



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: Ohio Berry Tour, Central Ohio. Starts mid-afternoon on the 27th and ends mid-afternoon on the 28th. Tour stops include Rhoads Farm Market (Circleville), Circle S Farms (Grove City), Schacht Farm Market (Canal Winchester), Jacquemine Farms (Plain City), and Doran's Farm Market (New Albany). We will keep you posted as definite times are set and registration information becomes available.

August 3: OVPGA & Ohio Fruit Growers Society Young Grower Tour, Stops at Farmers Produce Auction (Mt. Hope), Graf Growers (Akron), Hilgert's Berry Farm (Mogadore), K.W. Zellers & Sons (Hartville), and Hartville Kitchen.

Licking County Summer Twilight School, stay tuned for details.

[Newly Set Raspberries and Irrigation](#)

Source: Richard C. Funt, Ohio Small Fruit Team, Ohio State University, Columbus

Raspberries and blackberries require considerable care before, during, and after planting. The major concern is the roots. When plants arrive at the farm, check the roots for moisture. Lightly water or add damp paper towels to the roots, but do not over water or leave puddles in plastic lined boxes. Keep plants at or close to 35° F if you must hold them for 3 to 10 days. After 10 days put nursery mature or bare root dormant plants in moist peat moss.

Harden off plants after transport and storage by bringing the plants slowly into sunlight and warm temperatures, 50 to 65° F. Start about 5 to 10 days before planting by slowly adding 2 to 4 hours of light per day under cool temperatures. Increase to 8 hours per day and increase temperature to 65° F over the next 3 to 5 days and keep roots moist. This is best for green tissue, cultured plug plants for increasing plant root growth and decreasing plant "shock" on hot, dry days immediately after planting. Do not allow plants to sit in storage or an outside area if temperatures are expected to drop below 32° F.

When transporting plants to the field, water plants before and after setting the plants. Take buckets of water to the field, soak plants 3 to 5 minutes, and use a water wheel or transplant solution as the plant is set. This keeps good root moisture before planting. Watering helps to settle the dry soil (and air pockets are reduced) around the roots. Good soil root contact is vital for plant survival. If no irrigation is ready within 2 to 3 days after planting and the weather is warm and dry, hand water the plants by sprayer, handgun, or backpack. Remember, when planting on raised beds, that raised beds will dry out more quickly than flat, non-ridged beds. A 90 to 95% plant survival should be the outcome. However, after 30 days a new planting without watering could have a 60 to 70% plant survival. Be sure the trickle tube is set close to the young plants. Revisit the surface placed tubing and do not allow 'snaking' of the tube to get it far from the young plant.

Bramble transplants require considerable care from the time they are received and for the first 30 days after planting. Achieving a 90% plant survival takes management, but a good start means earlier returns in the life of the planting. Early returns, high yields, and good prices are the pathways to profitability and success.

Apple Scab Update

Source: Wayne Wilcox, Plant Pathology, Cornell University, Geneva, Scaffolds Fruit Journal Number 6

This is shaping up to be a spring that is "made" for the advantageous use of strobilurin fungicides ("strobies") to control apple scab. Early green tip infection periods may or may not have been important in orchards that may or may not have received appropriate fungicidal protection. Growers who applied a half rate of mancozeb in alternate rows before the long and wet infection period that we just finished, now wonder whether or not they retained enough fungicide to do the job. Undoubtedly, many growers are doing just fine at this point. But a betting man would be wise to wager that, if they don't do something about it, other growers will be looking at cluster leaf scab as fruit buds become exposed and start to develop into apples. And we all know that the most important source (by far) of fruit scab is spores of the scab fungus that develop on cluster leaf lesions. Cluster leaf scab is just plain bad news.

