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Calendar

February 17-19, 2002: Ohio Grape - Wine Short Course, Wyndham Dublin Hotel, Dublin, Ohio. This three day program includes sessions on marketing, winemaking, viticulture, farmland preservation, wine tasting, grape disease research, wildlife problems, and grape/wine pests, among others. Contact Dave Ferree (ferree.1@osu.edu), Todd Steiner (steiner.4@osu.edu) or Dave Scurlock (scurlock.2@osu.edu) for information. You can also log on at http://www.ohiowines.org.

February 26, 2002: Mid American Ag and Hort Services (MAAHS) Labor Seminar, Days Inn in Findlay, Ohio. Information about this seminar is contained in a newsletter that can be obtained by clicking this highlighted text. In order to view this newsletter you must have Adobe Reader installed on your computer. If you do not have Adobe Reader on your computer you can receive a copy by clicking on this text Adobe Reader.

March 27, 2002: Fruit Crops Breakfast, Vanson's Restaurant, U.S. Rte. 20 and St. Rte. 99, Monroeville, OH, 8:00 a.m. Guest presenter will be Dr. Dick Funt, who will discuss cultural practices that enhance fruit IPM.

March 27, 2002: North-Central Ohio Pruning Clinic, Skitter Brae, 3222 Laylin Road, Norwalk, OH, 1:00 p.m. This session begins with a potluck lunch at noon. Bring a dish to share; tableware and beverage provided. Pruning demonstration on new and abandoned fruit trees presented by Dr. Dick Funt. Fee is $2.00 and is payable at the door. Bring a pair of pruning shears and loppers. Dress appropriately; workshop will be conducted regardless of the weather. For more information, contact Ohio State University Extension, Huron County at 419-668-8219.

Topsin-M Correction

Source: Mike Ellis, OSU Extension Plant Pathologist

The inclusion of grapes and pears on the Topsin-M label as suggested in the last Fruit ICM News was premature. The manufacturer, Cerexagri, is expecting EPA approval in time for this growing season. However, in the meantime, Topsin-M is NOT labeled for use on grapes or pears.

Chill Hours Revisited

Source: 1998 Handbook of Peach and Nectarine Varieties, W.R. Okie, USDA Agricultural Handbook Number 714, 1998.

Peter Hurst, Purdue University Horticulturalist, raised a legitimate question about our use in the last Fruit ICM News of zero F rather than zero C when calculating chill hours. Below is the description of three different approaches to gauge and monitor chilling requirements. We had chosen the oldest approach by Weinberger in determining chill hours, as that method is supported by our software.

Chilling Requirements (Chill)

"Peach trees need cold weather during the winter in order for the buds to develop properly, so the tree will bloom and foliate normally. *Chilling requirement* refers to the duration and degree of cold needed for a particular variety. Over time, at least three different approaches have been developed to gauge and monitor chilling requirement. This earliest approach by Weinberger calculated *chill hours.*[359] Later a model was developed in Utah that calculated a *chill unit.* The Utah model has been revised several times. [14, 273] Recently, Erez and others developed a dynamic model that calculates *chilling portions*.[104]

"The figure given (in the text) under the category Chill represents the so-called Weinberger *chilling requirement* - the total number of hours below 7C (45F) that a variety needs during winter for its flower buds to develop and bloom normally.[359] Once this chilling occurs, the tree needs a certain amount of warm weather to bloom: about 5,000 degree-hours above 4.5C (or about 9,000 Farenheit degree-hours), or roughly 2 weeks at room temperature (20C). Most of the chill ratings in this handbook (*1998 Handbook of Peach and Nectarine Varieties*) were determined by comparing a variety's bloom date with the bloom date of a variety whose chill requirement was known (as opposed to attempting to force bloom after known quantities of chilling by periodically bringing cut shoots inside and determining the percentage open after 2 weeks).

