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Northern Michigan FRUITNET 2001

Weekly Update

James E. Nugent Gary E. Thornton William M. Klein

NW Michigan Horticultural Research Station

Michigan State University

May 1, 2001

WEATHER

Recent above normal temperatures have advanced development earlier than normal for the fourth year in a row. Interestingly, base 42 degree day (DD) accumulations are 40-50DD behind the last 2 years, while base 50 is equal to the past two years. When this occurs, we are likely to see some insects developing slightly ahead of normal relative to tree development. Rainfall has totaled only 2.12 inches for the month of April.

GROWING DEGREE DAY ACCUMULATIONS as of April 30, 2001 at the NWMHRS

Year	2001	2000	1999	1998	1997
GDD42	214	266	255	291	146
GDD50	98	98	98	126	53

GROWTH STAGES:

Plum (European) – green cluster

Pear: Bartlett - early green cluster

Apple: Red Delicious - early tight cluster

Sweet Cherry: Napoleon - 5% bloom

Tart Cherry: Montmorency - tight cluster

Grapes: Chardonnay - late bud swell

COMMODITY REPORTS

Apple growers have had minimal activity up to this point. Some growers experienced a light infection period for apple scab beginning on 4/26. Growers should consider using a scab fungicide that has activity against powdery mildew at pink. This is a critical stage for controlling powdery mildew, particularly on susceptible varieties like Jonathon and Ida Red. Cutworm activity poses an increasing threat in newly planted orchards and in the occasional apple orchard. Spotted tentiform leafminers averaged 158 per trap at the NWMHRS.

Cherries will be susceptible to brown rot once the bloom opens. Blossom blight can be critical to control in sweet cherries, while tart cherries are not nearly as susceptible. Growers should rotate fungicides when possible. Green fruitworm adults are actively laying eggs.

Pear growers should be on the lookout for hatching pear psylla – hatch is expected sometime this week.

MISCELLANEOUS

Benlate Cancelled

DuPont is voluntarily canceling Benlate. Cancellation will be effective on Dec. 31, 2001 for the technical material. Growers should use up the stock they have on hand this season.

Registrant Announces Worldwide Phase-Out Benomyl (Benlate)

EPA has been informed by Dupont that it will announce today a business decision to discontinue the manufacture of the widely used fungicide benomyl throughout the global market by the end of this year. The company has informed us that it expects to phase out distribution and sales of all benomyl products by the end of 2002. EPA stands ready to assist Dupont in carrying out the company's request for voluntary cancellation and phase-out of benomyl, often marketed under the trade name Benlate here in the U.S.

Benomyl is approved for use on about 70 fruit, nut, vegetable and field crops. No residential uses are approved. EPA has been in the process of reviewing the human health and ecological effects of benomyl in order to complete a re-registration eligibility decision (RED) on the pesticide next year.

On April 18, 2001, Dupont formally requested voluntary cancellation of all of their benomyl technical, end use, and special local need product registrations. The next step under FIFRA will be for EPA to publish a Section 6(f) Federal Register notice announcing our receipt of the request for voluntary cancellation, and inviting public comment for 30 days.

FIRE BLIGHT

(Bill Turechek, Plant Pathology, Geneva)

Fire blight is perhaps the most devastating disease of apple worldwide. Last year, extensive losses occurred across much of the Midwest and Northeast because weather conditions during bloom, coupled with bouts of severe weather later in the season, created conditions that were extremely favorable for disease development. Add to this that our new varieties, rootstocks, and planting systems have evolved in such a way that newer plantings are more susceptible to fire blight than ever before, and we now have a situation that makes it increasingly difficult to manage this disease. The bottom line is that fire blight is on almost every apple grower's mind. The following article provides an overview of the fire blight disease cycle and discusses management options through the blossoming and post-bloom periods.

Definitions

Blossom blight starts in spring when flowers become infected. The blossom blight phase of fire blight includes shoot death that develops as a result of bacterial invasion from the flower clusters.

Shoot blight develops from secondary infections that originate on young terminal shoots. Shoot blight usually develops in late spring or early summer.

Trauma blight is a term used to describe infections that occur when blight is initiated at leaf or bark injuries resulting from hail or severe windstorms.

Rootstock blight occurs when bacteria from infected blossoms or shoots moves internally through symptomless trunks and infects roots. Trees on M.26 and M.9 are often, but not always, killed when the roots become infected.

