year | 2005 | 2004 | 2003 | 2002 | 2001 | 15 yr. Avg. |
|---|---|---|---|---|---|---|
| **GDD42** | 509 | 447 | 468 | 329 | 604 | 482.0 |
| **GDD50** | 235 | 199 | 209 | 153 | 321 | 233.9 |

**GROWTH STAGES AT NWMHRS (5/23/05)**

**Apple:** Red Delicious -full bloom; Mac-petal fall
**Pear:** petal fall
**Sweet Cherry:** Hedelfingen: shuck split; Gold: shuck split
**Tart Cherry**: fruit set
**Apricot:** shuck split
**Plum:** fruit set
**Grapes:** bud burst

**WEATHER**

Warmer weather returned this past week at a critical time for pollination of apples in much of the region and tarts in the coolest blooming areas. Two rain events delivered some much needed water. Degree day accumulations base 42F is slightly ahead of the 15 year average at the NWMHRS, while base 50F is at average.

**CROP REPORT**

**Apples**: A wetting event was reported for Friday, May 20 that resulted in a light to moderate **scab infection** throughout the northwest. Yesterday, Monday, May 24, we had another wetting event that lasted until this morning, and it resulted in some light apple scab infection in most areas in the northwest and some heavy pressure in Northport. There have been minimal changes in the pest insect status since last week, and overall numbers are still low despite warming temperatures. We captured our first **codling moth** here at the station, although three moths were caught in Benzie County on Friday and the Antrim County area has been catching moths for the past three days. **Spotted tentiform leaf miner** catches have increased in the past week, with an average of 665 insects per trap.

**Sweet cherry**: Overall, the wetting events of the past week did not result in much **cherry leaf spot** (CLS) infection, but we did report a light infection period in the East Leland and NW Station areas. We have captured **plum curculio** in organic cherry blocks and areas where we are using the new, more effective lures. There has been no observed plum curculio egg-laying activity.

**Tart cherry: Cherry leaf spot** (see sweet cherry above). **American plum borer** catches are on the rise in the past week.

**MISCELLANEOUS**

**Updated Information on Boron and Soft Fruit!**

New research from MSU has provided some preliminary recommendations to prevent soft fruit with Boron use. The study shows that foliar applications of Boron in May, June, and July readily move from the leaves into the fruit, where it softens the cherries. If possible, try to keep Boron use to a minimum prior to harvest; however, if you need to apply a foliar application, apply the material at the low rate of ½ lb/acre. The best time to use Boron is after harvest. If Boron is added to an herbicide application, the uptake into the fruit is less than when Boron is applied to the leaves.

**Technical Problems**

We have been experiencing some technical problems with both the Code-a-Phone and FruitNet during the past several days. The Code-a-Phone line for stone fruit had been updated

PestNet during the past several days. The Code-a-Phone line for stone fruit had been updated since the May 12 message and for some reason, the computer did not accept the message of May 17. Both the stone and pome fruit messages were updated today and are now working properly.

We are also experiencing some problems with the PestNet reports for Old Mission and East Leland and have been working with the weather technology specialists to get the problem resolved as soon as possible. We apologize for the inconvenience this has caused and promise that we'll continue to work on the problem until it's resolved!

**Leelanau Co. Extension Office Move**

The Leelanau County MSU Extension office will be relocating to 201 E. Chandler Street in Leland (formerly the Sheriff's Dept offices). Although this move may be inconvenient, it will generate a substantial cost savings and be temporary until the new government complex is built in Suttons Bay Township and all county offices will be located in one place.

The office will be ***closed May 26th and 27th*** for the move and will **reopen** at the *Leland locati*on on ***May 31, 2005***, 8:30 am - 4:30 pm.

The new mailing address will be **PO Box 987, Leland, Michigan 49654** and the phone number will remain the same; 231-256-9888.

We thank you for being understanding during this transition.

**Mouse Guards**

Remember to remove mouse guards at this time to prevent girdling and allow for expansion.

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ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2005

**Please send any comments or suggestions regarding this site to:**

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# Northern Michigan FruitNet 2005
## *Weekly Update*

**NW Michigan Horticultural Research Station**

Jim Nugent — District Horticulturist
Nikki Rothwell — District Fruit IPM Agent
Bill Klein — Farm Mgr, NWMHRS
Duke Elsner — Agricultural Agent
Jim Bardenhagen — Leelanau Extension Director

**May 31, 2005**

**Growing Degree Day Accumulations at NWMHRS as of May 30, 2005**

| Year | 2005 | 2004 | 2003 | 2002 | 2001 | 15 yr. Avg. |
|---|---|---|---|---|---|---|
| GDD42 | 618 | 525 | 573 | 427 | 688 | 586.2 |
| GDD50 | 290 | 232 | 264 | 210 | 355 | 290.9 |

**GROWTH STAGES AT NWMHRS (5/30/05)**

**Apple:** Red Delicious: 10 mm fruit; Mac: 8mm fruit
**Pear:** 11 mm fruit
**Sweet Cherry:** Hedelfingen: 11 mm fruit; Gold: 10 mm fruit
**Tart Cherry:** 8 mm fruit
**Apricot:** 22 mm fruit
**Plum:** shuck split
**Grapes:** Chardonnay: 1 – 3" shoots

**WEATHER**
We finally had a week of "normal" temperatures. The month of May continued a two-month trend of below normal precipitation.

