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Crop Conditions

FFF 97-08
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Continued cool, wet, cloudy weather has slowed fruit plant development considerably. Little has changed over the past week. Strawberry harvest is underway in the south and will begin soon in central areas. More sunshine is needed to improve fruit quality. Grapes are at bloom in the southwest. Few fruit diseases have been reported, but the potential is high, so keep on a tight spray schedule.

Cold Damage to Fruitlets: In some parts of the state we are observing russetting of apple fruitlets probably caused by the cold temperatures in late April. This is often showing up as russetting of the fruit stem and the lower part of the fruit, often with the fruit being misshapen as well. The ring of russet often associated with cold damage doesn't seem to be showing up, perhaps due to the stage of fruit development when the cold hit. The stem damage appears to be superficial and probably isn't too critical. The damage to the fruit however (in terms of russetting and uneven shape) is serious and will result in some fruit being of poorer quality at harvest.

Unfortunately there isn't too much we can do about it. The damage doesn't seem severe enough to be sure that your chemical thinners will remove more of this fruit leaving the good fruit, although increased uptake of thinner through the russeted areas of the fruit is a possibility. I'm setting up an experiment to look at this, but that doesn't help you right now. Thinning down to a reasonable crop load is still necessary to ensure good return bloom next year. The decision that you need to make right now, is do you stay with your chemical thinning only approach, or hand thin to remove damaged fruit? Removing the damaged fruit by hand is probably only feasible if you have a lot of damage and fairly heavy set. Wait until at least a week after your last application of thinner so you can see what you have left before going in and hand thinning. Let's hope we don't have a glut of cider apples this year.

Disease Monitoring: Now is the time for growers in southern Indiana to be walking their orchards looking for the first symptoms of apple scab, fire blight, powdery mildew, and rust. When looking for diseases select those blocks which are most disease susceptible. Gala, Ida red, Jonathan, and Romes are some of my favorite trees to inspect for disease doings; they are all highly susceptible to scab, blight, mildew and rust. If you do

see symptoms of any of the above mentioned diseases we suggest the following: a) Apple scab - refer to the last edition of Facts For Fancy Fruit for suggested fungicides to help deactivate sporulating scab lesions. b) Fire blight - immediately cut out blighted twigs 10 to 12 inches below any sign of infection, being sure to sterilize pruning tools between each cut; maintain good control of sucking insects which are primary carriers for secondary spread of blight; and apply streptomycin within 24 hours following injury from hail storms. Special attention should be given to young trees and trees on M9 and M26 rootstocks or interstems. c) Powdery mildew - maintain mildewcide sprays (Nova, Rubigan, Bayleton and other sterol inhibitor fungicides are excellent for control of powdery mildew) until terminal growth stops. d) Rust - relax and learn to appreciate the colorful display of orange spots on leaves and/or green depressions on fruit.....no further infection from rust will occur this year in southern Indiana, however, northern growers need to maintain rust fungicides for another few weeks.

Ugly Stubs & Fire Blight: Growers should be especially alert for fire blight symptoms in late May to early June....this is generally the time fire blight makes itself known. Look for new growth that appears wilted and crooked at the tip with browning and wilting of leaves. Efforts to limit secondary spread by cutting out fire blight strikes are most successful if these strikes can be removed immediately after they appear. Cut out blighted twigs 10 to 12 inches below any sign of infection; however, if the infected shoot is associated with the main trunk or a major scaffolding limb you may want to try the "ugly stub" cut to help avoid possible canker formation. Do not cut flush with the trunk or major limb, but instead leave a naked 4-5 inch branch stub. Marking the ugly stubs with flags or a bright colored paint when the cuts are made can help in

relocating them during the winter pruning operation, when the ugly stubs are removed, without fear of canker formation.

Wet Weather and Diseases: With all the recent rain my thoughts go to apple scab, sooty blotch and flyspeck, black rot, bot rot, collar rot, the list never ends..... wet weather is what makes diseases “happen”. Don’t cut rates, and don’t extend spray intervals and you should be okay. In many areas of the state the ground has been saturated with water over the past few weeks. This is a situation which encourages the development of crown rot and root rot on apple, peaches, cherries, brambles, blueberries, strawberries, etc..... you name it and the *Phytophthora* fungus gets it! Ridomil and Aliette are recommended to treat for *Phytophthora* diseases. Ridomil is applied as a drench, while Aliette is applied primarily as a foliar spray. Follow all label directions. Of course the best solution is to improve drainage in wet sites.

