



# Newsletter

Extension

## Fruit ICM News

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## Calendar

**Note: The Ohio Fruit ICM News will not be published next week to allow the editor's attendance at the NC Regional Small Farm Workshop.**

**March 28: North Central Fruit Crops Breakfast**, Vanson's Restaurant, Monroeville, Ohio, 8:00 a.m. followed by pesticide update at 9:00 a.m. Contact Ted Gastier at Huron County Extension, (419) 668-8210.

## Oil Sprays for Apples

*Source: Rick Foster, Purdue Dept. of Entomology, Facts for Fancy Fruit 2001-01 March 14, 2001*

One of the first and most important parts of a good insect and mite management program is the application of an early season oil spray to control European red mites, San Jose scale, and several species of aphids. Scales overwinter on the tree as nymphs, and European red mites and aphids

overwinter as eggs. Because two-spotted spider mites do not overwinter on the tree, oil sprays are not an effective control measure for that species. Although scales, European red mite eggs, and aphid eggs may appear to be inactive, they are living organisms and, therefore, must respire, or breathe. The application of the oil creates an impervious layer over the pests that will not allow the exchange of gases, causing the pest to die of suffocation.

Oil sprays should be applied between 1/2-inch green and tight cluster. Apply a 2% rate at the 1/2 inch green stage or a 1% rate at tight cluster. Oil sprays should not be applied during, immediately before, or immediately after freezing weather. For best results, apply when temperatures are 45ø F or above, and not just before rain showers. Remember that the oils are not directly toxic to the pests. They only work by suffocation. Therefore, the better the coverage, the better control you will receive. Our data have shown that mite control is improved if oil is applied at tight cluster rather than at 1/2 inch green.

One question that has arisen as a result of our research that showed that predator mites overwinter on the tree is: **What effect will early season oil sprays have on predator populations?** In other words, will the oil sprays kill the predators and create more serious European red mite populations? Our research showed that oil sprays, whether applied at green tip or tight cluster, had absolutely no detrimental effect on mite predators.

Therefore, we recommend the use of early season oil sprays as a good management practice. If you plan to use Apollo, Savey, Agrimek, Pyramite, or some other material for mite management, a reasonable question to ask is: **Is it still necessary to apply an early season oil spray?** I believe that the oil application is still a good idea, for two reasons. First, it will provide control of aphids and scales, as well as European red mites. Secondly, I believe that the use of oil will reduce the likelihood of developing resistance to these miticides. Therefore, I still recommend oil sprays even if other miticides are going to be used. The addition of an insecticide with your oil spray usually will not increase control of any of the three pests by more than a small amount.

## Peach Leaf Curl

*Source: Paul Pecknold, Purdue Dept. of Botany and Plant Pathology, Facts for Fancy Fruit 2001-01 March 14, 2001*

Peach trees need all the help they can get; that includes a spray for control of peach leaf curl. If you have not yet sprayed for leaf curl get on your tractor and spray the first chance you get; however, if peach trees are at, or past bud swell, you're too late. If you always seem to be too late, consider applying your leaf curl spray at leaf fall this autumn, then you won't have to worry about spraying in spring.

## Pruning Grapes

*Source: Bruce Bordelon, Purdue Dept. of Horticulture, Facts for Fancy Fruit 2001-01 March 14, 2001*

March is the most common month for pruning grapes. The threat of extremely cold weather has passed, and we can evaluate any winter injury to vines that may have occurred. By April buds will begin to swell and it is important that pruning is completed prior to bud swell to avoid damage to the tender buds.

Winter injury in grapes this year should be minimal. However, there is likely to be some damage on cold-tender varieties. You should assess bud damage prior to pruning so that adjustments in the balanced pruning formula can be made based on the amount of bud loss.

Typically, if less than 25% of the buds are damaged you can prune normally. If 25-40% of the buds are damaged then you'll want to adjust the number of buds retained accordingly. For example, if 40% of the buds are damaged then 60% are live. If you need 40 buds per vine for the proper crop load, then you'll have to leave 68 buds to end up with 40 primary shoots. To determine how to adjust the bud number, multiply the inverse of the percentage of live buds ( $1/.60$ ) times the desired number of buds ( $1/.60=1.7$ ;  $1.7 \times 40 = 68$  buds). If more than 40% of the buds are damaged then you'll probably want to do minimal pruning now and wait until after budbreak to determine where live buds occur in order to have an adequate number for balancing the vines.

