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THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

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In This Issue:

Calendar

June 19-20: Farm Market Tour; Pickaway, Ross, and Pike counties, sponsored by Direct Marketing Association of Ohio and Ohio State University Extension. For more information, contact John Ellerman at the Centers at Piketon (800) 297-2072.

Orange Rust on Blackberry and Raspberry

Source: Mike Ellis, OSU Department of Plant Pathology

Nova fungicide was registered last year for control of orange rust. We (Ohio) also have a 24C registration for the use of Ferbam fungicide for control of orange rust. It is important to make spring applications of fungicide to control this disease. I would prefer to use Nova in the spring and make the first spray just prior to when the orange rust spores are released from infected plants. This generally occurs sometime in May around Wooster. It occurs earlier in southern Ohio. Try to find some wild infected plants or leave an infected plant in the planting to scout for when the orange spores are produced. Remove the infected plant as soon as it starts to release spores. The fungicide is necessary to protect the uninfected plants from

infection. I have prepared a package of information on the use of fungicides to control orange rust. Contact me to get a copy: Mike Ellis, phone (330) 263-3849 or email ellis.7@osu.edu.

Understanding Orange Rust Infection

Source: PennState, Fruit Times Newsletter, Vol. 20, No. 6, May 1, 2001

Now that there is a material that can be used for orange rust control (Nova), it's important to understand the biology of the fungus in order to use the material when it will be effective. Use at other times would not only be a waste of the material, but could also contribute to resistance buildup. It is important to realize that Nova will not cure plants that already have systemic infections (i.e., the plants that show the bright orange spores). Its use is to prevent clean plants from becoming infected. The following information is condensed from the *Compendium of Raspberry and Blackberry Diseases and Insects* orange rust section written by Bill Kleiner (Adams Co., PA Coop. Ext.) Jim Travis (PSU), and from Mike Ellis of Ohio State.

Orange rust sporulation and infection is greatest during periods of cool, wet weather. There are two different periods when different types of infection occur. The first is in the spring, when the bright orange spores (called aeciospores) are produced. The spores released at this time cause localized infections on the leaves. In 21 to 40 days, another type of spore (called teliospores) form on the underside of these newly infected leaves, and produce basidiospores that actually cause the systemic infections. These systemic infections usually take place when temperatures are cool in the late summer and fall. Therefore, there are 2 periods when a fungicide should be used. The first is starting in the spring when the bright orange spores are forming (early to mid May) on a 10-14 day schedule until the infected leaves die and dry up in early summer. The second period is starting when temperatures start to decline in late summer to early fall through the first killing frost. There is a good chance of resistance development, however, so Nova used when not necessary should obviously be avoided. Also, cultural controls, such as removing wild brambles from areas near the planting, and removing any infected plants from the planting early in the season should be used to the greatest degree possible. Improving air circulation by controlling weeds, and using good pruning practices will decrease the duration of leaf wetness necessary for leaf infection.

Fire Blight

Source: Bill Turechek, Plant Pathology, Geneva, NY, Scaffolds Fruit Journal #7, April 30, 2001

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*, which 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 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 onto 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.

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) plays 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.

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 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.

Apogee: Timing Is Everything

Source: Jim Schupp, Horticultural Sciences, Highland, NY, Scaffolds Fruit Journal #7, April 30, 2001

The timing of the first Apogee application is critical to getting optimal growth control in orchards in northern states. This is because most of the annual shoot growth occurs in a relatively short, rapid burst in orchards north of the Mason-Dixon Line. Shoot growth begins about full bloom, quickly enters the phase

of the most rapid growth, then gradually slows and usually ends by mid- to late July. To get the best growth control from Apogee, it must be applied before the start of the rapid growth phase.

It takes 10-14 days for Apogee to fully take effect, and a lot of the season's growth will have already occurred if the spray is late. Also, once shoots are rapidly growing, it seems to take a higher concentration of Apogee to get them under control. Observations suggest this last point is especially true with McIntosh.

The first Apogee application should be made when the new terminal growth is 1 to 3 inches long. This amount of growth often coincides with late bloom to petal fall, and we suggest that growers use petal fall to time Apogee applications. Growers do not have time to measure shoots, and are usually not attuned to how rapidly shoots are growing at this time of season. In short, if a grower waits until 3-inch long shoots are present to schedule an Apogee spray, then waits 2 or 3 days so that he can apply Apogee along with a scheduled pesticide spray, then waits a little longer to get good spray conditions, the results will be sub-optimal. Timing is everything. Apogee is non-toxic to bees; go knock off some petals with Apogee sprays! The duration of growth control depends upon the dose and tree vigor. The Apogee label permits a wide range of dose options, from 3 to 16 ounces per 100 gallons, dilute basis.

