



# Newsletter Extension

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## Calendar

**June 22 & 23: North Central Horticultural Risk Management Workshop**, Marriott Hotel, 305 E. Washington Center Road, Exit 112 off I-69, Fort Wayne, Indiana. The focus of this workshop is "managing the variations in profits and protecting business equity". Contact Ted Gastier for a registration form and additional information.

**June 30: 1999 Ohio Fruit Growers Society Annual Summer Tour**, Eshleman Fruit Farm, near the intersection of U.S. 20 and St. Rte. 101, Clyde, OH. Tour wagons begin rolling at 8:00 a.m., lunch is at noon, and annual business meeting begins at 1:00 p.m.

**July 21 & 22: Small Fruit Tour**, Wooster/Mt. Hope area. Pre-tour gathering begins Wednesday evening at Maurer Farms near Wooster. Included will be demonstrations of weed and disease control, strawberry renovation, drip irrigation, and raspberry plots. Dinner is compliments of the Maurers. Thursday morning the group begins its self-guided, self-driven tour at Farmers' Produce Auction in Mt. Hope. Lunch is on your own. Demonstrations at OARDC in Wooster round out the afternoon, and the day ends at Moreland Fruit Farm near Wooster with a walking tour, discussion, and fruit pies. \$5.00 registration fee. For more information contact Mike Pullins at (614) 249-24424.

**August 5: Young Grower Tour**, northwest Ohio. Designed for, but not limited to, producers and their spouses age 40 and under. More information will follow.

**"Stretching" the Use of Good Old Rubber Bands**

*Source: Ron Perry & Gail Byler, Horticulture, Michigan State University's Fruit Crop Advisory Team Alert, May 21, 1999*

We are always trying new methods and materials to help us in training trees on dwarfing rootstocks. In following our Slender Spindle and Vertical Axe training protocols, the goal is to develop branches, especially those in the Table of Production Zone (lower tier of branches), in a horizontal angle. Over the years we have tried many ideas and materials: cotton string, wire spreaders, tape, plastic, and rubber bands (elastics). Of all the materials, the one we favor is the blue rubber bands purchased from orchard suppliers. They are large bands that withstand UV light break down. After a few months in the tree, these inexpensive bands will have served their purpose and disintegrate. We have always found them to be most useful in training new succulent branches, which yield readily to the slightest pressure exerted by rubber bands. In many situations, looping two bands together to double their length makes them more effective in training branches.

The training of young sweet cherries on dwarfing rootstocks has led us to trying a new technique in making the same rubber bands even more useful and multi-faceted in purpose. The challenge in training sweet cherry branches and keeping them flat is that they are more resistant to pressure than the willowy apple branches. We are further challenged with using materials that are non-abrasive (rubber bands) to bark to avoid bacterial canker entry points. We found that when we doubled the bands and looped them together (using four bands), we could double their strength and put enough pressure on branches to orient them to the desired angle. As with the single strength bands, some follow-up adjustment may be necessary due to the effects of temperature and stress. We started applying this technique to woody apple branches with similar results. We even tried tripling the band strength and found a unique way to take two of the loops and attach them to the leader and allow four loops free to train four separate succulent branches. This latter technique will be ideal later in the summer when we begin tying apple and cherry branches down in the upper tier of canopies. We should be able to reduce tying time (labor) by having to make only one attachment point on the leader/support stake or at other points in the tree.

Give it a try and maybe you'll learn to appreciate the versatility of rubber bands in your orchard.

## **Dogwood Borer** *Synanthedon scitula*

*Source: Amy Irish-Brown, ICM Fruit Agent, Ron Perry Horticulture; Michigan State's Fruit CAT, May 21, 1999*

In recent findings at the Clarksville Horticulture Experiment Station, it has been found that mounding the rootstock shanks with sand in November 1998 has killed dogwood borer that had infested the burr knots of M9 clonal rootstocks. It is also thought that mounding right now, before egg laying occurs, will deter dogwood borer from laying eggs in burr knots.

It is suggested that growers should mound sand now over M9 and related rootstocks. By doing so, you can bypass a trunk-applied insecticide if the burr knots are covered before egg laying starts (usually late June and into July). Using a French hoe works well.