As we've explained before, one of the primary strengths of the strobies is their ability to suppress the formation of spores from recent infections. In our Geneva trials in years with similarities to this one, applications of Sovran (1996, 1998) or Flint (1998) provided outstanding control of cluster leaf scab

when they were made more than a week after one or more

important early infection periods. At the end of the year, there was significantly less **fruit** scab in these treatments than in any other of the other treatments in the trial, primarily because we controlled the critical source of inoculum coming from early cluster leaf infections.

I have heard of a lot of skepticism about the strobies out in the industry. Some of it is based on price (OK, this is a judgement call). Some of it is based on misinformation or lack of experience. Some of it is based on bad experiences with other "new" products that failed to live up to their marketing hype. All I can say to these latter concerns is this is why public institutions conduct disease control trials. I have gotten poor results with some newer recent introductions (e.g., Procure and Vanguard) and have said so (and have heard the dismay from interested parties afterwards). Similarly, I have gotten very good to excellent results with Sovran and Flint, and am saying so. I don't care what fungicide a grower does or doesn't use. I **do** care that they have the best information available to make an informed decision.

Thus, if it were my orchard and I had any doubt about my scab control up to this point, I'd apply a strobie sometime this week before the next rain comes. This should suppress sporulation from any previous infections and provide good protective activity for another week or more. When such suppressive activity is needed, full rates are important, e.g., our experience with Sovran suggests that the 1.6 oz/100 gallons (dilute basis) rate will be more effective than the 1.0 oz/100 gal rate. Currently, we don't know if it's important for continued suppression to apply a second (back-to-back) application 7-10 days later, but the safe answer is "yes".

One last issue: Growers who have been burned by poor fruit scab control with the SI fungicides (without a protectant) are understandably reluctant to apply the strobies without also tank-mixing a protectant. Again, I point to the results from trials that Dave Rosenberger and I have both conducted in multiple blocks over multiple years. Both Sovran and Flint provide excellent control of fruit scab when used alone. If scab is the only issue, I think you'd be better off spending the same money on a full rate of the strobie, rather than a marginal rate plus a half rate of protectant.

Manage Mildew to Avoid Fungicide Resistance

Source: Dave Rosenberger, Plant Pathology, Cornell University, Highland, Scaffolds Fruit Journal No. 6

Powdery mildew is one of the three or four most important diseases of apples in New York State, but the importance of mildew is often overlooked because early season fungicide programs are targeted primarily for apple scab. Considerable attention has been focused on resistance management for scab fungicides, but resistance management for apple mildew may be even more important because we have fewer fungicides that are effective against mildew. The recent registrations of the strobilurin fungicides (Sovran and Flint) provide new tools for resistance management for powdery mildew on apples.

For the past 10 years or more, the only consistently effective mildewcides were sulfur and the SI fungicides (Bayleton, Rubigan, Nova, and Procure). The benzimidazole fungicides (Benlate and Topsin M) were effective in some orchards, but in other orchards they were ineffective because the powdery mildew fungus had developed resistance to the benzimidazoles.

Subjective observations suggest that the SI fungicides have also lost some effectiveness against mildew

in some orchards. When it was first introduced, Bayleton controlled mildew very well at rates of 1.5 oz/A. By the mid-1990's, however, consultants and growers noted that Bayleton provided effective mildew control only when used at rates of 3 or 4 oz/A. If apple mildew follows that same pattern that has been observed in grapes, the reduced effectiveness of Bayleton will soon be followed by a similar reduction in effectiveness of other SI fungicides against mildew. In fact, some apple growers reported that Nova did not adequately control mildew in their orchards last summer, although factors other than fungicide resistance may have contributed to some of these failures.

Flint and Sovran have been tested and promoted primarily as scab fungicides, but they are very effective against powdery mildew. In orchards where mildew is a concern, either Flint or Sovran should be rotated with SI fungicides to reduce selection pressure for resistance to both of these fungicide groups. An ideal program would involve applications of Flint or Sovran at tight cluster and pink to reduce sporulation of overwintering mildew. SI fungicides could then be used at petal fall and in cover sprays. In orchards where Nova failed to provide adequate control last year, growers might want to revert to cover sprays of Sovran or Flint after the two SI applications at petal fall and first cover.

