



Newsletter Extension

Fruit ICM News

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Calendar

July 8: Eighth Annual Horticulture Field Night, OSU Piketon Research Centers, 1864 Shyville Road, Piketon, OH. (East from Rte. 23 & 32 intersection, just off Rte. 32.) View more than 500 research & demonstration plots and 18 different fruit and vegetable projects from 5:00 pm to 9 pm. Ask the experts. No admission charge. Open to the public; supper for everyone. For more information contact Brad Bergefurd, Extension Agent, at 1-800-297-2072, or e-mail him at bergefurd.1@osu.edu.

July 27-28: Ohio Berry Tour, Central Ohio. Learn more about growing & marketing berries. This drive yourself tour begins on Thursday at 2:30 pm at Rhoads Farm Market on SR 56 east of Circleville. Then head northwest to Circle S Farms located west of Grove City on London-Groveport Road. The tour offers dinner at Circle S Farm on Thursday evening, along with discussions with Dr. Dick Funt and Dr. Mike Ellis of OSU. Friday's tour begins at 9:00 AM at Schacht Farm Market on Shannon Road in Canal Winchester, and also includes stops at Doran's Farm Market on Babbitt Road outside of New Albany and Jacquemine Farms on Hyland-Croy Road near Plain City. Cost of the tour is \$15 per person including dinner Thursday evening. For those not participating in the dinner meeting, the cost is \$5 per person. Contact Berry Coordinator Sandy Kuhn at (800) 297-2027 or kuhn.37@osu.edu for a registration form (or print it from our website (above)). **No on-site registrations!**

August 3: OVPGA & Ohio Fruit Growers Society Young Grower Tour, in northeast Ohio, 8:30 a.m. to 7:30 p.m. This bus tour provides a broad variety of fruit and vegetable operations that use different marketing strategies. Tour is designed for growers 40 years of age and younger, and others are welcome if interested. Contact John Wargowsky at (614) 249-2424 or jwargows@ofbf.org for more information.

Nova for Small Fruit

Nova 40 W fungicide (myclobutanil) has received federal registration for use on several small fruits and is currently registered for use in Ohio. On raspberry and blackberry it is registered at the rate of 1.25 to 2.5 ounces per acre for control of several rust diseases (including orange rust)and powdery mildew. It may be applied up to the day of harvest (1-day PHI).

On strawberry, Nova is registered for control of powdery mildew, leaf spot, and leaf blight. It is registered for use at the rate of 2.5 to 5 ounces per acre and can be applied up to the day of harvest (1-day PHI). Nova is also registered on currants for control of powdery mildew and gooseberry for control of anthracnose.

For more information or to obtain a copy of the label, contact Mike Ellis at 330-263-3849 or e-mail ellis.7@osu.edu.

Fire Blight Rundown

Source: Dave Rosenberger, Plant Pathology, Highland, Scaffolds No.15, June 26, 2000

In the last three weeks, severe fire blight has been reported in a number of apple orchards throughout the Hudson Valley. The blight outbreak this year has several unusual characteristics. Pear blocks are mostly unaffected, because pears were at petal fall when the blight infections occurred. In apples, most of the fire blight has developed in Gala blocks where trees are three to five years old. In several cases, Gala blocks are so severely affected that several hundred trees have already been removed and many more will be lost to rootstock blight.

At this point, the incidence of blight appears manageable in adjoining blocks of other cultivars including Cortland, Rome, Spartan, Macoun, and Delicious. The distribution of blight strikes in cultivars adjacent to affected Gala blocks suggests that Gala acted as a source of inoculum for other cultivars. The number of blight strikes in those blocks is greatest immediately adjacent to or downwind from the Gala trees. In several of the Gala blocks, we discovered evidence of over-wintering cankers from last year or point-sources for this year's infections, even though the growers involved were not aware that fire blight had been present in the orchard last year.

The good news is that the fire blight epidemic in the Hudson Valley is still limited to relatively few orchards. The devastating hailstorms that occurred beginning May 19 did not generate the disaster that would have developed if blight inoculum had been present in all orchards. The hailstorms did contribute to spread of blight to adjacent cultivars in some of the affected orchards, but there are still many orchards, including Gala blocks, that do not have any fire blight at this time.