## **Strawberry Harvest News**

*Source: Dr. Richard C. Funt, Extension Specialist, Small Fruits, OSU*

The central Ohio strawberry crop is ahead of schedule by 7 to 10 days with Earliglow being picked on May 25 and 26 with good, large, sweet berries. Cool weather has slowed the 14 day advance, but is keeping berries firm. With more warm weather projected and some replenished moisture, this crop will move fast after Memorial Day. Prices are near 1998 for pick-your-own, ranging from 75 to 95 cents per pound and from \$1.75 to \$2.40 per quart ready-picked.

The OSU economic analysis indicates that there is a loss of investment with 5000 pounds/acre and \$.80/lb pick-your-own. This translates to a similar loss if ready-picked berries are sold at \$1.55 per pound or \$2.25 per quart.

In eastern Ohio the growers are more widely scattered and I am being questioned as to where people can pick strawberries. The decline in strawberry farms in that region is the major issue. The 1997 Ag census shows a decline in acreage in Ohio since 1992. I have not heard of any major replanting of strawberries taking place and would project a deficit for the next several years.

## **More Strawberry Harvest News**

*Source: Ron Becker, Program Assistant, Agriculture & IPM, OSU Extension, Wayne County*

Strawberries are just starting to ripen. You can go to a 1/4 acre patch and get a few quarts, but it will still be a few days before we get into any kind of a good harvest. We did find one berry with gray mold on it. It was a patch that had been sprayed during bloom, but also one where the straw was sufficient in some spots and sparse in others. No button berries have been found, but there were a few of the ripe ones showing a little slug damage.

## **Fungicide Resistance: What You Should Know**

*Source: Annemiek Schilder & Alan Jones, Botany & Plant Pathology, Michigan State University's Fruit Crop Advisory Team Alert, May 21, 1999*

Continuous application of fungicides exerts selection pressure on pathogen populations. Individuals with reduced sensitivity to a particular fungicide have a selective advantage over sensitive individuals when exposed. Over time, a shift in fungicide sensitivity may occur in the entire pathogen population, resulting in diminished levels of disease control with the same amount of chemicals applied. It should be noted that diminished disease control can also be caused by improper fungicide application, extremely high disease pressure, or other factors not related to the presence of resistant pathogen strains.

Reduced fungicide sensitivity usually results from one or more mutations, which change the affinity of the chemical target site or increase inactivation or secretion of the chemical by fungal cells. Chemicals with a single-site mode of action are more likely to lead to development of resistance, since a single mutation may be all that is needed to give the pathogen a chance of survival. On the other hand, protective compounds with multi-site modes of action, such as Captan, have been used extensively for decades without development of field resistance. Resistance to sterol biosynthesis inhibitors (SBIs or SIs), which have a single-site mode of action, has been reported in *Venturia inaequalis*, which causes

apple scab, and *Uncinula necator*, which causes grape powdery mildew. Diminished control of apple scab with SIs has also been observed in some Michigan apple orchards. Resistance of the apple scab pathogen to SIs has been shown at experimental sites. Last year, reduced efficacy of Nova against grape powdery mildew was observed in a vineyard in SW Michigan.

Cross-resistance refers to a situation where a pathogen with resistance to a particular fungicide also turns out to be resistant to another fungicide. This happens frequently with fungicides that share the same mode of action. For instance, a fungus strain resistant to Rubigan will also express some resistance when exposed to Nova, since both of these fungicides are SIs that affect the demethylation step in the sterol biosynthesis pathway. These fungicides are therefore termed demethylation inhibitors (DMIs). There is, however, no cross-resistance between DMIs and the morpholines, a group of sterol biosynthesis inhibitors (e.g. fenpropimorph) which act on a different step of the sterol biosynthesis pathway. No morpholines are currently registered for disease control on fruit crops.

Even though differences in efficacy will be apparent between fungicides with the same mode of action, it is generally not a good idea to alternate or mix them. Rather, devise a program which incorporates fungicides with different modes of action to optimize disease control and minimize the risk of resistance development. Resistance prevention strategies help prevent unexpected crop losses and prolong the effective lifetime of a fungicide. Fungicides registered for fruit crops are listed by group with the same mode of action in Table 1. An even better strategy is to incorporate other methods of disease control, such as host plant resistance, cultural methods, and disease prediction, to reduce the overall need for fungicides and, thereby, the selection pressure on pathogen populations.

