http://ipm.osu.edu/fruit/index.html

THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

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Calendar

June 28: Ohio Fruit Growers Society Annual Summer Tour, Vogley Enterprises, East Sparta, Ohio, Stark County. Watch for more details.

July 27-28 (tentative): Ohio Berry Tour, Central Ohio. Watch for more details.

Drought Conditions Persist in Parts of Ohio

Source: http://www.cpc.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif

Conditions in Ohio as of April 1, 2000

Region	Category of Drought
NW Ohio	Severe
WCentral Ohio	Moderate
SW Ohio	Near Normal
SCentral Ohio	Near Normal
Central Ohio	Moderate
NCentral Ohio	Near Normal

NE Ohio	Near Normal
Central Hills	Near Norma
NE Hills	Severe
SE Ohio	Near Normal

BLACK ROT CANKERS AND WHITE ROT CANKERS

Source: Dave Rosenberger, Plant Pathology, Highland, New York

Some apple growers in eastern New York are noting more than the usual number of canker problems in their orchards this spring. The only "cure" for large cankers is to prune them out. However, early season spray programs may reduce the potential for at least one kind of canker disease. Growers and consultants should be aware of early indications that orchards may be at risk for white rot canker. Some adjustments in prebloom spray programs may be appropriate for blocks where white rot lesions have become established.

The two most common apple cankers in New York are black rot canker caused by Botryosphaeria obtusa and white rot canker caused by Botryosphaeria dothidea. Both of these fungal pathogens can also cause fruit rots during summer. However, in northern growing regions (e.g., New York, New England, Michigan) there is no apparent linkage between incidence of the canker diseases and incidence of the fruit rot diseases. Orchard conditions that favor canker development do not necessarily favor development of fruit rot diseases, nor is there evidence that fruit rots contribute to canker development.

During the first three-quarters of the 1900's, the problem of black rot cankers was addressed by numerous researchers in the northeast, whereas white rot canker was considered a "southern" problem. In the 1980's, Dr. Jim Travis and co-workers at Penn State showed that white rot canker was causing tree decline in parts of Pennsylvania. White rot cankers were also found in some Hudson Valley orchards as well.

It is not always easy to tell the difference between black rot and white rot cankers, but there are some characteristic differences. Black rot cankers are usually initiated at pruning cuts, whereas white rot cankers may be initiated in unwounded bark on trunks and scaffold limbs. Black rot cankers have distinct margins, and the bark and cambium within the canker margins are completely killed.

White rot cankers frequently begin as depressed areas in the bark with less clearly defined margins. Green cambium is often evident beneath superficial white rot lesions. Bark areas affected for several years may develop large wart-like structures surrounding lenticels. The superficial white-rot lesions do not seem to cause economic damage until the trees become drought stressed. Under drought stress conditions, the white rot fungus penetrates through the cambium and the resulting cankers suddenly become obvious. In some cases, white rot cankers that develop during summer may ooze, almost like active fire blight cankers.

Field observations in New York suggest that black rot cankers develop primarily on trees where xylem tissue has been sequentially damaged by cold injury and by basidiomycete wood-invading fungi such as Schizophyllum commune and Trametes versicolor. The wood-invading fungi follow saprophytic yeasts and bacteria into pruning cuts where they colonize, discolor, and soften the old wood in the center of trunks and limbs. Healthy trees create chemical and physical "barrier zones" that keep these weak

pathogens from invading undamaged xylem, but stressed trees cannot maintain effective barrier zones. The wood-invading fungi advance from the center, damaged wood outward toward the bark until the perimeter of living tissue can barely support life functions of the limb. It is at this stage that B. obtusa moves into the surface tissue and completes the killing of the bark to form a visible black rot canker. Incidence of black rot cankers often increases dramatically three to five years after a severe winter-injury event because it takes three to five years for wood-invading fungi to weaken limbs enough to allow development of a black rot canker.

Development of white rot cankers in New York seems more closely correlated with drought stress than with winter injury. (Drought conditions also allow more rapid extension of black rot cankers, but drought seems less important in the epidemiology of black rot cankers.) White rot cankers are more abundant following drought conditions because superficial white rot lesions on the bark surface are able to completely penetrate the bark only when the tree is under drought stress. Most fruit growers fail to notice superficial white rot lesions on trunks and older limbs because the superficial lesions can be mistaken for a natural part of the "aging process" that occurs as trunks transition from smooth to scaly bark. Nevertheless, I have seen at least three orchards where failure to control superficial white rot lesions over a period of years allowed development of severe canker problems in a drought year.

