

Crop Advisory Team

Alert



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Fruit Crop Advisory Team Alert

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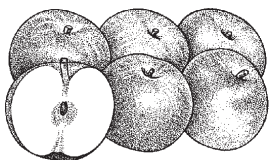
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Watch for late season apple pests

Amy Irish-Brown, MSU-E educator

There are several insects that can cause injury to apples late in the season, particularly in blocks that have poor weed control. This year growers are trying to keep their expenses down given the rough looking hail-pecked apples that are all too common. While a third generation of codling moth doesn't seem likely for 2008, other insects such as European corn borer and dock sawfly could show up, particularly in apple blocks under mating disruption for codling moth, because general cover sprays are not used as routinely in these blocks.

European corn borer can be a sporadic pest in apples. Typically, it is of more concern where apples are growing next to a corn field. When the corn is harvested, there could be some migration to nearby apples as a secondary food source. However, European corn borer damage does occur in apples even where corn is not grown adjacent to orchards.

Corn borer excavates rather large tunnels in apple fruit, feeding in the flesh. The larvae tunnel into fruit, usually entering at the calyx end, and feed inside until early fall. This differs from codling moth damage, which makes a smaller tunnel extending to the seed cavity. Typically, this pest is a problem when weeds such as pigweed and lambsquarters grow up into the canopy. Weeds should be mowed to reduce the risk of problems from this pest. Problems develop in late August and September, as corn fields dry down and

orchard spray programs wind down. The damage is usually confined to the border rows in orchards. Since it is difficult to predict which orchards will be damaged, it is wise to check the fruit for damage as harvest nears. Corn borers have also been found to tunnel into the shoots of young, non-bearing trees, causing dieback. Where corn borers have been a routine problem in apples, maintain insecticide spray programs later in the season, especially in the border rows of the orchard.

Dock sawfly can also cause late season damage in apples by burrowing into the fruits. This insect is usually only a problem in orchards with poor weed control, and where hollow-stemmed weed species, such as dock, are found growing up into the canopy. Dock sawflies seek an overwintering location and generally choose hollow-stemmed weeds, but if apples are nearby the weeds, they have been known to burrow into the fruits as well. They usually don't become evident until the bins are removed from CA storage; when the bright green larvae become active again and begin to emerge from fruits. Adequate weed suppression via herbicides or mowing is the best prevention for damage from dock sawfly. The insect is far too unpredictable to try to manage with insecticides. **IPM**

As the *CAT Alert* season is winding down, we would like to gather feedback from our readers. We are interested in learning what articles you would like us to publish next season and how the *CAT Alerts* have been useful. We would like to share your comments with our funding organizations that help us publish the newsletters free on the internet. Please take part in our four question survey available at: www.ipm.msu.edu/cat08fruit/f08-19-08.htm

ReTain use on apples in stress years

Philip Schwallier, Clarksville Horticultural Research Station Coordinator

This article was originally published in the August 7, 2007 issue of the Fruit CAT Alert.

ReTain is a very useful growth regulator on apples that has the following benefits. It will:

- 1) Delay fruit maturity of any variety.
- 2) Decrease fruit drop.
- 3) Improve the condition of treated fruit in storage.
- 4) Improve fruit quality and size.

ReTain needs to be applied 30 days before anticipated harvest to achieve the best results and highest effectiveness of the material. Full rate ReTain will delay maturity of most varieties seven to ten days and some very sensitive varieties up to 21 days. 'Gala' and 'Jonagold' are very sensitive to ReTain. 'Honeycrisp' appears to be moderately sensitive and other varieties are less sensitive, but still respond to the ReTain treatment. Some

growers will use half rate on 'Gala', 'Jonagold' and 'Honeycrisp' because of the sensitivity, but realize that this also will reduce the response.

ReTain will delay harvest, reduce fruit drop, improve storage condition life, reduce shoulder cracking in some years and sometimes increase fruit size if the fruit hang long enough. The delayed maturity is very useful to pick-your-own operations. The delayed maturity extends when varieties are available for U-pick customers to pick in excellent condition.

Growers with large acreage can use ReTain to help program harvest. For example, if a grower has large acreages of one variety like 'Red Delicious', then a portion of the Reds can be treated with full rate Retain to reduce drop and delay maturity. Another portion of the Reds could be treated with half rate to only slightly delay maturity. This will allow

the picking to be more orderly, less drop and all the Reds will be picked in excellent condition.

ReTain is a helpful growth regulator with benefits to small and large growers. Time the applications 30 days ahead of anticipated normal harvest and then plan on picking treated fruit later than normal. ReTain full rate is labeled at 50 grams/acre active ingredient. That is equal to 333 grams (1 pouch) of ReTain. **Stressful years**

Apple trees under stress do not respond well to ReTain treatments. Hot, dry years seem to reduce the ReTain response. In those situations where trees' stress is a factor, consider not applying ReTain or use the higher rate. One-third and half rate will not provide good results on stressed trees. ReTain is also more effective closer to the 28 days before harvest timing rather than the 30 to 35 days before anticipated harvest. **IPM**

Small fruit news

Post-harvest is the optimal time for blueberry bud mite control

Rufus Isaacs and John Wise, Entomology

Over the past five years, blueberry bud mite (*Acalitus vaccinii*) has been identified as the cause of some problems with poor growth and low yield in Michigan blueberry fields. Sampling by grower groups, extension educators and the small fruit entomology program detected this pest across most of the major blueberry production regions in our state. However, only some fields have sufficient populations to cause economic levels of injury, and only some cultivars are susceptible. For example, in Grand Junction we have seen 'Rubel' bushes with high infestation and damaged growth growing next to 'Bluecrop' plants that showed no visible symptoms. Because of this, bud mite management is warranted only in fields where 1) poor growth and damage have been seen, **and** 2) high bud mite populations have been verified by magnified analysis of bud samples.