Post Harvest Handling of Strawberries and Raspberries: (by Regina Rieckenberg from Small Fruit News of Central New York, June 1, 1997.) As berry season approaches, here are some suggestions for improving berry shelf life: At minimum, berries need to be refrigerated to get any shelf life out of them at all. The recommended temperatures for strawberries are 32F with 90-95% relative humidity. For raspberries 32F is also ideal and at 30F or less berries might freeze. At temperatures over 45F, water loss occurs and fungal growth is accelerated. BOTH temperature and relative humidity must be right or water loss will occur. For example, if the temp is 32F but the RH is only 50%, lots of water loss will occur (this is what happens in a regular refrigerator). If the humidity is correct at 95% and the temperature is too high at 45F, you’ll also get moisture loss because warm air can hold more moisture than cool air.

Cooling berries affects bruising. Richard Ashley, from U Mass, wrote last year that there are two types of bruising: impact and compression. Impact bruising occurs when a sudden force is applied (like when berries are dropped). Compression bruising is the static squishing that occurs when layers of berries press down on each other over time. When strawberries are held at room temperature, they are more resistant to impact bruising. When they are stored at 34F, their resistance to compression bruising increases. Makes sense . . .

Forced air cooling: It takes 1/4 to 1/10 as long to cool berries when air is forced through them instead of just placing them into a refrigerated room. The improvement in shelf life and quality is also significant. Use high capacity fans to pull refrigerated air through the stack of berries. A simple forced air cooling tunnel can be made by draping a plastic sheet over a stack of berries and using a low speed, high volume fan to draw the air through the berries. Hugh Fraser, Engineer with the Ontario Ministry of Ag, Food and Rural Affairs, suggests an airflow rate of 2 to 4 cubic feet of air per min per lb of berries. This should give 7/8 cooling time of no more than one hour in most cases. The 7/8 cooling time is the time required to remove 7/8 of the temperature difference between the starting berry temperature

and the temperature of the refrigerated air. For example, berries starting at 80F being cooled to 32F would be 7/8 cooled when they reach 38F. You still need adequate refrigeration to remove field heat. Increasing air flow will not make up for inadequate refrigeration, and you can never have too much refrigeration. Again, from Fraser, use the following to estimate a reasonable peak need:

$A \times (B-C) / D$ where
A is the amount cooled (lbs/batch)
B is the starting berry temp (F)
C is the room air temp (F)
D is the 7/8 cooling time (hours)

For example, if 5000 lbs of fruit are cooled in one batch, starting at 80F, using 32F air, and with a 1.5 hour 7/8 cooling time, the minimum refrigeration just for cooling the berries would be 160,000 Btu/hr, or over 13 tons of refrigeration.

Condensation on berries: Condensation can occur any time the combination of air temperature and relative humidity reaches the dew point at the point of contact of the berries. One method to avoid sweating is to wrap precooled berries in plastic ONCE THEY ARE COOLED and keeping them wrapped until they are warmed to the display temperature. This causes the condensation to form on the outside of the plastic wrap, not on the berries. The other method is to hold berries at a constant cold temperature until they are sold.

Harvesting and Handling: Extending berry shelf life starts in the field. Harvest berries at the white tip stage. Berries will continue to color in storage. Any berries that are dead ripe should be sold immediately at the farm stand, or frozen. Instruct pickers on how to pick correctly to avoid bruising. Be sure to do a good job with disease control during production.

Cyclosporiasis Outbreaks in 1997: (From Marvin Pritts, Cornell University via the Smallfruit mailing group). *Cyclospora* is back in the news again. You may recall in the spring and summer of 1996, an outbreak of cyclosporiasis in the United States and Canada was linked to eating raspberries imported from Guatemala. During April and May of 1997, the CDC received reports of eight event-associated clusters of cases of cyclosporiasis from five states; New York, California, Florida, Nevada and Texas. Approximately 90 cases of infection have been laboratory confirmed.

Fresh berries were served at six of the eight events. Raspberries were included in mixtures of various types of berries at four events, were served separately from other berries at one event, and were the only type of berry served at one event. In a May 30, 1997 report, the CDC states “the preliminary findings of the investigations suggest that raspberries imported from Guatemala and possibly from Chile were the likely vehicle of infection for some of the outbreaks of cyclosporiasis during April and May.”

While the 1996 outbreak was linked to raspberries imported from Guatemala, the mode of contamination of the implicated raspberries was not determined, in part because the methods for testing produce and other environmental samples for *Cyclospora* are insensitive. It’s been suggested that a likely source of the

Cyclospora in that outbreak was the water used in pesticide solutions.

