



Newsletter

Extension

Fruit ICM News

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In This Issue:

[New Crop Labels for Savey Miticide](#)
[Asana Insecticide for Blueberries](#)
[Powdery Mildew \(Rusty Spot\) on Peach](#)
[Apogee - Growth and Fire Blight Control](#)
[Managing Young Trees](#)
[Berry Press Release Packets Soon Available](#)
[Brown Rot of Stone Fruit](#)
[Herbicides for Newly Planted Strawberries](#)
[Obituary for Kenneth Karl Varian](#)
[Fruit Observations & Trap Reports](#)
[Ohio Degree-Days and Phenology](#)

New Crops for Savey Miticide

Source: Celeste Welty, OSU Extension Entomologist

Gowan Company has announced that registration of Savey 50DF has been expanded to include plums and caneberries, including red and black raspberries and blackberries. The rate is 3-6 oz/A and use is restricted to one application per year. The preharvest interval is 28 days for plums and 3 days for caneberries. Savey is highly effective at killing eggs and nymphs of spider mites, including European red mite and two-spotted spider mite. It does not kill adult mites. Savey has been available for pears since 1994, apples since 1996, and peaches, cherries, and strawberries since 2000.

Asana Insecticide for Blueberries

Source: Celeste Welty, OSU Extension Entomologist

Registration for Asana XL (0.66 EC) has just been expanded to include blueberries. Asana, a pyrethroid, controls cranberry fruitworm and aids in control of cherry fruitworm at 4.8 to 9.6 oz/acre; it controls blueberry maggot at 9.6 oz/A. The preharvest interval is 14 days. There is a limit of 38.4 oz/acre per

season. Asana can be applied before or after bloom, but it acts as a bee repellent so should not be sprayed within 7 days of pollination.

Powdery Mildew (Rusty Spot) on Peach

Source: Mike Ellis, OSU Extension Plant Pathologist

Last year we had a bad outbreak of rusty spot on peach. Rusty spot is actually powdery mildew that infects the fruit, causing a whitish area (discolored) on the fruit surface. In time the area or spot develops a rusty color. The disease does not develop into a rot and oftentimes it is not highly visible at harvest; however, it is a fruit blemish and can be serious. Last year was the first time I saw the disease in Ohio in the 22 years I have been here. Although not common, it was quite severe last year. I think the mild winters we have had over the past several years due to El Niño are largely responsible for the development of the disease. As we go back to more "normal" or colder winters, the disease may not appear. However, growers who had the problem last year should consider a control program this year if we have a peach crop.

Fruit are susceptible to infection from shuck split till pit hardening. The fungicides we generally use during this period are not good powdery mildew materials. Topsin-M or Benlate should have fair activity against mildew, if the mildew strains in your orchard have not developed resistance to them. This has been a problem in other areas around the country.

The sterol inhibiting fungicides (Nova, Elite, and Indar) all provide excellent control of powdery mildew, but are expensive to use during this period when brown rot is generally not a threat. I would prefer to use these materials during the pre-harvest period (starting 3 weeks before harvest) for brown rot control. My choice of fungicide during this period would be a protectant like captan or ziram plus a sulfur fungicide. The sulfur should do a good job of controlling the powdery mildew and would be very cost effective. Sulfur will also provide fairly good control of scab. I have talked to several growers that use sulfur alone during this period and have had good results.

Consult bulletin 506-A2 "Ohio Commercial Tree Fruit Spray Guide" for more information, or give me a call at (330) 263-3849.

Apogee - Growth and Fire Blight Control

Source: Dave Ferree and Diane Miller, OSU Dept. of Horticulture and Crop Science

Apogee has been successful in controlling growth (20-50% reduction in shoot growth) and in decreasing shoot fire blight in our Ohio trials. On trees with significant fire blight last year that were pruned hard to remove infected limbs, Apogee may provide significant benefit this year. Here are some rules to follow:

1. Time of application: 1-2 inches of shoot growth
2. Rate: 250 ppm (12 oz/100 gal)

3. Single Spray: in our trials there was no advantage to split applications
4. Do not apply to Empire or Stayman - causes fruit cracking
5. Apogee makes shoots less susceptible to fire blight. It does not affect the fire blight bacterium. Thus, if conditions are favorable for blight you need the normal streptomycin sprays.
6. Use a surfactant
7. If spray water high pH is a problem, add an equivalent weight to the weight of Apogee of ammonium sulfate to the tank.

