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### Crop Conditions:

Almost all crops are developing very well following a mild winter and warm spring. In most areas of the state there is still a chance of frost so we don't want to speak too soon, but right now we're looking good. In central Indiana peaches are just a little past petal fall, apples are approaching full bloom and grapes are just beginning to bud out.

**Apple Thinning:** The thinning decision you make with apples is one of the most critical management decisions you will make all year, and one that affects not only the crop this year, but next year also. Thinning is all about tradeoffs and compromise. The earlier you thin, the better the response will be, both in terms of fruit size increase and in return bloom for next year's crop. The problem is that early thinning is risky, so what to do? Use the nibble approach where you don't try to get the job done in one shot. Put on a mild thinner application early (say around petal fall) and then follow up with another application about 14 days later if you think it is needed. This way you achieve some of the benefit of early thinning while at the same time spreading some of your risk. A few other pointers for thinning:

- Thinners work best when temperatures are 70-80F at the time of application and for a few days afterwards. Don't apply thinners when temperatures are below 65 F as they will have little affect.
- Keep detail notes of what you applied, what rate, when, what the conditions were at the time of application and for a few days afterwards, and what the result was. This will help you build up a picture of what works best on your farm
- If you suffered some frost damage, think long and hard before you decide not to thin this year. The risk is that there may be more crop left than you think, and by

not thinning you may be compromising next years crop as well as the crop this year.

- It usually takes 10-14 days until the effects of a thinner application can be seen, so don't rush back in with a second application without allowing enough time to assess the effect of the first application. (Hirst)

**Care of New Trees:** If you planted new trees this spring, a few points to remember to help them get off to a good start.

- Heavy pruning on young trees delays the time when cropping begins. So to bring trees in to cropping early, minimal pruning should be done in the early years.
- Make sure the graft union is a few inches out of the soil to reduce the chance of scion rooting.
- If planting dwarfing trees, provide a post or trellis as tree support right from the time of planting.
- Pay attention to weed control. Weeds can severely impact the establishment of young trees.
- If deer are likely to be a problem, apply control measures from day 1 (deer fence, soap, etc).
- Even though trees won't have fruit the first year, good pest and disease control is essential.

Remember, your goal is not for the trees to just survive (although that is definitely a good start!), but to have them perform close to the optimum. (Hirst)

### **Labor Law Posters: Most Are Available For Free**

A number of state and federal laws and regulations require employers to display posters and/or information for employees. Posting is generally to be displayed in a central location where information is accessible to all employees. Most state and federal labor law posters are available at no charge by downloading from government agency web sites or calling the appropriate agencies.

To obtain this information, log onto the website of the Mid American Ag and Hort Services, Inc at: <http://www.midamservices.org>

Look for:

“Labor Law Posting Compliance”

From there you can look up both federal and state labor law requirements and download free labor law posters.

(Hirst, adapted from information from MAAHS)

### **The Distant Sound of Drumming**

Growers, packers, processors and shippers of fresh and fresh-cut produce should be hearing the distant sound of drumming from the mighty jungle that is our nation’s capital. Those aren’t celebratory drums you are hearing either, particularly if your business includes lettuce, spinach and/or tomatoes. The Food and Drug Administration (FDA) has issued two letters of concern addressed to the fresh produce industry (Feb. 2004 and Nov. 2005), an “Action Plan to Minimize Foodborne Illness in Fresh Produce...” (2004) and most recently, a draft guide for Industry to minimize microbial food safety hazards for fresh-cut fruits and vegetables (March, 2006). All of this activity and attention from the FDA can mean only one thing: if you haven’t already done so it is time to work on evaluating your practices for potential food safety hazards, modify your operation to minimize those hazards, and fast.

The first letter of concern from the FDA was addressed to growers, packers and shippers of fresh lettuce and fresh tomatoes and focused on 14 outbreaks of foodborne illness caused by Salmonella, E. coli O157:H7, Cyclospora and Hepatitis A virus. The FDA then proceeds to let you know

what information is available to address the problem, their expectation that some action is required on the part of industry and they finish with a warning regarding their legal jurisdiction in these matters.