In the Hudson Valley and other regions where rust diseases are a concern, the SI fungicides should be used at tight cluster and pink to prevent rust diseases on fruit. Flint or Sovran can then be used at petal fall and first cover. Either rotation (starting with SIs or starting with strobilurins) will provide an effective resistance-management strategy for mildew.

The resistance management strategy can be strengthened by using a third fungicide in cover sprays after first cover. Sulfur at 2-3 lb/A will suppress mildew, provided disease pressure is low as would be expected following two strobilurin sprays plus two SI sprays.

In some orchards, Benlate or Topsin M might also provide adequate control of mildew during summer. Benzimidazole-resistant mildew may have been introduced with nursery stock in the early to mid-1980's when nurseries depended on Benlate and Topsin M to control mildew in the nursery row. After the SI fungicides were registered, nurseries shifted away from benzimidazoles. At the same time, growers stopped using benzimidazole for scab control because of resistance problems. As a result, benzimidazole-resistant mildew may be prevalent in orchards that are 15 to 20 years old, whereas these fungicides may still work reasonably well as mildewcides in some of the younger orchards.

There is no easy test for fungicide resistance in apple mildew, so the only way to know if a fungicide is working is through careful field observations. The benzimidazole fungicides are not dependable enough to be recommended for mildew control between tight cluster and first cover. However, they might be worth evaluating as mildewcides after first cover because their failure at that time of year usually will not be disastrous, although it may allow build-up of inoculum for next year.

The most common mistake that growers make in controlling mildew is omission of prebloom mildewcide sprays. Primary mildew becomes visible on infected flower buds at tight cluster. These primary infections provide inoculum for infecting new leaves, so mildewcide applications should begin at tight cluster or very soon thereafter.

When the benzimidazole and SI fungicides were still at peak effectiveness, many growers found that they could delay the first SI application until pink, bloom, or even petal fall and still achieve reasonable mildew control. Omitting prebloom mildewcide sprays gives the fungus time to establish numerous secondary infections on new foliage. As with apple scab, it is much harder to control a large population than to control a small population. When mildewcide applications are delayed until petal fall, the mildewcides are often being deployed as eradicators against a population that is much larger than it

would have been at tight cluster or pink. This not only reduces effectiveness of the program, it also creates much greater selection pressure for fungicide resistance.

The apple industry is fortunate to have the strobilurins registered on apples before the SI fungicides lost all effectiveness against apple mildew. The new fungicides provide an option of rotating mildewcides with different modes of action. If growers fail to rotate mildewcides, apple powdery mildew could conceivably develop resistance to both the SIs and the strobilurin fungicide groups, thereby leaving apple growers with sulfur as their primary mildewcide.

Goal Herbicide for Strawberry Section 18 Approval for 2000

Source: Richard C. Funt, Ohio Small Fruit Team, Ohio State University, Columbus

The USEPA has granted a Section 18 to the Ohio Department of Agriculture for Goal herbicide to control broadleaf weeds in strawberries. It may be applied at 1 to 2 pints (0.25 to 0.5 lbs active) per broadcast acre. Do not apply more than 2 pints (0.5 lbs active/A) per season.

Strawberry plants must be dormant at the time of application. At renovation Goal herbicide may be applied between June 20 and July 20, 2000, immediately after the leaves have been removed by mowing and before new growth occurs. Further, Goal may be applied between October 15 and December 15, 2000 when strawberry plants are dormant. This generally occurs after three frosts when temperatures drop to 24 to 26 degrees F.

Goal 2XL herbicide should provide pre-emergence control/suppression of wild buckwheat, groundsel, lambsquarter, knotweed, mayweed, pigweed, pineapple-weed and smartweed. On certain weeds it can provide post emergence control, too.