Disease cycle

Fire blight is caused by the bacterium *Erwinia amylovora*. *E. amylovora* overwinters in cankers on infected limbs. Cankers become active in early spring as temperatures warm and buds begin to develop. Active cankers produce a yellowish to white bacterial ooze that can appear several weeks prior to bloom. During this period, insects (mainly flies) disseminate the bacteria throughout the orchard. During bloom, pollinating insects rapidly move the pathogen from flower to flower initiating the blossom blight phase of the disease. Flowers can become infected within minutes after a rain or heavy dew when the average daily temperatures are equal to 60°F or greater. Flower receptacles and young fruits are resistant after petal fall. Early symptoms of blossom blight can be expected 5 to 30 days after infection depending upon daily temperatures.

Inoculum produced from infected blossoms is further spread by wind, rain, and insects. Shoot tip infections are likely to occur when shoots are actively growing and daily temperatures average 60°F (16°C) or more. In years when blossom infections do not occur, the primary sources of inoculum for the shoot blight phase are the overwintering cankers. Particularly, young water sprouts near these cankers become infected as the bacteria move into them systemically from the canker margins. In the absence of blossom infections, the development of shoot blight infections is often localized around areas with overwintering cankers.

Rootstock blight is associated primarily with the highly susceptible rootstocks such as M.26 and M.9. On these trees, just a few blossom or shoot infections on the scion cultivar can supply bacteria that move systemically into the rootstock where a canker may develop and girdle the tree. Trees affected by rootstock blight generally show symptoms of decline and early death by mid- to late season. Sometimes symptoms may not be apparent until the following spring.

Although mature shoot and limb tissues are generally resistant to infection by *E. amylovora*, injuries caused by hail, late frosts of 28°F (-2°C) or lower, and high winds that damage the foliage breach the normal defense mechanisms in mature tissues. Instances of fire blight that originate with infections at sites of injury are called trauma blight and may affect even normally resistant cultivars like 'Delicious'.

Disease Management During Bloom

Managing blossom blight is achieved through well-timed chemical sprays. The level of control is critically dependent upon which product you choose to use and the timing of your sprays. The number of applications is typically far less important, *per se*, than when sprays are applied.

Streptomycin: Streptomycin applications during bloom are highly effective against the blossom blight phase of the disease. These sprays are critical because effective early season control often prevents the disease from becoming established in an orchard. Predictive models, particularly MARYBLYT and Cougar Blight, help to identify potential infection periods and improve the timing of streptomycin, as well as to avoid unnecessary treatments, particularly during the blossom blight phase of the epidemic.

Streptomycin applications are best used in a preventive mode, just prior to an infection event. Using predictive models (e.g., MARYBLYT), it is possible to use local weather forecasts to predict (i.e., guess)

whether an infection event is likely to occur in the next day or two. This can be extremely helpful in identifying unusually high-risk situations. In younger orchards, removing blossoms by hand will reduce the risk of blossom infection. This practice can be especially effective in minimizing losses due to rootstock blight as well, particularly when highly susceptible varieties such as 'Gala' or 'Gingergold' are grafted on to M.9 or M.26. Although somewhat time consuming, blossom removal is a much less expensive alternative than replanting an entire block.

Messenger (Harpin) is a unique pesticide that may prove useful for managing both the blossom and shoot blight phases of fire blight. Messenger was recently labeled for use in New York (see related article in this issue). The active ingredient in Messenger is a protein derived from the bacterium *Erwinia amylovora* (the causal agent of fire blight). The protein is called harpin. Messenger has no direct effect on the viability of the pathogen. Instead, Messenger activates natural defenses within plants to make them more resistant to diseases and physiological stresses. Plants require 5-7 days for full induction of resistance, so Messenger must be applied several days prior to fire blight infection periods. This is a problem with using this compound because it means that the product must be applied before anyone can tell whether or not weather conditions during bloom will actually allow blight infections to occur. The blight suppression provided by Messenger will last for approximately 14 days. In experimental orchards, Messenger applied 10 days before pink and at pink significantly reduced blossom blight, but it was less effective than streptomycin.