Spring freeze damage can also be a significant economic problem for grape growers. A technique called long pruning or double pruning helps avoid spring frost and freeze damage, especially on varieties that tend to bud out early. The procedure utilizes the apical dominance of buds on the cane. The first buds to begin growing are those on the tip of the cane, while buds closer to the base begin growth later. This type of pruning is only applicable to spur or no-tie training systems. To perform long pruning, select canes to be used for fruiting spurs during the normal pruning practice, but leave those canes long, with 10-15 more buds than desired. Spurs are normally pruned to 5 or 6 nodes for fruiting, but if they are not cut back, then the extra buds will help delay the development of the desired basal 5-6 buds, which helps avoid frost injury.

After the date of the last probable spring freeze has passed, the canes are shortened to the desired length to properly adjust the bud number for the vine. Growth of the basal buds can be delayed by as much as two weeks if weather conditions are favorable. While this procedure requires an extra trip through the vineyard, it can mean the difference between a full crop and little or no crop.

## Pruning Brambles

*Source: Bruce Bordelon, Purdue Dept. of Horticulture, Facts for Fancy Fruit 2001-01 March 14, 2001*

This is a good time to finish pruning summer-bearing brambles. Last year's fruited canes should be removed now if they were not removed last summer or fall. Remove weak or spindly floricanes and thin to 2-4 canes per foot of row. Laterals on blackberries and black and purple raspberries should be trimmed back to about 2/3 to 3/4 of their original length to promote flowering on strong wood. Red raspberry canes can be tipped if desired, but should not be tipped more than 1/4 of the cane length. If the planting is trellised, the canes should be tied to the wires now before growth starts. Fall bearing types should be mowed to the ground before growth begins for a fall-only harvest, or remove the fruited tips if a summer and fall harvest is desired. Remove and destroy the prunings to help prevent anthracnose.

## Pruning Blueberries

*Source: Bruce Bordelon, Purdue Dept. of Horticulture, Facts for Fancy Fruit 2001-01 March 14, 2001*  
Spring is the best time to prune blueberries. Winter injured wood is easily identified and should be

removed. Try to establish an even number of canes of various age classes. A well-pruned blueberry bush should have about 15-25 canes (depending on age, cultivar and growth habit) with approximately 1/3 in the 5-7 year-old class, 1/3 in the 2-4 year-old class, and 1/3 new canes for renewal. Pruning should open the center of the bush to encourage new cane growth, and promote an upright growth habit by removing low, drooping branches. Detailed pruning to remove weak growth in the tops of the canes will reduce the number of fruit and improve fruit size.

## **Raspberry Anthracnose**

*Source: Paul Pecknold, Purdue Dept. of Botany and Plant Pathology, Facts for Fancy Fruit 2001-01 March 14, 2001*

The most important spray you will apply this season for control of anthracnose on brambles is the delayed dormant spray of lime sulfur. **DON'T FORGET IT!** Liquid lime-sulfur at 20 gallons per acre should be applied when new leaves are exposed 1/4 to 3/4 inches. If you are late in your application and don't spray until a few leaves have unfolded, cut the rate to 10 gallons per acre. **NOTE:** There is greater risk of lime-sulfur burn when applied at this later time.

## **Straw Removal From Strawberries**

*Source: Bruce Bordelon, Purdue Dept. of Horticulture, Facts for Fancy Fruit 2001-01 March 14, 2001*

Studies done in Illinois indicate the proper time to remove straw from matted row strawberries is when the bare soil temperature at 4 inches averages about 40-43° F. According to data from the Purdue Applied Meteorology Group, bare soil temperatures are averaging in the high 30's for most areas of the state. Soil temperatures should rise steadily through the month of March and should reach the low 40's over the next two weeks. Once temperatures reach this range, the straw should be raked off the tops of the beds and into the row middles. Leaving some straw on top of the beds for plants to grow up through provides a clean surface for fruit. Straw should be removed from strawberry beds before the plants grow enough to cause yellowing of foliage. Allowing the leaves to become etiolated (yellowed with long petioles) due to late straw removal can reduce yields by as much as 25%. However, uncovering the plants early may promote early growth and increase chances of frost or freeze injury. This is a judgment call that growers have to make for themselves. After the straw is removed, the frost protection irrigation equipment should be set up.