Managing Young Trees

Source: Dave Ferree and Diane Miller, OSU Dept. of Horticulture and Crop Science

Young trees should be pruned as little as possible, as each pruning cut you make delays cropping. Shoots that potentially will be upright and compete with the leader should be dealt with during the growing season. As trees start to grow it may be desirable to rub off the 2-4 buds just below the terminal to avoid leader competition. If you don't get them rubbed off, the use of toothpicks or wooden snap clothespins when they are 3-4 inches long will force wide crotch angles. This practice slows their growth 15-20% so they won't compete with the leader. If you find excessive vigorous growth later in the season (12-14 inches), rubber bands or electrical tape can be used to bend or tie shoots to decrease their growth and cause them to form flower buds.

If you have done a good job controlling growth and you have ample bloom on young trees, be prepared to hand thin to prevent over cropping. Allowing young trees to over crop reduces yield for 3-4 years, and if the crop pulls all the scaffolds or leader down it is very difficult to restore balance to the tree.

How much to thin? If growth is generally weak, remove all the fruit. If terminal shoot growth is ample (15-30 inches) remove all fruit from the tips and all lateral bloom from one year wood. Thin the remainder to 6-8 inches between fruit.

Berry Press Releases Soon Available

Source: Sandra Kuhn, OSU Berry Coordinator

The OSU Centers at Piketon, in collaboration with the OSU Department of Communications and Technology, are assembling press release packets for Ohio berry producers. These packets will be available to growers for use in advertising their berry crops. The packets will include press releases on production, research, and health benefits, plus pictures, recipes, and brochures for use in their farm markets.

The strawberry packet will be available May 4 at this site <http://www.ag.ohio-state.edu/~prec> Click on the Program Area, then the Horticulture link, and finally the Berry link. Other berry packets will be

available in June. You can also receive a packet by mail by contacting Melissa Fitzpatrick at (800) 297-2072.

We encourage you to use the information with your local media and customize it to fit your own operation. For more information or suggestions for the packets, call Sandy Kuhn at the number above or e-mail her at kuhn.37@osu.edu
Happy Berry Season!

Brown Rot of Stone Fruit

Source: Bill Turechek & Cathy Heidenreich, Plant Pathology, Geneva, NY

Introduction

Brown rot, caused by the fungus *Monilinia fructicola*, is a major disease of peaches, cherries, plums, prunes, nectarines, and apricots. The fungus can infect the blossoms, immature and mature fruit, spurs, and small branches. Complete crop loss can occur if weather conditions favor disease development and fungicide protection is lacking during bloom and just before ripening. Additional losses are possible in storage if fruit are not handled properly during harvest.

Symptoms on blossoms, twigs, and fruit

Disease symptoms are similar on all stone fruit. Infected flowers turn brown, wither, and either become fixed to twigs as a gummy mass or drop like unpollinated flowers. In order of susceptibility, apricot is most susceptible to blossom blight, followed by prune, sweet cherry, peach, sour cherry, and then plum. If infected blossoms do not drop off, the fungus may grow through the pedicel (flower stem) into the twig below, causing twig infections. Twigs develop elliptical to fusoid cankers with profuse gumming at the margin between diseased and healthy tissue. Leaves on infected shoots turn brown and wither, but remain attached. In some instances, twigs are girdled and killed.

On the fruit, brown rot infections first appear as soft brown spots. These rapidly expand and become covered with powdery masses of tan spores (called conidia). Infections may spread rapidly from fruit to fruit, particularly if environmental conditions are favorable and the fruit are touching one another. Under optimum conditions, an entire fruit may be rotted in 48 hrs! All stone fruits become increasingly susceptible to brown rot as they ripen. Rotted fruits typically shrink into a wrinkled "mummy" as they dry on the tree. Both immature and mature fruit infected with brown rot tend to remain on the tree and form mummies.

Disease cycle

M. fructicola overwinters in dried infected fruit called mummies, or in cankers on twigs and branches. Mummies remain either hanging in the trees or scattered on the orchard floor during the winter. Both may produce spores that infect blossoms and young fruit in the spring, but the mummies that remain in the trees are more important than those on the ground. Two types of spores are produced from mummified fruit. Ascospores are produced only on mummies that have fallen to the ground and have been partially covered with soil. Ascospores are less common in the Northeast than in semi-arid climates. In the Northeast, most brown rot infections develop from conidia that are produced on mummies and infected twigs. Conidia are produced in late spring when temperatures range from 55-77°

F and are spread by wind, rain, and insects.