**CROP REPORT**
**Apples:** A wetting event was reported for Friday, May 27 for the Northport area that resulted in a light **apple scab** infection. **Fireblight** will continue to be a concern in susceptible varieties as long as tag bloom remains in trees. We have had our first report of **cherry leaf spot** symptoms, and occasional **bacterial canker** is showing up in tarts. We captured an average of two **codling moths** per trap here at the station, and there have been reports of biofix in orchards under high codling moth pressure. **Spotted tentiform leaf miners** catches have decreased over the past week. **Oriental fruit moths** were captured for the first time at the station, with an average of 20 moths/trap.

**Cherry:** Only one wetting event was reported last week in Northport, and it did not result in a **cherry leaf spot** (CLS) infection. We have had our first report of **cherry leaf spot symptoms**, and occasional **bacterial canker** is showing up in tarts. We have captured **plum curculio** in

baited traps, and we have egg-laying in the entomology block here at the station. With the temperatures expected in the 70's this week, we predict an increase in plum curculio egg-laying. Remember that these insects can cause considerable damage in a short time period if night temperatures are above 60°F. We are still capturing **American plum borers** (APB), and the first **lesser peach tree borer** (LPTB) catches were reported this week. Sprays for APB should be applied at this time where needed. Lorsban applied now for APB should provide control of LPTB. **Green fruitworm** was present in blocks of tarts in the Suttons Bay area.

**Grape:** Most of our vinifera cultivars are at the 1 to 5 inch growth stage, and the clusters are now visible. Insect activity has been very light, with no reports of **flea beetles** or **climbing cutworms** at injurious levels in NW Michigan. **Powdery mildew** should be the only disease concern at this time, especially in vineyards that had this disease build up last fall. Nova, Elite, Rubigan, Bayleton and Procure all offer excellent control efficacy for powdery mildew and several other options are available. Growers with downy mildew susceptible cultivars should be looking for the initial symptoms of this disease once the vines reach 6 to 12 inch shoot growth, especially if rainy weather develops.

**APPLE THINNING**
Jim Nugent

This week is expected to be a good window for apple thinning where fruit is advanced enough. Thinners are most effective when daily highs will be warm (above 70º F) for two to three days following application. Many factors influence the desired aggressiveness of thinning, including

vigor of bloom, tree vigor, frost damage, and weather during pollination. Fruit thins easiest between 8-12 mm king bloom fruit size with warm temperatures. If fruit size is slightly smaller than this but the weather looks to be good, consider thinning early. Thinners applied at 5-7 mm during warm weather work better than applied at 8-12 mm with cool weather.

**CODLING MOTH AND NEW CONTROLS**
Dr. Nikki Rothwell

With the predicted rise in temperatures for the coming week, codling moth (CM) flight will be on the rise. Because control of CM has changed in the past few years and we have many new products that require different application timings than the traditional organophosphates (OP's), we need to have a good handle on CM development. First, CM control is based on biofix, which is the first date at which moths are caught in traps, and the moths must be captured on two successive dates. In other words, biofix is the first sustained catch of moths. The biofix date is the point where we begin to accumulate degree days at base 50? F to accurately time insecticide applications according to CM development. Egg laying is predicted at 250 growing degree days after biofix.

**Codling Moth GDD Model**

| DD° Base 50 (Post Biofix) | Event | Action |
|---|---|---|
| Pink bud | Development of overwintering larvae | Set traps |
| 0 DD° = Biofix (~200 DD° after Jan 1) | 1st sustained moth captures | Set DD° = 0 |
| 250 DD° | Start of 1st generation egg hatch | Timing for 1st treatment if over threshold |
| 1000 DD° | Expected end of 1st generation activity | |
| 1200-1250 DD° | Start of 2nd generation egg hatch | Timing for 1st treatment if over threshold |
| 2100 DD° | Expected end of 2nd generation activity | |
| Chart from Dave Epstein, Larry Gut, and John Wise | | |