This mite is microscopic (Photo 1), and feeds inside buds in the winter, causing damage to developing tissues and resulting in symptoms that include



Photo 1. The microscopic blueberry bud mite.

blistered red bud scales in spring, misshapen flowers, small leaves and fruit, or few berries per cluster (Photo 2). The wide variability in symptoms among varieties adds to the difficulty in diagnosing this pest injury. Berries on infected shoots may also appear roughened and malformed. While these symptoms may be indicators of infestation, it is best to take shoot samples in the late fall or early spring to identify infestations. Bud mites are



Photo 2. Damage caused by the blueberry bud mite.

moving to fruit buds formed this year to find places to spend the winter, so sampling should include the top six inches of shoots with fruit buds. These should be examined to verify that bud mites are the problem, because some of the symptoms are quite similar to the catch-all category of winter damage. This can be done with a hand lens if you know what to look for, or can be done under a microscope by trained personnel. Send samples to

your local extension office, to your crop consultant, or to MSU Diagnostic Services (www.pestid.msu.edu) for checking.

This pest can be difficult to control with pesticides because of its small size and the difficulty of getting miticide residues into the tiny cracks and crevices it inhabits. However, the immediate post-harvest timing (i.e. now) is recommended for targeting this pest because the relatively exposed situation before the buds have formed completely for the winter. Effective control is extremely difficult once the mites are protected under bud scales, and so prompt action is needed if a planting requires control of bud mites.

Registered miticide options for blueberry bud mite are limited (Table 1), but include effective options. Thiodan 3 EC is the most effective miticide for this pest, and should be applied once immediately post-harvest, and again two to three weeks later. Although the label recommends waiting six to eight weeks between the sprays, this label was developed for southern United States conditions, and in Michigan we do not

Table 1. Miticide rates and timings for blueberry bud mite

Compound	Product rate / acre	Application timing
Summer oil	1 percent v/v	Delayed-dormant
Thiodan 3 EC	2 qt	Post-harvest
Sulforix	1 gal	Pre- or post-harvest

have that long between the end of harvest and formation of next year's buds. That's why we recommend growers tighten up this period between sprays to get the second Thiodan spray on before complete bud formation. It is recommended that sprays be applied at fairly high pressure (150 to 200 psi) and high gallonage to obtain effective coverage and penetration. Unless the interior spaces of the bud scales are wetted, it is unlikely that good control will be achieved. Use of a surfactant to improve the spreading and penetration of the spray is expected to increase control of bud mites. Trials of new alternatives to Thiodan including Sulforix have been done at MSU and we have found that Sulforix provides moderate control of bud mites when applied in the fall. Many growers are using this for a disease control spray and can expect some level of mite

suppression if used at this timing, but applications at leaf drop are later than the ideal timing for bud mite control. An additional option for population suppression of bud mites is the application in spring of a delayed-dormant application of oil. A high grade ultrafine oil at 0.5-1 percent by volume can help to reduce populations in the spring.

Pruning infested shoots from bushes is a cultural control that should be done to reduce infestation. In some southern states, bushes are "topped" to cut off bud-mite infested shoots. Many growers leave prunings in the row middles and chop them in the row, but in fields infested with bud mite, the removed wood should be taken out of the field and burned or buried. Chopping this wood in the row middles may spread the mite back onto the bushes. **IPM**

Management of bunch rot diseases in grapes

Annemiek Schilder, Plant Pathology

There are several late-season bunch rots that can affect wine grapes in Michigan. The most common of these is Botrytis bunch rot caused by *Botrytis cinerea*, the same fungus that causes gray mold in a number of other crops. Botrytis bunch rot got an early start this year in Michigan vineyards. Tight-clustered varieties such as 'Pinot gris', 'Pinot noir', and 'Vignoles' are particularly susceptible to Botrytis bunch rot. Another, more sporadic bunch rot disease is sour rot, which smells distinctly of vinegar due to the presence of acetic acid bacteria. Often other organisms are also involved in sour rot, including various fungi and yeasts. Damage can be extensive because infections that begin in a single berry can rapidly spread to adjacent berries and destroy most or all of a cluster. While under cool, dry conditions, Botrytis bunch rot sometimes can be beneficial for wine quality ("noble rot"), sour rot is very undesirable.

Disease symptoms

Bunch rot often begins in one or a few berries, usually at the site of an injury, and then spreads rapidly throughout the cluster. Generally, rotting berries turn brown and become soft, collapse or shrivel up. Specific pathogens are sometimes identifiable by their appearance. Botrytis produces gray spores, whereas *Penicillium* produces green spores, and *Aspergillus* and *Rhizopus* have dark brown or black spores. Sour rot often has a wet look to it, with berries collapsing and leaking juice and no visible mold growth. It also results in the typical vinegar smell from which the name sour rot is derived. Fruit flies are often present and are thought to spread the disease. Botrytis bunch rot can sometimes also be confused with Phomopsis fruit rot; however, Phomopsis usually does not produce visible mold (only small black pimples) on berries, does not smell, and is characterized by a black or dark brown necrosis on the rachis and a browning

and shriveling of the berries, much like a balloon that is being deflated. Phomopsis-infected berries are not leaky and tend to drop off when the berry stem is killed.

Factors that favor disease development

Tightness of fruit clusters as well as injury to the berries are the primary factors influencing bunch rot development. As berries ripen and sugar content increases, injured fruit become increasingly susceptible to bunch rot pathogens. Other than *Botrytis cinerea*, which can directly penetrate intact berry skins under conditions of prolonged moisture or very high humidity, most other bunch rot organisms are opportunistic pathogens that live on plant surfaces and can only cause infections if they gain entry to the berry through wounds. Examples are injuries from fruit splitting due to internal pressure, bird and insect feeding, hail, and rain splitting. Entry holes created by

grape berry moth larvae are a common cause of bunch rot as well. Similarly, early-season feeding injury from thrips can cause scarring on fruit skin that reduces its elasticity, resulting in small cracks as the berry grows. Fruit flies that are attracted to rotting or overripe fruit may also play a role in development and spread of sour rot. In addition, infection by the powdery mildew fungus creates small dead spots on the berry skin, which can lead to cracking of the berry and possible invasion by bunch rot pathogens. Even inconspicuous powdery mildew colonies resulting from late-season infections can increase the severity of bunch rot. We have to remember that these microorganisms operate on a very small scale, so that even microscopic wounds that are invisible to the naked eye can lead to infection. Bunch rot is more common in grape varieties with tight clusters that may experience fruit abscission or splitting from growth pressure. Any juice leakage from cracked or abscised berries also boosts growth of fungi, yeasts, and bacteria. In addition, wet

weather during fruit ripening also favors bunch rot, and the longer the wet period, the greater the amount of rot. Therefore, grapevines with dense canopies that dry slowly and maintain high humidity have an increased risk of bunch rot.