Warm, wet weather favors brown rot infection. Although conidia can germinate and infect at temperatures between 32 and 90°F, optimum temperature for blossom infection of peach range from 70 to 77°F. Under these conditions, spores germinate and penetrate plant cells on wet blossom surfaces in as little as 5 hours. In tart cherries, significant blossom infection can occur following 12 hours of wetness at 60°F or 24 hours of wetness at 50°F. Blossom blight may also develop at lower temperatures with prolonged wetting periods.

Disease Management

Orchard sanitation is essential for reducing disease pressure. Prune out mummified fruit and cankers during the dormant season and either burn or bury them deep in the soil. Remove wild or neglected stone fruit trees in the area that may serve as reservoirs for disease. Fruits thinned after pit hardening are more likely to become infected on the orchard floor than those thinned prior to pit hardening because they decompose less rapidly, but the importance of thinned fruit on brown rot epidemics in the Northeast has not been studied.

Any type of injury will provide a point of entry for the fungus: hail damage, insect feeding wounds, bird pecks, fruit cracking, limb rubs, twig punctures, picking/packing injuries. It is essential to control fruit feeding insects such as plum curculio, oriental fruit moth, and tarnished plant bug. Take special care during harvest and packing not to puncture or bruise fruit. Cool fruit to as close to 32°F as possible after harvest.

Fungicide program

Some of the label information and restrictions for brown rot fungicides are summarized in Table 1. The protectant fungicides (Bravo, captan, sulfur) must be applied prior to a wetting period to be effective. If disease pressure is not very high, captan may be a good choice for blossom blight sprays because it is economical. Be aware, however, that captan can be phytotoxic to some sweet cherry and plum varieties. Bravo is a better choice for brown rot control on sour cherries and plums because it also controls black knot. Bravo is also the better choice when disease pressure is high, but it cannot be applied beyond shuck split.

The sterol-inhibiting (SI) fungicides include Elite, Indar, and Orbit. All of them are labeled for controlling blossom blight and can be applied again 2 to 3 weeks prior to harvest to control fruit rots. None of them are labeled for brown rot control at shuck split or first cover, but if applied at these times to control other diseases on the label (mildew, peach scab, cherry leaf spot, etc.) they will also suppress brown rot infections on green fruit. Labels for these products contain varying limitations concerning which stone fruit can be sprayed, spray timing, numbers of applications per season, etc., so read labels carefully. SI fungicides should not be used exclusively for both blossom blight and fruit rot; these fungicides must be rotated with non-SI fungicides for effective resistance management. The SI fungicides can provide 24-48 hrs of kickback activity if conditions prevented a timely application of a protectant fungicide prior to an infection period.

The benzimidazoles were once very effective brown rot fungicides. Widespread resistance to this class of fungicides has left them ineffective for most areas in New York State. The benzimidazoles may provide effective brown rot control in young orchards in isolated locations where resistant strains from older orchards are unlikely to be present. The benzimidazoles used in combinations with other brown rot fungicides can suppress black knot if applied at 7-day intervals between white bud and shuck split.

Rovral is a dicarboximide fungicide labeled for use against blossom blight. It should be used as a protective spray, although it does have limited post-infection activity (~48 hrs at 68°F). Vanguard is in a different class of fungicides and, like Rovral, is labeled for only blossom blight control. It is labeled for use on all stone fruits EXCEPT sweet cherry. Vanguard has yet to be extensively tested for blossom blight in New York.

Final Considerations

For many stone fruits, only one blossom blight spray may be needed unless disease pressure is high. Where large numbers of fruit were left unharvested the year before, or when conditions are warm (above 60°F) and wet, more than one blossom blight application will be required. Petal fall applications are essential if bloom sprays were omitted and conditions turn warm and wet at petal fall. Fruit can be very susceptible to infection 1-3 weeks after shuck split, so shuck split and first cover sprays are important, especially in wet weather. Spray intervals should be tightened 3 weeks prior to harvest when fruit are most susceptible to brown rot. In order to manage disease resistance, SI fungicides such as Indar, Elite or Orbit should not be used continuously throughout the season for BOTH blossom blight AND fruit rot control. Use captan or other fungicides intermittently with preharvest SI fungicides. Lastly, ALWAYS remember to check product labels for timing and rates of application.