An editorial in the May 29, 1997 New England Journal of Medicine discusses how the 1996 cyclosporiasis outbreak illustrates the changing epidemiological characteristics of foodborne illness. The author, Dr. Michael Osterholm, points out that persons traveling to developing countries are cautioned to eat only foods that can be boiled or peeled to reduce the risk of traveler's diarrhea. Yet seasonally, up to 70% of selected fruits and vegetables consumed in this county come from developing countries. He notes "one does not need to leave home to contract traveler's diarrhea caused by an exotic agent."

While recognizing that produce from U.S. growers can be a source of pathogens, Dr. Osterholm adds that fruits and vegetables from developing countries are cause for additional concern, especially as more countries enter the global produce market. He says the first raspberry vine was planted in Guatemala in 1987, yet approximately 20% of all fresh raspberries sold in May 1996 in the United States came from Guatemala.

The 1996 cyclosporiasis outbreak also illustrates the unfortunate lessons learned when a public announcement is made of an apparent association between a product and an illness without sufficient epidemiologic evidence. When the first announcement was made about the 1996 outbreak, health authorities concluded that the consumption of fresh California strawberries was associated with the illness. After several weeks of confusion about the actual cause, it was concluded from additional studies that raspberries from Guatemala were the source of the outbreak. As Dr. Osterholm notes, "When an outbreak occurs, public health agencies are often under pressure to act quickly. The public has come not only to expect a quick response, but also to demand it." He adds "The need to warn the public is legitimate, but it must be weighed carefully against the possibility of being wrong, which will result in economic loss for the falsely accused industry, as well as weaken the confidence of both industry and the public in future public health warnings."

As you communicate to the public about the most recent cyclosporiasis outbreak, be sure you indicate that the information about a likely source is based on preliminary findings. State and local health departments, the CDC and the FDA are continuing the investigations to identify the vehicles of infection, to trace the sources of implicated foods and to determine whether transmission is ongoing.

In the meantime, as CDC notes, produce should always be thoroughly washed before it is eaten. This practice should decrease, but may not eliminate the risk for transmission of Cyclospora. Because raspberries are fragile and replete with crevices, even thorough washing may not eliminate contamination of the fruit.

A CDC fact sheet on Cyclospora can be found on the Web at the following address: <http://www.cdc.gov/ncidod/diseases/cyclospor/cyclohp.htm>

IHS Summer Meeting: Hopefully you all have July 1-2 written on your calendars for the summer meeting. This is a week later than in past years to avoid conflicting with a Kentucky tour.

The meeting will be held in two locations: July 1 - Applacres Inc., Bedford IN, and July 2 - Beiersdorfer Orchard, Guilford, IN. Although these two orchards are about 2 hours apart, we felt that the importance of cider this year made it desirable to visit both in 1997. Both have excellent cider facilities, quite different, that should be of great interest.

Invitation: All interested fruit growers are invited to attend these tours without regard to membership in the Society. Growers in surrounding states are especially invited to attend.

July 1, 1997 - Applacres

Dave Byers operates Applacres, Inc. just south of Bedford in Lawrence County. They have a large, retail market that operates year-round. Bedding plants make up a substantial part of their spring sales. Their own fruit makes up the bulk of the fall and winter sales. They grow apples, peaches, pears and some blackberries for PYO. Applacres also operates a wholesale candy, pickle, jams, jellies, apple butter, etc. sales and distribution organization. They have a fine cidemaking facility, using a large rack and cloth press and rotary screen. While they will not be making cider in July, they will have the operation ready for viewing and discussion. Dave has emphasized sanitation in all of the operation.

The early April freezes resulted in substantial crop loss depending on variety. Red Delicious and other early blooming varieties were especially hard hit. Later blooming varieties were not as vulnerable and some have needed thinning. All of his new plantings are on either M.9 or M.7 rootstocks, although some trial plantings are on Bud. 9 and Mark. Bob Byers, Dave's father, is growing some of their own apple trees mostly on M.9, with a few on M.7, Bud.9 and M. 27 rootstocks.

Directions: Applacres is located south of Bedford, one-half mile south of the intersection of SR 37 and US 50 west. The retail market is on the east side of the road. The Eichart and Sherwood farms are located west on US 50 about 3 miles.

July 2, 1997 - Beiersdorfer Orchard

Bill and Hilda Beiersdorfer operate a tree fruit orchard in Dearborn county, along with sons Jerry and Russell. Since we visited the Beiersdorfers in 1991 our emphasis this year will be on cider, and especially on sanitation and pasteurization procedures.