Disease management strategy

One of the main goals in managing bunch rot diseases is to minimize injuries to berries that enable bunch rot pathogens to get established. Reducing the number of berries per cluster on tight clustered varieties would be the best method and may be possible by mechanical or chemical means. However, research is currently being done at MSU to determine a safe way to do this. In addition, effective management of grape berry moth and powdery mildew will greatly reduce the risk of bunch rot in many vineyards. In addition, promoting good air circulation within the grapevine canopy also reduces the risk of bunch rot. Canopy management methods aimed at improving air circulation and reduce humidity include leaf removal in the

fruit zone, shoot positioning, shoot thinning, and hedging. Limit excessive vegetative growth by balance-pruning and avoiding excess nitrogen fertilization.

There are a number of fungicide options for control of Botrytis bunch rot, including Rovral, Vanguard, Scala, Endura, and Elevate. However, these are generally ineffective against sour rot organisms. Captan, as a general broad-spectrum fungicide, is sometimes used to control a variety of bunch rot fungi, but does not have activity against bacteria.

There are two products that have sour rot listed on the label: BlightBan A506 (*Pseudomonas fluorescens* A506) and Serenade Max (*Bacillus subtilis* QST 713). Both are biological control products containing bacteria that are antagonistic to a variety of other microbes. Both are strictly protectants, so thorough coverage is important. Small plot and on-farm trials have not shown much efficacy of Serenade against sour rot and BlightBan A506 is being evaluated this year for efficacy. **IPM**

Grape IPM workshop August 28 at Lemon Creek Winery

Rufus Isaacs, Mark Longstroth, and Steve Van Timmeren, MSU Entomology and Southwest MSU Extension

MSU will host an evening IPM workshop and barbeque for southwest Michigan grape growers on August 28 at Lemon Creek Winery. This is part of a series of meetings provided by MSU Extension and National Grape Cooperative, and it will focus on pre-harvest insect and disease management, and pre-harvest horticultural issues.

The meeting will start with a

barbeque at the winery at 6:00PM and updates on insect and disease management trials underway at Lemon Creek. We will continue in the vineyard with MSU Extension educators and specialists presenting hands-on training related to scouting for insects and diseases. Presenters will include members of the MSU Grape Team.

The meeting will be held at the

Lemon Creek Winery and Fruit Farm, 533 East Lemon Creek Road, Berrien Springs, Michigan 49103. Meet at the farm's winery around 6:00PM.

This meeting is open to anyone with an interest in growing grapes, and it is free. Restricted Use Pesticide applicator credits have been applied for. **IPM**

Other news

Agricultural labor statistics for summer 2008

Vera Bitsch, Agricultural, Food, and Resource Economics

This July, the hourly wage for agricultural workers in the United States stood at \$10.34, up 35 cents from a year ago. Field workers received \$9.66, up 42 cents from a year ago. Livestock workers made \$9.98, up 25 cents from a year ago. This wage rate includes supervisors and other workers, such as bookkeepers and pilots. Wage rates do not include the value of benefits. Total

hired workers are estimated at 1,173,000 individuals, down by three percent compared to last year. The number of hours worked down two percent at 40.5.

Michigan, Minnesota, and Wisconsin make up the Lake region. For the three states, the number of hours worked stood at 36.5 hours during this July. The total number of workers, excluding agricultural service workers, is estimated

at 64,000 individuals, compared to 78,000 during last July. Rain and wet conditions during this year's survey week are probably the main cause for this decline. The average wage rate for all hired workers in the Lake region was \$10.75 per hour, up 49 cents from a year ago. Only, Hawaii with \$13.33, the Cornbelt I region (Illinois, Indiana, and Ohio) with \$11.00, and the Mountain II

region (Colorado, Nevada, and Utah) region with \$10.90 paid higher wages. Field workers in the Lake region earned \$10.10 per hour, up 58 cents. Livestock workers earned \$10.09 per hour, up 76 cents.

In addition to analyzing wage rates by type of worker, NASS provides wage data by type of farm with slightly different results. These data combine field workers and livestock workers, but exclude other typically higher paid groups. The average hourly wage rates in 48 states, excluding Alaska and

Hawaii, during this July were \$9.74 overall, \$9.48 for field crop farms, \$9.71 for other crop farms, and \$9.89 for livestock and poultry farms. Last year those rates were \$9.44, \$9.17, \$9.33, and \$9.75, respectively.

The hourly wage rates in the Lake region were \$10.10 for all farms, \$11.05 field crops, \$9.78 for other crops, and \$10.13 for livestock and poultry farms. Last year, the July wages in the Lake region were \$9.44 for all farms, \$9.50 for other crop farms, and \$9.25 for livestock and poultry farms. There was

insufficient data to calculate the wages for field crop farms. As in the April survey, the Lake region has seen wage increases.

To read Dr. Bitsch's complete newsletter go to her website at <http://www.msu.edu/user/bitsch>. Under "News" click on "U.S. Agricultural Labor Statistics for Summer 2008" or click on "Agricultural Labor Issues in Michigan" for a list of available newsletters. For more details, the NASS release is available at <http://www.nass.usda.gov/index.asp>. Search for "Farm Labor. **IPM**

MarketMaker links producers with agricultural businesses and consumers

Anyone in Michigan who grows, sells, processes or eats food now has a new resource to help them. Market Maker[®] locates producers, businesses and markets of food products, providing an important link between Michigan producers and their buyers including end-consumers. The on-line information is provided on maps so that producers, businesses and markets can be visually located. Producers can use the web site to find processors, wholesalers, distributors, retailers, restaurants or farmers' markets who might buy their products. Producers who are registered on the site can be easily found by their potential buyers and end-consumers.

Registration and use of MarketMaker is free. Producers, processors, wholesalers, retailers, restaurants, farmers' markets and wineries can register by going to the website at <http://mimarketmaker.msu.edu/> and clicking on the link, "Register Your Business." Producers can also download a paper registration form by going to the Michigan State University Product Center web site at www.productcenter.msu.edu.