Properly timed applications of streptomycin during bloom should still be used as the primary defense against fire blight. Messenger may prove useful as a supplement to streptomycin for situations where blight is expected to be unusually severe either because of high carry-over inoculum in young highly susceptible orchards or when severe blossom blight conditions can be expected based on long-term weather forecasts. We do not yet have enough information to justify recommending routine use of Messenger except in locations where streptomycin-resistant strains of the fire blight bacterium are present. Streptomycin resistance, however, has not been documented in New York. Messenger applied after bloom at 14-day intervals has so far shown variable results in controlling shoot blight. When mixing Messenger, do not use chlorinated water, or water below pH 5.0 or above pH 10.0. Follow label instructions regarding tank mixing. Research on the use of this new material is continuing.

Blight Ban: BlightBan A506 is a biological control agent that is used primarily on the west coast for the management of blossom blight. BlightBan contains beneficial bacteria that, when applied to the blossoms, colonize the blossoms quickly to produce a protective barrier that inhibits infection from the fire blight bacterium. It has given significant control of blossom blight in research trials, but is usually not as effective as streptomycin. Unfortunately, BlightBan is not registered for use in New York.

How do these chemicals fit in to a blossom blight management program?

Effectively managing fire blight requires a combination of disease management practices. Chemical control will be less effective in orchards where fire blight cankers have not been pruned out. Dormant and seasonal pruning (i.e., removing infected limbs as soon as symptoms are detected and before extensive damage develops) play an integral role in reducing the amount of disease pressure in an orchard. Copper applied at 1/4-inch green will reduce the amount of inoculum on the surface of infected trees.

Assuming that appropriate prebloom controls have been employed (removal of cankers, copper at green tip), how does one incorporate

Messenger and streptomycin into a blossom blight spray schedule? At bloom, streptomycin sprays are still the most effective defense against blossom blight. These sprays are critical because effective early season disease control often prevents the disease from becoming established in an orchard. Predictive models, particularly *MARYBLYT*, help to identify potential infection periods and improve the timing of antibiotic treatments.

Messenger can be applied 5-7 days prior to an infection event to activate a plant's natural defenses to fire blight. Accurately predicting an infection event a week in advance is impossible. Therefore, it is recommended that Messenger be applied at the pink bud stage in orchards that have historically high disease pressure. These orchards should then receive the normal streptomycin sprays in addition to the Messenger spray at pink. Thus, until we have more experience with Messenger, it should be used only as a means of adding extra protection to existing streptomycin programs. Messenger should not be used as a substitute for streptomycin.

Managing fire blight after bloom

Management focuses on minimizing shoot blight (especially if blossom blight was severe) and the development of cankers that can overwinter and serve as next year's inoculum source. Minimizing shoot blight damage begins by pruning out infected limbs as soon as symptoms are detected and before extensive necrosis develops. When pruning out active cankers, cuts should be made at least 12 inches below symptoms. The effectiveness of sterilizing pruning-shears between cuts is debatable, and is often not done due to the impracticality.

Growers should use management systems that promote early cessation of tree growth without adversely affecting tree vigor. Excessive vigor is an important component of orchard risk for fire blight. When tree growth continues past mid summer, the likelihood that late season or trauma blight infections will overwinter increases. Nitrogen fertilizer should be applied based on foliar analysis. In young blocks, it is possible to use Apogee as a means to terminate growth and possibly minimize the damage due to fire blight. The thoughts behind this approach will be featured in an article next week.

Trauma events (hail, high winds) can put any orchard block at risk because varieties that are considered relatively resistant to blossom blight and shoot blight can suffer severe blight under trauma conditions. If a trauma event occurs when trees are actively growing, application of streptomycin within 12-24 hours after the trauma event may limit the severity of the resultant trauma blight. After midsummer, when trees have hardened off for the season, streptomycin protection following trauma events may be unnecessary because trees are thought to be fairly resistant to fire blight after tree growth stops for the season. Applications of streptomycin may be not be possible after mid-summer anyway because of the days-to-harvest limitations on the label.

Managing fire blight requires season-long attention. Unfortunately, even the most prudent grower can suffer extensive losses because fire blight can strike very rapidly and unexpectedly. Next week's article will discuss the use of Apogee for managing fire blight.

Scaffolds Fruit Journal, Geneva, NY, Vol. 10, No. 7, April 30, 2001

PESTNET – WEATHERNET – FRUITNET REPORTS 2001

If you have not already received subscription information and/or how to subscribe to this year's PestNet, WeatherNet or FruitNet reports, please contact either Jackie or Alison at the NW Station, 946-1510 and they can provide you with the appropriate information.