## **Canada Reopens Border to Stone Fruit**

*Source: George M. Greene II, from Fruit Growers News*

Canadian fruit growers can buy plum pox (PPV) susceptible Prunus (stone fruit) plant material from suppliers within the United States for the first time since late 1999. An interim order, effective January 8, from the Canadian Food Inspection Agency (CFIA), Plant Health and Production Division, has allowed importation of PPV-susceptible Prunus plant material from the U. S. In October 1999, the CFIA

was notified of the presence of plum pox virus in Adams County in Pennsylvania. The CFIA suspended the entry of Prunus propagative material, such as almond, apricot, nectarine, peach, and plum but excluded some cherry species. The interim policy was issued because the U.S. completed a national survey of propagative sources without finding PPV outside Pennsylvania, according to the CFIA Web site.

## Stone Fruit Cultivars That Tested Positive in Canada

*Source: Fruit Times Vol. 20, No. 3, March 13, 2001*

During the 2000 growing season there was an extensive testing program in Canada to determine the spread of Plum Pox Virus. Below is a list of cultivars that tested positive. Some of the cultivars are not grown in Pennsylvania, but there are many that are. While symptoms can vary between cultivars with some showing worse fruit symptoms than others, it is important to remember that in North America we have no known immune cultivars. In Europe several breeding programs have been trying to develop new cultivars that either show reduced symptoms on the fruit or ideally are immune. However, until, and if, that ever happens we must assume that all cultivars grown in North America will be susceptible.

**Peach cultivars:** Baby Gold #5, Baby Gold #7, Brighton, Cresthaven, Early Redhaven, Garnet Beauty, Harrow Beauty, Harrow Dawn, Harrow Diamond, Harson, Jubilee, Loring, Newhaven, Redhaven, Veecling, Venture, Vinegold, Vulcan, 791105

**Nectarine cultivars:** Fantasia, Redgold

**Plums:** Shiro

For more information about Plum Pox Virus contact: CFIA Plum Pox Virus General Inquiries (toll-free): 1-877-854-1599 or visit the CFIA Website: <http://www.cfia-acia.agr.ca>

## Early Season Pear Psylla Control

*Source: Fruit Times Vol. 20, No. 3, March 13, 2001*

Egg laying by overwintering pear psylla females is expected to begin in mid-March in south central Pennsylvania. A single female can produce over 600 eggs. An effective early spring psylla control program may be crucial for the entire season. In orchards with a history of pear psylla problems, the first sprays should include oil in order to suppress egg laying and some adulticide to eliminate overwintering adults. Depending on when you start, use the following oil rates: 3% oil at dormant bud, 2% oil at budburst, and 1% up to white bud. You can make two applications of oil, one at dormant to bud swell (2%) and one at bud burst (2%). Thorough coverage is required for good control of psylla during each application. The main reason for applying oil is to "buy" some time. This oil schedule has provided excellent egg laying suppression. Pear psylla females do not like to lay eggs on oily surfaces. The oil spray at budburst should be combined with an adulticide to kill the adults. The pyrethroids (Asana or permethrin) are still fairly effective for this spray. From a resistance standpoint, it is good to note that a new insecticide Esteem (pyriproxyfen) is also registered for use against pear psylla between swollen bud

and petal fall. The mode of action of pyriproxyfen is different from that of ordinary neuro-toxic insecticides. The compound acts by suppressing embryogenesis within the insect egg (ovicidal activity) and by inhibiting metamorphosis and adult emergence. Two applications of Esteem are allowed per season. Please remember that the best options for the multi-season pear psylla control have to include the "three R" recommendation: rotate - rotate - rotate.

