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Crop Conditions:

Harvest of early apples such as Lodi and Pristine have just been completed in central and southern parts of the state. Apples they appear to be about a week later than normal (although each year I am less certain what "normal" is). Early grapes are at or just starting "veraison," or the ripening stage. Harvest is usually about 35-45 days from the beginning of veraison. Harvest appears to be on a normal schedule this year with early varieties ripening in mid August in southern Indiana to early September in northern areas. Blackberries in the Lafayette area are just coming on and fruit size and quality are excellent. Blueberry harvest in Northern Indiana is still going strong.

Excellent Summer Meeting at Apple Hill Orchard:

Our thanks go to Joe Black, who along with Jane, Brad and Karen, were marvelous hosts for the summer meeting of the Indiana Horticultural Society at their orchard near Vincennes recently. One of the strengths of the Society is the willingness of its members to pitch in and volunteer, even when it requires significant effort and work. I think all who attended were impressed with the job the Black's have done in establishing their market and transforming their farm from a cornfield to a producing apple and peach orchard in just 5 years. There is no doubt that we were all impressed with the market facility (it seems hardly appropriate to call the building a "barn" – those who have seen it will know what I am saying). It takes considerable courage for new fruit growers to open their doors to experienced growers from across the state and we extend our gratitude to the Black family for doing so. (Hirst)

Determining Apple Maturity: Making the decision on when to harvest can be a very tricky and complicated issue. The longer you intend to store the fruit, the more precise your timing needs to be. For summer apples, most growers only intend to store them until their better quality fall apples come on stream, so storage times beyond a week or two are not

that common. Even for fall apples, many growers aim to sell the majority of their crop immediately to the consumer, and try to be done by mid November or so. So since storage times are relatively short, harvest maturity is less important. This being the case, harvest apples when fruit are fully ripe. There are various tests for this, but taking a bite out of a few apples is just as good an indicator as any test.

Bear in mind that even in cold storage, fruit continue to ripen, just at a slower rate. Therefore, fruit intended for longer-term storage should be harvested when they are less ripe. There is no single test that will give you the answer but factors such as calendar date, heat unit accumulation, fruit firmness, soluble solids concentration, starch content and ethylene evolution all give answers to a piece of the puzzle. As you can see, this gets complicated real fast. Beyond the taste test, if you are going to perform one test I suggest looking at starch index. This gives an estimate of how much of the starch in the apple has been converted to sugar. This test is quick, easy, and doesn't require expensive instruments to perform. For more details look in the Tree Fruit Pest Management Handbook, ID-93, available at <http://www.hort.purdue.edu/fruitveg> under bulletins. (Hirst)

Control Of Preharvest Drop with NAA: The traditional material used for stop drop control on apples is NAA (Fruitone N), a synthetic auxin. Other synthetic auxins you may have heard of include 2,4-D and 2,4,5-T. Of course you also know Fruitone N as a chemical thinner. Early in the season NAA knocks them off and later towards harvest it sticks them on. This highlights the importance of timing when using plant growth regulators.

Another newer stop drop material is ReTain (see article by Dr Jim Schupp on ReTain immediately below). Although both NAA and ReTain can reduce preharvest drop, they do this in different ways. ReTain delays apple maturity whereas NAA does not delay maturity (and may even hasten it) but just reduces the fruit dropping. As Dr Schupp highlights in his article, ReTain must be applied well ahead of the anticipated harvest date so a considerable amount of planning is required. NAA on the other hand needs to be applied just before apples start dropping, so in this regard can be viewed as a rescue treatment.

Once NAA is applied it takes about 3 days for the activity to kick in. After that you can expect about 7 days of drop control. Rates of 10-20 ppm are usually effective, but knowing exactly when to apply it can be tricky. If the application is made too soon, the effect may wear off before harvest is complete. If the NAA is applied too late, then too many apples will have dropped on the ground before the NAA starts having an effect. Wait until you start to see a few apples drop, and perhaps assist this by bumping a few branches and seeing if any apples drop. Then it's time to apply the NAA. Longer stop-drop control can be obtained with a split application, 10 ppm applied 7-14 days apart. NAA works best when the temperature is over 70F but the way the weather has been lately, this won't be much of a constraint. Be aware that high rates of NAA (20 ppm) can advance fruit maturity.

NAA can be tank mixed and is compatible with a wide range of products. Always conduct a small test before mixing NAA with materials you haven't tried previously. Apply in enough water to ensure good coverage. (Hirst)

Timing Retain Sprays: ReTain (AVG) is a plant growth regulator that blocks the production of ethylene. When ReTain is applied to apples, several ripening processes are slowed, including preharvest drop, fruit flesh softening, starch disappearance, and red color formation.