Based on their concerns, the Feb., 2004 letter directs growers to refer to the 1998 “Guide to Minimize Microbial Food Safety Hazards for Fruits and Vegetables” for an overview of Good Agricultural Practices (GAPs) and Good Manufacturing Practices (GMPs) recommended by the FDA. The letter also directs your attention to a 2001 report “Analysis and Evaluation of Preventive Control Measures for the Control and Reduction/Elimination of Microbial Hazards on Fresh and Fresh-Cut Produce,” available at <http://www.cfsan.fda.gov/~comm/ift3-toc.html>. This collaborative report between the FDA and the Institute of Food Technologists (IFT) summarizes then “current scientific research relating to the various methods of eliminating or reducing pathogens, while maintaining fresh attributes, on whole and fresh-cut produce.” However, understanding GAPs and GMPs by using the FDA Guide and related USDA materials is a bit easier than trying to read through the FDA/IFT 2001 report.

Finally, that first letter finishes with the following warning, “As you are aware, food produced under unsanitary conditions whereby it may be rendered injurious to health is adulterated under § 402(a)(4) of the Federal Food, Drug, and Cosmetic Act ((21 U.S.C. 342(a)(4)). FDA will consider enforcement actions against firms and farms that grow or pack fresh produce under such unsanitary conditions.” Take note of this warning, regardless of whether you grow, pack, ship or distribute tomatoes or lettuce. This letter, signed by Terry C. Troxell, Ph.D. Director, Office of Plant and Dairy Foods, Center for Food Safety and Applied Nutrition, FDA, clearly sends the message to the entire fresh produce industry that the FDA has taken notice and is going to expect action from the industry to minimize this problem.

A second letter of “serious concern” followed the first this past November of 2005. The second letter was addressed to California lettuce and spinach growers, packers, processors and shippers of fresh and fresh-cut lettuce and spinach and signed by the Director for the Center for Food Safety and Applied Nutrition of the FDA, Robert E. Brackett,

Ph.D. Citing the previous letter and the resources it referenced, the second letter focused on reiterating the FDA's concerns and to "strongly encourage" the industry to focus on reviewing the practices in their operations that could lead to microbial contamination and to implement modifications from the farm through distribution.

The November 2005 letter also focuses on the issue of produce being contaminated by floodwaters without equivocation. Dr. Brackett writes, "Although it is unlikely that contamination in all 19 outbreaks was caused by flooding from agricultural water sources, we would like to take this opportunity to clarify that FDA considers ready to eat crops (such as lettuce) that have been in contact with flood waters to be adulterated due to potential exposure to sewage, animal waste, heavy metals, pathogenic microorganisms, or other contaminants." And he notes that adulterated food is subject to seizure by the FDA.

And it doesn't stop there. The FDA is apparently beginning to lose its patience with efforts to work with industry on this problem. They quite poignantly state that they have been attempting to work with everyone on this issue since 1998 and that the stance taken by some in the industry that the exact nature of the problem must be known before anyone should take action is not acceptable to them. Therefore, specifically in California, yet, intended for the entire industry, the FDA is asking for industry cooperation in the following areas: communication, guidance, outreach and research. It would be unwise at this point to simply hope that this will go away.

My recommendations for those who aren't in California is to learn as much as you can about GAPs, review your own operation for potential contamination, modify your operation based on what you determine, and document your food safety policies and procedures in a food safety plan. Another potential resource for this is the FDA's 2004 Action Plan at <http://www.cfsan.fda.gov/~dms/prodpla2.html>. This document reviews many of the same recommendations given in all GAPs programs and it gives an update on the FDA's most recent views on safe practices and their implementation.