What is the best way to deal with fire blight in young orchards where blight was not completely controlled during bloom? No single answer can be applied to all situations, and there is considerable room for debate on many details relating to blight management during summer. Dr. Paul Steiner at the University of Maryland has posted some excellent articles about fire blight on the World Wide Web at <http://www.caf.wvu.edu/kearneysville/wvufarm10.html>

However, none of the articles answer all of the questions that arise after blight appears in an orchard. Answers for many questions are lacking because the appropriate research has not been done or because research results have been inconsistent.

Growers dealing with fire blight must make daily management decisions even when scientists do not have enough data to provide research-based recommendations. Therefore, I have provided below my "best guesses" for some of the questions raised by growers. Much of this information may come too late to be useful for this season, but it may help to stimulate discussion and awareness concerning the best approaches for managing shoot blight in the future.

1. Q: Should I try to prune out fire blight when it appears in young trees?

A: Absolutely, unless blight is so severe that the orchard is beyond hope. Strikes should be pruned out as soon as possible after they appear. Failure to do so increases the likelihood that blight will continue to spread both to adjacent trees and into the rootstocks of affected trees. Pruning out infections in mature trees may not be practical, but mature trees with a full crop will set terminal shoot buds earlier than young trees. When trees set terminal buds, blight stops spreading both between trees and within the affected trees.

In order to remove strikes before cankers extend too far into the tree, trees must be examined at least two or three times weekly until the epidemic begins to slow. In sections where trees are severely affected, it may be more cost-effective to immediately remove entire trees, especially if trees are a susceptible cultivar like Gala. Pulling out badly affected trees will allow blight removal crews to focus their efforts on trees that can be salvaged. Blight removal crews should be trained to recognize the early symptoms of blight on terminal shoots. On terminals just beginning to show symptoms, the first or second fully expanded leaf will droop and closer examination will show blackening along the midvein at the base of the leaf blade. The entire shoot tip may appear to be slightly yellowed. Remove such shoots by cutting back into two-year-old wood at least 8-12 inches below the last visible symptoms. If a spur or shoot on the central leader shows signs of blight, immediately remove the central leader down to 8-12 inches below the last visible symptom. Immediate and aggressive removals reduce the need for repeated pruning in the same tree and may result in fewer trees lost to root stock blight. **2. Q:** Is it necessary to disinfect pruning tools between cuts?

A: Dr. Paul Steiner has shown that disinfecting pruning tools is a waste of time because minute cankers often form on the ends of cuts even when pruners are disinfected. Instead of wasting time disinfecting pruning tools, Paul recommends making all cuts into at least 2-year-old wood, where bacteria will be less able to multiply. Also, leave "ugly stubs" by cutting branches between nodes and at least several inches away from the central leader. Small cankers that form on these stubs can then be removed during winter pruning, whereas a canker that forms at a flush cut on the central leader will be missed during winter pruning.

An extension specialist in California reported that he failed to transmit fire blight with pruning tools when he purposely made cuts through active cankers in dry weather. However, he succeeded in transmitting blight on pruning tools when pruning was done in wet weather. Blight removal operations should usually be suspended in wet weather, but that is not always possible. (See question #4 below). As a precaution, perhaps pruning tools should still be disinfected if blight removal must be done in wet weather.

3. Q: Should prunings be removed from the orchard?

A: I haven't found any recent recommendations addressing this question (although I admit my search was not exhaustive). My personal recommendation is to place prunings in the row middles and allow them to thoroughly dry before running a mower over them. "Thoroughly dry" means that the bark no longer slips on the branches that have been removed, and the out bark and cambium have turned brown. With today's tightly spaced orchards, I am concerned that carrying prunings out of the orchard may spread more blight than occurs when prunings are left to dry in the row middles.

