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FFF99-11
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Crop Conditions: Continued dry weather is causing some problems for fruit growers such as poor fruit size and plant stress, but it is minimizing fruit disease problems. The recent cooler temperatures should help improve fruit color and quality. Grape harvest is getting started in the south. Fruit quality is excellent and yields are above average for most varieties. Blueberry harvest is winding down in the north with late season varieties like Elliot being picked. Fall-bearing raspberry harvest is underway in most areas. Where irrigation has been used or rainfall adequate fruit size and quality are excellent. No fruit rot problems have been reported, but Japanese beetles have been troublesome. Early season apples appear to be running about 7-10 days ahead of normal and are being harvested in most areas. Apples appear to be sizing well and look to be better than earlier expected. Where there are peaches, harvest continues for the late varieties. Quality has been good where scab and brown rot have been controlled.

Cider Update:

Labeling- A reminder that placards are no longer acceptable this year and that cider jugs must have the warning label on them for this coming cider season (unless you are pasteurizing). See the last issue of FFF for more details.

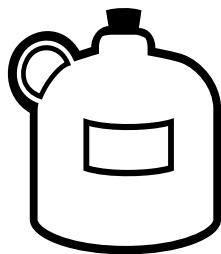
UV Pasteurizers- I know many cider producers have had many questions concerning UV cider treatment systems. The research I have seen on these shows they work well, and can achieve the 5-log reduction of pathogens. Also, I understand they are considerably cheaper than heat pasteurizers. There has been a lot of talk about the use of these systems, but the bottom line is, as of right now, **THE USE OF UV PASTEURIZERS FOR APPLE CIDER IS NOT LEGAL.** It was thought by some that a law passed in the 60's covered the use of UV pasteurizers, but the intensities of UV light necessary for use with

cider far exceeds the intensities allowed by this law. A California company has applied to the FDA for pre-market approval for UV pasteurizers for cider and the current state is that this application is in the expedited (priority) review process at FDA. I was told by the FDA last month that so far it was looking good and a final decision should be in a matter of "months". Will this approval come through in time for the coming cider season? Your guess is as good as mine, but I wouldn't want to be depending on it.

Cider Safety Meeting- A few weeks ago I attended a cider safety workshop in Washington DC organized by the FDA. The workshop was attended by FDA and other regulatory officials, lobbyists, researchers, extension specialists, and a few cider producers. It was an intense 2 days, with updates on both research and regulatory activities as affecting apple cider. Several of us in attendance

explained the situation of cider producers to the FDA and impressed on them the steps cider makers had already taken to improve the safety of their product. My impression was that many FDA officials had a pretty much common sense approach and know that nothing can ever be completely 100% safe. By the same token, let's not forget that Washington is a city driven by politics, and that the FDA is a federal agency. I made some good contacts at the workshop and anticipate inviting a representative of the FDA to Hort Congress to give us an update from their perspective. Be kind!

HACCP Rule- The FDA is currently drafting the final version of the HACCP rule. The key people involved in the drafting of this regulation were on a panel at the cider workshop in Washington, but would not speak about what was going to be in the new rule. Apparently, once they start drafting it, it is illegal for them to disclose what is in the rule. I expressed my frustration to them and said that if they were going to pass a rule that was going to affect cider makers this coming season, we needed to know about it as soon as possible. They would not comment on when the rule was likely to be completed or when it would take effect. However, they did explain the process the rule must go through. My understanding is that once the rule has been written, it needs to go to the president and then to congress for 30 days, not so much for approval as for them to view it. Reading between the lines, I'd be very surprised to see this being implemented for the coming season. Also, it seems likely that there will be a phase-in period depending on the size of the producer. *-Hirst*

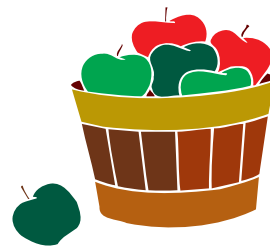


FQPA Becomes a Reality: On August 2, 1999 the EPA announced the first results of its reassessment of pesticides as required by the Food Quality Protection Act of 1996. Of interest to fruit and vegetables growers, the EPA has announced the cancellation of the follow-

ing uses of methyl parathion (PennCap M): apples, broccoli, brussels sprouts, carrots, cauliflower, celery, cherries, collards, grapes, kale, kohlrabi, lettuce, mustard greens, nectarines, peaches, pears, plums, rutabagas, spinach, succulent beans, succulent peas, tomatoes, and turnips. These changes take effect at the beginning of 2000. In addition, the Restricted Entry Intervals have been increased from 2-3 days to 4-5 days. In 2001, all applications of methyl parathion must be made from an enclosed cab or cockpit.