There is no evidence that spray programs can slow development of black rot cankers under New York conditions. However, spray programs definitely can affect the incidence of the superficial white rot lesions that contribute to development of visible white rot cankers in drought stressed trees. Observations I have made over the past 15 years suggest that superficial white rot lesions gradually increase in abundance in orchards where early-season scab sprays consist of either SI/EBDC combinations or low rates of EBDCs (mancozeb, Polyram) used alone. Neither the EBDCs nor the SI fungicides (Nova, Procure, Rubigan) have much activity against Botryosphaeria species. EBDCs may have been somewhat effective when they were applied at rates of 6-8 lb/A, but they no longer suppress white rot when applied at 3 lb/A. The benzimidazoles (Benlate, Topsin M) controlled this disease when they were used for scab control, but these fungicides are rarely used in prebloom sprays today because the scab fungus is resistant to benzimidazoles in many orchards.

No research has been done to determine when superficial white rot lesions are initiated or the best method for controlling them. Therefore, we have no scientific basis for making control recommendations. However, I suspect that copper sprays applied at green-tip to half-inch green may be the most cost-effective approach for suppressing white rot lesions because the copper residues remain on the bark for an extended period of time. Including Topsin M or Benlate in a tight cluster or pink spray might also help reduce the incidence of superficial white rot lesions. The new strobilurin fungicides (Sovran, Flint) are effective against Botryosphaeria species and may help to suppress white rot lesions if they are applied prebloom.

White rot canker does NOT pose a significant threat for most New York apple growers. No changes in fungicide programs should be needed in orchards with trickle irrigation or orchards where there is no evidence of superficial white rot lesions. However, fungicide adjustments may be warranted in non-irrigated orchards where superficial lesions are abundant, especially considering that the long-term weather forecast is calling for another dry summer.

Rosy Apple Aphid

Source: Art Agnello, Department of Entomology, Geneva, Scaffolds Fruit Journal, April 19, 1999

In our opinion, the most crucial of the pest decisions to be made at Pink has to do with rosy apple aphid (RAA), because this is the last defining period for a truly successful rosy management option. Although RAA feeds mainly on apple foliage, causing leaf chlorosis and curling, its saliva is also translocated to nearby fruits, which become bunched, stunted, and malformed. RAA will attack all apple varieties, but varieties such as Cortland, Monroe, R.I. Greening, Idared, and Golden Delicious are particularly susceptible, and those in the McIntosh family are relatively tolerant.

As with most aphids, this species has a complex life cycle, starting with black eggs that overwinter on twigs, in bud axils, and in bark crevices. The eggs develop into solitary, wingless "stem mothers", which then give birth to living young, most of which are also wingless. RAA nymphs are visible beginning at about Tight Cluster but are most easily observed at the Pink bud stage.

Our control recommendations for RAA cover the period from Half-Inch Green to the Pink bud stage, using any of a number of materials: Thiodan, Lorsban, Lannate, Vydate, Supracide or Asana, listed roughly in order of increasing harm to beneficial mites. Pink applications of any of these products do a better job than an earlier spray. This is an observation resulting from the fact that, in those cases where aphid populations have built up during early summer on vegetative growth inside the canopy, a Pink spray will have done a more effective job of reducing populations than an earlier treatment at Half-Inch Green. From the standpoint of management practicality, it is therefore easier and more natural to consider the need for aphid control at the time of the Pink spray.

Excellent images of RAA are available at these sites:

http://www.caf.wvu.edu/kearneysville/pest_month/rosy_apple_aphid.htm

http://www.nysaes.cornell.edu/ipmnet/ny/fruits/FruitFS/rosyappleaphid.html

Because RAA populations are highly variable, it is important to assess their densities before making a treatment. In past surveys, approximately 50% of the orchards sampled have ended up requiring treatment. If you are inspecting fruit clusters for STLM eggs at Pink anyway, it is not much more trouble to note the presence of RAA nymphs or damage at the same time. We recommend, however, that a few more clusters be checked for RAA than are required for STLM sampling. Try to select 10 from the interior canopy area of each of 10 trees distributed throughout the block. RAA nymphs are of course present at Pink, and large enough to see without difficulty, but they do occur on the same tree and in the midst of colonies of green apple aphids, which are not usually a problem until the summer.

To distinguish among the species, you can use leaf damage as a cue, as well as the insects' color. RAA nymphs are usually pinkish, sometimes varying to a light brown, slate gray, or greenish black, and the body is covered with a whitish mealy coating. Most importantly, they have pronounced cornicles ("tailpipes") and long antennae (more than half the body length). Green apple aphid nymphs are clearly green, and without the whitish cast. Their cornicles are little more than buttons, and the antennae are clearly less than half of the body length. Also, aphids found inside curled or distorted leaves at Pink are almost always Rosy Apple Aphids. If you find ONE infested cluster (1%, or stop as soon as you find one), we would advise including an RAA material in your Pink spray; this threshold may be a little conservative for people who are skilled at finding the aphids.