We suggest that growers select the dilute rate, then use the TRV calculations as outlined in Cornell Recommends http://www.nysaes.cornell.edu/ent/treefruit/ to determine rate per acre. For New York conditions, 6-12 ounces of Apogee per 100 gallons dilute basis will provide growth control for trees of good-to-high vigor, respectively. The growth control at these rates will usually last 4 to 6 weeks. Lower doses may also be effective, but the response may last only 2 to 4 weeks.

Two well-timed sprays should provide season-long growth control in most orchards in the northeast. Excessively vigorous trees may require a third application to achieve season-long control.

One strategy for timing the second spray is the calendar method. Apply the second spray 2 weeks after the first. This is an effective strategy that involves the least time investment. For operations that are stretched thin on management, this may be the best strategy.

The other option is monitoring. Three weeks after the first spray, start scouting the orchard twice weekly. Monitor the longest shoots in the top of the canopy for new growth, and **apply the second spray as soon as the first shoots resume growth.**

Monitoring may provide the most growth control for the least cost. If growth control from the first spray persists, growers may be able to reduce the rate of the second Apogee spray and still achieve season-long control. It is important to leave a few untreated check trees in the block to compare the effect of Apogee and to gauge the need for the second spray. Poor monitoring that fails to detect the first regrowth, or a slow response that fails to re-apply Apogee before shoot growth resumes will result in poor growth control. Continue to monitor shoot growth in excessively vigorous blocks to determine if a third spray is necessary, keeping the 45 day pre-harvest interval in mind.

How about spray volume? Apogee has performed well with a wide range of volumes. Use enough water to get thorough coverage for the size and density of the canopy being treated.

The suggested retail price of Apogee is $90 per pound, equal to $5.63 per ounce. If a grower has a block of trees with tree row volume of 200 gallons per acre and decides to apply 6 ounces per 100 gallons dilute basis, then each spray will apply 12 ounces per acre. The estimated cost of the material is 12 ounces/acre x $5.63/ounce = $67.56 per acre per spray. Two sprays to obtain season-long growth control will require a total of 24 ounces for an estimated $135.12 per acre. This will lead some growers to ask how thin

Apogee can be stretched before it breaks.

My suggestion for 2001 is to treat the majority of the block exactly as described in the previous paragraph. The most expensive spray is the one that fails, and it is important to see what Apogee can do before experimenting with lower rates. That said, there are some legitimate ways to try to achieve savings. The first opportunity for savings may come about by using the monitoring strategy. If the first Apogee application of 6 ounces per 100 gallons dilute controls growth for 6 weeks or more and the untreated check trees are slowing down at the time that a second spray is needed, then 3 ounces per 100 dilute may be all that is needed in that second spray to achieve control for the rest of the season. This would use only 18 ounces of Apogee for the season. The estimated cost of the Apogee would be $101.34 per acre, saving $33.78 per acre.

A similar idea would be to plan on making 3 sprays at 3 ounces per 100 gallons, dilute rate. In the example of a 200 gallon tree row volume block, this plan also aims to control growth with a total of 18 ounces of Apogee per acre, by monitoring growth to get the maximum duration out of each spray.

Another opportunity to get results and savings comes about when the need to control vigor in the trees is confined to the top of the canopy. Shutting off the bottom 2 nozzles will direct the Apogee to where it is needed, while reducing the spray output per acre. This will extend the amount of acreage covered by each tank of spray and reduce the cost per acre.

Redbanded Leafroller Control

Source: Midwest Tree Fruit Pest Management Handbook

Leafroller populations can be sampled by both tree examination and pheromone traps. Because of a wide host range for redbanded leafroller, pheromone traps, if employed as a sole indicator, are unreliable for indicating whether sprays are needed. Pheromone trap catches will indicate when to monitor carefully for the larvae. (Eggs normally begin to hatch at petal fall, so larvae will be present will be present soon after petal fall.) Monitor for larvae by examining the number of larvae per 100 expanding leaf terminals or fruit clusters. Use an average of four larvae per 100 expanding leaf terminals or fruit clusters for making management decisions.

Chemical Control: In the Midwest, cover sprays for codling moth and other pests usually control leafrollers as well. Egg hatch of the redbanded leafroller often coincides with petal fall, so sprays applied at this time will control it. In some areas, the oblique-banded leafroller has become resistant to organophosphate insecticides, so chemicals with different modes of action may be required.

