



Northern Michigan FRUITNET'99

Weekly Update

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

JULY 6, 1999

WEATHER

By Jim Nugent, District Horticulturist, MSU-E

For the second week in a row, a major storm came through early Monday night. Last night, rainfall in the Traverse City area was much higher than previous rains this year. Winds were again very strong. Rainfall at the NWMHRS last night was 3.30", and the total for the week was 3.57". The total rainfall for June was 2.97".

Evaporation this past week was estimated at 1.44" (our evaporation pan overflowed last night, so Monday's evaporation was estimated). Evaporation total for June was 6.51", which is actually less than the 17 year June average by 0.46". This probably occurred because while the total precipitation was less than average for the same 17 year period by 0.44", we actually recorded measurable precipitation on 13 out of the 30 days, thereby reducing evaporation during those days of rainfall.

GDD 50: 1053; GDD 42: 1699

GROWTH STAGES

Apricot: Harcot – 36mm

Plum: Stanley – 23mm

Apple: Red Delicious - 42mm

Sweet Cherry: Napoleon – 20mm

Tart Cherry: Montmorency – 20mm

Grapes: Buckshot berries

INSECTS

By Gary Thornton, District Fruit IPM Agent

Apple maggot - The first adult catch in the abandoned orchard occurred last week. It was also reported by a scout in a commercial block near abandoned apples. Growers who are not scouting have 7-10 days after first flight before they have to have an insecticide on their apples, as the apple maggot adults only feed during this time. By July 7 to 10 the adults should begin laying eggs and an insecticide should be on by then. If growers are scouting for apple maggot they should get their red spheres out ASAP. Alternate row applications of insecticides work very well in controlling apple maggot.

Codling moth - Trap catches are down this week. We are in between generations, although some orchards can still experience high catches. In approximately 2 weeks the second generation will start.

Two spotted spider mites continue to build. This week we are approximately 3.5 mites per leaf in the tart cherries at the station. Last night's rain probably washed some of the mites off the trees. The rain will help the groundcover to stay favorable for the mites, so they won't migrate to the trees.

Cherry fruit fly adults continue to migrate into commercial orchards. Cherry fruit fly maggots have been found in untreated sweet cherries here at the NWMHRS.

Plum curculio larvae are mature and continue to drop out of the cherries to pupate.

Apple leafminer - A new pest to me, but apparently it has been observed in scattered in NW Michigan. Mining was observed on apples and occasionally in tart cherries. The pupa is unique, in that it is suspended in silk on a lower leaf.

Spotted tentiform leafminer - tissue-feeding mines are now observed in apples.

DISEASES

Cherry leaf spot - a heavy infection occurred last week on Thursday, ending on Friday morning. Last night's rain resulted in a light infection period. Growers should be sure to continue to control diligently for cherry leaf spot, as it is only early July. There is an abundance of inoculum, and new growth is still occurring. The young leaves are the most susceptible to infection.

Brown rot is now very common in untreated orchards. Growers should be very concerned about this disease, with all the wind whip and damage that can be found in both tart and sweet cherries. Full cover sprays with an appropriate fungicide are advised in all blocks. **Alternaria** can also be found on sweet cherry, particularly on cracked fruit. Indar, Orbit and Elite do not protect against this fungus. Rovral would be the best choice if Alternaria is a concern. Beware of the 7-day PHI for Rovral.

ETHREL LOOSENER

Temperatures appear to be close to ideal in the next few days for applying loosener. Ethrel has a 7-day PHI now.