Complete that form and return it per the instructions. Businesses that are already on the web site can establish their own unique user name and password so they can update their information at any time.

"Consumers are increasingly interested in buying food that was produced closer to home. MarketMaker is an important tool to help all parts of the supply chain meet this consumer need," said Don Koivisto, Director of the Michigan Department of Agriculture.

Wayne Wood, President of Michigan Farm Bureau, adds, "We support the development of an Internet marketplace for farmers to feature Michigan-based commodities and value-added products. MarketMaker meets that need."

MarketMaker has been brought to Michigan by the MSU Product Center with funding support from Project GREEN, the Nowlin Chair for Consumer-Responsive Agriculture, Greenstone Farm Credit Services, the Southeast Michigan Food Systems Economic Partnership, the C.S Mott Chair for Sustainable Food Systems,

Michigan Food & Farming Systems, and the Washtenaw County Agricultural Council. "In addition to our financial supporters, the Michigan Department of Agriculture, Michigan Farm Bureau, and Michigan State University Extension have provided information to help build the database of producers, farmers markets, processors and wineries," reports Chris Peterson, Director of the MSU Product Center. MarketMaker is active in ten states with two more states plus the District of Columbia scheduled to become active in the near future.

The Michigan State University Product Center was established to improve economic opportunities in the Michigan agriculture, food and natural resource sectors. The Product Center assists the development and commercialization of high value, consumer-responsive products and businesses in the agriculture and natural resource sectors.

For more information, contact the MSU Product Center by e-mail at mimarket@msu.edu or call (517) 432-8750. **IPM**



I – Southwest

Mark Longstroth
Bill Shane

Weather

Weather the past two weeks has been seasonal with highs in the mid-80s and lows near 60, with no significant rainfall. Soils are dry. Annual plants, such as weeds and field crops, are wilting due to water stress. A few scattered storms have moved through the region and left some much needed rain in a few areas. Rainfall amounts were between a third and a half-inch. The forecast for the upcoming weeks

is for continued cooler and dryer than normal conditions indicating that the lack of water will continue. The growing degrees days table on page 6 has been corrected with some missing data at sites marked with an asterisk*.

Tree fruit

The window for leaf sampling for nutrient analysis in southern Michigan is ending. If you plan on nutrient sampling, take the samples this week. Young trees should be irrigated to reduce drought

**Southwest Michigan growing degree day totals
March 1 through August 17.**

Location	GDD 42	GDD 45	GDD 50
SWMREC: *	2870	2477	1877
Lawton:	2944	2556	1954
Fennville: *	2680	2307	1733

stress. San Jose scale crawlers are out and can cause fruit damage. We are seeing this pest in more orchards this year. Few Japanese beetles have been out recently.

Peach fruit are 2.5 to 3.0 inches in diameter. Dry weather has resulted in firm, relatively sweet fruit. Harvest of 'Red Haven' and 'Starfire' is ending, harvest of PF 17 is underway. Brown rot is still a problem, including infections of wood next to infected fruit. It is usually associated with bacteria spot or insect feeding. X-disease symptoms are easy to find in the area. Bacterial spot symptoms on peach leaves and fruit are fairly widespread. Check the PHI (days to harvest) when applying sprays to reduce bacterial spot. Stinkbug puncture wounds to fruit are more obvious. Watch for western flower thrip damage to peach and nectarine fruit with hot, dry weather. Delegate offers a new option for thrip control. Oriental fruit moth trap catch is up indicating the start of the third generation.

In **cherries**, yellowing leaves and leaf drop due to cherry leaf spot and bacterial canker are common in some orchards. Few orchards have lost most of their leaves. Be sure to check the leaves for signs and symptoms of these two diseases, as the controls are different. The scattered rains of the last two weeks resulted in no wide spread cherry leaf spot infection periods in the southwest region. A few areas had significant infection periods.

Plum varieties being harvested range from 'Shiro' and 'Ozark Premier.' 'Stanley' fruit and leaves showing a fair amount of bacterial canker symptoms from earlier cool and wet weather. Growers should scout for apple maggot, white apple and potato leafhoppers.

Apples are 2.5 to 3.0 inches in diameter. Harvest of 'Paulared', 'Earlymac', and 'Zestar' are underway. 'Gala' and 'Golden Delicious' are relatively typee (elongated). Fire blight infections have stopped as the dry

weather halts growth. Very few sooty blotch and flyspeck symptoms have been found. Trap catch for codling moth is high indicating the second-generation flight. There was no gap between generations in some orchards. Codling moth entries are easy to see, especially on yellow-skinned varieties. It is doubtful that there will be a third generation this year. Few apple maggots have been caught for several weeks in Southwest Michigan. Apple maggot emerges following rain; about a quarter of an inch is considered the trigger amount. This means that growers can expect an increased emergence following rain. Obliquebanded leafroller larvae are easier to find feeding on leaves, with very little leafroller feeding on apple fruit. Spotted tentiform leafminer mines can be found. The new insecticides Delegate and Altacor seem to be doing a good job controlling this insect. Green apple aphids are common in growing shoot tips. White apple leafhopper leaf stippling and bronzing due to European red mites are generally scarce. Growers should inspect calyx ends of apples for mite eggs. San Jose scale crawlers are out and red spots on apple fruit is showing up. Young trees should be irrigated and examined for potato leafhopper.

Pears are about 2.5 inches in diameter. Pear psylla numbers are generally low. Sooty blotch and flyspeck are a concern; fungicides should be included in cover sprays. Both codling moth and oriental fruit moth can damage pear fruit at this time.

Small fruit

Blueberry harvest of the late season varieties, 'Jersey' and 'Elliot' continues with heavy harvest volumes. Anthracnose ripe rot, small fruit and soft fruit have been a problem. Leaf spots are a problem in some areas. Drought stress is revealing other mineral nutrition problems such as iron and potash. Japanese beetles and



B. Shane

Brown rot from the infected peach fruit has entered the stem and is affecting the leaves close to it as indicated by the yellow leaves.

blueberry maggot flies are out.