This is the third year in which Ohio has received an emergency exemption for Goal on strawberries. Progress toward product registration under IR-4 has been generated with residue data on strawberries from several states. Human health risk assessment under FQPA will be completed during the re-registration process. While IR-4 submitted data in 2000, it is possible that registration for use of Goal on strawberries may not occur for several years.

Growers who intend to use Goal herbicide in 2000 are required to have the Section 18 label in their possession at the time of application. Read and follow all label restrictions.

Blackberry Cultivars - Flavor and Shipping

Source: Richard C. Funt, Ohio Small Fruit Team, Ohio State University, Columbus

Not all blackberries are equal. Some are erect and some are semi-erect. Some have thorns and some are thornless. Some have big berries, some ripen earlier than others. What about taste, firmness related to transporting berries, and shelf-life after transport?

Navaho is a thornless, erect type that has very firm fruit and ripens after Arapaho. Various storage and

transport reports indicate it is the best in both categories. Under constant temperatures of 36⁰ F, Navaho can be expected to have good quality after a maximum of 10 days of storage. Fresh market blackberries must have less than 1% decay to meet grading standards (1). The firmness of Navaho after seven days of storage was highest among four blackberry cultivars tested.

Arapaho is a new thornless release that ripens before Navaho. It holds up well in transport to fresh markets for up to three days (1). In southern Oklahoma, Arapaho ripens in mid-June and Navaho mid-June to early July.

Chester ripens after Arapaho and Navaho and is semi-erect. It is firm and has good shelf life. In Ohio, Chester ripens in early August and in some years may have berries until Labor day.

Triple Crown is a semi-erect thornless blackberry, ripening before Chester. It tends to bruise (which leads to molds) and is larger than Chester. It may not be as winter hardy as Chester.

What about flavor? Recent Internet discussions indicate that cultivars, such as Navaho, Kiowa, Triple Crown, Illini Hardy, and Arapaho have good to excellent flavor. Chester is considered good with a tart-sweet flavor but others are sweet-tart. Illini Hardy is sweeter than Chester.

What about firmness? Navaho, Arapaho, Chester, Chickasaw, and Kiowa are firm, based on research and grower experience. Growers indicate that local and wholesale markets should use containers which handle large size berries in a single layer. Smaller sized berries as Illini Hardy could have two layers in a plastic container, but the weight of each berry bruises other berries. Illini Hardy is considered firm but not as firm as those listed.

What about yield? The following produce high yields in their respective categories:

Erect thorny - Kiowa, Shawnee, and Chickasaw
Erect thornless - Arapaho and Apache
Semi-erect and thornless - Chester, Hull, and Black Satin.

Not all blackberries are the same. With new cultivar releases, there is a blackberry for every market and grower who has the soil, climate, and market for blackberries. The demand for fresh blackberries in the Midwest is greater than supply.

Reference:

1. P. Perkin-Veazie, J. L. Collins and J.D. Clark. 1999 Cultivar and storage temperature effects on the shelf-life of blackberry fruit. *Fruit Varieties Journal* 53(4):201-208.

First Aid Instructions Revised for Pesticide Product Labels

Source: http://www.epa.gov/PR_Notices/

On April 11, EPA proposed to revise the format and content of first aid advice on all pesticide product labels to make them easier to read. While companies can start to use this revision immediately, the Agency will accept public comments for 30 days. The revision incorporates recommendations by the medical community and the Consumer Labeling Initiative. Changes to labels will include: section

headings labeled "First Aid" instead of "Statement of Practical Treatment"; new format designs; first aid advice for each pathway of exposure through the mouth, skin, inhalation, and eye. The goal is to revise all product labels by October 1, 2001. For more information, please contact Amy Breedlove in the Office of Pesticide Programs at (703) 308-9069, or by e-mail at: breedlove.amy@epa.gov. For a copy of the notice see: http://www.epa.gov/PR_Notices/.