NW Michigan Horticultural Research Station

Insect Trap Count Averages - 1999

DATE	Codling Moth	Spotted Tentiform Leaf Miner	Lesser Peach Tree Borer	Greater Peach Tree Borer	American Plum Borer	Oblique Banded Leafroller	Grape Berry Moth	Dogwood Borer
5/18	0	660	8		30			
5/24	0	88	1.3		14.3	0		
6/1	.6	85	17		4.6	0	9	
6/8	2	15	17.3		2.7	0	7.7	
6/14	1	342	11	6	.3	7	4.3	
6/21	.33	511	10	5	0	2.3	1	
6/28	.75	455	6.3	1.6	.75	2.3	16.3	10.6
7/5	0	357	7.3	1.6	2.6	0.3	2.3	7

[ACTUAL AND PREDICTED DEGREE-DAY ACCUMULATIONS SINCE MARCH 1 1999 \(*\)](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@pilot.msu.edu

Last Revised:7-6-99



Northern Michigan FRUITNET'99

Weekly Update

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 NW Michigan Horticultural Research Station
 Michigan State University

JULY 13, 1999

WEATHER

High winds, accompanied by highly variable rainfall, hit NW Michigan on Monday evening. Evaporation rates were quite high this past week at 1.95". June evaporation has totaled 6.13". Rainfall this week at the NWMHRS was 0.57" (including the 0.48' Monday evening). June rainfall totaled 2.96", with 2.06" falling in the first 10 days of the month.

GDD 50: 1168; GDD 42: 1870

This week we are introducing a Daily DD Accumulation chart to help growers calculate their spray intervals from biofixes for pests like codling moth. See chart below.

GROWTH STAGES (as of 7/6)

Apricot: Harcot – 36mm

Plum: Stanley – 23mm

Apple: Red Delicious - 42mm

Sweet Cherry: Napoleon – 20mm

Tart Cherry: Montmorency – 20 mm

Grapes: Buckshot berries

COMMODITY/PEST REPORT

Tart cherry harvest is underway. Wind damage is common as a result mainly of high winds on 6/28 and 7/5. The crop appears to be picking out light. Cherry leaf spot is quite common at low levels. A heavy infection period for cherry leaf spot and brown rot occurred on 7/8 and 7/9. With such an early harvest and the cherry leaf spot pressure, tarts will generally need a full cover protectant as a post-harvest spray. SI's are not very good as post harvest options, as they do not provide the duration of protection needed. Cherry fruit fly populations are increasing. Be cautious that late harvested blocks are adequately protected. See note on SI's below.

Sweet cherry harvest continues with cracking less of a problem than I would have expected. Beware that cherry fruit fly needs to be controlled in late harvested blocks. Sevin is the best late season, short PHI alternative for cherry fruit fly. Ambush WP and Pounce WP have not always provided adequate results.

Apples - Apple maggot adults were first trapped at the NWMHRS on July 1st and trap catches are currently up in abandoned apple orchards. Expect numbers to be increasing throughout July. If trapping with unbaited red spheres, plan to spray when a

couple of flies have been caught on a trap. Codling moth adult flight is generally still low, but some blocks are experiencing a substantial rise in trap catches from an apparent late first generation flight. If this occurs, mark the point as a biofix and plan to spray in about 250 DD base 50.

Grapes - Recent rains and hot weather have generated dense canopies in many vineyards. Growers need to be alert for the development of powdery mildew, downy mildew and black rot under these dense foliage conditions. Insect pressure remains light except for potato leafhopper, which is prevalent throughout the region. Rose chafer numbers have dropped off significantly.

Miscellaneous

Comment on SI's

By Jim Nugent, District Horticulturist, MSU-E

Several cherry leaf spot problems have resulted when SI's were used in programs that should have worked, when judged according to spray records. Control failure likely occurred because the SI was applied during a period of very heavy dew, i.e., when moisture was dripping from trees. This seems to be particularly problematic when a surfactant is used with the SI. Cherry leaf spot provides the most common example of this problem, but keep this in mind when using SI's to control any disease.