Grapes are at nearing veraison and 'Concord' has begun to change color. Grape berry moth trap catches are variable. They are down in some vineyards, but scouts are finding more eggs. Trap catches late in the season are a poor indicator of berry moth pressure and vineyards that have historically had high grape berry moth pressure should be treated. Larval stings and split berries are easy to find in vineyards with light crop and minimum sprays. Grape leafhoppers are scarce. Wine grapes need to be protected from potato leafhoppers. Japanese beetles are not abundant. Fungicides at this time should target downy mildew and phomopsis. Berry susceptibility to black rot ends as veraison begins. Phomopsis lesions in the fruit clusters can be found. The fruit becomes resistant but the cluster rachis is always susceptible to this disease. With frequent heavy dews, we expect downy mildew to increase. Botrytis fruit rot has been found in wine grapes.

Strawberry regrowth is underway. Some growers report poor growth. This seems to be due to drought stress, black root rot or insect feeding. Growers should protect against potato leafhoppers to prevent hopper burn and stunting of new growth. Irrigation is very important to get good growth during this dry season.

Summer **raspberry** and **blackberry** harvest has ended. Growers should be

prepared to protect against gray mold in ripening fall brambles.

Upcoming meetings

The last evening grape IPM meeting

of the season is coming up on Thursday, August 28. This meeting begins with a free dinner at 6:00 PM at the Lemon Creek Winery and will end with a trip out to the Vignoles vineyard scouted

for the weekly scouting report. We are expecting one RUP credit to be available for this meeting. **IPM**

2 – Southeast

Bob Tritten

Weather

For the most part cooler temperatures have persisted over the region for the last two weeks or so. We have had a couple of scattered warm days that have been followed by cool nights. The lack of precipitation at many fruit farms across the region is a continuing story. While some growers have had some good amounts of rain in the last two weeks, in the range of one to one and a half inches, there are many that have not had rain since mid-July and a few unlucky growers have not had significant amounts of rain since late June. Driving throughout the region it is pretty easy to keep an eye on the sod cover along the roadways that give an indication of how much rainfall people have received. In the mere span of just a few miles you can go from green lush looking grass, to brown, dried grass. Where soil has been dry; growers have been irrigating heavily to try to keep up with moisture demands. While **peaches** and **blueberries** are nearing an end to harvest for many of the main varieties, some continue to be in need of irrigation. Our season is about normal in terms of degree day totals and about normal when I look at the beginning of harvest of our fruit crops.

Tree fruit

Apples continue to size well where soil moisture has been adequate, with most being in the range of two and five-eighths to three inches in diameter. Growers have now finished up picking ‘Jerseymac’ and are anticipating ‘Paulared’ harvest to begin later this week. ‘Gingergold’ have been picked at a few farms for a very light first picking. Deer browsing appears to be very heavy at many fruit farms across the region. Summer pruning is now getting toward the time when it will be wrapped up fairly quickly.

Apple maggot emerged over seven weeks ago, and started with unusually high trap catch numbers on yellow sticky

Southeast Michigan growing degree day totals for March 1 to August 18

Location	GDD42	GDD45	GDD50
Commerce (Oakland)	2839	2459	1871
Emmett (St Clair)	2760	2397	1872
Flint (Genesee)	2834	2446	1863
Lapeer (Lapeer)	2804	2431	1855
Petersburg (Monroe)	2680	2495	1908
Romeo (Macomb)	2908	2527	1934

boards. For the most part, since then lower trap numbers have been seen, with the exception of growers over the last week who have had rainfall that seemed to cause a bit more emergence. I have only had a few reports of trap catch on red sticky ball traps. In mid-August, apple maggot is less of a threat for the rest of the season. Woolly apple aphid populations have continued to grow at several farms. Where growers had hot spots a few weeks ago, the numbers have increased and the area of infestation seems to have spread. Now is an excellent time to do a thorough job of scouting for woolly apple aphids. Japanese beetle numbers have continued to drop; there are just a few adults that seem to be hanging around at this time. The threat for Japanese beetle is pretty well complete for the season. Codling moth trap catches are on the rise as we are most likely now in the “B” peak of the second generation adult flight. Even in pheromone disrupted blocks, there are one or two being caught in traps. Green apple aphid populations are still high in a few varieties at several farms across the region. It seems a bit unusual talking about green apple aphid populations being so high this late in the season. Fall web worm tents are more numerous than two weeks ago. European red mite populations seem to be under control at most farms across the region as they approach maturity. Keep an eye on egg laying in the calyx of apples. I have seen just a bit of this begin to develop mid- to late last week. There are a good number of predators that have helped to reduce European red mite populations.

Black rot fruit symptoms have been reported at more farms this week than last. Now is a good time to do thorough scouting for black rot infected fruit. Sooty blotch and fly speck symptoms have not been observed. Some late season sheet scab continues to show up in many blocks across the region. Bitter pit is starting to be seen in a few varieties, most notably ‘Honeycrisp.’ Leaf drop from necrotic leaf blotch is being seen in ‘Golden Delicious’ and related varieties.

Pears continue to size fairly well with most being about two and a quarter inches in diameter. Growers who have removed suckers from inside middles of trees have seen a reduction in pear psylla adult populations.

Peach harvest continues across the region, with ‘Red Haven’ harvest being wrapped up here in the next few days at most farms. Harvest of later maturing varieties will continue over the next three to four weeks. ‘Red Haven’ on drier soils have had fruit size issues toward the end of harvest. There continues to be a fair amount of bacterial spot infected foliage and fruit. X-disease is fairly common across the region this year. Peach scab has been seen at a few farms over the last week or so.

Sweet and tart **cherry** leaf yellowing and drop from bacterial spot and cherry leaf spot seems to have slowed a bit.

Plums are mostly one and a half inches in diameter. ‘Shiro’ harvest will wrap up fairly quickly. European plums have colored fairly well over the last two weeks. There is a fair amount of fruit that has been infected with brown rot, as

well as fruit with poor finish due to spring frost and freeze injury.

Small fruit

Strawberries have rebounded well through the renovation process where soil moisture had been adequate. Where soil moisture has not been adequate, strawberries have suffered. In many of these dry soils plantings weed control has been poor, there will need to be a fair amount of hand weed control done. In newly planted strawberries where soil moisture has been adequate, plants are in great shape and rows have now filled out

well. Here again, on drier soils many of the daughter plants have not rooted well and the plantings need more moisture before they will fill out completely. White grub feeding has been reported at even more farms than in my last report. Now is a good time to do a thorough job of scouting for plant collapse.