"Weather conditions can dramatically speed or delay bloom progression. In the field, most varieties can bloom with 100-200 fewer chill hours than the rating specifies, but more heat will be needed, so bloom will be relatively delayed. In extreme cases of inadequate chilling, flower buds drop off, bloom occurs over a long span of time, flowers are malformed, fruit set is poor, and leaf bud break is erratic. [187] In years or regions where excessive chilling occurs, less heat is needed and bloom occurs rapidly when the weather turns warm.

"Chilling requirement is important in the Southeast, where winters are mild, temperatures fluctuate, and spring frosts occur. Time of bloom there depends on chilling requirement and winter temperatures (cold

and warm). The typical bloom at Byron, Georgia, is from late February (for 450-hour peaches) through late March (for 1,000-hour peaches). In contrast, bloom period in the Northeast may be compressed down to 1 week. Since 1976, cumulative chill hours (October 1 to February 15) at Byron have ranged from 808 to 1,608, with an average of 1,139.

"Varieties with low chilling requirements bloom reliably every year at Byron, but they are subject to spring frost damage because they bloom early. The variety Flordaking (400 hours) crops about 1 year in 3 at Byron. On the other hand, high chilling varieties do poorly in low chilling years but usually crop well in high chilling years. The southeastern peach grower must try to choose a mix of varieties that will crop most years, given the wide range of chilling from year to year.

"Growers in areas having consistently cold winters (such as the Northeast) or infrequent freezing temperatures (such as the San Joaquin Valley in California) are less concerned with chilling requirement. In northern areas, mid-winter bud hardiness is the primary concern. Low-chilling varieties tend to be less winter hardy, which is partly due to the selection criteria used in their area or origin. High-chilling varieties also vary in their cold hardiness. Generally, varieties developed in California or the Southeast are less hardy than northern varieties.

"Chilling requirements for leaf buds are not given, but they are usually similar or slightly higher than those for flowers. The time of ripening is a function of both bloom date and fruit developmental period, but not all early bloomers are early ripeners, nor is the converse true.

"While Weinberger chill hours are simple to calculate, most recent research shows that chilling is most effective at about 4C (40F) and less effective at higher or lower temperatures. In the southeastern United States, the Weinberger approach works well enough most years to gauge the progress during chilling accumulation. Temperatures below freezing are counted toward chilling satisfaction even if they are ineffective, but this is compensated for by not counting temperatures slightly above the Weinberger threshold of 7C (45F).

"In the newer Utah model, Richardson *chill units* vary with the temperature, with a maximum of 1 unit accumulating for each hour at 4.5C.[273] Therefore, when temperatures are predominately just above 7C, chill units but not chill hours are increased; at temperatures below 0C (32F) only chill hours are accumulated. Revisions of the Utah model include negation of accumulated chill units by temperatures above 16C (60F).

"Some years at Byron, Georgia, recorded chill hours exceed Richardson negated chill units, and other years chill hours approximate chill units. Since 1976, chill hours at Byron have run substantially higher than negated chill units. In other climates the reverse could be true.

"The Utah model also includes accumulation of postchill heat units that are asymmetrically temperature dependent, with a base of 4C, an optimum of 25C, and a maximum of 36C.[14] Some years at Byron, the Utah model does not correctly predict bloom, even with chilling negation limited to the previous 24-hour period.

"The dynamic model of Erez is the most recent attempt to produce a widely useable model. This approach views chilling satisfaction as a two-step process, with only the first step being reversible.[104] Accumulation of Erez portions generally parallels accumulation of chill units.

14. Anderson, J.L., E.A. Richardson, and C.D. Kesner. 1986. Validation of chill unit and flower bud phenology models for 'Montmorency' sour cherry. Acta Horticulturae 184:71-78

104. Erez, A., S. Fishman, G.C. Linsley-Noakes, and P. Allan. 1990. The dynamic model for rest completion in peach buds. Acta Horticulturae 276:165-174.

187. Lammerts, W.E. 1941. An evaluation of peach and nectarine varieties in terms of winter chilling requirements and breeding possibilities.. Porceedings of the American Society of Horticultural Science 39:205-211.