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE March 1, 2001 \(*\)](#)

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Northern Michigan FRUITNET 2001 *Weekly Update*

James E. Nugent Gary E. Thornton William M. Klein

NW Michigan Horticultural Research Station

Michigan State University

May 8, 2001

WEATHER

We finally got some needed rain this past week, but unfortunately it came in the middle of sweet bloom, then again during tart bloom.

GROWING DEGREE DAY ACCUMULATIONS as of May 7, 2001 at the NWMHRS

Year	2001	2000	1999	1998	1997
GDD42	350	413	402	403	191
GDD50	180	198	191	184	65

GROWTH STAGES:

Plum (European) – full bloom

Pear: Bartlett - white bud

Apple: Red Delicious - pink

Sweet Cherry: Napoleon – early petal fall

Tart Cherry: Montmorency – full bloom

Grapes: Chardonnay – bud burst

COMMODITY REPORTS

Apple blossoms are opening in the earlier areas of NW Michigan, making them susceptible to fireblight infections if conditions are right. Ida Reds began bloom in Benzie County on Sunday, May 6th, and in southern Leelanau County and Elk Rapids area on Monday. The rains Monday afternoon did not produce an infection period for fireblight, as the average temperatures have been too low. Those rains did produce an apple scab infection period. Growers should be including a material for powdery mildew control as well as apple scab control. Spotted Tentiform Leaf Miner trap catches were just over 600 per trap this last week. Green Fruit Worm can be found in apples. Predator mites (mostly Z. mali) are common in some blocks. European Red Mites are hatching out. Oil sprays should go on prior to pink, or burning of the blossoms can result.

Pears also become susceptible to fireblight as blossoms open with the proper conditions. Pear Psylla continue to hatch out. Controls should go out after petal fall.

Cherries -- the warm weather last week resulted in less spread than normal in bloom timing between early and late blooming varieties at the NWMHRS. Nearly all sweet varieties reached full bloom on 5/2 or 5/3, which is about the same as the last three years. In tarts, full bloom occurred on 5/5. Bloom is heavy, with no significant cold injury to date. Monday's rains resulted in a Cherry Leafspot infection and increased the threat of brown rot, particularly in sweets.

Apricot, peach and plum were also susceptible to brown rot.

In stone fruits, Plum Curculio are in the orchards, but fruit other than apricot are generally not yet developed enough for egg laying. Green Fruit Worm adult flight continues, but larvae are difficult to find in cherry. American Plum Borer trap catches remained at zero this week.

MISCELLANEOUS

Weed growth has accelerated with improved moisture this past week. Spring control of quack grass is best accomplished when Roundup is applied to active growing shoots at 6" to 10" tall. If tank mixing Roundup with a residual herbicide, use more than 1 quart per acre.

CONSIDERING APOGEE FOR 2001?

By Gary Thornton and Jim Nugent

Extensive work in southern Michigan has shown the new growth regulator Apogee to be an effective method of reducing the shoot blight phase of fireblight and reducing excessive growth in apple and pear. Last year Gary Thornton put out two plots in NW Michigan that tested the use of reduced rates of Apogee to take advantage of our overall low vigor growing conditions. Both Ida Red and Northern Spy were tested at 12 oz. per acre and 18 oz. per acre. These are substantially lower rates than recommended for more vigorous growing conditions. In both cases the tree size was equivalent to approximately a 300 gal. per acre dilute equivalent orchard.

Both of the rates were too low for the Spys, but the 18 oz/acre. Rate was too high for the Ida Reds. For this block of Ida Reds the 12 oz. rate appeared to be ideal. The 18 oz. rate resulted in a 30% reduction in growth in Northern Spy and substantially more than that in Ida Red. Northern Michigan apple growers should consider using Apogee in two circumstances. First, if there has been a history of fireblight in a given block, this product will help to reduce the shoot blight phase. Second, consider using it where a potential reduction in pruning expense (dormant and summer) is desired. Apogee would more typically be used in blocks where trees have filled their space rather than in some young blocks still filling canopy space. A few points to consider:

The more vigorous the trees, the less the response at a given rate. Likewise, weak trees (such as the Ida Reds tested in NW Michigan last year) can show significant response at the same rates resulting in too little growth.

The recommended timing on the label is between approximately 1" and 3" of new shoot growth. It has generally performed best when applied

early in this period, i.e. between full bloom and petal fall. Probably the best timing (weather permitting) is approximately at petal fall of king bloom. Include an amount of ammonium sulphate in the tank equal to the amount of Apogee if "hard" water is a problem.