Also, take the time to look at the March, 2006 draft Guide to Minimize Microbial Food Safety Hazards

of Fresh-cut Fruits and Vegetables (<http://www.cfsan.fda.gov/guidance.html>) and send comments while the door is open (through April, 2006). You may not do any cutting; however, the FDA is asking fresh produce growers to look at this document, too. Anything that gets by without comment is assumed to be accepted by all. Your comments on this draft guide are part of what the FDA means when it says it is looking for communication.

And for Indiana and Ohio fruit and vegetable producers who could use a little help with all of this, feel free to contact us at the Ohio and Indiana Specialty Crop Food Safety Initiative by calling Mid American Ag and Hort Services at 614-246-8286 or emailing us at [maahs@ofbf.org](mailto:maahs@ofbf.org). We are funded by the United States Department of Agriculture's Risk Management Agency to provide free materials regarding GAPs, as well as free on-farm consultations through September 2006. Visit us at the MAAHS website at [www.midamservices.org](http://www.midamservices.org) and select "Projects" from the list on the left side of the page.

(Shari L. Plimpton, Ohio and Indiana Specialty Crop Food Safety Initiative)

### **Apple Disease Update**

Fortunately for us, powdery mildew isn't the problem here that it is in other places, but it might be worse than usual after our mild winter. Also, certain varieties (e.g., Ginger Gold, Granny Smith Jonathan, Idared, Paulared, Rome Beauty, and Stayman Winesap) are very susceptible, making it a problem for some. Powdery mildew spore release starts at about the tight cluster stage of bud development. For best management, begin applying fungicides at tight cluster and continue until midsummer when terminal growth ceases. Recommended spray intervals are approximately 10 days from tight cluster through petal fall; as shoot growth slows, this rate is lengthened to 14 days after petal fall. The DMI-fungicides (Bayleton, Nova, Rubigan, or Procure) provide excellent powdery mildew control; however if scab is an issue, your best bet is to stick with Nova, Rubigan, or Procure, as Bayleton does not control scab. Sovran and Flint, both strobilurin fungicides, provide good control of powdery mildew, scab, and rust. As always when using strobilurins, or DMI's, be sure to rotate, or tank mix a protectant like Mancozeb, Ziram, or Polyram (EBDCs) or Captan (dicarboximide).

Now is the time for fire blight management. The use of less susceptible rootstocks, like Bud. 9 or M.7, when using more susceptible varieties is critical in orchards with a history of fire blight. It is important to note that susceptible scion varieties (like Gala, Honeycrisp, or Jonathan, to name a few) of young trees grafted to resistant rootstocks will still sustain fire blight strikes, but should not be killed by rootstock blight, unlike the same scion wood grafted to M. 26 or Mark.

After the use of less susceptible scion and rootstocks, spray ALL the trees in the orchard with copper up to about 1/2 inches green tip. In addition to making sure that the correct rate of copper is used, make sure that sprayers are properly calibrated.. Any formulation of copper (e.g., copper sulfate, copper hydroxide, copper oxychloride) should be effective in disease control. However, if using copper sulfate, make sure at least 10 days have transpired between dormant oil and copper sulfate to prevent phytotoxicity. Fixed coppers like C-O-C-S (copper oxychloride), or kocide (copper hydroxide) will not have the same incompatibility issues that copper sulfate has with early season oil sprays.

Often overlooked in scab management, it is important to avoid early infections on sepals: These first infections are difficult to detect, but provide subsequent inoculum for the rest of the growing season. Although it's still a little early, forewarned is forearmed! Copper applied to control fire blight should provide adequate protection should an infection period occur. Copper will not, however, provide kick-back against scab. Two fairly new fungicides, Scala 5SC and Vanguard 75WG (both AP (anilopyrimidine family)) provide about 48 hours of "kick-back." Due to a relatively high risk of resistance, tank-mix either product with a protectant EBDC or captan. Suggested rates:

5 oz of Vanguard or 7-10 oz of Scala  
tank mix with

3-lb. rate of mancozeb 75DF or Polyram  
80DF per 100 gallons

(Beckerman)

Collar Rot: If your trees, or site have a history of Phytophthora collar rot, now is the time to apply Ridomil Gold EC as a drench before budbreak. Ridomil Gold EC, with later foliar applications of Agri-Fos, or Aliette, are recommend in orchards

with poor drainage and heavy, clay-type soil. As always, treat surrounding, apparently healthy trees, not just trees already showing severe symptoms of collar rot. Remember that these fungicides work best protecting new growth from infection, not curing already infected trees.