NW MI Horticultural Research Station -- Daily DD Accumulation -- Three Week Periods

			Daily	YTD	Daily	YTD
Date	Max	Min	Base 50	Base 50	Base 42	Base 42
6/22/99	85	62	23.50	759.45	31.50	1301.04
6/23/99	86	64	25.00	784.45	33.00	1334.04
6/24/99	83	68	25.50	809.95	33.50	1367.54
6/25/99	86	63	24.50	834.45	32.50	1400.04
6/26/99	87	65	26.00	860.45	34.00	1434.04
6/27/99	87	68	27.50	887.95	35.50	1469.54
6/28/99	81	62	21.50	909.45	29.50	1499.04
6/29/99	69	54	11.50	920.95	19.50	1518.54
6/30/99	77	56	16.50	937.45	24.50	1543.04
7/1/99	66	55	10.50	947.95	18.50	1561.54
7/2/99	82	58	20.00	967.95	28.00	1589.54
7/3/99	81	61	21.00	988.95	29.00	1618.54
7/4/99	90	70	30.00	1018.95	38.00	1656.54
7/5/99	90	77	33.50	1052.45	41.50	1698.04
7/6/99	79	66	22.50	1074.95	30.50	1728.54
7/7/99	80	62	21.00	1095.95	29.00	1757.54
7/8/99	73	56	14.50	1110.45	22.50	1780.04
7/9/99	70	56	13.00	1123.45	21.00	1801.04
7/10/99	68	55	11.50	1134.95	19.50	1820.54
7/11/99	78	52	15.00	1149.95	23.00	1843.54
7/12/99	81	55	18.00	1167.95	26.00	1869.54

7/12/99	81	55	18.00	1167.95	26.00	1869.54
7/13/99	81	60	20.50	1188.45	28.50	1898.04

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1 1999 \(*\)](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@pilot.msu.edu

Last Revised:7-14-99



Northern Michigan FRUITNET'99

Weekly Update

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

July 22, 1999

WEATHER:

July continues to be rainy. The NWMHRS during the week of 7/14 to 7/20 had measurable precipitation 5 of the 7 days, totaling 1.69". Rainfall from 7/1 to 7/20 totals 6.89". Evaporation for the past week totaled 1.73".

GDD 50: 1370; GDD 42: 2144

INSECTS:

Apple Maggot - Trap catches were very high this week at our abandoned site, 59/trap being the high. If growers are not trapping for AM, they should have a spray on to control this pest.

Codling Moth - Trap catches remained low at the Station and our abandoned site. The degree days are appropriate for the second generation to start, but moth flight is down so far at the Station. The warm weather and early season should be ideal for a large second generation adult flight, so I would expect a strong second generation flight.

Cherry Fruit Fly adults have been caught in very high numbers recently. Growers with more than 5 days to harvest should have their crop protected with an insecticide unless they have traps out and are closely monitoring those remaining orchards. Traps should be less than 2 weeks old to be considered usable; fresh traps should be hung if their effectiveness is in doubt.

Green Apple Aphids are building in some apple orchards.

European Red Mites and Two Spotted Spider Mites - In the last two weeks, populations have increased. Some apple and plum blocks are now over the threshold of 10/mites/leaf. Tart cherries, apples and plums harbor the highest populations. The threshold for tart cherries after

harvest in a season with abundant mid-summer moisture is at least 30 mites/leaf (lower in years of drought).

DISEASES:

Cherry Leaf Spot - Old burned out lesions combined with new infections have recently led to a wave of yellow leaves showing up in the top of trees. This wave in some cases can be partially due to the Ethrel

being applied to the trees. Leaves that have a very low level of leaf spot infection, that might otherwise not have enough lesions to cause leaf drop, can be induced by Ethrel to turn yellow and drop. This occurs because cherry leaf spot infection causes ethylene to be produced within the leaf, which ultimately leads to leaf yellowing and drop. An Ethrel threatment can add to the cherry leaf spot induced ethylene to cause greater total leaf drop. High rates of Ethrel will increase this problem.

Brown Rot - Where appropriate fungicides have been used, this fungi has been controlled. Hot, humid weather in the next few days will be ideal for its development.

Alternaria Fruit Rot - This fungi is not controlled by sterol inhibitors and has been very common this year. It generally colonizes injured areas, such as cracks in sweets or wind whipped areas in tarts. Rovral and Captan will provide some control of alternaria

MISCELLANEOUS:

Summer Pruning By Gary Thornton and Jim Nugent

We have had good success with post-harvest pruning of tart cherries in past years. However, we suggest delaying summer pruning on tart cherries this season until after August 1st. There is concern that pruning done prior to that time will result in regrowth this current season. This concern is the result of both the early season and lots of currently available soil moisture.