Use with a non-ionic surfactant, such as Regulaid.

The activity of Apogee does not appear to be as influenced by temperature near application as most other growth regulators.

It will take about 2 weeks following application to see a decrease in shoot growth.

Apogee is not a substitute for good fireblight control during bloom! Its role is to help suppress the spread of shoot blight.

Phil Schwallier, MSU District Horticulturist in the Grand Rapids area, said on the Crop Advisory Team conference call this week that return bloom this year appears to be slightly higher, in general, following Apogee last year, but he has not yet compiled the data. He did say that in two trials Cortland looked particularly impressive when evaluating the effect on return bloom. In both cases he is seeing a 2 to 3 fold increase in bloom on Cortland. No other variety was as dramatically affected as Cortland.

Tank Mixing Order for Different Formulations

By Al Gaus, Berrien County ANR Agent - Horticulture

When mixing different chemical formulations in a spray tank, there is a specific addition order to use. Of course, the label is always the final authority and should be read first to determine if there is a mixing sequence for that particular product. In general, the following order should be used. Products in soluble packets should be added first. Wettable powder products should be added next followed by flowables. Next, the emulsifiable concentrates are added followed by the oils. Again, always follow the labels. For example, a nonionic, sticker, spreader label specifically indicates to add it to the tank as the "last ingredient."

Added note by Jim Nugent: Be sure water-soluble bags are completely dissolved prior to adding boron to spray solution.

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE February 15, 2001 \(*\)](#)

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Northern Michigan FRUITNET 2001 *Weekly Update*

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NW Michigan Horticultural Research Station

Michigan State University

May 15, 2001

WEATHER

Scattered frost occurred in low sites throughout NW Michigan on Sunday morning, May 14th. Damage was minimal in most locations.

During the month of May, evaporation at the NWMHRS has totaled 2.84", while rainfall has totaled 1.93".

LATE ALERT: As this newsletter was 5 minutes from going out of here, we received word of very significant hail in areas of NW Michigan. In hail areas, apples need to be treated with Strep as soon as possible and sweets may be more susceptible to brown rot.

GROWING DEGREE DAY ACCUMULATIONS as of May 15, 2001 at the NWMHRS

Year	2001	2000	1999	1998	1997
GDD42	442	499	481	537	223
GDD50	230	235	228	264	77

GROWTH STAGES:

Plum (European) – petal fall

Pear: Bartlett - petal fall

Apple: Red Delicious – full bloom

Sweet Cherry: Napoleon – shuck split

Tart Cherry: Montmorency – petal fall

Grapes: Chardonnay – 1"-3" shoots

COMMODITY REPORTS

Apples experienced a light to moderate scab infection period last Friday. The threat of fire blight is very low now, due to the recent low temperatures. Potato leafhopper were found for the first time in apples this season. Rosy apple aphid colonies are building, and European red mites are now fully hatched out, with populations being on the low side. Spotted tentiform leaf miners were 750 per trap at the NWMHRS.

Cherry growers have had an easy time with disease control so far. No infections for cherry leaf spot occurred in the last week. Green fruit worm are ½" long and showing up in tarts and sweets, but are still difficult to find in most blocks. Plum curculio stings have been found at the NWMHRS in the entomology planting of sweet cherries. Black cherry aphids have been found for the first time this week.

Pear psylla are in the second instar; overall the populations are low this year. Pear scab remains a threat. Growers should watch for late bloom that could make them vulnerable to fireblight.

Plum growers should be spraying for black knot prior to wetting events.

Grapes that are recently planted are susceptible to cutworms. Grape flea beetles have been found feeding on the buds of grapes. Unless growers have had a difficult time with powdery mildew, sprays should be delayed until about 2 weeks prior to bloom.

MISCELLANEOUS

Apple Thinning

By James E. Nugent

District Horticulturist, MSUE

Chemical thinning of apples is such a tough call because so many factors are involved in determining the response. Here are some factors to consider in thinning the 2001 crop.

Most orchards carried a light crop in 2000, so trees should be coming into this year with above normal stored reserves. This should make thinning more difficult. Past experience indicates this to be an important factor in determining rate.

This likely goes without saying, but profitably marketing small apples is getting harder and harder. Under thinning is apt to be a more costly error than over thinning.