Strawberry Bud Weevil or Strawberry Clipper

Source: Midwest Small Fruit Pest Mgmt Handbook http://ohioline.ag.ohio-state.edu/b861/index.html

Damage: Nearly mature blossom buds are injured by adult clippers that puncture buds with their snouts, deposit eggs inside buds, then girdle the buds and clip the stem below the buds. Clipped buds hang down

or fall to the ground. Injured buds that survive to flowering may have small holes in the petals.

Appearance: The strawberry clipper adult is a dark, reddish-brown weevil about 1/10 inch long; its head is prolonged to form a slender, curved snout about one-third as long as the body. The larva is white and 1/16 inch long.

Life Cycle and Habits: Adult clippers overwinter in fencerows and woodlots near strawberry plantings. Once temperatures reach 60 degrees F, they move to plants with developing fruit buds. A small portion of a population may remain in the strawberry field over the winter. Strawberry flowering coincides with the time that clippers move out of their overwintering sites, so strawberries are ideal host plants for this insect. Redbud trees are another early host.

Adult clippers first feed on immature pollen by puncturing nearly mature blossom buds with their snouts. Each female then deposits a single egg inside the bud and girdles the bud, which prevents it from opening and exposing the developing larva. The female then clips the stem. Eggs hatch in about one week. Larvae feed within the damaged bud for three to four weeks; a new generation of adults emerges in late June and July. These weevils feed on the pollen of various flowers for a short time, but seek shelter in midsummer in preparation for overwintering. There is one generation per year.

Cultural Control: Because the strawberry clipper does not disperse over long distances, locating strawberry plantings away from woodlots and hedgerows that harbor this insect through the winter can reduce the number of adults that move into strawberries in the spring. Because early varieties are usually damaged more than later ones, planting two or three rows of an early variety as a trap crop around the perimeter of each field has been suggested as a way to reduce overall damage or to concentrate the adults for control by use of an insecticide only in the trap crop.

Monitoring and Thresholds: Early detection of clipper activity is important. Sample for strawberry clipper adults and damage as soon as temperatures are above 65 degrees F and flower trusses are visible in crowns. In each of five places within each planting, examine a 1-foot by 2-foot length of row. Sampling should be most intensive along field edges near woods or hedge rows. Get down on hands and knees and look closely for clipped buds of unopened flowers, and look for adult weevils in unexpanded flower clusters. An insecticide application is warranted for clipper control if any live weevils are observed, or if the average damage per 1- by 2-foot length of row is greater than 1.3 clipped buds.

Control by Insecticides: If control is necessary, insecticide should be applied as soon as damage begins to occur; this usually occurs well before most flowers have begun to open. When damage is observed only in rows along a field border, then insecticide application can be limited to border rows. Plantings with a history of clipper problems may require a second application 7 to 10 days after the first application.

Recommended Insecticides: *Source: Ohio Commercial Small Fruit and Grape Spray Guide 2001*

http://www.hort.purdue.edu/ext/extpubs.html

Brigade - highly effective

Lorsban - highly effective

Guthion - moderately effective

Methoxychlor - moderately effective

Timing Sprays for Oriental Fruit Moth

Source: PennState Fruit Production Guide http://tfpg.cas.psu.edu/part2/part23w.htm

Spray timing for Oriental fruit moth can be aided by using pheromone traps to establish a biofix (i.e., first sustained capture of two or more moths per trap) and then calculating and recording degree days (DD base 45) to determine the percent egg hatch for each generation. Having placed sex pheromone traps in stone fruit and/or orchards in early April, and having now captured moths to establish biofix, you need to calculate DD (base 45). Timing of insecticide sprays for the first and second generations are as follows:

- First generation - 150 to 200 plus 350 to 400 DD following biofix
- Second generation - 1,100 to 1,150 plus 1,450 to 1,500 DD following biofix
- Insecticide timings for third (and fourth) generations are still being evaluated

Recommended control products for Ohio growers at petal fall and later include Ambush, Asana, Pounce, Guthion, Imidan, Lannate, or SpinTor*. However, the use of pyrethroids (Ambush, Asana, Pounce) can cause mite outbreaks because they kill mite predators and persist a long time.

*(PennState has not found SpinTor to be effective in controlling OFM).