**Peach Leaf Curl and Plum Pockets:** I realize that there aren't that many plum growers, but the management is the same, and the pathogens are kissing cousins! Now is the time to spray if your trees (peach or plum) aren't quite at bud swell. If they are, or past, then you're too late—Plan on fall for control next spring! Fungicides labeled for control include Bravo, carbamate, Ziram, and the ecoppers (sulfate, hydroxide, and oxychloride).

**Raspberry Anthracnose and Cane Blight:** This is the single most important spray you will apply to management anthracnose and/or cane blight on cane fruits. When leaves are 1/4 to 3/4 inches apply liquid lime-sulfur (rate= 20 gallons per acre). Late applications of lime-sulfur can result in burn, so time appropriately!

### **Workshops and Services for the Food Industry and Food Entrepreneurs**

The Department of Food Science at Purdue has a number of workshops planned for those in the food industry.

#### Aseptic Processing and Packaging Workshop

The Aseptic workshop at Purdue incorporates a lecture and "hands on" laboratory format to review the essential scientific and engineering principles relevant to applying the aseptic technology. The topics presented are an overview of aseptic processing and packaging, microbial principles applied to aseptic processing, chemical considerations, principles of thermal processing, equipment features, and packaging considerations.

May 15 - 18, 2006 Steve Smith  
smithrs@purdue.edu

#### Development and Implementation of HACCP Programs

This course provides instruction for developing Hazard Analysis Critical Control Point (HACCP) programs for the meat/poultry/egg and fruit/vegetable industries. This workshop includes an overview of foodborne hazards and prevention strategies, an

understanding of HACCP principles, and an awareness of the regulatory requirements for HACCP programs.

October 24 - 26, 2006 Kiya Smith  
kiya@purdue.edu

#### Introduction to Food Processing Plant Sanitation

This course is recommended for meat, poultry, and egg processing plant personnel involved in sanitation under USDA-FSIS. In this course, participants will learn about sanitation requirements, selection of cleaners and sanitizers, how to train sanitation crews, and how to validate sanitation programs.

November 8, 2006 Kevin Keener  
kkeener@purdue.edu

#### Retail Food Safety: Retail Food Manager's Certification Courses

As of January 2005, Indiana requires at least one manager from each retail food establishment be certified in retail food safety and pass a nationally recognized exam. Our program focus is to prepare retail food managers for this requirement and teach sound food handling procedures. The 3 programs above are offered in Indiana to address these needs. Each program has been developed as a nationally recognized curriculum and certification program for retail food handlers. Our website provides information about current programs offered.

Essentials of Food Safety and Sanitation  
SuperSafeMark™  
ServSafe Kiya Smith  
kiya@purdue.edu

#### Wine & Grape Workshops

The Purdue Wine Grape Task Force is a cooperation between the Indiana Wine Grape Council and Purdue University to serve the State's existing and prospective vintners and growers and to help propel the local wine/grape industry into world-class competitiveness.

On the web at [www.indianawines.org](http://www.indianawines.org)  
Year-round workshops across Indiana cover topics ranging from vineyard establishment, grape and wine quality assessment and analysis, to commercial winemaking techniques and recent issues in wine sales and marketing.

June 12, 2006 Christian Butzke  
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September 2006 Christian Butzke  
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#### Upcoming meetings:

May 4. Eastern Indiana Fruitgrowers meeting. For more details contact Dave Clamme, [dclamme@purdue.edu](mailto:dclamme@purdue.edu), Phone 765-747-7732

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