Raspberry harvest continues on the lower growing canes of fall bearing raspberries. While there are still a few Japanese beetles being seen, for the most part they have run their course for the season. Potato leafhopper feeding

continues to be present, particularly in newly planted fall red raspberries. Pruning is now complete on summer bearing red, black and purple raspberries.

Blueberry harvest continues on 'Jersey' across the region. We have had an issue with poorer fruit size on the second and later pickings of 'Jersey' due to dry soils at many farms across the region. Most farms report that we are about three quarters complete with harvest at this time. Birds continue to be an issue, particularly in drier regions. Japanese beetles seem like they have run the course for the year. **IPM**

3 – Grand Rapids Area

Phil Schwallier

Amy Irish Brown

Carlos Garcia-Salazar

Tree fruit

We've dropped a bit behind normal averages for degree day totals. Base 42 totals are about a day and a half behind normal and base 50 totals are two and a half days behind normal.

There is a flush of leaves dropping in some **apple** varieties, especially 'Golden Delicious.' This is most likely a normal leaf drop and not an indication of any disease or nutrient deficiency. It could be enhanced by the recent dry period as well. Earlier in the season, Phil Schwallier mentioned that we could see some regular leaf drop throughout this growing season because of the lighter than normal crop. If trees don't need extra leaves, they will start to drop them. If you look around at other deciduous trees; maples, birch and even oak you will notice that they too are dropping some leaves. It's just a normal horticultural process that you don't need to spray anything for.

Retain applications need to be made 30 days ahead of anticipated harvest dates to be the most effective. That means that Retain should go on 'Honeycrisp' right away in the Grand Rapids area as its harvest date should be around September 18. Empire harvest is predicted for September 21, so Retain

needs to be applied later this week on that variety.

Be sure to watch your Pre Harvest Intervals, as we are getting to within 30 days of harvest for some early harvested apples.

Apple scab is still showing up in some blocks that didn't get a handle on primary scab.

Japanese beetles are mostly over, but I am hearing of some still feeding in 'Honeycrisp.'

Our degree day accumulations of codling moths since my regional biofix on May 24 are 1475 DD50 through Monday. This indicates that second generation egg hatch is well underway and nearing a peak. Peak egg hatch for second generation should occur around 1500 DD50. I would expect we'll reach peak egg hatch by the end of August 19 or 20. Your own trap counts are your best indication of what's going on in your blocks, but on a regional level, second generation codling moth egg hatch is nearing peak. Cover sprays are very important to maintain where you have trap numbers over the threshold of five moths per trap accumulated over time for this generation in non-disrupted blocks and two moths per trap accumulated for disrupted blocks.

We've accumulated just over 2000 DD45 at the Sparta station from my May 8 Oriental fruitmoth regional biofix. This indicates that egg hatch for the second generation of Oriental fruitmoth should be over. Trap catches

should be starting to go back up again with the flight of the third generation. Early egg hatch for third generation will probably happen around August 27 or 28. We rarely see apple or stone fruit stings from third generation Oriental fruitmoth in this area and peaches are in full swing for harvest, so sprays aren't very feasible anyway. It's a good idea to have a few Oriental fruitmoth traps in your disrupted apple blocks just to know what's going on with this insect, but the trap numbers I've seen don't indicate a problem in apple this year.

European red mites seem to be very low this year most likely due to all the rain back in July having washed them off. The threshold for treatment in August is 7.5 mites per leaf, but really once we get past August 15, there's little benefit to treating for mites. Also, with the lighter crop we have this year, we can probably tolerate a few more mites per leaf anyway. It's better to save your miticides for next year and let the beneficials build up to help you then.

San Jose scale crawlers are still active, but most are settled down on leaves, fruits or stems. This is a good time to be scouting carefully for any scale damage to fruits because it shows up very well against the green background color. If you see scales on fruits, it's an indication that you will need to add management of this insect into your pest control program for 2009.

Obliquebanded leafroller should start to fly again soon. **IPM**

4 – West Central

Mira Danilovich

Weather and crop development

The dry weather pattern continues. There has not been significant rainfall since the beginning of August. Trees are showing signs of drought stress

through wilted appearance and leaf drop. Looking outside of the orchards into the wooded lots more stressed trees are starting to change color.

Crop report

Cherry harvest has ended, totaling 49.8 million pounds for our area. Peach and nectarine harvest is underway with peak expected next week. Apricots are still being harvested. Plums are beginning to enter the market arena. Overall in terms of quality, the crop load looks good.

Brown rot is becoming a problem in stone fruit. Cherry trees are starting to lose leaves as a result of the previous cherry leaf spot and bacterial leaf spot and canker infections. Powdery mildew is evident in many blocks across all species. Bacterial leaf spot and x-disease symptoms evident in peaches.

Codling moth trap catches have gone up significantly (from three to 21 per trap) indicating that the second-generation is well on its way. Oriental fruit moth has been sporadic. American

West Central Michigan totals from March 1 as of Monday August 18

Location	DD42	DD45	DD50	Rainfall August 3 - 18	Rainfall since April 1
Hart	2556	2191	1630	1.05	16.71
Ludington	2428	2068	1515	0.42	16.88
Manistee	2522	2161	1609	0.2	16.74

plum borer trap catches have gone up since last week's temporary decline. The numbers have gone from 17 to 23 per trap. Lesser peach tree borer trap catches have just about doubled since last week going from 4.5 to 8.5 per trap. Greater peach tree borer trap catches have been on a rise in the last two weeks. The numbers have gone from eight to 12.25 per trap. Apple maggot trap catches are still relatively low. Dry weather has suppressed their emergence resulting in

a 50 percent drop in their numbers since last week. Obliquebanded leafroller numbers are up. Redbanded leafroller numbers are down dropping from a high of 11 per trap last week to three per trap this week. Mite population has gone up significantly. Many blocks are showing bronzing of the leaves.