Oriental Fruit Moth

Source: Angus Howitt, Common Tree Fruit Pests

During May, June, and July, when the terminal parts of rapidly growing twigs are succulent, they are frequently attacked by the Oriental fruit moth. Succulent peach twigs are exceedingly attractive to the larvae. Plum, apple, and cherry may occasionally be moderately infested. Young trees are usually more heavily attacked, and rapidly growing trees have more injured twigs than stunted trees.

Sprays to control the first generation should be applied about 6 days after the first peak adult emergence. This application usually coincides with sprays for plum curculio control. Apply sprays for the second generation 3 days after peak adult emergence to coincide with peak egg laying of the second generation.

The braconid wasp *Macrocentrus ancylivorus* is an important parasite that destroys many of the first- and second-generation larvae.

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:	Variogated leafroller

Site: Waterman Lab, Columbus (4/20-4/26)

Source: Dr. Celeste Welty, OSU Extension Entomologist

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

Apple

RBLR: 0 (down from 4)

Peach

OFM: 0 (down from

1)
 STLM: 43 (down from 214) LPTB: 0
 (unchanged)
 DWB: 0 (unchanged) PTB: 0 (unchanged)
 SJS: 0 (first report)
 CM: 0 (first report; mean of 3
 traps)
 OBLR: set up
 TABM: set up
 VLR: set up

Site: East District; Erie & Lorain Counties (4/20-4/26)

Source: Jim Mutchler, IPM Scout

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

Apple

Peach

RBLR: 11.5 (up from 7) OFM: 1.9 (up from 1.5)

STLM: 675 (up from 662) RBLR: 27.2 (up from 7)

Beneficials at work: Lady beetle

Fruit development: Peach set heavy so far.

Site: West District; Huron, Ottawa, & Sandusky (4/19-4/25)

Source: Gene Horner, IPM Scout

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

Apple

Peach

RBLR: 29.3 (up from 9) OFM: 1.25 (up from 0)

STLM: 513 (down from 1240) RBLR: 25.0 (up from 10)

Site: Wayne County (4/20-4/26)

Source: Ron Becker, Extension Program Assistant

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

Apple			Peach		
West	East	North	West	East	North
RBLR: 23	RBLR: 8	PC: 0	OFM: 27		LPTB: 0

STLM: 50	STLM: 8				
PC: 1					

Heavy scab infection period on 22nd, orchard in full bloom.

Other pests: Grape flea beetle causing 5-7% loss of buds in grapes.

Beneficials at work: good pollinator activity, lady bugs and brown lacewings also found.

Northern Ohio Apple Scab Activity - SkyBit Product

SkyBit based on observations: April 1, 5, 6, 7, 9-12, 24-26; active but no infection

April 2-4, 8, 17-23; possible infection & damage

Based on Forecasts: April 27-30, May 1-6; active but no infection

North Central Ohio Spectrum Technologies Orchard Monitors

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

Location	Actual DD Accumulations April 19, 2000		Forecasted Degree Day Accumulations April 26, 2000			
	Base 43° F	Base 50° F	Base 43° F	Normal	Base 50° F	Normal
Akron - Canton	357	135	418	371	175	165
Cincinnati	513	213	597	625	275	303
Cleveland	338	126	395	348	163	155
Columbus	491	205	561	466	253	216
Dayton	466	185	538	472	235	222
Mansfield	342	131	402	360	169	161
Norwalk	312	107	370	328	144	145
Toledo	347	115	405	314	152	138
Wooster	393	157	450	338	192	144
Youngstown	348	126	403	327	161	144

Phenology

Coming Events	Range of Degree Day Accumulations	
	Base 43 F	Base 50 F
San Jose scale 1 st catch	189-704	69-385
Lesser peachtree borer 1 st catch	224-946	110-553
White apple leafhopper nymphs present	236-708	123-404
Oriental fruit moth 1 st flight peak	259-606	96-298
First codling moth catch	273-805	141-491
Spotted tentiform leafminer sap-feeders present	295-628	130-325
European red mite egg hatch complete	361-484	183-298

Thanks to Scaffolds Fruit Journal (Art Agnello)

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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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