Fruit Observations

Insect Key

STLM: spotted tentiform leafminer
RBLR: redbanded leafroller
OFM: Oriental fruit moth

Site: Waterman Lab, Columbus
Source: Dr.Celeste Welty, OSU Extension Entomologist

Apple: 3/30-4/5
RBLR: 17 (up from 13)
STLM: 506 (up from 348)

Peaches:
OFM: 0 (same as last week)

Tree Development: Apples - tight cluster to pink; Peaches - bloom

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Site: Eastern Erie County
Source: Ted Gastier, Extension Agent

Apple: 3/30-4/5
RBLR: 6 (first catch)
STLM: 0

Peach: OFM: 0
RBLR: 5 (first catch)

Site: Western Erie County
Source: Gene Horner, IPM Scout

Apple: 3/30-4/5
RBLR: 43 (first catch)
STLM: 0

Peach: OFM: 0

Beneficials observed - brown lacewing

Tree Development: Apples - green tip to 1/2" green; Peaches - pink

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Site: Western Wayne County
Source: Ron Becker, Extension Program Assistant

Apple: 3/30-4/5
RBLR: 62 (range: 35-88)
STLM: 373 (range: 120-550)

Site: Eastern Wayne County
Source: Ron Becker, Extension Program Assistant

Apple: 3/30-4/5
RBLR: 10
STLM: 0

Tree Development: Apples - pink; Peaches - pink to full bloom

Other Wayne County Observations: Low of 24° F on March 31

Spectrum Technologies Monitors and Software* Observations:

April 2 & 3; Heavy Infections
(Software* based on Modified Mills Chart)

Northern Ohio Apple Scab Activity
SkyBit Product & Spectrum Technologies Orchard Monitors

SkyBit based on observations: April 1, 5; active but no infection; April 2-4: possible infection & damage

Based on Forecasts: April 6, 7, 10, 13-15; active but no infection

Spectrum Technologies Monitors and Software* Observations: April 2 & 4; Light Infections
(Software* based on Modified Mills Chart)

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

	Actual DD Accumulations April 5, 2000		Forecasted Degree Day Accumulations April 12, 2000			
Location	**Base 43° F**	**Base 50° F**	**Base 43° F**	**Normal**	**Base 50° F**	**Normal**
Akron - Canton	225	86	267	163	106	61
Cincinnati	335	129	403	308	165	126
Cleveland	237	93	278	155	111	59
Columbus	307	123	359	216	148	86
Dayton	291	114	348	215	141	86
Mansfield	222	82	264	157	102	61
Norwalk	220	79	258	137	97	51
Toledo	224	78	261	124	95	47
Wooster	252	95	288	148	112	53
Youngstown	216	83	252	140	101	52

Phenology

	Range of Degree Day Accumulations	

Coming Events	Base 43° F	Base 50° F
Redbanded leafroller - 1st catch	32-480	5-251
Tarnished plant bug adults active	71-536	34-299
Spotted tentiform leafminer - 1st adult catch	73-433	17-251
Rosy apple aphid nymphs present	91-291	45-148
Spotted tentiform leafminer - 1st oviposition	141-319	48-154
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

Thanks to Scaffolds Fruit Journal (Art Agnello)

Preliminary Monthly Climatological Data for Selected Ohio Locations March 2000

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	2.02	3.33	7.07	7.72	53.1	47.3	33.3	28.6	43.2	38.0
Cincinnati	3.34	4.24	13.50	9.52	57.9	53.0	35.6	33.1	46.7	43.0
Cleveland	1.57	2.91	6.26	7.14	52.9	46.3	33.4	28.2	43.2	37.2
Columbus	2.65	3.27	8.97	7.69	56.0	50.5	35.8	31.2	45.9	40.8
Dayton	2.21	3.42	7.56	7.72	55.1	50.0	35.5	31.0	45.3	40.5
Elyria*	-	2.76	-	6.85	54.4	48.8	31.8	28.8	43.1	38.8
Mansfield	2.13	3.30	7.85	7.30	52.2	46.6	32.5	28.6	42.4	37.6
Norwalk**	2.25	2.77	7.45	6.40	53.8	45.4	32.3	26.9	43.0	36.1
Toledo	1.84	2.66	4.62	6.14	54.1	45.5	33.4	26.8	43.7	36.1
Wooster	2.04	2.92	6.71	6.84	54.7	47.7	33.2	27.7	43.9	37.7
Youngstown	1.86	3.11	6.00	7.27	52.3	45.3	32.5	27.3	42.4	36.3

Temperatures in degrees F, Precipitation in inches
Elyria* records not available, data from Berlin Heights orchard monitor; Norwalk** records not available, data from Milan farm monitor

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

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