Miscellaneous

We are still within the window for collecting and submitting leaves for foliar analysis. **IPM**

5 - Northwest

Nikki Rothwell, Duke Elsner, Erin Lizotte, Rob Serrine

Growing degree day accumulations at NWMHRS

GDD42 2597
GDD50 1667

Weather

Weather continues to be extremely dry in the north. We have not received significant rainfall near the NWMHRS since July 20. Daytime temperatures are seasonal, but nighttime temperatures remain cool. Overall degree day accumulations are similar to our 18-year average, and we have accumulated 2597 GDD base 42 and 1667GDD base 50.

Crop report

Cherry harvest is finished for 2008. Tart cherries picked out long, and we are well over the USDA estimate for the northwest. Quality was a challenge with the windy conditions and wind whip. The Balaton® crop was light, and both

'Balaton' and 'Montmorency' size was good. The apples are coloring, but size is a major concern with the lack of rain.

Obliquebanded leafroller numbers in cherries remain relatively low for the second week in a row, with an average of seven per trap in the station trap line. Lesser peach tree borer and American plum borer numbers are remaining low, but steady with less than 10 per trap for the fifth week in a row. Greater peach tree borer emergence is increasing with an average of 33 per trap at the station. One cherry fruit fly trap caught 74 flies this week, but the majority of the traps ranged between zero and three.

Powdery mildew is quite prevalent on new growth in tart cherry orchards. We have seen varying levels of cherry leaf spot around the region. Just a reminder that growers should apply a post harvest chlorothalonil to help reduce early defoliation and leaf spot inoculum levels next year. Additionally, the removal of leaf litter from the orchard floor helps reduce inoculum in subsequent years.

Spotted tentiform leafminer trap

catches remain relatively steady with an average of 65 per trap. We caught seven obliquebanded leafrollers in the apples this week. Oriental fruitmoth catches continue to vary from week to week at the station, with zero to nine per trap. We are seeing the second generation of codling moth. The trap line at the station caught seven to eight this past week. We never saw codling moth emergence stop completely and, at this time in the season, growers should be keeping the fruit covered to avoid feeding scars and larvae in fruit from both codling moth and obliquebanded leafroller. San Jose scale crawlers were detected last week.

We are seeing powdery mildew moving in on grapes, but it has been an unusually slow progression this year and properly covered orchards still look pretty clean. Downy mildew is being seen in area vineyards, and we have also seen grape berry moth webbing in the vineyards. Potato leafhopper populations continue to be at low levels. Phomopsis and black rot also appear to be popping up in some area vineyards. **IPM**

Weather news

Jeff Andresen
Agricultural Meteorology
Geography

Drier than normal conditions persisted across much of Michigan during the past one to two weeks (a notable exception was the Saginaw Valley and Thumb regions of the state, where precipitation was more common) in response to a broad upper

air ridge over the central United States. Rainfall totals for the past 30 days remained below one inch from the western Upper Peninsula south and eastward into western and southern Lower Michigan, in many cases less than 25 percent of normal, which

has resulted in abnormally dry soils and the appearance of moisture stress symptoms in some crops.

During the next few days, high pressure will dominate weather conditions across the state with more dry weather, but the passage of a cool frontal boundary next weekend is expected to bring the best chances for significant rainfall in at least two weeks. Until then, look for mostly sunny and dry conditions Wednesday through Friday (August 20 – 22), with gradually warming temperatures.

A cool front is forecast to pass through the region by late Saturday, with a good chance of showers and thunderstorms expected across all of the state. At this point, low-level moisture

is expected to be in place ahead of the front, with 0.50-1.00 inch rainfall totals possible in most areas of the state before the rain comes to an end early Sunday.

Depending on the exact movement of the remnants of tropical storm Fay, more rainfall may be possible during the first half of next week. Current indications are that some of the residual moisture from Fay may make it as far north as the Ohio Valley, but remain just south of Michigan. Regardless, these types of weather features are difficult to forecast, so stay tuned. Temperatures Wednesday through Friday will gradually warm to above normal levels, with highs Wednesday from 70°F north to the low 80s south warming into the 80s to near 90°F by Friday and Saturday. Lows will

warm from the mid- to upper 40s and low 50s Wednesday morning to the 60s by Friday morning.

Further ahead, medium range forecast guidance suggests upper air ridging across western sections of the United States, and troughing across parts of the east, with northwest flow across Michigan. National Weather Service **6 - 10 day**, covering August 24 – 28, and **8 - 14 day**, covering August 28 through September 1, outlooks both call for mean temperatures to range from near normal levels across southern sections of the state to above normal levels in the north and for precipitation totals to range from below normal in western sections of the state to near normal in the east. **IPM**

Michigan State University Cooperative Agricultural Weather Service
Cumulative Precipitation Summary For 08/18/2008

