UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

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A newsletter for commercial growers of fruit and vegetable crops

"We are what we repeatedly do. Excellence, then, is not an act, but a habit." Aristotle

Address any questions or comments regarding this newsletter to the individual authors listed after each article or to its editor, Rick Weinzierl, 217-244-2126, weinzier@illinois.edu. The ***Illinois Fruit and Vegetable News*** is available on the web at: http://ipm.illinois.edu/ifvn/. To receive email notification of new postings of this newsletter, call or write Rick Weinzierl at the number or email address above.

In this issue ...

Upcoming Programs

Check the Illinois SARE calendar for a full list of programs and links for registration.
http://illinoissare.org/ and http://illinoissare.org/calendar.php

- **Good Agricultural Practices (GAPs), April 8, 15, 22, and 29, 2013** … webinar series, 6:00 – 8:00 p.m. See the Illinois SARE calendar at http://illinoissare.org/calendar.php.
- **Southwestern Illinois Twilight Orchard Meetings, April 18 and May 9, 2013**; at Broom Orchard, Carlinville, IL (Macoupin Co.) on April 18 and at Weigel Orchards, Brussels, IL (Calhoun Co.) on May 9. For more information, contact Michelle Berg Vogel, ANR Program Coordinator, University of Illinois Extension Calhoun County Office, P O Box 366, Hardin, IL 62047 (http://extension.illinois.edu; email: mbergv@illinois.edu or call (618) 653-4687.
- **Quad Cities Food Hub First Annual Spring Open House, April 18, 2013** … 6:00 – 8:00 p.m. At the Freight House, 421 W. River Drive, Davenport, IA. For more information, see www.qcfoodhub.com or call 563-265-2455. (Donation = $15.00 for light fare and beer sampling.)
- **GAPs Training (Good Agricultural Practices in relation to food safety), April 19, 2013.** 8:00 a.m. – 4:00 p.m., University of Illinois Extension Office, 4618 Broadway, Mt. Vernon, Il 62864. To register, see https://webs.extension.uiuc.edu/registration/?RegistrationID=8100
- **Scouting for Vegetable and Fruit Pests on Organic Farms (webinar), April 25, 2013. Begins at 1:00 p.m. and is** free and open to the public. Advance registration is required at https://www1.gotomeeting.com/register/172329329
- **Illinois Summer Horticulture Day, June 13, 2013** … the morning program will be at Curtis Orchard in Champaign, IL, followed by an afternoon tour of the University of Illinois Fruit Research Farm in Urbana and Vegetable Crops Research Farm in Champaign. **More details to come, but mark your calendars!**

Regional Observations

In western Illinois, spring has sprung! In just a week's time, the grass turned green and has initiated spring growth. We received a little more than an inch of rain early this week, most coming early Monday morning. As I am writing this, more is predicted for Wednesday afternoon and evening into Thursday. [*Editor's note … and everyone got those rains since Mike wrote this update.*] On better drained soils, field work began April 3-4. Temperatures pushed spring fruit growth, and apples are at silver to green tip, peach buds are swollen, grapes and blueberries are beginning to swell, raspberries and blackberries are showing up to ½" green, and an occasional bud can be found on plasticulture strawberries.

Kyle Cecil mentioned in the last issue that the time for removal of straw on strawberries can occur once soil temperatures reach 42-44 degrees. The recent warm temperatures have raised soil temperatures to that level or above. Don't delay in removing straw, as that can cause some loss of yields due to lowering photosynthesis and the plant having to use stored food reserves for new growth. Use a soil thermometer to determine temperatures under straw and time removal accordingly. Placing the straw in the row middles helps reduce weeds and can provide a clean environment for pickers. But keep enough straw in the row to keep the berries off the soil (which can reduce leather rot).

Dead asparagus fern growth can be mowed anytime conditions allow. By keeping the fern growth until spring (rather than mow in the fall), two things are accomplished. First, the ferns help to keep the soil cool by shading the sun's rays. This can help to delay the emergence of new spears. Early spear growth is more susceptible to early frost events. Secondly, those ferns help trap snow for possible extra moisture. If you've not soil tested your asparagus patch, it might be worth the effort. I had not soil tested our patch for 15 years (the age of the patch) until last year and found surprisingly low phosphorus levels … and we had been applying moderate levels of nutrients annually.

For 2012 plantings of asparagus or other perennial fruit/vegetable crops (brambles, rhubarb, herbs, etc.) that would normally be harvested this year, consider growing conditions last year. If no supplemental water was used throughout last year, you may want to evaluate whether you should harvest this year or not. Development of root systems for these perennial crops is essential for their long life. It's doubtful if much progress was made in developing these rooting structures last year, so perhaps for the health and longevity of the planting it might be best to allow another year for development. I know our asparagus crowns we planted last year didn't really grow until the rains of Hurricane Isaac (they remained less than knee high until after Sept. 1st). We don't plan on harvesting that planting this year, even though it is a male hybrid that normally would have had a short harvest.

Bramble pruning needs to be done now as well. For erect blackberries, remove the dead canes that fruited last year (if not removed last fall). For the remaining canes, prune the smallest ones out, leaving a cane every 6-8" in the hedgerow. Trailing blackberries follow a somewhat similar regime, removing the canes that fruited last year and leaving 6-8 of the larger canes per plant. Winter cold weather can sometimes cause some dieback of trailing canes, but we wouldn't expect that this year as temperatures never got below 5 degrees in central IL.