273. Richardson, E.A., S.D. Seeley, and D.R. Walker. 1974. A model for estimating the completion of rest for 'Redhaven' and 'Elberta' peach trees. HortScience 9:331-332.

359. Weinberger, J.H. 1950. Chilling requirements of peach varieties. Proceedings of the American Society for Horticultural Science 56:122-128.

Congratulations to Dave Ferree

Congratulations to Dr. Dave Ferree, who received the Outstanding Graduate Educator Award at the 2001 Annual Meeting of the American Society for Horticultural Science in Sacramento, California. The ASHS Career Award, made by the Awards Committee of the Society, is for distinguished contributions to graduate education in horticultural science. Recommendations included notes that Dave's students are the "backbone of US pomology today" with former students at Cornell, University of Arkansas, Penn State, University of Florida, Purdue, Ohio State, and Southern Illinois University. The Award was presented to Dave by ASHS Awards Committee Chair Don Maynard.

Manage Strawberry Diseases With Resistant Varieties

Source: John Hartman, Extension Plant Pathologist, Kentucky Fruit Facts, Jan/Feb 2002

Strawberry diseases can sometimes limit yields and profitability for fruit growers. To manage strawberry diseases it is important to use all strategies for disease management, including disease-suppressing cultural practices, chemical management, and resistant varieties. For some diseases, especially soil-borne diseases such as red stele and Verticillium wilt, resistant varieties are the most effective means of control.

Many commercial cultivars have good resistance and/or tolerance to Leaf Spot, Leaf Scorch, Red Stele, Verticillium Wilt, and Powdery Mildew. The more disease resistance within the program, the better. The following table lists ratings for disease resistance in several of the more commonly grown cultivars. This table was derived from the Midwest Small Fruit Pest Management Handbook, Bulletin 861, a cooperative extension service publication.

Disease Resistance of Several Strawberry Cultivars Commonly Grown in the Midwest

Cultivar Junebearing	Red Stele	Verticillium Wilt	Leaf Spot	Leaf Scorch	Powdery Mildew
Allstar[5]	VR[1]	R	R	R	R

Annapolis[5]	S	I	S	S	U
Blomidon	U	U	U	U	U
Canoga	I	I	R	R	U
Cardinal	S	S	R	R	R
Catskill	S	VR	S	R	R
Cavendish[5]	R	I	T-R	T-R	S
Delite	R[2]	R	R	T-R	S
Dalmarvel[4]	R	R	T-R	T-R	R
Earliglow	R[2]	T-R	T-R	R	I
Guardian	R[2]	T-R	T-R	R	S-I
Honeoye[5]	S	S	R	R	U
Jewel	S	S	R	R	U
Kent[5]	U	U	U	U	U
Lateglow[3]	R	R	T	T	T
Latestar[3]	R	R	T-R	T-R	T
Lester	R	R	R	R	R
Midway	R[2]	S-I	S	S	I
Noreaster	R	R	T-R	T-R	T
Primetime	R	R	T	T	T
Raritan	S	S	S	S	I
Redchief	R[2]	R	T-R	R	T-R
Scott	R	I-R	S-I	R	R
Seneca	S	S	U	U	U
Sparkle	S-R	S	S	S-I	R
Surecrop	R[2]	VR	T-R	T-R	U
Veestar	S	T	T	T	U
Everbearing					
Tribute	VR	T-R	T	T	R
Tristar	R	R	T	T	R

1. **VS** = very susceptible; **S** = susceptible; **I** = intermediate; **T** = tolerant; **R** = resistant; **VR** = very resistant; **U** = unknown.
Resistant characteristics of the cultivar usually preclude the need for other controls.

2. Resistant to several races of the red stele fungus

3. Susceptible to leaf blight

4. Delmarvel has resistance to Anthracnose foliage and fruit rot.

5. Highly susceptible to angular leaf spot (bacterial blight)

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