For the insecticide azinphosmethyl (Guthion), the EPA has reduced the tolerance for pome fruit from 2.0 parts per million (ppm) to 1.5 ppm now and 1.0 ppm in 2001. This means that the amount of residue allowable on the harvested fruit can only be half as much in 2001 as it can be now. The best information I have available indicates that use rates for apples will be reduced from 6 to 5 pounds of active ingredient per acre per season and the pre-harvest interval will be increased from 14 days to 21 days. Restricted Entry Intervals will also be increased for azinphosmethyl. Again, these changes are effective for the 2000 growing season.

These are the first announced changes in the registration of the organophosphate insecticides. There are many more to come. It appears at first glance that we can live with the changes that were announced yesterday without too much disruption. What the future holds is anyone's guess. *-Foster*



Apple Maturity: Early season apples have started and the question arises "how do I know when to pick?" Like any good scientist my answer is "it depends"! The primary factor is how long you intend to store the fruit prior to sale and consumption of that fruit. For many of us in Indiana, the storage time is short therefore fruit can be harvested almost fully ripe, whereas if fruit is to be stored for longer

periods, fruit should be harvested less ripe. As fruit matures and ripens a whole bunch of biochemical changes take place in that fruit. Some of these are obvious like changes in skin color, whereas other changes like the production of ethylene (a ripening hormone) by the fruit are less obvious. One of the changes that affects the prime eating time of the fruit is the conversion of starch to sugar. Try eating an apple a month before you'd normally harvest it and you'll sure know what starch tastes like. An iodine solution will turn starch black but is not affected by sugar, therefore this can be used to determine where the fruit is in the process of starch conversion to sugar. Mix 0.3 oz (10 g) potassium iodide and 0.1 oz (2.5 g) iodine in one quart of water. If you can't weigh these out too accurately, don't worry too much about it, it's not that critical. Iodine fumes are toxic so do all this in a well-ventilated area. Put the solution in a plastic or glass bottle. It'll keep for long periods of time, and in fact it may take a while for the iodine to fully dissolve. Cut the apples in half transversely and dip one half in the solution for 30 seconds or so. I always use the top half of the fruit because the stalk being attached makes it easier to lift out of the iodine. Other people just put the iodine solution into a spray bottle and mist the cut surface of the fruit with it - either method will work just fine. As the fruit matures and ripens, starch is converted to sugar so the black staining disappears. If you are harvesting fruit for immediate sale or very short term storage, there should only be a small amount of black staining (starch) present in the fruit. For more details, see the chart on page 99 of the Midwest Tree Fruit Pest Management Handbook.

Ok, so what if you don't want to do all of that, what can you do? Well for a ballpark estimate, the following is a guide of the length of growing season required for a range of varieties.

Anticipated days from bloom to harvest for a number of important apple cultivars:

Cultivar	Days From Bloom to Harvest
Yellow transparent	70-90
Lodi, Pristine	75-95
Mollies Delicious, Red Free	120-125
McIntosh, Cortland, Gala	125-145
Jonathan, Liberty, Grimes	
Golden, Empire, Red	
Delicious, Golden Delicious, Jonafree	140-150
Mutsu	145-170
York Imperial	155-175
Rome, Winesap, Stayman	160-175
Braeburn, Fuji, Goldrush, Enterprise, Granny Smith	180-210

Remember, this is just an approximate guide, and bear in mind that there isn't any one measure of maturity that gives the whole picture. Scientists who study fruit maturity look at a whole range of factors like firmness, soluble solids, seed color, skin color, internal ethylene, starch, etc. An experienced person can judge much of this with a bite out of the apple. If you're going to use the starch iodine test, I recommend you dip one half of the apple in the iodine, and take a bite out of the other half and compare the taste with the starch level. You'll then begin to build up a picture of how fruit taste with various levels of starch and may be able to then go by taste alone. -Hirst

Disease Management: Water is a critical factor in the disease cycle of most fungi that cause foliar and/or fruit diseases. Consequently, disease pressure from diseases such as apple scab, sooty blotch, summer rots, flyspeck, brown rot of peach, plum and cherry, strawberry leafspot, and grape bunch rot is minimal during dry periods. Due to the lower disease pressure, protectant sprays do not need to be applied on as tight a schedule as in 'normal' years (does anyone know what 'normal' is anymore?). However, this does NOT mean you can stop applying fungicides. Remember that most fungicides are protectant, not curative, and need to be in place before infection occurs, not after. This

generally means applying fungicides before it rains, not after; and while it might seem it will never rain again, just one lengthy rain period can result in severe disease infection. By all means use the longest interval between sprays as recommended on the label, but maintain a regular fungicide spray program....you never know, it just may rain. - *Pecknold*