Table 1. Use patterns of various fungicides for control of brown rot on stone fruit.

Chemical Category	Fungicide	PB(1)	Bloom	PF	SS	Covers	PHI
Protectants (3)	Bravo	ACNP(2)	ACNP	ACNP	ACNP	****	0
	Captan	ACNP	ACNP	ACNP	*CNP	ACNP	0
	Ferbam	****	****	*C**	*C**	*C**	7
	Sulfur	*CNP	*CNP	*CNP	*CNP	*CNP	0
Sterol Inhibitors (4)	Elite	*CN*	*CN*	*CN*	****	*CN*	0
	Indar	ACN*	ACN*	ACN*	****	ACN*	0
	Orbit	ACNP	ACNP	ACNP	****	ACN*	0
Benzimidazoles (5)	Topsin-M	ACNP	ACNP	ACNP	ACNP	ACNP	1
	Benlate	ACNP	ACNP	****	****	ACNP	3
Dicarboximide (6)	Rovral	ACNP	ACNP	ACNP	****	****	0
Analino-pyrimidine (7)	Vanguard	ACNP	ACNP	****	****	****	0

(1) PB = pre-bloom (red bud for apricot, popcorn for cherry, pink for peach and nectarine, and white bud for plum and prune; PF = petal fall; SS = shuck split; Covers = cover sprays; PHI = pre-harvest interval.

(2) A = Apricot; C = Cherry; N = Peach and Nectarine; P = Plum and Prune.

(3) Do not apply Bravo after shuck split. On apricot, petal fall applications of captan should be made at 75% petal fall. Application of sulfur to mature nectarines may cause discoloration.

(4) Elite is also labeled on cherry for control of leaf spot and powdery mildew beginning at petal fall until terminal growth stops. On peaches, Indar can be applied for control of peach scab and on cherries for control of leaf spot beginning at shuck split at 10-14-day intervals up to harvest. Do not apply Orbit

to 'Stanley type' prunes; do not apply to prunes after petal fall; do not apply more than 12 oz from early bloom through petal fall; no more than 2 applications are permitted for fruit rot control. Two additional applications can be applied to all stone fruits for control of powdery mildew or, on cherry, for leaf spot.

(5) If resistance is not an issue, these may be used in a fungicide resistance program. Fruit rot applications can begin 3 weeks prior to harvest. Topsin-M and Benlate should not be used alone.

(6) Do not make more than 2 applications per season.

(7) Do not apply to sweet cherries.

Herbicides for Newly Planted Strawberries

Source: Richard C. Funt, OSU Dept. of Horticulture and Crop Science

In 1978 a research study at Michigan State University using 4 to 6 pounds of Devrinol per acre applied prior to May 15 showed good weed control and no loss of runner root formation in July. This study answered the question: How can I get long term (100 days) annual weed control on newly set strawberries without affecting plant growth and setting of runners in a matted row system?

A recent report from Penn State using Allstar, Northeaster, and Earliglow strawberry cultivars and Devrinol 50 WP - 4 lbs/A at planting, plus Sinbar 2 oz. on June 11, hand weeding on July 16 plus Devrinol 50 WP - 4 lbs/A on July 19 indicated the lowest percent weed cover in early September. Weed cover in this treatment was comparable to a hand weeding at three times during the establishing year. Further, the Devrinol treatment had similar yields as the hand weeded treatment. The percentage of daughter plants rooted was not decreased, significantly. Allstar had higher yields than Northeaster and Earliglow. Fruit size was not affected by any herbicide treatment.

Management of weeds is the most important aspect of strawberry production in Ohio. Cultivation, plastic, fumigation and/or herbicides are generally used. Each have their advantages in weed control, but the cost of either one or a combination of methods is a major consideration. At Cornell University in 1998, new cultivation tools were evaluated along with costs for the first growing season. Over 100 hours of labor were required and costs ranged from \$650 to \$1400/acre.

Yields were highest with cultivation and herbicide. Management of weeds prior to planting is an important part of the annual cost of weed control. A 2- to 5-year plan (strategy) of field location, crop rotation, perennial weed control before strawberries, adding weed free mulches, green manures or composts, and reduction of weeds blowing into the field is vital. The maintenance of a weed free strawberry field is best with the control of weeds and soil cultivation before planting. Applying the appropriate weed control or herbicide to weed free soil for maximum plant production which is effective and economical is important.

Sources:

Demchak and Orzolek. 2001 Herbicides for strawberry establishment evaluated. PA. Veg. Grower News - p. 19.