Tarnished Plant Bug

Sources: Midwest Small Fruit Pest Management Handbook, *Midwest Tree Fruit Pest Management Handbook, Ohio Commercial Small Fruit & Grape Spray Guide 2001, and Ohio Commercial Tree Fruit Spray Guide 2001*

Damage - Brambles: Malformed berries or failed drupelets result from tarnished plant bugs sucking juices from developing fruits. Whitening of the damaged drupelet results from feeding on mature fruit.

Damage - Peach: Tarnished plant bug (TPB) damages young peach buds, causing blossom drop and early fruit drop. After bloom, feeding by this insect causes cat-facing and increased fruit drop. TPB cat-facing is characterized by sunken corky areas on fruit surface.

Damage - Strawberry: Slightly to severely uneven berry growth and deformed berries with hollow seeds can result from tarnished plant bug feeding on flower buds and developing fruit.

Recommended control products for Ohio:

Brambles: Pre-bloom & at initiation of fruit-color - Sevin XLR or Malathion. Guthion is labeled for brambles, and has been known to control TPB on other fruit crops. (Observe pre-harvest restrictions.)

Peaches: Shuck-split & cover sprays - Guthion, Asana, Pounce, Ambush, Imidan, or Sevin.

Strawberry: Post-bloom to harvest - Thiodan, Danitol, or Brigade.

Northern Ohio Apple Scab & Fire Blight Activity from SkyBit®

	Dates (Green tip = April 9, Bloom = May 1)	Level of Disease Activity
Observed	April 9, 10, 12-15, 17-19, 21, 23-30, May 1-3	**Scab** active, but no infection
	April 11, 16, 20, 22	Possible **scab** infection & damage
	May 1-3	No **fire blight** activity
Forecast	May 4-11	**Scab** active, but no infection expected
	May 12	Possible **scab** infection & damage
	May 4, 6-7, 10	No **fire blight** activity
	May 8-9, 11-12	**Fire blight** active, but no infection

Degree Day Accumulations for Selected Ohio Sites January 1, 2001 to date indicated

	Actual DD Accumulations 5/2/01				Normal Degree Day Accumulations for 5/9/01	
Location	**Base 43° F**	**Base 43° F normal accumulations**	**Base 50° F**	**Base 50° F normal accumulations**	**Base 43° F**	**Base 50° F**
Akron - Canton	360	371	197	153	476	213
Cincinnati	608	625	333	286	762	374
Cleveland	348	348	194	144	449	201
Columbus	541	466	299	202	585	274
Dayton	497	472	283	208	594	282
Mansfield	376	360	215	150	464	208
Norwalk	360	328	198	133	429	191
Piketon	611	647	333	307	782	393
Toledo	336	314	176	126	416	184
Wooster	392	338	220	133	437	188
Youngstown	344	327	188	133	422	186

Phenology

	Range of Degree Day Accumulations	

Coming Events	Base 43° F	Base 50° F
Spotted tentiform leafminer - 1st oviposition	141-319	48-154
European red mite egg hatch	157-358	74-208
San Jose scale 1st catch	189-704	69-385
Lesser peachtree borer 1st catch	224-946	110-553
White apple leafhopper nymphs present	236-708	123-404
Oriental fruit moth 1st flight peak	259-606	96-298
1st codling moth catch	273-805	141-491
Spotted tentiform leafminer sap-feeders present	295-628	130-325

Thanks to *Scaffolds Fruit Journal* (Art Agnello)

Fruit Observations & Trap Reports

Insect Key
AM: apple maggot
CM: codling moth
ESBM: eye-spotted budmoth
LAW: lesser apple worm
LPTB: lesser peachtree borer
OBLR: obliquebanded leafroller
OFM: oriental fruit moth
PTB: peachtree borer
RBLR: redbanded leafroller
SJS: San Jose scale
STLM: spotted tentiform leafminer
TABM: tufted apple budmoth
VLR: variegated leafroller

Waterman Lab, Columbus, Dr. Celeste Welty, OSU Extension Entomologist

Traps used: STLM = Wing trap, SJS = Pherocon V, Codling Moth = mean of 3 MultiPher® traps, Others = MultiPher

Apple: 4/25 (bloom) to 5/2 (petalfall)
CM: 6.7 (up from 0)
OFM: 9 (first week)
RBLR: 2 (down from 13)
SJS: 6 (up from 0)
STLM: 3 (up from 2)

Peach: 4/25 (petalfall) to 5/2

LPTB: 1 (up from 0)
OFM: 6 (up from 1)

Wayne County Report, May 3 - Ron Becker, Program Assistant, Agriculture & IPM

Traps used: STLM = Wing trap, Others = MultiPher

Apple: 4/27-5/3
CM: .10 (down from .3)
RBLR: 41 (up from 34.9)
STLM: 264 (down from 269)
PTB: 0 (unchanged)
OFM: 40 (up from 12)

ERM were found in one block of apples in Medina County. Leafrollers were found in several blocks. Two-spotted spider mite found active with eggs present in one strawberry planting. Infestation high enough to warrant action.