**NW Michigan Horticultural Research Station
Insect Trap Count Averages - 1999**

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5/18	0	660	8		30			
5/24	0	88	1.3		14.3	0		
6/1	.6	85	17		4.6	0	9	
6/8	2	15	17.3		2.7	0	7.7	
6/14	1	342	11	6	.3	7	4.3	

6/21	.33	511	10	5	0	2.3	1	
6/28	.75	455	6.3	1.6	.75	2.3	16.3	
7/5	0	357	7.3	1.6	2.6	0.3	2.3	
7/19	1.6	188	2.3	6	7.3	2	3.6	

**NW MI Horticultural Research Station
Growing Degree Day Accumulations for July**

Date	Max	Min	GDD		Total Base	
			50	50	42	42
7/1	66	55	10.50	947.95	18.50	1561.54
7/2	82	58	20.00	967.95	28.00	1589.54
7/3	81	61	21.00	988.95	29.00	1618.54
7/4	90	70	30.00	1018.95	38.00	1656.54
7/5	90	77	33.50	1052.45	41.50	1698.04
7/6	79	66	22.50	1074.95	30.50	1728.54
7/7	80	62	21.00	1095.95	29.00	1757.54
7/8	73	56	14.50	1110.45	22.50	1780.04
7/9	70	56	13.00	1123.45	21.00	1801.04
7/10	68	55	11.50	1134.95	19.50	1820.54
7/11	78	52	15.00	1149.95	23.00	1843.54
7/12	81	55	18.00	1167.95	26.00	1869.54
7/13	81	60	20.50	1188.45	28.50	1898.04
7/14	79	64	21.50	1209.95	29.50	1927.54
7/15	86	68	27.00	1236.95	35.00	1962.54
7/16	89	71	30.00	1266.95	38.00	2000.54
7/17	81	68	24.50	1291.45	32.50	2033.04
7/18	80	59	19.50	1310.95	27.50	2060.54
7/19		61	0.00	1310.95	0.00	2060.54

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1 1999 \(*\)](#)

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Last Revised:7-23-99



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Weekly Update

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

July 27, 1999

WEATHER:

A trace or more of rainfall has been recorded at the NWMHRS on 5 of the past 7 days, totaling 1.23". Since July 1 precipitation has totaled 8.12", with measurable precipitation occurring on 15 out of the 27 days to date in July. No wonder leaf spot is common!

GROWING DEGREE DAY ACCUMULATIONS

GDD 50:1497; GDD 42: 2311

COMMODITY REPORTS

Apples: The hot humid weather has created ideal conditions for the **sooty blotch/fly speck** fungus in apples. Fresh market apples should have a Topsin M or Benlate plus Captan or Ziram spray applied soon. A second spray may be needed towards the end of August if it continues to be wet. **Apple maggot** flies have been trapped in many, but not all, commercial apple blocks. Remember that 2 flies caught in a block is the threshold. **Codling moth** trap catches were very low this past week. Considering our degree days, we should be seeing the second generation soon, and trap catches should rise. **European red mites** are above threshold in some apples. **Aphids** are building in some apple blocks. Young trees, in particular, should be scouted for infestation.

Cherries: Tart cherry harvest is nearing conclusion in NW Michigan. The crop appears to be picking out below the USDA estimate. Wind damage is common, but firmness has been excellent. **Cherry fruit fly** adults are being caught in very high numbers. If you expect to be harvesting for over 4 or 5 days more, then the later fruit should be protected. Last Wednesday we had a heavy infection period for **cherry leaf spot**. If adequate protection was not applied prior to infection, then a sterol inhibitor fungicide should be included with Bravo in the post harvest spray. **Brown rot** pressure has been extremely high in unsprayed tart cherries.

Peaches: Peach growers should heed the warning about **brown rot** and make sure an appropriate

fungicide is used on them during this pre-harvest period.

Other Fruit: In young apples, plums, grapes, and strawberries, **potato leafhoppers** continue to be a threat.