Black Rot and White Rot: Branches which show bright yellow leaves that eventually turn brown and die are likely candidates for having black rot or white rot cankers. All such yellow “flags” should be pruned out completely several inches below any signs of obvious cankering or discolored wood as soon as they appear. Removing dead wood, mummies and cankers from the trees is critical in the management of these diseases. Current-season prunings should be removed from the orchard or chopped with a flail mower. Prunings piled on the orchard perimeter (let alone within the orchard!!) can serve as important disease sources...both this year and next! Act now to get rid of such sources. -*Pecknold*

Nectria Twig Blight: Speaking of canker diseases... I often mistake Nectria twig blight on ‘Rome Beauty’ for fire blight; don’t laugh, it’s easy to do. Both diseases show a shepherd’s crook at the terminal end along with browning and wilting of leaves. A primary difference between the two, in the early stages of disease development, is that outer and inner bark discoloration is most evident at the base of the twig if Nectria is the problem, while with fire blight, the discoloration is most evident at the terminal twig end. Also, with Nectria there is no bacterial ooze, instead, bright pinkish-orange spore producing structures will form within the cankered areas at the base of the stem. Nectria is a “stress pathogen” that should not be of major concern; it has been reported to occur where trees are too vigorous in fall and fail to harden adequately before winter. While Romes are where you most often find Nectria canker, it has also been reported on Fuji and Granny Smith. -*Pecknold*

Raspberry Anthracnose: During this time of year the plant disease clinic often receives raspberry samples with severe anthracnose infection. The most disturbing overall symptom is the failure of fruit to ripen; fruit remain small, hard and discolored due to the extensive girdling of canes and pedicels. The fungus overwinters on both living and dead plant tissues; therefore, old fruiting canes and infected primocanes should be removed from plantings after harvest and destroyed. This greatly reduces the amount of disease that survives within the planting. ALSO, if anthracnose is severe, do not forget the liquid lime sulfur application next spring. See ID-169, “1999 Indiana Commercial Small Fruit & Grape Spray Guide” for further information. - *Pecknold*

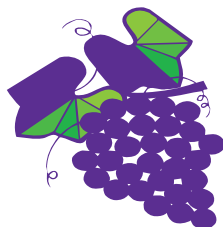
Grape Harvest Parameters: Grape harvest is 7-10 days ahead of normal this season. That could be a problem for vineyards in the southern half of the state where high temperatures during ripening may lead to high pH, low TA, and poor color and flavor development, especially on the early ripening varieties. The recent cooling trend should help improve fruit quality. Bird damage has been a problem in some areas, especially where rainfall has been lacking.

Growers should be sampling their vineyards and analyzing fruit composition (sugar, acidity, and pH) to determine harvest date. As harvest nears, sampling should be done at least twice weekly to track the progress of fruit ripening. Samples should be representative of the entire vineyard so avoid end plants and other atypical plants when sampling. As fruit ripen, sugar concentration increases, titratable acidity decreases, and pH increases. Flavor and color also develop as the ripening process occurs. It is very important to pick grapes at their peak ripeness level because grapes do not continue to ripen after they are harvested. The level of ripeness desired at harvest depends on the variety and style of wine to be made. For light, fruity style wines, grapes are usually harvested before they are fully ripe. This is especially true with strong flavored American varieties such as Concord and Niagara, and some of the

French-American hybrids such as Cayuga White. When grapes are harvested before full ripeness sugar may have to be added before fermentation, but the results are a lighter, fruitier wine without the overpowering 'foxy' flavor. For heavier, full-bodied wines, fruit is usually allowed to fully ripen before harvest to develop full flavor, color, and tannins. If you will be selling to a winery, keep them updated on fruit composition and let them help make harvest decisions based on their needs.

Sugar (soluble solids) is the easiest parameter to measure, but is not the best indicator of optimum fruit ripeness for winegrapes. Instead, a balance of soluble solids, titratable acidity, and juice pH should be considered. Of the three parameters, juice pH is perhaps the most important. High juice pH can be a problem in warm growing seasons, and with certain varieties, and causes many problems for the winemaker. Several wine quality attributes are adversely affected by high pH including color, protein and tartrate stability, oxidative rate, metal complexing, ability to clarify, biological stability, and sensory attributes. Since pH cannot be adjusted in the winery as easily as titratable acidity or sugar content, it is best to harvest fruit within the desired pH range. Most winemakers prefer white winegrapes with a juice pH of about 3.1-3.2 with a maximum of 3.4, and red winegrapes with a pH of 3.3-3.4 with a maximum of 3.5.