The orchard has a fine cider making facility using the Shenko press. They have had to purchase additional fruit to supply their demand for cider. They have a potential of extensive wholesale sales of cider into the late spring. The Beiersdorfers have purchased and installed a Thermaline Flash Pasteurization system. They are currently on-line and making pasteurized cider. They will demonstrate for us the entire process of pasteurization, and will have samples of both fresh and pasteurized cider for us to compare with taste evaluation.

We will have an extensive discussion of sanitation suggestions and steps toward implementation of a HACCP program in cider manufacture. It looks now (Late May) as though each cider producer shipping cider across state lines will have to have a HACCP program

under way. However, nothing is yet set in concrete. You will be brought up to date as of July 1.

Directions: The Beiersdorfer Orchard is located between Guilford and Yorkville on the Guilford-York Ridge Road. From Indiana SR. 1 go through Guilford, go up over the hill west from Guilford a distance of 4 miles, turn left on Kuebel Road. A Beiersdorfer Orchard sign is on the corner. The orchard is the first farm on the left, 0.8 mi. from the corner.

From the northwest, exit I-74 at the Sunman Exit (Route 101), go 2 miles south on SR 101 to

Sunman. In Sunman turn left (East) on North Dearborn Road. North Dearborn Road joins SR 101 right at the railroad crossing in Sunman. Go to New Alsace (about 4 mi), then turn right on York Ridge road, 3 miles to Yorkville. Continue on York Ridge Road 1/2 mile to Kuebel Rd.

From the northeast, come south from I-74 on SR 1, turn west on North Dearborn Rd. to New Alsace; turn left onto York Ridge Rd. to Yorkville and on to Kuebel Rd.

The agenda for Tuesday, July 1 is:

8:00 am Registration in the rear of Applacres salesroom. (Please park in the rear to allow for customers to park in front.)
9:00 am Travel to Eichart farm for tour of plantings, then on to Sherwood farm to see new plantings and return at noon.
12:00 Lunch on the grounds
1:30 pm Indiana Horticultural Society business meeting
2:00 pm Machinery and Orchard Equipment Demonstrations - in orchard block behind sales room.
3:30 pm Tour of storage, packing facility and cider facility. Discussion of cidermaking practices.
5:30 pm Adjourn for the day - supper on your own and travel toward Beiersdorfers.

The agenda for Wednesday, July 2 is:

8:00 am **EDT***: Re-registration in Beiersdorfer Orchard packing shed area.
Coffee will be available.
8:45 am Tour of packing and storage facilities, and the retail market
9:15 am Discussion of cider sanitation concerns and the status of HACCP
10:15 am Demonstration of cider press operation - probably a dry run.
Demonstration of pasteurizer operation - using either cider or water, but a complete run.
Tasting of cider
12:00 Adjourn to travel home.
*(Eastern Daylight Savings Time, an hour ahead of most of us)

Motel Information for the Bedford - Mitchell area - Ask for discounts

Stonehenge Lodge, Hwy 37 south in Bedford. 1 person \$60.+tax, 2 persons \$66.+tax.
1-800-274-2974.

Spring Mill Inn, Hwy 60 Southeast of Mitchell, 1 bed \$46.44 tax incl., 2 beds \$ 50.76 tax incl. (812) 849-4081
(Make reservations ASAP.)

Rosemont Motel 1923 M Street, Bedford. \$32.+tax per room, two beds. (812) 275-5953.

Motel Information for the Seymour area - Ask for discounts

(Seymour is about halfway between Bedford and Lawrenceburg on US 50.)

Lees Inn, US 50 east of Seymour, west of I65. One person, Queen bed \$58.50 +tax, two persons \$67.50 +tax. (812) 523-1850.

Holiday Inn, US 50 east of Seymour, west of I65. 1 person \$66.+tax, \$7.+tax each addl. adult. (812) 522-6767.

Knights Inn, US 50 east of Seymour, west of I65. 1 person \$39.95 +tax, 2 persons \$42.95+tax, and king bed \$45.95+tax. (812) 522-3523.

Days Inn, US 50 east of Seymour, east of I65. 1 person \$35.+tax, 2 persons \$45.+tax. (812) 522-3678.

Econolodge, US 50 east of Seymour, east of I65. 1 person \$43.+tax, 2 beds \$53.+tax, each addl. adult \$4.+tax. (812) 522-8000. (Note, for seniors 50+, if reservation is made through the 1-800-553-2666 number, a 30% discount is given, rather than 10%.)