4. Q: What about pruning out blight in damp or rainy weather?

A: In the ideal world, blight removal would only be done in dry weather. However, when a week of rain is predicted just as the first symptoms of blight appear, one must weigh the risks of spreading blight by pruning in wet weather versus the risks of giving the epidemic a full week, or even a two- or three-day head start. With highly susceptible cultivars like Gala, I would opt to remove blight as quickly as possible, even if that meant that some removal would be done in less than ideal weather conditions.

5. Q: Can I do hand thinning or bud pinching while blight is active in the orchard?

A: Avoid these activities until after terminal bud set. Delaying hand thinning may result in some loss of fruit size, but risks of spreading blight outweigh the benefits of early hand-thinning. One local grower demonstrated that pinching buds as part of tree training for the vertical axe system is a great way to spread blight. Even though we no longer recommend disinfecting pruning tools between cuts, one can still spread blight on one's fingers while pinching buds (and presumably while hand-thinning). Pinching is done to succulent shoot tips that are highly susceptible to blight, whereas cuts made to remove blight are made in wood that is at least two years old.

6. Q: What can be done to stop the spread of blight to new terminal shoots?

A: No good answers here. Anything that helps to shut down tree growth will help to limit the spread of blight since the epidemic stops when terminal buds are set. Lucky growers never get blight, but if they do, they only get it in drought years when trees stop growing in mid-June. (This is not a lucky year!) Obviously, blocks with blight should not be trickle-irrigated until well after terminal bud set. Allowing weed regrowth beneath trees may increase competition for water and nutrients, thereby helping to slow tree growth.

The new plant growth regulator called "Apogee" may prove useful for arresting blight epidemics. This product has a federal label, but it is not yet registered in New York State (or Ohio). Apogee causes trees to set terminal buds beginning about two weeks after it is applied. To control vegetative growth in overly vigorous blocks, Apogee application will be recommended at late bloom or at petal fall. In young orchards, however, early cessation of terminal growth is undesirable except when blight is present. If Apogee is applied after the first symptoms of blight appear in an orchard, two applications will probably be needed to rein in the growth process, and blight will continue to spread for at least two weeks after the first Apogee application. In highly susceptible cultivars, blight may reach the rootstocks in many trees before Apogee can shut down terminal growth and make the tree more resistant to blight. In dry years, untreated trees may stop growing on their own about the same time that Apogee takes effect. The earlier cessation of shoot growth triggered by Apogee will help control blight in wet years, but the combined cost for the two Apogee treatments may exceed \$150 per acre. Cost-effectiveness of Apogee for fire blight remains to be determined.

Until the mid 1980's, fire blight experts recommended reducing action thresholds for aphids and leafhoppers in orchards with blight because of concerns that these insects might spread blight during

summer. Research in the Mid-Atlantic States has shown that aphids and white apple leafhoppers cannot vector blight. The role of potato leafhoppers (PLH) is less clear. A spray of Provado or carbaryl to control PLH may be helpful. However, complete control of PLH is impossible in a season when thunderstorms regularly drop new immigrant PLH adults into orchards.

Streptomycin sprays should NOT be applied during summer because summer applications will result in rapid development of streptomycin-resistant strains of the blight pathogen. The only exception is that streptomycin should be applied immediately after any hailstorm if there is active blight in the orchard (i.e., orchards where blight was present this year and terminal shoots are still growing).

Copper sprays applied in summer theoretically should inactivate blight bacteria on plant surfaces and thereby help to reduce inoculum and slow the epidemic. However, attempts to document the benefits of summer copper sprays have provided inconsistent results. Proponents of using copper during summer admit that benefits of copper will be limited because copper is not systemic and therefore will not affect bacteria inside plant tissue. Furthermore, actively growing terminal shoots "outgrow" the copper residue, thereby leaving the blight-susceptible shoot tips unprotected within several days after an application. Copper applied in summer is also phytotoxic to fruit, with injury appearing as necrotic black spots at fruit lenticels. Thus, copper sprays are not acceptable where the crop is destined for fresh market. In young orchards, salvaging the crop may be less important than salvaging the trees. This is especially true this year when many orchards in the Hudson Valley already have severe hail damage.