During harvest, protect fruit quality by picking early in the day while the fruit is cool, handling the fruit carefully to avoid cracked berries, juice leakage, and potential spoilage, and keeping the fruit cool by moving containers out of the vineyard quickly and placing them in shade or cold storage. Minimize the time between harvest and crush as much as possible. -*Bordelon*



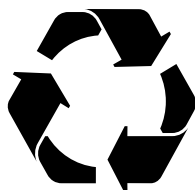
Irrigation of Small Fruit: With the lack of rainfall across the state it is very important to irrigate small fruit plantings if possible. Small fruit crops are generally shallow rooted and will suffer water stress if soil moisture levels get too low. We generally say that small fruits need at least an inch of rainfall each week, but this is dependent on soil type and water holding capacity. It is especially important to maintain good moisture levels in strawberries because they are developing their fruit buds now and stress at this time will have a negative effect on next year's yield. Likewise, blueberries will begin to differentiate fruit buds in September so it is important to maintain adequate moisture levels throughout the fall. -*Bordelon*

Biological Control Website: "Biological Control: A Guide to Natural Enemies in North America" is a website that offers a continuously revised, extensive overview of biological agents of insects, disease, and weed pests in North America. At last count, the Guide included photographs and descriptions for approximately 100 natural enemies of pest species. Additional material describes life cycles, habits, and other practical information. Authored by C. R. Weeden, et al, the site is divided into sections for parasitoids, predators, pathogens, and weed feeders. The site is at <http://www.nysaes.cornell.edu/ent/biocontrol/>. Source: Joe Kovach, Ohio IPM/PIAP, Ohio Fruit ICM News, Volume 3, Issue 28, August 5, 1999.

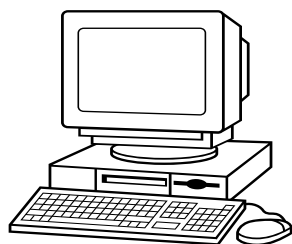
Confirm 2F Registered for Use on Apples: Rohm and Haas has announced that the US EPA has registered Confirm 2F for use on apples. This insecticide has been important in the control of organophosphate-resistant leafrollers (particularly obliquebanded leafroller and tufted apple bud moth) in several apple growing regions. It also provides some control of codling moth. More details will follow. Source: Rick Weinzierl, Illinois Fruit and Vegetable News Vol. 5 No. 20 August 5, 1999

Elevate (Fenhexamid) Labeled for Botrytis Control on Strawberries and Grapes:

Elevate 50WDG (fenhexamid) from Tomen Agro, Inc. was recently labeled for use for control of Botrytis on strawberries (gray mold) and grapes (bunch rot). Elevate has both 'protective and curative activity', so it can be used before or after an infection period. Elevate is different chemistry than Rovral, Vanguard, and Benlate so it should be useful in resistance management. It works by inhibiting germ tube and mycelial growth of the fungus. It has a re-entry interval of 4 hours and a pre-harvest interval of 0 days. Considering the loss of Ronilan for strawberries, this is especially good news for strawberry growers. (Adapted from PennState Fruit Times, Vol. 18, No. 11, July 13, 1999 by Kathy Demchak)



Pesticide Container Recycling: The Office of the Indiana State Chemist is offering pesticide container recycling at several locations across the state August 3 through September 9. Contact the OISC at 765-494-1594 for the date of a location near you.



Subscribing electronically: To subscribe (or unsubscribe) to Facts for Fancy Fruit, send a message to fff@lists.hort.purdue.edu with the subject or body "subscribe" (or "unsubscribe"). You can also use the form at the web site <http://www.hort.purdue.edu/fff/maillinglist.html> to submit your subscription. Electronic access is free of charge.

Coming Meetings:

October 21, 1999 – The Second Annual Pawpaw Field Day. Kentucky State University Research Farm, Frankfort, KY. Contact Kirk Pomper at 502-227-5942 or kpomper@gmail.kysu.edu. Check out the website at www.pawpaw.kysu.edu

October 23, 1999 – Kentucky Vineyard Society's annual meeting. Maker's Mark Conference Center, Loretto, KY/ Contact Mitchell Wagner at 502-459-6958 or mitch@kort.com

November 3-4, 1999 – Southeast Strawberry Expo. McKimmon center, Raleigh, NC Contact the North Carolina Strawberry Association at 919-542-3687

January 3-4, 2000 – KSHS/KVGA Annual Meeting and Trade Show. Holiday Inn North, Lexington, KY

January 16-20, 2000 – 5th International Symposium on Cool Climate Viticulture and Enology. Melbourne, Australia. Contact the symposium secretary at ICMS Pty. Ltd., 84 Queensbridge St., Southbanc, VIC 3006 Australia. Phone: 61 3 9862 0244 or check out the website at www.icms.com.au/coolclimate

January 24-26, 2000 – Indiana Horticultural Congress. Adam's Mark Hotel, Indianapolis.

February 10-12, 2000 – North American Farmers' Direct Marketing Association meeting. Cincinnati, OH

February 13-15, 2000 – Ohio Grape-Wine Short Course. Columbus, OH

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