Leaves damaged by cold injury makes thinning easier. Most leaves have little to no cold damage.

Heavy fruit set (therefore hard to thin) is favored by warm sunny conditions from pink to petal fall. So far this period has not been particularly warm in most areas of NW Michigan, though it was exceptionally warm prior to pink (which likely does have some effect). Continue to monitor temperatures during this time. I expect temperatures and sunlight actually continues to play a role in fruit set between petal fall and 10mm fruit size, though maybe not as critical as pink to petal fall.

Thinning compounds are influenced by temperature. Temperature is a particularly critical factor influencing thinning response. 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.

The greater the tree vigor, the more aggressive the thinning treatments. Conversely, weak trees thin easier. Several factors influence tree vigor,

including nutrition, soils, etc. One of the most important factors is last year's crop load as discussed above. Generally, it is appearing so far to be a year when relatively aggressive thinning will be in order.

Nearly all thinners (with exception of blossom thinners and NAD) are most effective when applied at 10-12 mm king fruit size. Therefore, the ideal timing for application of most thinners is between about 8 to 12 mm king fruit size. However, because temperature is so important at and following application of thinners and because our temperatures in northern Michigan 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 after petal fall to apply thinners. If thinner is applied earlier than the ideal 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. Phil Schwallier, MSU Extension District Horticulturist, authored a good reference guide to thinning about five years ago called "Apple Thinning Guide." Consider purchasing if you don't have one already.

Necrotic Ring Spot Virus (NRSV)

By Jim Nugent

Necrotic Ring Spot Virus (NRSV) is showing up again this season in tart cherries. The disorder is most damaging to trees in the early bearing years (8 to 14 years old). The trees first become infected with NRSV when they reach bloom from infected pollen. It takes a few years for the virus to multiply enough to produce symptoms. The tree responds to the virus by producing mechanisms to resist the virus. If conditions get just right in spring for this virus to rapidly multiply in a young bearing tree where adequate resistance has not yet developed, then unusually severe symptoms can develop. This is called "shock symptoms." This occurs in years when the temperatures get exceptionally warm for 3 or 4 days in a row during bud development.

If this weather condition occurs early during bud development, the result is a blasting (killing) of buds. This has led us to giving the disorder the nickname of "red bud". This year the conditions favoring this virus occurred later in the process of bud development, so the symptoms are appearing as a blasting of more developed buds. The sample brought in to me today from a warm growing area in NW Michigan exhibited a blasting of flowers after they were out of the bud. This is the latest stage of development I have seen the stock symptoms from NRSV. In addition to killing flower buds, the newly developing leaves also show the classic symptoms of necrotic spots that will later drop out, leaving a tattered appearance. Severely damaged leaf buds may be killed. Leaf buds that are not killed will produce symptoms on a few of the first leaves to appear this spring, but later leaves will be unaffected.

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Northern Michigan FRUITNET 2001 *Weekly Update*

James E. Nugent Gary E. Thornton William M. Klein

NW Michigan Horticultural Research Station

Michigan State University

May 22, 2001

WEATHER

Significant rain fell in NW Michigan on 5/15 and 5/16, though amounts varied a great deal. The NWMHRS received 1.67" over the period from 5/14-5/17. Unfortunately, some localized heavy hail occurred in NW Michigan on 5/15, shredding leaves and fruit from trees. Sweet cherries appeared to be most severely damaged, as they were out of the shuck. Most other fruit was not very advanced.

GROWING DEGREE DAY ACCUMULATIONS as of May 21, 2001 at the NWMHRS:

Year	2001	2000	1999	1998	1997
GDD42	579	571	618	713	247
GDD50	311	265	228	311	81

GROWTH STAGES:

Plum (European) – shuck split

Pear: Bartlett - fruit set

Apple: Red Delicious – fruit set

Sweet Cherry: Napoleon – 11mm

Tart Cherry: Montmorency – 8mm

Grapes: Chardonnay – 4"-8" shoots

COMMODITY REPORTS

Apples and pears are just beginning to set fruit. Apples experienced a heavy apple scab infection period last week. The current infection period is rated low at the time of this report. Continue control measures until primary scab season is over. The first codling moths have been caught in NW Michigan. Growers who are trapping for codling moth need to get their traps out. In a few blocks with very high codling moth pressure trap catches have already reached biofix. In these cases sprays timed for egg hatch will need to be applied in two weeks. In most blocks trap catches have not yet reached biofix. Spotted tentiform leafminer trap catches were down to 340 per trap this week at the NWMHRS. The sap feeding stage of the leafminers should be showing up soon. Rosy apple aphid colonies continue to expand and are starting to curl up in leaves. Green apple aphid colonies are just starting to show up, but are not at all widespread. Plum curculio will become a threat as the apples size. Eye spotted bud moth can be found in abandoned apples.