The bottom line: If I was managing a young Gala block with fire blight, I would be applying a low rate (about 4 oz/100 gallons dilute spray) of a fixed copper on a 7-10 day schedule until terminal buds are set. Copper sprays should be applied under good drying conditions. The alkaline nature of copper sprays means that they probably cannot be combined with other pesticides that are subject to alkaline hydrolysis.

7. Q: What determines how many trees will develop rootstock blight?

A: No one knows. Rootstock blight develops when bacteria move from strikes in the top of the trees, down through the trunk, and cause cankers in the rootstock. Because M.9 and M.26 rootstocks are highly susceptible to blight, rootstocks that become infected usually die. In the Hudson Valley, Gala orchards that showed the first symptoms of fire blight in early June now have many trees with bacterial ooze coming out of the rootstocks. Some of the trees with rootstock blight still have a reasonably intact canopy, but they will not survive. Some will die within several weeks, some will die later this fall, and some will survive until next spring when they will wilt and die soon after bud break. Incidence of rootstock blight can range from less than 5% of trees to more than 80% in a severely blight block. Rootstock blight is most common in orchards less than 6 years old, but other factors that make trees susceptible to rootstock blight have not been determined.

The Boring News

Source: OSU Commercial Tree Fruit Spray Guide 2000

The peachtree borer, lesser peachtree borer, and shothole borer often infest peach trees, also apricot, cherry, and plum trees. The peachtree borer is primarily a pest of young trees, the lesser peachtree borer of older trees, and the shothole borer in trees of low vigor with dead and/or diseased limbs. Moths of the borers lay their eggs on the bark while the shothole beetles lay their eggs in the inner bark. Some of the

regularly applied cover sprays aid in controlling borers; however, specific trunk and scaffold branch sprays are often required. Pheromone traps are available to monitor moth emergence and peak of moth flights. Where borers have been a problem, make a spray 7 to 14 days after moth emergence begins (spray mid May to early June for lesser peachtree borer, or in late July to early August for peachtree borer) and again 6 to 8 weeks later. Where damage has been light, make 1 spray at peak of second flight (spray after harvest in August).

Additional comments can be found in the "Special Problems/Pests of Peach" section in the *Commercial Tree Fruit Spray Guide 2000*.

Fruit Observations

Insect Key	
AM:	Apple maggot
CM:	Codling moth
DWB:	Dogwood borer
LPTB:	Lesser peachtree borer
OBLR:	Oblique banded leafroller
OFM:	Oriental fruit moth
PC:	Plum curculio
PTB:	Peachtree borer
RBLR:	Redbanded leafroller
SJS:	San Jose scale
STLM:	Spotted tentiform leafminer
TABM:	Tufted apple budmoth
VLR:	Variiegated leafroller

Site: Waterman Lab, Columbus (6/22-6/28)

Source: Dr. Celeste Welty, OSU Extension Entomologist

Traps used: STLM=wing traps, SJS=Pherocom-V, Others=Multipher-1® traps

Apple

RBLR: 3 (down from 17)

STLM: 87 (down from 345)

DWB: 2.5 (up from 1)

SJS: 0 (unchanged)

CM: 3.7 (down from 6.7)

OBLR: 0 (unchanged)

TABM: 0 (down from 2)

VLR: 1 (unchanged)

AM: 1.0 (up from 0.7)

Peach

OFM: 6 (down from 13)

LPTB: 1.5 (up from 1)

PTB: 4.5 (down from 5)

Site: East District; Erie & Lorain Counties (6/15-6/21)

Source: Jim Mutchler, IPM Scout

Traps Used: STLM=wing traps, Others=Multiplier® traps

Apple

RBLR: 21.2 (up from 1.7)

CM: 5 (down from 8.1)

SJS: 0 (unchanged)

Peach

OFM: 13.7 (down from 21.3)

RBLR: 22.3 (up from 2)

LPTB: 36 (down from 39)

PTB: 4.3 (up from 2.3)

Other pests: green apple aphid, fire blight, scab, powdery mildew, white apple leafhopper

Beneficials at work: lacewing eggs, larvae, & adults (brown & green), orange maggots, lady beetles, *Stethorus punctum*

Site: West District; Huron, Ottawa, & Sandusky (6/14-6/20)