In order for ReTain to be effective it must be applied well in advance of the climacteric rise in ethylene production that signals the onset of fruit maturity. If applied too early the effects may wear off prematurely. If applied too late, a significant portion of the crop may not be responsive to AVG, having already begun to produce autocatalytic ethylene. A second reason for avoiding late applications of ReTain is the 21 day preharvest interval (PHI), which, combined with a late spray date could result in an undesirable delay in harvest.

The label recommends applying ReTain four weeks before anticipated harvest (WBH). This has sometimes caused confusion, as the grower is timing the spray relative to some future, unknown date. A more scientific basis for timing would be to state that ReTain should be applied four weeks before the natural climacteric rise in fruit ethylene, but this is still a future event with an element of uncertainty. The good news is that there is a fairly wide window when ReTain can be applied with optimal results, and a fairly easy way to determine when to apply it.

The best application window for ReTain is about 10 days wide and centered on the 4 WBH date. For early season varieties, such as Gala and McIntosh, start by estimating when you would normally expect to begin harvesting the variety if no ReTain or ethephon (Ethrel, Ethephon II) were used. Now take into consideration the season. For example, the 2004 bloom date, the ripening pattern of cherries, peaches, and summer apple varieties all suggest that this season is about 10 days earlier than normal in PA. Adjust the anticipated harvest date according to how early or late you estimate the season is, and then count back four weeks on the calendar. Now mark the calendar from that date through the next seven days. This is your application window for that early season variety.

Watch for good spray conditions with at least six hours drying time within that week and apply the material at the first opportunity. Congratulations! Your ReTain is on at the right time.

Now mark your calendar for 21 days after the spray was applied. This is the PHI, as required by the label. You can't legally harvest before this date.

Repeat the same thought process for later varieties, but keep in mind that later varieties are usually less affected by seasonal variation in

maturity than stone fruits or early apple varieties. It is usually unnecessary to account for seasonal variation in fruit maturity for Empire and later varieties. (Dr. Jim Schupp, The Fruit Times, Penn. State University)

Grape Harvest: Grape harvest is getting near in the southern part of the state. As harvest nears, it is very important to monitor grape chemistry. Sampling should occur weekly leading up to harvest. Fruit quality is comprised of several factors of which the most important are sugars, acids, and pH. Other important factors are phenolics and anthocyanins, volatile terpenes, and other flavor and aroma compounds. Freedom from rots is also an important consideration. Unlike some other fruit, grapes do not continue to ripen after harvest. Consequently, it is extremely important to harvest grapes at the peak of quality and with the desired parameters for the intended use. Fruit quality is the most important factor determining the quality of wine.

Winegrape growers should have the ability to monitor sugars (refractometer), titratable acidity and pH (pH meter and burette). Each of these factors is important in determining proper harvest time, but none alone can accurately estimate overall fruit quality. It is the balance of sugars, acids and juice pH that is important to the wine maker. Equipment and supplies for a small lab can be purchased for about \$250.

With winegrapes, all fruit of a given cultivar is usually harvested from the vineyard or block at a single time to coordinate winery activity and to reduce costs. The fruit is bulked together for processing and eventually all the juice may be blended into a single tank. It is important to carefully plan the harvest date to coincide with the optimum fruit quality from the entire vineyard.

Most vineyards have some degree of variability in aspects such as soil type and drainage, sunlight exposure, wind, insect and disease pest, nutritional status, etc. These variations can have a significant effect on fruit ripeness on specific vines. In addition to variations between different parts of the vineyard, fruit from adjacent vines as well as from different parts of the same vine can vary. These differences are caused by differences in crop load (pounds of fruit/vine size), cluster position, degree of sun exposure, vine vigor, and so on. Much of the variability can be reduced with proper vineyard management.

In order to estimate the juice parameters on the entire crop after harvest and processing, growers must accurately sample the vineyard. On a small, well-managed vineyard block with minimal variability, a sample of 100-200 berries might give a good estimation. However, on a larger vineyard with considerable variability in fruit maturity, it may take a much larger sample to accurately estimate the final juice chemistry. Growers should make every effort to accurately estimate fruit maturity before harvest begins. A workshop is planned for September 12 (see notice below) to discuss this topic. (Bordelon)