**Table 1. Risk of Resistance Development to Fungicides Registered for Use on Fruit Crops**

Chemical Group	Fungicide	Active Ingredient	Risk of Resistance Development
Anilinopyrimidines (APs)	Vanguard	cyprodinil	High
Benzimidazoles	Benlate	benomyl	High
	Mertect	thiabendazole	High
	Topsin-M	thiophanate methyl	High
Heterocyclic compounds	Captan	captan	Very low
	Captec	captan	Very low
Dithiocarbamates	Carbamate	ferbam	Very low
	Thiram	thiram	Very low
	Ziram	ziram	Very low
Ethylenebis-dithiocarbamates	Dithane	mancozeb	Very low

(EBDCs)	Manzate	mancozeb	Very low
	Penncozeb	mancozeb	Very low
	Polyram	metiram	Very low
Aliphatic nitrogens	Syllit	dodine	Moderate
Dicarboximides	Rovral	iprodione	High
	Ronilan	vinclozolin	High
Inorganics	Microthiol Special	sulfur	Very low
	Wettable Sulfur	sulfur	Very low
	Champ	cupric hydroxide	Low
	Kocide	cupric hydroxide	Low
	Copper Sulfate	copper sulfate	Low
Organophosphates	Aliette	fosetyl-Al	Low
Phenylamides	Ridomil	metalaxyl	High
Demethylation inhibitors (DMIs) (subgroup of sterol inhibitors (SIs))	Bayleton	triadimefon	Moderate
	Elite	tebuconazole	Moderate
	Indar	fenbuconazole	Moderate
	Nova	myclobutanil	Moderate
	Orbit	propiconazole	Moderate
	Procure	triflumizole	Moderate
	rubigan	fenarimol	Moderate
Strobilurins	Abound	azoxystrobin	Low to moderate
	Sovran	kresoxim methyl	Low to moderate
Substituted aromatics	Bravo	chlorothalonil	Very low
	Bothran	dichloran	Moderate

## 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: Variegated leafroller

**Site: Waterman Farm, Columbus**

*Source: Dr. Celeste Welty, OSU Extension Entomologist*

**Apple:** 5/19 - 5/26

RBLR: 0 (unchanged)  
STLM: 179 (up from 1)  
SJS: 0 (unchanged)  
CM (mean of 3 traps): 5.0 (up from 4.7)  
TABM: 25 (up from 7)  
VLR: 9 (up from 4)

**Peach:**

OFM: 9 (up from 8)  
LPTB: 1 (unchanged)

**Site: East District; Erie & Lorain Counties**

*Source: Jim Mutchler, IPM Scout*

**Apple:** 5/19 - 5/25

RBLR: 0.1 (down from 2.3)  
STLM: 92.2 (down from 548)  
SJS: 0 (down from 1.9)  
CM: 2.6 (down from 4.7)  
VLR: 8 (up from 3)  
OBLR: 0 (down from 2)

**Peach:**

OFM: 23.8 (up from 12.8)  
RBLR: 0.8 (down from 7.3)

**Site: West District; Huron, Ottawa, & Sandusky Counties**

*Source: Gene Horner, IPM Scout*

**Apple:** 5/19 - 5/25

RBLR: 0.9 (down from 1.4)  
STLM: 110.29 (down from 229)  
SJS: 0.1 (down from 1)

**Peach:**

OFM: 3 (unchanged)  
RBLR: 1.5 (down from 6.5)

**Site: Wayne County**

*Source: Ron Becker, Program Assistant, Agriculture & IPM, OSU Extension*

**Apple:** 5/19 - 5/26

RBLR: 0 (down from 2.9)  
STLM: 3 (down from 9.3)  
CM: 15.78 (up from 14.6)  
OBLR: 0 (unchanged)

**Peach:**

OFM: 48 (up from 42)  
LPTB: 22.5 (down from 25)

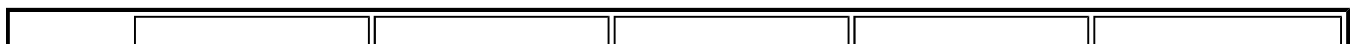
The codling moth trap catch in the Moreland orchard is still going up. The 250 DD since biofix was reached Monday; spraying will take place as soon as conditions permit. Pests found in low numbers were white apple leafhopper, aphids, European red mite. Fruit damaged by plum curculio is still very low. One leaf with a mine was also found the first we have found this season. Raspberries were checked in two locations with one location having one plant showing rust, the other showing about two dozen plants with rust. Wild brambles along the road show it very readily. For the most part it has been too cold to find any insect activity in fruits.

