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Apples are at petal fall in northern regions of the state and around 12 mm diameter in the south. Peaches are in the shuck. Many parts of the state experienced heavy rains over the last week although temperatures have remained very warm. These warm conditions will certainly be helping out with the cell division phase of fruit growth.

IHS Summer Meeting: The summer meeting of the Indiana Horticultural Society will be held at Tuttle Orchard in Greenfield on June 23-24. We're still working out a few details, but write these dates on your calendar and plan to attend. (Hirst)

Apogee: If you are going to apply Apogee this year, the time is now! Apogee is a relatively new growth regulator for use on apples. It can reduce shoot growth dramatically, but it is expensive so it's probably not a product you want to spray over your whole orchard each year. Its main application is likely to be in blocks where there is excessive vigor due to crop loss, or inappropriate tree spacing / rootstock combination. Apogee can also reduce the incidence of fireblight – it does this not by affecting the fireblight bacterium, but by reducing the amount of susceptible new shoot growth on the tree. Timing of application is critical, and if this product is applied after shoots are about 3" long, then it is likely to have little effect. Rates of application and more detail are in the 2003 Commercial Tree fruit Spray Guide on pages 13 and 39. (Hirst)

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 10-14 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 70-80 F 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.

(Hirst)

Powdery Mildew of Apple: Powdery mildew survives the winter as dormant fungal threads within apple terminal buds. Now is the time to keep a close watch for the first symptoms of powdery mildew; especially on those inner, shaded, water sprouts. Shoots infected with mildew have a spindly appearance; leaves are folded inward longitudinally. Fruit infections become evident later in the season, as netlike russet lines, similar in appearance to the ‘normal’ russeting we see on Goldens and other russet-prone varieties. Indeed, if you have above normal fruit russet in any year, consider powdery mildew as a possible cause. Growers of mildew susceptible varieties such as Jonathan, Rome Beauty, and Ida Red (my favorite disease apple) should be especially diligent in their watch for mildew. Tight cluster, pink, bloom, petal fall and first cover sprays are most critical for controlling mildew, however fungicide protection is needed until terminal buds are set. Your best mildewcides are the SI fungicides (Bayleton, Nova, Rubigan and Procure) and the new strobilurins, Sovran and Flint. Good old captan, Vanguard, Polyram and mancozeb products DO NOT provide adequate control of powdery mildew. I especially like the use of Sovran or Flint at first cover, not only do you get control of mildew but you also get good control of fruit scab and an early start on sooty blotch and flyspeck. (Pecknold)

Bayleton, Nova, Procure & Rubigan Resistance: A number of commercial Indiana apple growers have been using sterol inhibiting (SI) fungicides (Bayleton, Nova, Procure and Rubigan) for over 10 years. As reported previously, research out of Geneva, New York, indicates that in orchards where SI fungicides have been used for 7 to 8 years there is a significant increase in the potential for strains of the scab fungus resistant to SI fungicides to be present. To help delay/prevent the occurrence of resistance, it is strongly suggested the following two rules be followed:

- The first rule. Use full rates of the SI fungicide. Do not “cheat” on the rate, the coverage, or the spray intervals. Using full rates is even more important with continued use and as the scab fungus becomes less sensitive.
- The second rule: Mix the SIs with a protectant, such as captan, mancozeb, or Polyram.

Proper use of SI fungicides is becoming even more important the longer we continue to use them. (Pecknold)

Peach Scab: Early shuck-split and shuck-fall sprays are critical for peach scab control. The first spray should be applied about one week after petal fall. Do not wait until the shucks have slipped to begin this program. Continue to spray on a 10-day

interval until 40 days before harvest. See ID-168, “2003 Indiana Commercial Tree Fruit Spray Guide”, for further information. (Pecknold)

Plum Black Knot: Research has shown Bravo as an effective fungicide for controlling black knot. However, Bravo must not be applied to plums after petal fall in commercial orchards because applications after petal fall may cause fruit injury and are therefore prohibited on the label. Captan and Topsin M are also effective for black knot control, but are not as effective as Bravo. Thus, the best strategy for controlling black knot would be the following:

1. During winter or early spring, prune out and burn all knots found in the orchard and in wild plum and cherry trees in adjacent hedgerows.
2. Use Bravo as labeled to control brown rot blossom blight at popcorn, full bloom, and petal fall, or at approximately 7-10 day intervals starting at popcorn.
3. Use Captan or a Captan/Topsin M combination in sprays at shuck split and first cover. (Pecknold)

Thinning Peaches: While we have many good post-bloom chemical thinners for apples we do not have any for peaches. Therefore, the only method available is to thin the fruit by hand. The earlier you perform the job the greater will be the increase in fruit size. At the latest, thinning should begin just after June drop, which is between 5 to 8 weeks after full bloom. Thinning should be completed at the latest by the time pit hardening begins for the cultivar. Start thinning on your earliest maturing cultivars first and progressively move to the later maturing cultivars. Remove the small or damaged fruit first then space the remaining fruit out to about 6 to 8 inches apart.