## Using Degree-Day Accumulations with Insect Phenology

Source: *Common Tree Fruit Pests* by Angus H. Howitt

For years, fruit growers have indirectly used the accumulation of physiological time to correctly apply insecticide sprays. They associate the arrival or development of a particular insect pest with flower bud or leaf development of the fruit tree. Since temperature influences tree growth much as it affects insect growth, growers use the tree as a natural indicator (or accumulator) of physiological time. In addition, this accumulator provides distinct cues (e.g., green tip, pink, and petalfall stages) when the time is right to apply controls. This natural timer is most useful early in the growing season when the tree growth stages are readily observable. However, a system for making accurate predictions of insect life history events is needed throughout the growing season.

Entomologists have established methods of measuring physiological time and can estimate the rate of insect growth in response to daily temperatures. Each insect stage requires the accumulation of a certain number of physiological time units, called degree-days (DD), before molting to the next stage. The degree-day concept is an important one. The following outlines a simple method of computing degree-days, given daily high and low temperatures.

Average Daily Temperature	- Lower Developmental Threshold	= Degree Days
<b>Example</b>		
$(80^{\circ} \text{ F} + 40^{\circ} \text{ F}) / 2$	- $50^{\circ} \text{ F}$	= 10 Degree-days

Calculating degree-day totals for each day provides an accurate estimate of physiological time accumulations. Several other accurate ways have been developed to determine degree-days, including the sine curve method, which involves hourly maximum-minimum temperature readings.

By studying insect development in the field and laboratory, entomologists have determined the LDTs (base temperatures) and degree-day totals for the life stages of some insects. The codling moth provides an example of how this information can be used to manage an insect pest. The LDT for the codling moth is 50 degrees F. The following chart summarizes the degree-day totals associated with critical events in the life history of this pest.

<b>Events in the life history of the codling moth, predicted by physiological time (Degree-day accumulations)<sup>1</sup></b>	
<i>Life stage or event</i>	<i>DD accumulation from Biofix 1<sup>2</sup></i>
<b>First Generation</b>	
First spring adults	0

First egg hatch	243±21
Peak adult emergence	252±38
50% egg hatch	. 465±16
<b>Second Generation</b>	
50% egg hatch	1302±44
Peak adult emergence	1329±80
<sup>1</sup> Data from Riedl and Croft (1978). Management of the Codling Moth in Michigan.	
<sup>2</sup> Biofix 1 refers to the first male codling moth catch in a pheromone trap.	

Degree-days are accumulated from first male catch in a pheromone trap. By starting the DD accumulation after this easily observed biological cue, growers can make a more accurate prediction of subsequent events in the insect's life history than if DD were accumulated from some arbitrary chronological starting date such as January 1. (NOTE: Traditionally, this starting date for insects and mites has been March 1 or April 1.) Assuming the optimum timings of insecticide controls were at first egg hatch, 50% egg hatch of the first generation and 50% egg hatch of the second generation, sprays would be applied after the accumulation of approximately 240, 460, and 1,302 degree-days, respectively. (NOTE: The degree-day model above is based on DD starting with the first male catch (biofix) instead of DD starting on March 1 or April 1.)

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

Location	Actual DD Accumulations March 14, 2001				Normal Degree Day Accumulations for March 28, 2001	
	Base 43° F	Base 43° F normal accumulations	Base 50° F	Base 50° F normal accumulations	Base 43° F	Base 50° F
Akron - Canton	15	49	1	12	91	30
Cincinnati	74	108	8	32	191	69
Cleveland	16	47	1	13	88	30
Columbus	40	68	2	20	127	45
Dayton	27	68	0	19	125	43
Mansfield	10	46	0	13	88	30
Norwalk	10	38	0	10	73	23
Piketon	87	116	19	40	210	75
Toledo	4	30	0	8	63	20

Wooster	19	44	2	11	85	26
Youngstown	20	41	6	10	79	24

### Phenology

Coming Events	Range of Degree Day Accumulations	
	Base 43° F	Base 50° F
Pear psylla adults active	2-121	0-49
Pear psylla 1 <sup>st</sup> oviposition	25-147	1-72
Redbanded leafroller 1 <sup>st</sup> catch	32-480	5-251
Tarnished plant bug active	71-536	34-299
Spotted tentiform leafminer 1 <sup>st</sup> adult catch	73-433	17-251
Rosy apple aphid nymphs present - 1 <sup>st</sup> egg hatch	91-291	45-148

*Thanks to Scaffolds Fruit Journal (Art Agnello)*

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