There have been several new insecticides added to the codling moth arsenal. These products have shown good results in controlling CM, and because these insecticides have alternative modes of action, they will help delay CM resistance to OP's. Insect growth regulators (IGR's) are a new class of insecticides that include materials such as Esteem, Rimon (formerly Diamond), and Intrepid. Rimon and Esteem work in different ways and on different life stages of CM: 1) they suppress development within an egg, 2) they suppress larval development if a larva consumes the material, and 3) eggs laid by treated females show reduced hatch. Eggs show a diminished capacity to hatch if they are laid on top of an IGR residue, which is why the timing of these products is earlier than other products. The first application of Rimon or Esteem is biofix plus 100 growing degree days. Rimon applied at this time is also effective on oriental fruit moth, obliquebanded leaf roller, and spotted tentiform leaf miner. Esteem shows good activity on rosy apply aphid and San Jose scale. Rimon looks like a very good option for CM control in trials at the Trevor Nichols Research Complex. Intrepid also controls CM and works primarily against the larval stage, although it has some affect on eggs and sublethal action on adults. This product has residual action of 10-14 days. MSU's recommended timing for this product is biofix plus 150-200 growing degree days, and an adjuvant is recommended to improve spray deposition.

Assail, Calypso, and Clutch are in the new class of insecticides, the neonictinoids. Assail and Calypso (at the high end rate) work well for CM control as long as proper timing and coverage is achieved. They have a residual action of 10-14 days. The first application is recommended at biofix plus 150-200 growing degree days. Although Assail is labeled for CM control at 2.5-3.4 ounces per acre, the high rate had better results. Clutch is another neonictinoid that shows promise when used at the high rate, 6 oz/acre, when applied at biofix plus 250 growing degrees days. Avaunt is another product available for codling moth control in apples. This product is excellent on plum curculio (PC), so an early season application for PC will also work against CM. Warrior is a pyrethroid that is newly registered product that shows good control of CM. This chemical, like others in the pyrethroid class, show better control in the spring than in the summer, and pyrethroids are highly toxic to predator mites. Granulosis virus is a new product that is naturally occurring virus that is very effective and specific in controlling codling moth. This virus is available commercially as Cyd-X and Virosoft, and we expect to see a third product, Carpovirusine, accessible to growers this year. For the virus, frequent applications of low rates are the best approach for CM control.

| Compound Trade Name | Chemical Class | Life-stage Activity | Optimal Spray Timing for CM | Mite Flaring Potential |
|---|---|---|---|---|
| Guthion, Imidan | Organophosphates | Eggs, Larvae, Adults | Biofix + 250 DD | L - M |
| Asana, Warrior, Danitol, Decis | Pyrethroids | Eggs, Larvae, Adults | Biofix + 250 DD | H |
| Rimon | IGR (chitin inhibitor) | Eggs, Larvae | Biofix + 100 DD Residue under eggs | M* |

| | | | | |
|---|---|---|---|---|
| Assail, Calypso, Clutch | *B.t.'s* | Eggs, Larvae, Adults (limited) | Biofix + 150-200 DD Residue under eggs | M* |
| Intrepid | IGR (MAC) | Eggs, Larvae, Adults(sublethal) | Biofix + 150-200 DD Residue under eggs | L |
| Avaunt | Oxidiazine | Larvae | Biofix + 250 DD | L |
| Esteem | IGR (juvenoid) | Eggs, Larvae | Biofix + 100 DD Residue under eggs | L |

* May cause mite flaring in combination with carbaryl or pythrethroids that kill predacious mites.
Chart by Dave Epstein, Larry Gut, and John Wise

**MOVEMENT AND STORAGE OF HORN-FACE BEES**
Dr. Nikki Rothwell

Nesting containers should be removed from orchards before spraying insecticides. If insecticides are not a factor, nesting containers may be left in place until a significant, visible decline in activity is observed. Once the containers are removed from the orchard, they should be placed in a storage area where they will remain for the duration of the season. DO NOT place them in a cooler as larvae need to complete their development at seasonal temperatures throughout the summer and fall months. Take caution when moving the containers because the larvae are attached to their provisions at this time and if they become disconnected they usually die. We recommend that you store the container with the nest-entrances facing up to increase the chance of a detached larvae reattaching to its provisions. Lids on the nesting buckets are not recommended at this time due to moisture buildup in the tubes. Rather, store the buckets inside a barn or other similar structure that provides shelter from rain without compromising outdoor summer temperatures.

Relocating containers and nesting shelters results in all or most of the females interrupting their nesting activity and leaving the new site. Relocating the nest before egg-laying is completed is not recommended, but if moving the nest is necessary, the following steps will reduce bee losses: 1) 85% re-establishment can be obtained by marking shelters with large visual landmarks (e.g. plywood sheets), 2) containers and shelters should be moved at night when temperatures are cool and females are inside their nesting cavities, and 3) cavity entrances should be covered with a non-adhesive material to prevent females from leaving during transport. Be sure to use the same nesting shelter at the new site and place the containers within the shelter in the same position as before or females become disoriented and leave. Take care when moving the containers even early in the season (now) as eggs and young larvae are already present.

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