In stone fruit, lesser peach tree borer trap catches averaged 20 per trap, and American plum borer averaged 2.6 per trap at the NWMHRS. Growers can start trunk sprays anytime now. Trunk sprays should be concentrated on the base of the tree. In most circumstances the crotches and upper portions of the trunk get very little injury. Plum curculio stings have been found in commercial cherry orchards. Sweet cherries should be protected now to keep larvae out of the fruit at harvest. Tart cherry insecticide sprays can be delayed until 275 DD50 after full bloom if plum curculio pressure is low.

Generally, after two years of delaying insecticides, growers will need to spray at shuck split to knock the plum curculio population back. If green fruit worm is a problem, controls should go on now. The cool weather results in with low brown rot pressure. A cherry leaf spot infection period that is still ongoing is rated low so far. Growers should try to use Bravo at shuck split whenever possible. Bravo will provide excellent protection against leaf spot, as well as being an important resistance management tool. Rotation of fungicide groups is important if we want to preserve the effectiveness of the sterol inhibitors (Elite, Nova, Indar, Orbit, etc.).

Grapes are starting to show clusters on most varieties. Fungicide sprays can be delayed for two weeks unless grapes have had a problem with phomopsis. Grape flea beetle, cutworms and an occasional gypsy moth that floats in have been the major defoliators so far. In general, insect pressure has been light.

GIBBERELIC ACID ON CHERRIES

By James E. Nugent

District Horticulturist, MSUE

Gibberellic acid (GA) is used in young tart and sweet cherries to reduce flowering and fruiting which maximizes growth and minimizes pollen transmitted virus infection. GA is used in mature tart cherries to increase the fruiting capacity by stimulating the development of lateral shoots and spurs.

Tips for use:

1. 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.
2. 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. Leaves expanding under low temperatures are less efficient at uptake than leaves growing

under normal to above normal temperatures.

3. For mature tart cherries – to increase long-term fruit production.

a) Use 10-20 ppm of gibberellic acid. 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 ProGibb 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 a grower has 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) With a handgun, apply 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) about 3 weeks after full bloom plus 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. To bring young trees into bearing following treatment with high rates during non-bearing years, it is very important to not discontinue GA all at once. This results in oversetting of fruit and stunting of trees. In the past, we have suggested decreasing the rate to 15 ppm, however, 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 based on research), I now suggest weaning trees off GA over two or three years. The year prior to desired first fruiting, I suggest 30 to 40 ppm be applied if spraying dilute (12-16 fl oz ProGibb/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. 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 applied concentrate. The following year, 10 ppm is optional but often not required. In orchards where growth is weaker, it may be desirable to simply continue annual GA applications at 10-15 ppm as described above rather than discontinue at this time.

GA may also be applied later in the season on sweet cherries to increase fruit firmness and delay harvest. Results in Michigan have not been very consistent and may lead to increased cracking. This use is not discussed in this article.

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE March 1, 2001 \(*\)](#)

Please send any comments or suggestions regarding this site to:

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Northern Michigan FRUITNET 2001 Weekly Update

James E. Nugent Gary E. Thornton William M. Klein

NW Michigan Horticultural Research Station

Michigan State University

May 29, 2001

WEATHER

Cool, wet weather dominated this past week. So far this month at the NWMHRS, we have recorded precipitation on 17 days for a total of 5.12 inches.

GROWING DEGREE DAY ACCUMULATIONS as of May 28, 2001 at the NWMHRS:

Year	2001	2000	1999	1998	1997
GDD42	669	677	697	852	325
GDD50	349	319	349	471	116

GROWTH STAGES:

Plum (European) – 7mm

Pear: Bartlett - 10mm

Apple: Red Delicious – 9mm

Sweet Cherry: Napoleon – 11mm

Tart Cherry: Montmorency – 10mm

Grapes: Chardonnay – 4"-9" shoots

COMMODITY REPORTS

Scab started to show up on some apple leaves, generally where pressure was high. It has been most prevalent on McIntosh. Some areas experienced a moderate infection period for apple scab on Monday. Fireblight pressure is very low, due to the cool temperatures. Codling moth trap catches were zero for the week, doubtless due to cool evening temperatures. Both the lesser peach tree borer and American plum borers are flying. Growers can start to apply trunk sprays. Spotted tentiform leafminer trap catches were down to 96 per trap at the NWMHRS. No mines have been reported yet.