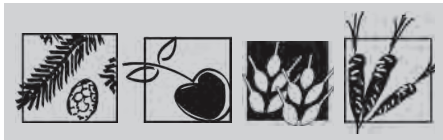
STATION	DIST	PRECIPITATION TOTALS SINCE						
		08/12/2008 (Last week)	08/05/2008 (Last 2 weeks)	07/22/2008 (Last 4 weeks)	04/01/08 (since Apr. 1)	Actual	Dev. Norm.	
MARQUETTE	WU	0.00	0.12	-1.22	0.98	-2.09	13.92	-0.72
CORNELL	EU	0.00	0.11	-1.24	1.07	-1.95	12.63	-1.16
SSMARIE	EU	0.03	0.16	-1.19	0.70	-2.32	12.28	-1.51
BENZONTA	NWL	0.10	0.16	-1.12	1.66	-0.92	16.15	3.15
BEULAH	NWL	0.09	0.19	-1.09	1.73	-0.85	17.05	4.05
BINGHAM	NWL	0.22	0.29	-0.99	0.49	-2.09	11.91	-1.09
NORTHPORT	NWL	0.13	0.22	-1.06	0.38	-2.20	11.12	-1.88
OLDMISSION	NWL	0.07	0.11	-1.17	0.36	-2.22	10.27	-2.73
ALPENA	NEL	0.02	0.95	-0.30	1.03	-1.75	14.02	0.97
ROGERCITY	NEL	0.31	0.97	-0.28	1.45	-1.33	15.94	2.89
FREMONT	WCL	0.00	0.34	-1.06	0.72	-1.98	12.64	-0.55
HART	WCL	0.00	0.42	-0.98	1.04	-1.66	15.07	1.88
LUDINGTON	WCL	0.02	0.14	-1.26	0.47	-2.23	17.29	4.10
LUDINGTON	WCL	0.02	0.14	-1.26	0.47	-2.23	17.29	4.10
ENTRICAN	CL	0.36	0.98	-0.27	2.77	-0.03	11.21	-2.90
BADAXE	ECL	0.34	1.58	0.45	4.56	2.08	17.39	4.55
SAGINAW	ECL	0.12	1.26	0.13	2.67	0.19	13.60	0.76
BHARBOR	SWL	0.00	0.46	-0.81	1.11	-1.69	11.81	-3.05
FENVILLE	SWL	0.00	0.57	-0.70	0.97	-1.83	17.44	-2.58
GLENDORA	SWL	0.03	0.42	-0.85	1.00	-1.80	14.75	-0.11
GRANDJUNC	SWL	0.00	0.29	-0.98	0.46	-2.34	13.05	-1.81
HOLLAND	SWL	0.00	0.20	-1.07	0.77	-2.03	18.03	3.17
KENTCITY	SWL	0.03	0.42	-0.85	1.00	-1.80	16.03	1.17
SPARTA	SWL	0.03	0.03	-1.24	1.03	-1.77	15.36	0.50
WATERVLIET	SWL	0.03	0.42	-0.85	1.00	-1.80	14.75	-0.11
BELDING	SCL	0.25	0.66	-0.76	0.91	-2.05	10.52	-4.26
COLDWATER	SCL	0.00	0.15	-1.27	0.30	-2.66	12.32	-2.46
ELANSING	SCL	0.03	0.11	-1.31	0.19	-2.77	11.24	-3.54
DETROIT	SEL	0.00	0.12	-1.25	0.40	-2.32	10.52	-3.76
FLINT	SEL	0.02	0.88	-0.49	1.72	-1.00	11.82	-2.46
MILFORD	SEL	0.00	0.64	-0.73	0.81	-1.91	14.71	0.43
ROME	SEL	0.20	0.73	-0.64	1.59	-1.13	12.20	-2.08
SALINE	SEL	0.13	0.97	-0.40	1.07	-1.65	11.28	-3.00
TOLEDO	SEL	1.07	1.07	-0.30	1.11	-1.61	15.74	1.46

ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1 2008 (*)

STATION OR DISTRICT	BASE 42 BE DEGREE-DAYS				BASE 50 BE DEGREE-DAYS			
	AS OF 2007	08/18 2008	BY 08/23	BY 08/28	AS OF 2007	08/18 2008	BY 08/23	BY 08/28
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
WEST UP NORMS**		2238	2348	2462		1405	1478	1554
MARQUETTE	2540	2006	2075	2203	1640	1199	1240	1321
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
EAST UP NORMS		2018	2125	2234		1205	1274	1344
CORNELL	2677	2229	2307	2450	1731	1390	1440	1533
SSMARIE	2449	2107	2181	2316	1551	1252	1297	1381
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
N. W. LP NORMS		2472	2589	2711		1582	1662	1748
BEULAH	2915	2604	2685	2839	1924	1669	1720	1824
BINGHAM	2941	2586	2667	2820	1980	1678	1729	1834
NORTHPORT	2566	2281	2352	2487	1644	1416	1459	1547
OLDMISSION	2754	2479	2556	2703	1812	1595	1644	1743
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
N. E. LP NORMS		2417	2533	2653		1532	1611	1693
ALPENA	2714	2481	2562	2706	1785	1578	1629	1725
ROGERCITY	2755	2425	2504	2645	1835	1527	1576	1669
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
W. CENT. LP NORMS		2696	2821	2951		1763	1850	1941
FREMONT	3120	2711	2809	2967	2096	1759	1824	1934
HART	2933	2610	2704	2856	1934	1677	1739	1844
LUDINGTON	2737	2453	2541	2684	1750	1534	1591	1687
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
CENT. LP NORMS		2779	2906	3037		1837	1925	2016
ENTRICAN	3048	2721	2816	2970	2040	1766	1829	1933
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
E. CENT. LP NORMS		2793	2923	3056		1849	1939	2033
BADAXE	2969	2764	2861	3024	2002	1818	1883	1997
SAGINAW	3239	2918	3021	3192	2204	1941	2010	2133
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
S. W. LP NORMS		3048	3188	3330		2051	2151	2253
BHARBOR	3377	2939	3040	3209	2304	1957	2026	2148
FENNVILLE	3145	2755	2849	3008	2096	1795	1858	1970
GLENDORA	3415	2943	3044	3214	2333	1953	2022	2144
GRANDJUNC	3434	3037	3141	3316	2359	2041	2113	2240
HOLLAND	3450	3076	3181	3359	2373	2084	2157	2287
KENTCITY	3215	2915	3015	3183	2185	1942	2010	2132
SPARTA	3122	2731	2825	2982	2085	1767	1829	1939
WATERVLIET	3415	2943	3044	3214	2333	1953	2022	2144
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
S. CENT. LP NORMS		2995	3129	3267		2014	2108	2206
BELDING	3121	2760	2854	3011	2103	1800	1863	1972
COLDWATER	3211	2959	3060	3228	2165	1961	2030	2149
ELANSING	3145	2909	3008	3173	2098	1938	2006	2123
+-----+-----+-----+-----+-----+-----+-----+-----+-----+								
S. E. LP NORMS		2999	3137	3278		2014	2112	2213
DETROIT	3563	3304	3413	3598	2468	2255	2330	2465
FLINT	3272	3049	3149	3320	2222	2051	2119	2242
MILFORD	3106	2789	2881	3037	2067	1829	1890	2000
ROMEO	3137	2924	3020	3184	2119	1943	2008	2124
SALINE	3252	2977	3075	3242	2193	1989	2055	2175
TOLEDO	3568	3244	3351	3533	2465	2218	2292	2425

* Since weather data for some agricultural stations are not available prior to April 1st, GDD values for those stations during February and March are estimated with closest available station data.

** District normals were calculated as the mean of daily GDD totals at several stations within each district for the period 1951-1980.



Crop Advisory Team Alerts

Integrated Pest Management Program
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