Multicolored Asian Lady Beetle, Grapes, and Wine: The Multicolored Asian Lady Beetles or “Lady Bugs” as most of us know them have become an indirect pest of grapes. Armed with a smelly defense chemical, these beetles have the capability of ruining vast amounts of wine. In the past few years, we have found them congregating on certain grapes at or near harvest. They tend to stay in the clusters through the crush and pressing operation, depositing their defense chemical (methoxypyrazine) into the juice, leading to a distinctive “LB” odor and flavor to the wine. Most people consider this herbaceous odor and flavor a serious wine flaw. The problem exists across the wine regions of the eastern US and seems to be mostly a problem where grape harvest occurs in late August and September. The problem seems to be worse in central and northern Indiana, the Great Lakes region, etc. It has not been a serious problem along the Ohio River Valley. However, we need growers and winemakers to help us monitor this pest. We would like to know when you notice significant numbers of Asian Lady Beetles showing up in your vineyards, what varieties they seem most attracted to, and at harvest, if they are present in harvested clusters. (Bordelon)

Strawberry Fruit Bud Development: The time to fertilize strawberry fields is coming soon. Applications of 20 to 50 pounds of nitrogen in mid August to September stimulate flower bud initiation during the fall months. Rates depend upon amount of nitrogen supplied at renovation and plant vigor. New fields with high vigor may not need additional nitrogen now, but older fields should benefit. Irrigation during this time is also extremely important, if rainfall has not been sufficient. We suggest about 1 inch per week. (Bordelon)

Fall Herbicide Applications for Strawberries:

A number of herbicides can be used on strawberries during late summer and fall to prevent weed germination, kill emerged weeds, and provide residue control until the following spring. The key set of weeds you need to control during this period are fall germinating winter annuals such as chickweed and shepherds purse. You may also need to control wheat, oats, or rye that come from seed in the straw mulch that you apply for winter protection.

Devrinol (napropamide) is a preemergence herbicide. It can inhibit rooting of daughter plants so it should be applied after early forming daughter plants have rooted. Late forming (after late August) daughter plants do not contribute to yield and Devrinol can be applied before these plants root. Devrinol must be applied before winter annuals and small grains emerge. Devrinol provides excellent control of small grains and some winter annuals such as chickweed. Devrinol must be moved into the soil by cultivation or water after application.

Dacthal (DCPA) is a preemergent herbicide that can be used in new plantings or immediately after renovation. It provides good control of many grasses and some broadleaves such as purslane and lambsquarter. Like Devrinol, it must be applied before weeds emerge.

Sinbar (terbacil) is primarily a preemergent herbicide but it has some postemergence activity against small susceptible weeds. Fall applications of Sinbar should only be applied after the strawberries are completely dominant. If Sinbar is applied to actively growing strawberries, injury can occur. Cultivars differ in tolerance to Sinbar. In general, less vigorous cultivars have greater injury. Applications are most effective when applied to the soil and activated by rainfall or irrigation. Sinbar provides excellent control of many winter annual weeds. Fall applications of both Devrinol and Sinbar will persist to the following spring.

Poast (sethoxydim) is a postemergent, grass specific herbicide. The grasses must be actively growing. Thus Poast should be applied in late summer or early fall before plants become dormant. Summer annual grasses, such as foxtails and crabgrass, will be killed by fall frosts, and do not require Poast applications for control. Poast is more effective against annual than perennial grasses. Poast can be used in the fall to suppress perennial grasses such as quackgrass: control early emerging small grains, and kill winter annual grasses such as wild oats and downy brome.

A systemic, postemergence broadleaf herbicide, 2,4-D amine can be applied when strawberries are dormant to control some winter annuals. 2,4-D provides good control of many mustards and shepherdspurse, but is not very effective against chickweed. The herbicide should be applied to actively growing weeds. Be careful of 2,4-D drift causing injury to non-target plants. Check the label as only a few formulations are labeled for strawberries.

Gramoxone Extra (paraquat) can be applied as a directed spray between strawberry rows, using shields to prevent contact with strawberry plants. Gramoxone is a nonselective herbicide, so it will kill or severely injure strawberries it contacts. Gramoxone is a restricted use pesticide and is extremely toxic to animals including humans. It provides excellent control of annual grass and broadleaf weeds. Gramoxone does not extensively translocate in plants so it does not control perennial weeds. Weeds should be actively growing when Gramoxone is applied.

In conclusion there are a number of herbicide options that can be used on strawberries during the fall. Select herbicides that will control problem winter annuals and small grains. Herbicides such as Devrinol and Sinbar can provide residue weed control until spring. (Bordelon)

Grape and Wine Fall Workshop: We have scheduled a fall workshop on September 12 (tentatively date) for grape growers and wine makers that will focus on vineyard sampling and fruit processing in the winery. The workshop will be held on the Purdue campus in West Lafayette. For more information visit our web site at <http://www.indianawines.org> and click on Events or call Jill Blume at 765-494-1749. Registration is required and space is limited.

