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Crop Conditions:

The coldest temperatures experienced this winter were on January 31 and February 1 for most places around the state. Common minimums were about —10F although temperatures as cold as —27F were recorded (see article). Temperatures have been variable over the past few weeks. Some warm days have occurred, but we've also experienced a few mornings with hard freezes. Early grape varieties were bleeding when pruned this week in southern Indiana and brambles were starting to leaf out. Strawberries are just starting to push new leaves but flower buds are not out of the crown. Blueberry buds are swollen.

Specialty Crops Marketing Search: We are pleased to announce that Dr. Jennifer Dennis has accepted the position of assistant professor of specialty crops marketing and will be joining us in June. Although it took longer than we initially anticipated to fill this position, the wait has been worth it and we are really pleased and excited to have Jennifer joining our team. I'd like to thank those of you in the industry who participated in the interview process and gave feedback on the candidates. (Hirst)

Subscription Notice: If you subscribe to the printed version of Facts for Fancy Fruit, check the mailing label on this issue. If there is a 03 in the corner we have no record of your payment for 2004 and this will be your last issue of the newsletter. If you want to continue your subscription please fill out the subscription form attached to this issue and send with a check for \$15.00 payable to Purdue University, to: Facts for Fancy Fruit, Department of Horticulture, 625 Agriculture Mall Drive,

Purdue University, West Lafayette, IN 47907-2010. If you feel there is an error, please contact Danielle Linback at (765) 494-1301.

Indiana Horticultural Congress: In January we hosted another successful IHC. Despite the poor weather, the meeting was well supported by both industry and vendors alike. Total attendance was over 700. We appreciate the support of the Office of the Commissioner of Agriculture for a grant to enable us to bring in more invited speakers this year. If you already have your 2005 calendars, the dates are January 24-26, 2005. (Hirst)

Cold Temperatures Hit State: A cold snap hit the state on Jan. 31- Feb. 1. The cold air mass kept temperatures low for over 24 hours in many places, resulting in significant damage to peach crops. Some of the minimum temperatures were: Angola-8, Bloomington -7, Crawfordsville -27, Greenfield -12, LaPorte -9, Lafayette -10 (although -23 was recorded at one weather station), Martinsville -16, Tell City +7, Terre Haute -16, Wabash -12. (Hirst)

Cider Contest Winners: In conjunction with the IHC, the Indiana Cider Contest was held again in January. Judged to make the best cider in Indiana, was Andy Hamilton who has just taken over Musgrave Orchard near Bloomington. Congratulations to the other entries who placed, John Beasley of Beasleys Orchard in Danville and Joe Black of Apple Hill Orchard near Vincennes.

While these 3 cider makers warrant special mention, we applaud all those who submitted entries — all were good and of premium quality. (Hirst)

Pruning Grapes: 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 is variable, but a section across the middle part of the state has reported some significant damage, especially 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 percent 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. Severe damage occurred in 2002 across the state and slight damage in some areas last year. 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 4 to 6 nodes for fruiting, but if they are not cut back, then the extra buds will help delay the development of the desired basal 4 to 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. (Bordelon)

Pruning Brambles: This is a good time to finish pruning summer-bearing brambles. Last years fruited canes

should be removed now if they were not removed last summer or fall. Remove weak or spindly floricanes and thin to 4-6 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 can be mowed to the ground now for a fall-only harvest, or the fruited tips can be removed if a summer and fall harvest is desired. Remove and destroy the prunings to help prevent anthracnose and botrytis. (Bordelon)

Pruning Blueberries: 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. (Bordelon)

Straw Removal on Strawberries: Studies done in Illinois indicate that proper time to remove straw from matted row strawberries is when the bare-soil temperature at 4 inches averages about 40-43°F. This usually coincides with mid to late March in central Indiana. According to data from the Purdue Applied Meteorology Group bare soil temperatures have been fluctuating between the high 30s and high 40s over the past two weeks. Soil temperatures should rise steadily through the month, so the straw should be raked off the tops of the beds and into the row middles if it hasn't already been done. 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. The Illinois research found that the difference between early removal and late removal increased first harvest by only 3 days, so there is no real advantage. After the straw is removed the frost protection irrigation equipment should be set up and tested. (Bordelon)

2004 Spray Guides: The revised 2004 Commercial Tree Fruit (ID-168) and Commercial Small Fruit and Grape (ID-169) Spray Guides are now available. The new issues contain the latest pesticide label information available at print-

ing time but, as always, you should read and follow the label directions. Several changes have occurred this year and all commercial growers should have a copy of the revised versions. The spray guides will be available at the regional meetings, through your local Cooperative Extension office, or directly from Agricultural Communication Service, Media Distribution Center at 1-888-EXT-INFO. (1-888-398-4636). The current version of the spray guides for both Tree Fruit and Small Fruit and Grapes is also available on the web at: <http://www.hort.purdue.edu/fruitveg/bulletinsmain.shtml>

Any changes in pesticide registrations that have occurred since printing will be listed under a special button on that web page. (Bordelon and Hirst)