Pritts. 2000. New cultivation tools for weed control in newly planted matted row strawberries. N. Amer. Small Fruit Conference. Proc. Vol. 17.

Obituary for Kenneth Karl Varian

Source: Jennifer Hungerford, Program Assistant, Ohio Fruit Growers Society

I'm sorry to inform you that past Ohio Fruit Growers Society president (1966) Kenneth Karl Varian of East Canton, Ohio passed away on Monday, April 23, 2001 at the age of 79. Myers Kreighbaum-Sanders Funeral Home in East Canton is handling the arrangements. Their phone number is (330) 488-0222. The funeral will be Saturday at 11:00 a.m. at Mount Tabor United Methodist Church in East Canton. Donations in Kenny Varian's name may be made to Mount Tabor United Methodist Church, Osnaburg Historical Society, or East Canton Lions Club.

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: 4/18 (pink) to 4/25 (bloom)

CM: 0 (first week)

RBLR: 13 (down from 24)

SJS: 0 (first week)

STLM: 2 (down from 11)

Peach: 4/18 (bloom) to 4/25 (petalfall)

LPTB: 0 (first week)

OFM: 1 (up from 0)

Wayne County Report, April 26 - Ron Becker, Program Assistant, Agriculture & IPM

Traps used: STLM = Wing trap, Others = MultiPher

Apple: 4/13-4/19

CM: .30 (up from 0)

RBLR: 34.9 (up from 32.8)

STLM: 269 (down from 844)

PTB: 0 (unchanged)

LPTB: 0 (unchanged)

OFM: 12 (up from 0)

Apples vary from pink to blossom with light thrip damage. With weather monitors at both Rittman and Moreland showing no scab infection periods since 4/11, growers are using only minimal fungicide applications for protection. One grower mentioned this one time cutback would save him about \$500 in spray costs. Rust is now being found on both black raspberries and blackberries.

Site: East District; Erie & Lorain Counties

Source: Jim Mutchler, IPM Scout

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

Apple: 4/25/01

SJS: trap set

STLM: trap set

Peach:

OFM trap set

RBLR: trap set

Apple in pink. Peach, pear, and tart cherry in bloom.

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: 4/18-4/24/01

SJS: 0 (first week)

STLM: 8 (first week)

RBLR: 17 (first week)

Peach:

OFM: 1 (first week)

RBLR: 52 (first week)

Apple in pink. Peach, pear, and tart cherry in bloom.

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

	Dates (Green tip = April 9)	Level of Scab Activity
Observed	April 9, 10, 12-15, 17-19, 21, 23-25	Active, but no infection
	April 11, 16, 20, 22	Possible infection & damage
Forecast	April 26-30; May 1-5	Active, but no infection expected

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

Location	Actual DD Accumulations 4/25/01				Normal Degree Day Accumulations for 5/2/01	
	Base 43° F	Base 43° F normal accumulations	Base 50° F	Base 50° F normal accumulations	Base 43° F	Base 50° F
Akron - Canton	272	310	151	117	371	153
Cincinnati	482	542	255	226	625	286
Cleveland	266	291	147	111	348	144
Columbus	419	396	226	157	466	202
Dayton	377	401	211	161	472	208
Mansfield	281	301	163	115	360	150
Norwalk	255	270	144	100	328	133
Piketon	492	565	263	245	647	307
Toledo	235	256	122	94	314	126
Wooster	302	282	173	101	338	133
Youngstown	263	272	146	101	327	133

Phenology - Thanks to *Scaffolds Fruit Journal* (Art Agnello)

Coming Events	Range of Degree Day Accumulations	
	Base 43° F	Base 50° F
Rosy apple aphid nymphs present - 1 st egg hatch	91-291	45-148
Green apple aphids present	127-297	54-156
	129-587	44-338

Oriental fruit moth - 1 st adult catch		
Spotted tentiform leafminer - 1 st oviposition	141-319	48-154
European red mite egg hatch	157-358	74-208
San Jose scale 1 st catch	189-704	69-385
Lesser peachtree borer 1 st catch	224-946	110-553

We appreciate the support given by the following OSU Departments toward the creation of this newsletter:

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Department of Horticulture and Crop Science, Dr. Dave Ferree, Dr. Dick Funt, and Dr. Diane Miller

Department of Plant Pathology, Dr. Mike Ellis

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| [Back](#) |