Cherry leaf spot has started to show up in scattered locations, and on Monday some areas had a light infection period. Green fruitworm are $\frac{3}{4}$ " to 1" long. Pressure is light in most blocks. Plum curculio have not been active in the last week. Currently we are 167 degree days after full bloom on tart cherries. Growers with low pressure can postpone insecticide sprays until 375 degree days base 50 after full bloom. At that time they need to spray an insecticide to insure clean fruit at harvest. Lecanium scale is reported to be high in some stone fruit blocks, particularly on the edges near woods.

MISCELLANEOUS

More On Apple Thinning

By Jim Nugent

Since bloom, conditions have generally been cool with an exceptional amount of cloudy weather. Under these conditions we would expect apples to thin easier, that is, the fruit will naturally thin more than when conditions are sunny and warm. The influential factor is the reduction in photosynthesis under these conditions that is helping to supply the needed carbohydrates to the developing fruit. While these conditions should make thinning easier, the problem is that conditions have not been good for applying chemical thinners. With the exception of a small window back at about petal fall, the weather has simply been too cold.

Even though the size is now into the perfect range for thinning, I believe the best advice is to wait for warmer weather. This morning Dr. Jeff Andresen, MSU Agricultural Meteorologist, indicated that it is likely that the cold weather may remain this week, giving us the first good thinning window early next week. Most varieties in most locations should still be within the thinning window. Try to find an opportunity for application to be made prior to a couple of warm days (highs above 70° F). Good luck!

Gibberellic Acid

By Jim Nugent

For tart cherries: As with apple thinners, GA is much more effective when used during a period of two to three warm days following application. Also, the combination of cold weather and developing crop are resulting in limited tree growth, particularly in bearing orchards. My suggestion, if GA is not yet applied, is to wait until weather warms, even if this doesn't occur until next week.

Actara Registered for Use on Pome Fruits

By John Wise, Dept. of Entomology, MSU

Actara 25WG received EPA registration on May 18, 2001 for use in pome fruits. Actara (Thiamethoxam) belongs to a new class of insecticides called neonicotinoids (thianicotinyl subclass). Actara provides control of a wide range of "soft bodied" homopteran insects like aphids and leafhoppers, as well as other apple and pear pests such as leafminers, psylla and plum curculio. This product has transtemic activity, meaning it moves through the vertical column of the leaf (translaminar movement) as well as laterally from the leaf base out to the expanding edges (acropetal movement). As a foliar application it remains on the leaf surface for only a short time, being quickly absorbed by the plant and maintained inside the foliage for a longer period. Lower rates of 2-4.5 oz are generally effective for aphid and leafhopper control, whereas 4.5-5.5 oz rates are needed for control of tougher pests like the plum curculio. A total of eight ounces of formulated product are allowed per season. The manufacturer, Syngenta, expects the product to be available on the market place within a few weeks.

ANNOUNCEMENTS

Potential Diversion Program Workers Wanted

With a larger than usual U.S. tart cherry crop anticipated this season, there will likely be some diversion of fruit under the FMO. Burt Stanley is responsible for organizing the workers necessary to certify the anticipated at-farm diversion and is looking for employees to help with this task. If you know of anyone 18 years of age or older (maybe a retired grower?) that would like some work during cherry season, please contact Burt at 231/533-8876.

Preharvest Strawberry Meeting

Come to a preharvest strawberry meeting to learn the latest techniques in strawberry weed management, IPM and marketing. This year we are pleased to announce our featured speaker from Ontario, Leslie Huffman, Weed Management Specialist for Horticulture Crops. You will also hear from several new MSU small fruit staff members, and a new weed identification book will be available for purchase at the meeting.

The meeting will be on Tuesday, June 5, 2001, from 9:30-11:30 a.m. at the Dunneback Fruit Farm, 3025 6 Mile Road, NW, Grand Rapids, MI.

The topic is "The 10 Worst Strawberry Weeds". Bring your hardest to control weed to the meeting!

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