Fire Blight: Dormant copper sprays are most beneficial in those years following severe fire blight. If you do feel copper sprays are needed, we suggest you apply copper to the entire orchard block, including non-susceptible cultivars. The reason for treating non-susceptible cultivars is that even normally fire blight resistant trees like Red Delicious can be colonized by the bacteria and serve as a source of infection during bloom. If copper sulfate (4 pounds per 100 gallons) is used be sure to apply it when trees are dormant. If applied late it may burn leaf tissue. Also, do not apply copper sulfate with oil; apply copper sulfate and dormant oil as separate sprays spaced at least 10 days apart. If copper sulfate is applied under poor drying conditions or later than silver tip,

plant injury can result. An alternative to copper sulfate are the fixed coppers such as Kocide and C-O-C-S; most fixed coppers do not have the compatibility problems of copper sulfate and can be tank mixed with early season oil sprays. Remember however that even fixed coppers, if applied after half-inch green, can cause fruit russeting in years when there is not enough rain to remove the copper residues before tight cluster. Note: when using copper sprays, growers must read the individual product label to ensure compliance with label restrictions. (Pecknold)

Collar Rot of Apple: Think back to late last summer, did trees in your orchard show premature leaf reddening, sparse, yellow foliage, and many small, highly colored fruit? Such symptoms, if accompanied by a canker (localized discolored tissue) at or just below ground level, are evidence of possible collar rot, caused by the soil-borne fungus, *Phytophthora*. If collar rot is suspected we advise the use of Ridomil Gold EC or Aliette 80WDG. We especially recommend these fungicides in those areas having poor drainage and heavy, clay-type soil. Be sure to treat surrounding healthy appearing trees, not just trees already showing severe symptoms of collar rot. Both these fungicides are best used to prevent collar rot.... not cure it. See ID-168, "2004 Indiana Commercial Tree Fruit Spray Guide", for further information. (Pecknold)

Powdery Mildew of Apple: The Pathologist's Almanac states: after a very cold winter there will be very little powdery mildew on apple; however, after a very mild winter powdery mildew may be severe. The reasoning behind this prediction is that mildew infected apple buds are much more apt to be killed off by severe cold. I'll let you decide how severe the winter cold was. However, if you do have mildew prone cultivars it might be wise to use a fungicide that will also control mildew in your early scab sprays. Nova and Rubigan are excellent for scab, powdery mildew and rust control. (Pecknold)

Peach Leaf Curl: 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. (Pecknold)

Raspberry anthracnose: 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. (Pecknold)

Grape Flea Beetle: The Grape flea beetle can be a serious pest of grapes because they feed on developing buds after final pruning. Lost buds can relate to a direct loss of yield. Grapes will be in early swell to budbreak across the state over the next two weeks and these are the stages most likely to be damaged from flea beetles. Scout vineyards for these insects or their damage and control if more than 5% of the buds have been damaged. Damage appears as holes eaten into the sides of buds. The insects are small (1/8 inch long) and shiny green, blue or black in appearance. They crawl quickly along the canes and tend to drop to the ground if disturbed. Incidence often occurs in outer rows adjacent to fence-rows or

woods, making spot spraying an option. Scout the planting carefully and apply insecticides only if needed. Damage from flea beetles usually decreases as buds break and shoots become 1/2 inch or longer. Sevin will provide excellent control of this insect. Refer to the label or ID-169 for complete recommendations. (Bordelon)

Upcoming Meetings:

April 6 - East Indiana Horticultural Society. Minnestrista Cultural Center, Muncie. 6.00 pm. Contact Dave Clamme, Delaware County Extension Educator. Email: dave.clamme@ces.purdue.edu, Phone 765-747-7732.

April 12 — Spring Grape and Wine Workshop. Anderson s Winery, Valparaiso. Contact Bruce Bordelon 765-494-8212, Jill Blume 765-494-1749, or visit www.indianawines.org

FACTS FOR FANCY FRUIT SUBSCRIPTION NOTICE FOR 2004

Facts for Fancy Fruit is a newsletter for commercial and/or advanced amateur fruit growers. It provides timely information on pest control and production practices that should be of interest to all growers. The information is not intended for home fruit growers unless those growers wish to follow commercial practices. All growers or interested persons are welcome to subscribe, however.

At least 14 issues will be published during 2004, bi-weekly during the growing season and monthly otherwise. The subscription price of \$15.00 includes only the basic costs of printing and mailing at first class rates. The newsletter is also available free of charge electronically through the World Wide Web at <http://www.hort.purdue.edu/fff/fff.html> or by e-mail. If you have e-mail and would like a copy sent electronically, send your e-mail address to hirst@hort.purdue.edu and we will include you on the list, or subscribe through the web at <http://www.hort.purdue.edu/fff/fff.html>.

If you wish to receive the printed version of the newsletter in 2004, please fill out the form below and send it to the Department of Horticulture, along with a check for \$15.00 (tax included) **made out to Purdue University.**

We hope that you will benefit from the information contained in the newsletter. We welcome your comments and suggestions.

Peter M. Hirst

Please send me "Facts for Fancy Fruit" for the 2004 season. Enclosed is my check for \$15.00 (tax included). Make checks payable to PURDUE UNIVERSITY.

Name _____	Please Check:
Address _____	_____ Grower
City _____	_____ Sales
State _____ Phone# _____	_____ Other _____
Zip _____ County _____	

I would like to see information on the following fruit crops:

_____ Apple	_____ Blueberries	_____ Grapes
_____ Peaches	_____ Strawberries	_____ Cider
_____ Pears	_____ Raspberries	_____ Other _____

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