Allstate Inn, US 50 east of Seymour, east of I65. 1 person \$27.50 including tax, 2 persons \$35.20 inc. tax. (812) 522-2666.

Motel Information for the Aurora-Lawrenceburg-Batesville area. Ask for discounts.

Riverside Inn Motel (42 rooms); 515 Eads Parkway (US 50), Lawrenceburg, IN
One person \$48.75+tax; Two persons \$53.75 +tax. \$5.00 +t each add'l person.
(812) 537-4441.

Holiday Inn Express, Eads Parkway (US 50) east of Lawrenceburg, IN
Single or double \$68.+ Tax (812) 537-2552.

Hillcrest Motel, US 50, west of Aurora. 1 person \$40.+tax, 2 persons \$45.+tax. (812) 926-1991.

Colonial Inn, 7644 US 50 west of Aurora. 1 person \$35. tax incl., 2 persons \$45. tax incl. (812) 926-2550.

There are some Bed and Breakfasts in the Aurora-Lawrenceburg area. Call the Dearborn Co. Chamber of commerce for information. (812) 537-0814.

Days Inn of Batesville, 112 State Rd 46, Batesville IN
Single \$45.+tax. King bed \$48.+tax, Two Beds \$50.+ tax. (812) 934-6185.

(This is not intended to be a complete list or to imply endorsement of these establishments.)

Coming Meetings/Events:

June 10 — Blueberry Growers of Indiana Summer Meeting. Pruitt's Farm, Wheatfield, IN. Contact Pat Goin 219-896-2283.

June 12 — Southwest Missouri State Fruit Experiment Station Viticulture Field Day, Mountain Grove, MO. Contact SanLiang Gu or Susanne Howard at 417-926-4105.

June 17 — Southeast Indiana Fruit growers Summer Orchard Tour, Busse Farm, Dearborn County. 6.00 pm (EDT, an hour ahead for many of us). Busse farm is on SR 48, just west of the SR 48-SR 148 intersection north of Aurora and west of Lawrenceberg. Contact: John Ewart, 812-926-1189

June 23-26 — Kentucky and Tennessee Cooperative Summer Apple Tour. Contact Jerry Brown 502/365-7541 ext.204 for additional information.

June 23 — Indiana Winegrowers Guild Summer meeting and Vineyard Tour. Chateau Pomije Vineyard and Winery, 25060 Jacob Rd. Guilford, IN. Business meeting: 1:00 - 3:00pm, Vineyard Tour/Workshop: 3:00 - 5:00pm. Cookout following. Contact Bruce Bordelon 765-494-8212.

June 26 — Summer Field Day and Cider Makers School, Illinois Horticultural Society. Mills Apple Farm, 11477 Pocahontas Rd, Marine, IL. Field Day begins at 10.00 am (cost \$15/person including lunch) and Cider Makers Certification School 2.00 pm. (cost \$100 per farm). Directions: I-70 to Marine then follow signs from the center of town for 3 1/2 miles NE. Contact: Don Naylor, RR#13, Box 36A, Bloomington, IL 61704. Phone 309-828-8929, email: dhnaylor@heartland.bradley.edu

July 1&2 — Indiana Horticultural Society Summer Meeting. July 1: Applacres, Inc. in Bedford. July 2: Beiersdorfer Orchard in Guilford. See program above. Contact Dick Hayden (765-463-6587).

July 9-11 — **American Society** for Enology and Viticulture/Eastern Section Annual Meeting and Riesling Symposium, Corning, NY. Contact: E. Harkness, Dept. Food Science, Smith Hall, Purdue Univ. W. Lafayette, IN 47907-1160, Phone 317-494-6704, FAX 317-494-7953 Email: Harkness@foodsci.purdue.edu.

July 23 — Commercial Apple IPM Meeting, Robert Rudd's Orchard, East Bernstadt, KY (Laural county). Contact Jerry Brown 502/365-7541 ext.204 for additional information.

July 24 — Robinson Substation Field Day, Quicksand, KY. Contact Terry Jones 606/666-2438.

August 4-6 — Kentucky Vineyard Society Grape Vineyard and Winery Tour. See article above.

August 21-22 — Apple Crop Outlook and Marketing Conference, US Apple Association, Chicago. Starts 2.00 pm on August 21 with regional break-out discussions of the USDA's 1997 apple crop forecast. An updated forecast will be presented to attendees starting at 8.00 am on August 22. Registration required. Contact: US Apple Association, 800-781-4443.

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