There are several factors that can help your thinning crew on which fruit to remove. First it is known that fruit that develops on the outside periphery of the canopy will be larger than interior fruit. This is primarily due to the better exposure to sunlight. It is also known that fruit that is at a node where a new shoot is growing will be larger and should be retained over fruit that does not have a shoot growing from the same node. Generally speaking the longer the shoot the larger will be the fruit size at harvest, assuming an equal crop density. It is believed fruit size is larger because there are potentially more leaves and growth on the longer shoots to provide carbohydrates for the developing fruit. Studies in Italy have determined that carbohydrate supply to the developing fruit for the first 4 weeks after bloom come mainly from the shoots developing at the fruiting node. After 4

weeks the food supply comes from the developing terminal shoot.

Recent published research by Rich Marini at VPI was aimed at determining if pruning can reduce the amount of hand thinning labor. In a series of studies he compared the effect of heading 1 year-old shoots versus blossom thinning. Heading shoots reduced fruit set, number of fruits removed with hand thinning and thinning time per tree. Yield, crop density and average fruit weight were not affected by heading. Profit was increased by shoot heading in one of the three years of the study. In conclusion Rich stated that results from the study indicate that heading peach shoots by 50% while dormant pruning can reduce thinning costs without reducing fruit size, but a similar level of labor-intensive blossom removal may reduce post-bloom thinning costs and improve size. (Dr. Rob Crassweller, Dept. of Horticulture, Penn. State University)

IDFTA Summer Tour: The International Dwarf Fruit Tree Association will be visiting Kelowna British Columbia for their summer orchard tour this year on July 6-8. For more information and registration see <http://www.idfta.org/>

Plum Curculio: I caught my first plum curculio in Lafayette on May 1. As usual, this coincided quite well with the end of bloom. Overwintering plum curculio adults continue to move into orchards, either by crawling or by flying. Petal fall and first cover sprays are very important for control of plum curculio. Imidan and Guthion continue to provide the best available control of plum curculio. If you are using some alternative product, such as insect growth regulators (Esteem, Intrepid, Confirm) for codling moth control, don't forget that you still need to use an effective plum curculio material at first cover. (Foster)

Codling Moth: First catch of codling moth in pheromone traps also occurred on May 1. The cool weather resulted in no catches for several days. I reached biofix on May 6. Since then, I have had high catches of codling moths, up to 14 per night. Tuesday would be the first day for accumulating degree-days to determine when to apply insecticides for codling moth control. For most chemicals, applications should be made between 150-250 degree days (base 50) after biofix. (Foster)

Imidan and pH: We recently received a report from Gowan that demonstrated the importance of spray water pH relative to longevity of control with Imidan. A common measure of how long a chemical lasts is its half-life, which would be the time until only half the residue remained. The following

table shows the effect of pH on the half-life of Imidan.

<u>PH</u>	<u>Half Life</u>
5.0	178 hours
5.5	92 hours
6.0	36 hours
6.5	14 hrs
7.0	10 hours
7.5	2 hours
8.2	33 minutes

This table shows the importance of adjusting the pH prior to adding Imidan. Many other pesticides will respond similarly to high pH. If you have not been getting the level of control you would like with your insecticides, an easy place to start is by checking the pH of your spray water. One additional note, if you are applying Imidan and expect rain in the next 7 days, it would be a good idea to add a sticking agent to the spray mix. (Foster)

Herbicide Drift Warning: The wet field conditions have delayed planting of corn and soybeans across the state. Whenever we have this type of year, we invariably have several cases of herbicide drift injury to fruit crops, especially grapes. As soon as conditions are favorable, spray rigs will be applying herbicides to thousands of acres of cropland. In many cases, applicators are in a hurry to get as much done as possible before the next rain and this can mean spraying regardless of wind or conditions favorable for temperature inversions and drift. This past year, planting was delayed significantly and herbicide drift was a major problem. Grapes are extremely sensitive to drift of phenoxy herbicides such as 2,4-D early in the season during the phase of rapid shoot growth. Exposure during this phase of growth usually results in severe leaf distortion, shoot stunting, and possibly flower cluster abortion resulting in significant crop loss. It would be a good idea for every grape grower to contact their neighbors, co-ops, etc. and ask them to be especially careful making applications near vineyard sites. (Bordelon)

Upcoming meetings:

May 22. LaPorte County twilight meeting. Garwood Orchard. Contact Walt Sell, LaPorte County Extension Educator. Email walt.sell@ces.purdue.edu, Phone 219-326-6808

June 23-24. IHS Summer Meeting, Tuttle Orchard, Greenfield IN. More details to come soon.

July 6-8. IDFTA summer tour, Kelowna, BC, Canada. See www.idfta.org for details.

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