**Site: Piketon Research Center, Pike County**

*Source: Brad Bergesford, Ag Extension Agent, Piketon*

Strawberry harvest is in full swing. Rainfalls from 0.5 to 1.5 inches were a big help for many crops. Cool evening temperatures in the high 40's have slowed down harvest somewhat. Strawberry planting continues. Blackbirds have been seen in the blueberry crops already. Tree fruit is enlarging quite well. No reports of severe codling moth pressure.

**Ohio Apple Scab and Fire Blight Watch - SkyBit Products**



	Central		North Central		Eastern Highlands		North East		West	
Date	apple scab	fire blight	apple scab	fire blight	apple scab	fire blight	apple scab	fire blight	apple scab	fire blight
May 8	pi	a,ni	pi	a,ni	pi	pi	pi	a,ni	pi	a,ni
9	pi	a,ni	pi	a,ni	pi	a,ni	pi	a,ni	pi	a,ni
10	a,ni	a,ni	a,ni	na	a,ni	a,ni	a,ni	a,ni	a,ni	na
11	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
12	a,ni	na	a,ni	a,ni	a,ni	na	a,ni	na	a,ni	a,ni
13	pi	a,ni	pi	a,ni	pi	a,ni	a,ni	a,ni	a,ni	a,ni
14	pi	a,ni	pi	a,ni	pi	a,ni	pi	a,ni	a,ni	na
15	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
16	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
17	a,ni	na	a,ni	na	a,ni	na	a,ni	na	pi	pi
18	pi	pi	pi	pi	pi	pi	pi	pi	pi	pi
19	pi	a,ni	pi	pi	pi	pi	pi	a,ni	a,ni	na
20	a,ni	na	a,ni	na	a,ni	a,ni	a,ni	a,ni	a,ni	na
21	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
22	pi	pi	pi	pi	pi	pi	pi	pi	pi	pi
23	pi	pi	pi	pi	pi	pi	pi	pi	pi	pi
24	pi	pi	pi	pi	pi	a,ni	pi	pi	pi	a,ni
25	pi	a,ni	pi	a,ni	pi	a,ni	pi	a,ni	a,ni	na
26	a,ni	a,ni	a,ni	na	a,ni	a,ni	a,ni	na	a,ni	na

**Based on Forecasts**

27	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
28	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
29	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
30	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na
31	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na



June 1	a,ni	na	a,ni	na	a,ni	na	a,ni	pi	a,ni	na
2	a,ni	na	a,ni	na	a,ni	na	a,ni	na	a,ni	na

na = not active; a,ni = active but no infection; pi = possible infection & damage

**Degree Day Accumulations for Selected Ohio Sites  
January 1, 1999 to date indicated**

Location	Actual DD Accumulations May 26, 1999		Forecasted Degree Day Accumulations June 2, 1999			
	Base 43° F	Base 50° F	Base 43° F	Normal	Base 50° F	Normal
Akron - Canton	750	378	916	871	495	470
Cincinnati	1033	553	1216	1272	687	742
Cleveland	747	376	913	828	493	444
Columbus	1005	555	1182	1030	683	578
Dayton	915	483	1096	1049	615	596
Elyria	808	437	972	889	553	488
Fremont	681	363	857	832	490	448
Mansfield	773	398	945	852	521	458
Norwalk	727	364	901	812	489	438
Toledo	756	391	926	801	512	431
Wooster	820	430	992	809	553	423
Youngstown	712	361	872	782	472	411

**Phenology**

Coming Events	Range of Degree Day Accumulations	
	Base 43° F	Base 50° F

Spotted tentiform leafminer 1 <sup>st</sup> flight subsides	489-978	270-636
Redbanded leafroller 1 <sup>st</sup> flight subsides	518-1104	255-658
Codling moth 1 <sup>st</sup> flight peak	547-1346	307-824
San Jose scale 1 <sup>st</sup> flight peak	581-761	308-449
Lesser peachtree borer flight peak	733-2330	392-1526
Peachtree borer 1 <sup>st</sup> catch	735-1321	299-988
European red mite summer egg hatch	773-938	442-582
Oriental fruit moth 1 <sup>st</sup> flight subsides	781-1574	442-1026

Thanks to Scaffolds Fruit Journal (Art Agnello)

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](mailto:gastier.1@osu.edu)

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TDD # 1 (800) 589-8292 (Ohio only) or (614) 292-1868

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