Source: Gene Horner, IPM Scout

Traps Used: STLM=wing traps, Others=Multiplier® traps

Apple

RBLR: 43.8 (up from 11.5)

SJS: 0.0 (unchanged)

CM: 2.7 (down from 5.1)

Peach

OFM: 8.5 (down from 22.3)

RBLR: 64.3 (up from 15.3)

LPTB: 53.3 (up from 32)

PTB: 7.3 (up from 4.8)

Other pests: green apple aphid, lilac borer, white apple leafhopper, fire blight, oriental fruit moth strikes, potato leafhopper, plum curculio strike, apple rust mite, two-spotted spider mite

Beneficials at work: Lacewing eggs & adults (brown & green), banded thrips, black hunter thrips, lady beetles, predator mites, orange maggot

Site: Wayne County (6/9-6/15)

Source: Ron Becker, Extension Program Assistant

Traps used: STLM=Wing traps, PC=Circle trunk trap, Others=Multiplier® traps

	Apple			
	North	South	East	West
RBLR:	5.67	33	7	11.5
STLM:	1327	80	37	166.8
CM:	3.89	2.33	2.3	2.58
PC:	0			0

	Peach		
	North	South	West
OFM:	12	24	5.5

LPTB:	0	11	0
LPTB:	0	6	3.5

Orchard observations: Japanese beetle is being found in all blocks with damage being light so far. Fruit damage by codling moth also found. Other insect activity includes aphids, white apple leafhopper, loopers, European red mite and two spotted spider mite. Beneficial mites, lacewings, ladybugs, leather backs, insidious plant bugs and hover flies also present.

Northern Ohio Apple Scab Activity - SkyBit Product

SkyBit based on observations: June 5, 6, 12-19, 21, 24-27; possible infection & damage
Based on Forecasts: June 29, 30, July 1-7; active but no infection

North Central Ohio Spectrum Technologies Orchard Monitors for Apple Scab
 Spectrum Technologies Monitors and Software* Observations: June 12, 18; Moderate Infection
 (Software* based on Modified Mills Chart)

Northern Ohio Fire Blight Activity - SkyBit Product

SkyBit based observations: June 1, 11-19, 21, 24-27; possible infection and damage
Based on Forecasts: July 3-7; possible infection & damage

Degree Day Accumulations for Selected Ohio Sites January 1, 2000 to date indicated

Location	Actual DD Accumulations June 28, 2000		Forecasted Degree Day Accumulations July 5, 2000			
	Base 43° F	Base 50° F	Base 43° F	Normal	Base 50° F	Normal
Akron - Canton	1659	1003	1868	1706	1159	1075
Cincinnati	2058	1318	2294	2267	1503	1506
Cleveland	1659	1018	1861	1662	1168	1046
Columbus	2024	1298	2241	1940	1464	1256
Dayton	1963	1241	2186	1987	1412	1303
Mansfield	1657	1010	1860	1692	1161	1066
Norwalk	1723	1073	1925	1656	1224	1051

Toledo	1700	1032	1904	1647	1184	1045
Wooster	1758	1083	1952	1617	1226	1000
Youngstown	1599	947	1790	1569	1086	967

Phenology

Coming Events	Range of Degree Day Accumulations	
	Base 43° F	Base 50° F
Oriental fruit moth 2 nd flight peak	1000-2908	577-2066
Redbanded leafroller 2 nd flight begins	1096-2029	656-1381
Codling moth 1 st flight subsides	1112-2118	673-1395
Spotted tentiform leafminer 2 nd flight peak	1295-2005	824-1355
Spotted tentiform leafminer 2 nd generation tissue feeders present	1504-2086	952-1201
Apple maggot 1 st oviposition	1566-2200	1001-1575
Codling moth 2 nd flight peak	1587-3103	1061-2212

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Information presented above and where trade names are used, they are supplied with the understanding that no discrimination is intended and no endorsement by Ohio State University Extension is implied. Although every attempt is made to produce information that is complete, timely, and accurate, the pesticide user bears responsibility of consulting the pesticide label and adhering to those directions.

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