MISCELLANEOUS

Apple Leafminer

By Gary Thornton

In the last several years we have seen this pest in a few locations throughout northwest Michigan. It does not seem to be a devastating pest, but it is one that you may want to consider controlling for in young apple blocks as this article suggests.

SCAFFOLDS Fruit Journal, Geneva, NY, Volume 8, No. 17, July 12, 1999 (Dick Straub, Entomology, Highland)

As occurs most years about this time, I have recently received some inquiries from Hudson Valley growers regarding considerable foliar damage by a leafminer. The pest is neither the spotted tentiform leafminer nor the apple blotch leafminer -- gracillariid species that are commonly found in this region. The culprit, apple leafminer (*Lyonetia speculella* Clemens), has been occurring sporadically here in isolated orchards since 1987.

Female moths oviposit in tender new foliage by piercing the undersides of leaves and depositing single eggs inside the leaf tissue. The hatched larvae form serpentine mines, which are visible as wavy brown lines on the tops of leaves. As the larvae grow, they enlarge their mines into brown blotches, within which they consume all of the tissue between the upper and lower epidermis. Unlike other leafminers of apple, *L. speculella* is characterized by frass (small black pellets) that is constantly expelled on a silken thread from the mine by the feeding larvae. Just prior to pupation, larvae spin cocoons, which are suspended by threads and resemble a hammock. Apple leafminer probably has 4 to 6 generations per year in southeastern New York.

Moreover, unlike our other leafminers, larval damage is confined to the youngest foliage, particularly terminal leaves of vigorously growing shoots. Root initials or water sprouts that are partially shaded are the preferred sites for feeding and pupation. Severely mined leaves turn brown and die; most such leaves drop off prematurely, thereby decreasing the number of the most photosynthetically active leaves. The potential for damage is greater in young orchards than in mature ones, and vigorous trees usually sustain higher infestations than do less vigorous trees.

Populations normally do not achieve high abundance or cause critical damage until the beginning of the harvest period of our earliest cultivars. Insecticidal control of larvae or adults at this time may not be a reasonable tactic because of the pre-harvest interval of most materials and, just as importantly, because infestations do not damage fruit or cause premature drop of fruit. Broad-spectrum insecticides typically used in cover sprays (OP's) are unlikely to provide significant control of adults or larvae. The optimum control tactic would be 1 or 2 sprays of either methomyl, oxamyl, endosulfan or a pyrethroid at petal fall or 1st cover. Undoubtedly, Provado at the same timing would also do some good. We consider that sprays are necessary only on non-bearing trees where vigor is essential, or on bearing trees that had high infestations the previous season.

Insect Trap Count Averages - 1999

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5/18	0	660	8		30		
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6/1	.6	85	17		4.6	0	9
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6/21	.33	511	10	5	0	2.3	1
6/28	.75	455	6.3	1.6	.75	2.3	16.3
7/5	0	357	7.3	1.6	2.6	.3	2.3
7/12	.3	274	6.6	3.6	7.6	2	.3
7/26	.3	233	4.6	4	11	1	5

NW MI Horticultural Research Station Growing Degree Day Accumulations for July

Date	Max	Min	GDD 50	Total Base 50.00	GDD 42	Total Base 42.00
7/13	81	60	20.5	1188.45	28.5	1898.04
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7/16	89	71	30	1266.95	38	2000.54
7/17	81	68	24.5	1291.45	32.5	2033.04
7/18	80	59	19.5	1310.95	27.5	2060.54
7/19	78	61	19.5	1330.45	27.5	2088.04
7/20	81	61	21	1351.45	29	2117.04
7/21	73	66	19.5	1370.95	27.5	2144.54
7/22	84	67	25.5	1396.45	33.5	2178.04
7/23	84	67	25.5	1421.95	33.5	2211.54
7/24	86	68	27	1448.95	35	2246.54
7/25	81	67	24	1472.95	32	2278.54
7/26	83	66	24.5	1497.45	32.5	2311.04
7/27		65	0	1497.45	0	2311.04

[ACTUAL AND PREDICTED DEGREE-DAY
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