New Midwest Grape Production Guide: A new comprehensive guide is available in the Midwest covering all aspects of wine and table grape production in colder regions of the US including the Midwest and Northeast. It describes the physiology of the grapevine; site and variety selection; vineyard establishment; cultural practices including pruning; training; canopy management; soil management and fertilization; disease and pest management including weeds, insects, and wildlife; and harvesting and marketing. Whether you are a novice or a seasoned grower, this guide will suit your needs and answer most of your questions regarding growing grapes in the Midwest.

Over 30 years of research and over 100 years of combined experience and expertise from specialists at the Ohio State University and Purdue University, plus industry and grower experience and innovation are brought together in this production guide, sure to be an invaluable resource for the grape grower.

This 155-page guide is generously illustrated with 114 colored photographs and drawings, 18 tables, and a pullout centerfold illustrating step-by-step vine training and common training systems. A detailed appendix outlines additional viticulture resources and a glossary of common terms.

Copies of the new book will be available at our Purdue Grape and Wine Workshop in September. The cost is \$15. Copies may also be purchased from Media Distribution, Communications and Technology, The Ohio State University, 385 Kottman Hall, 2021 Coffey Road, Columbus, OH 43210-1044. Phone: 614-292-1607. Fax: 614-292-1248. E-mail: pubs@ag.osu.edu. Visa and MasterCard accepted. (Bordelon)

American Society for Enology and Viticulture Eastern Section Annual Conference and Missouri Wines: John Kramb, Adams County Winery (From WineGrape Information by Mark Chein, July 19, 2005)

I had the privilege of attending part of the ASEV-Eastern meeting in St. Louis two weeks ago, and would like to offer the following observations.

- The wineries of Missouri have done a magnificent job of getting the support of their state legislature for their wineries. One winery owner stated that the most important thing that he did was to get his state representative to visit his modest facility. Hmmmmm. He asked his representative to come visit, and he did. Amazing.
- The technical sessions centered on cutting edge cultivars. I attended only the session on Traminette. The speakers covered the usual topics, rootstock, training systems, harvest parameters, etc. But the most useful session for me was when one grower told us exactly how he made three different styles of Traminette, each a Gold Medal Winner. Wow! He told us HOW he made medal-winning wine.
- One last observation. I learn more about wine making in the halls, on breaks, and at the meals than I do in the formal sessions. One of the great things about our industry

is that the most successful winemakers and growers in the business want for you and me to succeed. And they are willing, almost eager, to share their knowledge with you. They are also there to keep up on technology themselves. So if you aren't attending professional training, and you aren't where you want to be in your business, quit making excuses, get off your butt, and start attending. - John Kramb

Editor's note: ASEV is the professional association for our industry but very few growers or wine makers are members. The society provides valuable services to the industry, most importantly scholarship funds for graduate students studying viticulture or enology. The membership dues are only \$35 and it would be great if you would join up and show your support for ASEV. You can find information and a membership application on their web site at <http://www.nysaes.cornell.edu/fst/asev/>.

Upcoming Meetings:

Sept. 7: Fruit and Vegetable Plot Tours, Meigs Farm, Throckmorton Ag. Center, Lafayette, IN. Topics to be covered include: harvest practices for produce safety, grape varieties and training systems, apple varieties, dwarf apple pruning and training, organic apple production, organic vegetable research, pumpkin and sweet corn varieties, Southwest Purdue Ag Program research update, pumpkin disease management, pumpkin insect management, update on sandea herbicide trials, and sweet corn insect management. 5.00-8.00 pm. Directions to Meigs Farm: From Lafayette take US 231 S to CR 800 S intersection (flashing lights), turn left on CR 800 and go 1 mile and turn right on CR 100 E. Farm is 1 mile on left. From Crawfordsville take US 231 N to CR 800 S (approx. 3 miles north of Romney) and follow above directions. From Indy take I 65 north to SR 28 exit and turn left and stay on SR 28 until you reach US 231 (Romney). Turn right onto US 231 and go 3 miles to CR 800 S intersection. Turn right on CR 800 and then right again onto CR 100E, go 1 mile and farm is on left. Watch for signs.

Sept 12: Purdue Grape and Wine Harvest and Processing Workshop. West Lafayette Campus and Meigs Farm. Contact <http://www.indianawines.org> and click on Events or call Jill Blume at 765-494-1749. Registration is required and space is limited.

January 23-25, 2006: Indiana Horticultural Congress, Adams' Mark Hotel, Indianapolis.

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