Site: East District; Erie & Lorain Counties
Source: Jim Mutchler, IPM Scout

Traps Used: STLM=wing traps, SJS=Pherocon-V, Others=MultiPher®

Apple: 4/25 (pink) - 5/2 (bloom)
RBLR: 27.5 (first week)
SJS: 0 (first week)
STLM: 675 (first week)

Peach: 4/25 (bloom) - 5/2 (fruit set)
OFM:* 3.7 (first week)
RBLR: 45.7 (first week)

*OFM Biofix April 30, DD (base 45) accumulated 5/3 = 87. See above OFM article.

Site: West District; Huron, Ottawa, & Sandusky
Source: Gene Horner, IPM Scout

Traps Used: STLM=wing traps, SJS=Pherocon-V, PC = circle traps, Others=MultiPher® traps

Apple: 4/24 (pink) - 5/1 (bloom)
RBLR: 77.3 (up from 17)
SJS: 0 (same)
STLM: 175 (up from 8)
PC: 1 (first catch)

Peach: 4/24 (bloom) - 5/1 (fruit set)
OFM:* 15.8 (up from 1)

RBLR: 70.2 (up from 52)

Other pests include tarnished plant bug

*OFM Biofix April 30, DD (base 45) accumulated 5/3 = 87. See above OFM article.

Seneca County, May 2 - Jerry Cunningham

Strawberry clipper has been found in commercial patches. Orange rust observed in a black raspberry planting.

Preliminary Monthly Climatological Data for Selected Ohio Locations April, 2001

Weather Station Location	Monthly Precip	Normal Monthly Precip	Year-to-Date Precip	Normal Year-to-Date Precip	Average High	Normal High	Average Low	Normal Low	Mean Temp.	Normal Mean
Akron-Canton	3.53	3.16	8.26	10.88	63.7	59.1	40.2	37.9	52.0	48.5
Cincinnati	1.46	3.75	6.02	13.27	69.6	64.2	46.1	42.2	57.8	53.2
Cleveland	2.33	3.14	7.96	10.28	62.0	57.9	40.7	37.3	51.4	47.6
Columbus	3.39	3.21	7.10	10.90	67.8	62.0	45.8	40.0	56.8	51.0
Dayton	3.60	3.46	7.48	11.18	67.2	61.9	44.5	40.5	55.8	51.2
Mansfield	4.21	3.64	8.77	10.94	63.4	58.6	41.1	38.1	52.2	48.4
Norwalk	3.61	3.13	7.34	9.53	61.4	57.7	42.6	36.6	51.6	47.2
Piketon	0.85	3.80	4.39	14.40	71.1	64.1	43.9	40.7	57.5	52.4
Toledo	2.47	2.96	6.37	9.10	62.7	58.8	40.2	36.4	51.4	47.6
Wooster	3.44	3.06	6.22	9.90	65.7	59.6	40.4	36.7	53.0	48.1
Youngstown	2.71	3.06	7.52	10.33	63.5	57.7	38.9	36.8	51.2	47.3

Temperatures in degrees F, Precipitation in inches

Record high temperatures set: 7th - Dayton 85; 8th - Akron-Canton 80, Cleveland 80, Mansfield 80, Toledo 79, Wooster 81, Youngstown 81 9th - Cincinnati 85, Columbus 83, Mansfield 80; 12th - Youngstown 83

Record high temperatures tied: 7th - Cincinnati 85,Youngstown 81; 8th - Columbus 83, Piketon 83; 12th - Cleveland 82

Record low temperature tied: 18th - Mansfield 26, 19th - Youngstown 24

Table Created by Ted W. Gastier, OSU Extension, from National Weather Service, OARDC & Local Data

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The Ohio Fruit ICM News is edited by:

Ted W. Gastier
Extension Agent, Agriculture
Tree Fruit Team Coordinator
Ohio State University Extension Huron County
180 Milan Avenue
Norwalk, OH 44857
Phone: (419)668-8210
FAX: (419)663-4233
E-mail: gastier.1@osu.edu

| Back |