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More on soil temperatures… Remember that soil temperatures at the 3- to 4-inch level are really important in determining when to plant. When the winter annual weeds begin to grow, soil temperatures are increasing, but chickweed and henbit will start actively growing with a soil temperature of 40 degrees … still too cold for planting vegetables. Investing in a soil thermometer and measuring soil temperatures in your own fields is always a good investment of money and time. Leave the thermometer at the 3- to 4-inch depth for at least 20 minutes (and flag it when you walk away for that 20 minutes so you can find it again). Another good source of information on soil temperatures is the Illinois State Water Survey. The Water and Atmospheric Resources Monitoring (WARM) Program records soil temperatures at 4 and 8 inches under grass at 19 sites across the state. In addition, 4-inch bare soil temperatures are computed to represent a cultivated field. These data are available in map and tabular form for the past 7 days at http://www.isws.illinois.edu/warm/soiltemp.asp. Soil temperature data at this site includes hourly reports, as well maximum and minimum temperatures.

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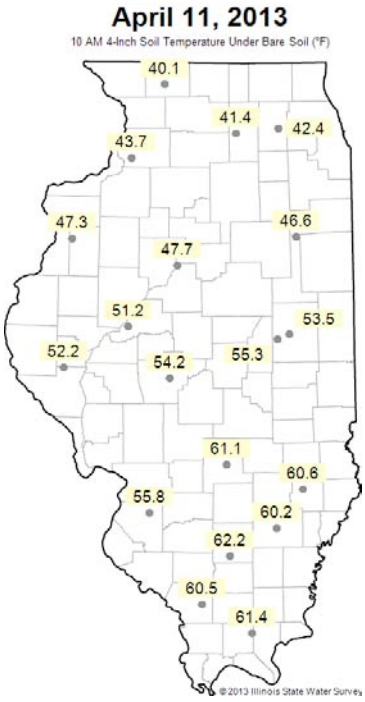

Notes from Chris Doll

What a difference a year can make for plant development in spring. Last year, full bloom of peach was March 15, and this year it is April 9. Apple bloom was between March 22 and 26 last year, and they are now between 1/2 inch green and early cluster bud. Records since 1971 show that the latest peach bloom was 4/23/80, followed by 4/19/08.

The seasonal difference is quite visible on strawberries too, as only a trace of bloom is showing on plasticulture strawberries in contrast to ripe fruit a year ago. The local fields look fine but may need some protection from cold as a new front is approaching. It has been very interesting to follow Dr. Barclay Poling and the SE US weather, as frost protection warnings seemed to be nightly through last Saturday, and now cooling sprays are being advocated.

Blossom thinning of peaches has started and other than some drought-stressed weakened trees, could be used on most varieties. Apples have received copper and oil sprays, and since no rains of volume have occurred since bud break, scab infections are nil. Unfortunately, some apple scab resistance to fungicides was identified from southern Illinois trees in 2012 for the first time, and more attention will be paid to preventing additional problems. As far as I know, resistance to dodine was never identified, and problems with infections resulted from timing or coverage rather than fungicide resistance. According to Dr. Mohammad Babadoost' s studies on fireblight resistance in 2012, Illinois remains free from that problem.

Economy and efficiency when spraying are buzz words that come to my mind at this time of the year again. Costs of pesticides and equipment costs are a continuing concern, but some other factors like saving time can be important. For instance …

- Level the orchard floor and holes for smoother and fasting driving
- Develop efficient traffic flow patterns for row identification and safe turns.
- Consider a quick identification system for rows and varieties for spraying, harvesting, problem identification, etc.
- Develop an efficient and safe tank filling system.
- Buy easy-to-use digital scales and liquid measuring containers for pesticides.

Chris Doll

Fruit Production and Pest Management

Corrections on High Tunnel Raspberry Data

The April 1, 2013, issue of this newsletter contained a summary of high-tunnel raspberry data from our variety trial. The table in the article contained some errors … here is the brief description of the trial again, with corrected results.

Eight cultivars of raspberries were planted in a high tunnel at DSAC in June 2011. A small crop was harvested in the fall of 2011. The plants were headed back in spring of 2012 and a crop was harvested from both the floricanes and primocanes. Harvest began in May and continued into July, then resumed in October and continued into November. The data below represent the means of three replicated 10-foot plots, expressed on a per-acre basis.

	Pounds/Acre		Pounds/Acre		Pounds/Acre	
Cultivar	May-Jul		Oct-Nov		Total Yield	
JoanIrene	12811	bc	4601	bc	17412	c
JoanJ	18620	a	10544	a	29164	a
Nantahala	4394	d	2610	c	7004	d
Josephine	8030	cd	5557	bc	14975	cd
Caroline	11756	bc	4354	bc	16110	c
AutumnBritten	16545	ab	7778	ab	25938	ab
Polka	16948	ab	5745	bc	22693	ab
Polana	14454	ab	3634	bc	18088	bc
Statistics:						
CV	23.9				22.9	
Cultivar	***		N.S.		***	
$LSD_{0.05}$	5426				8103	

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Fruit Thinning

Apple and peach bud development has slowed in the last couple of days but had advanced rapidly in previous warm weather … and will advance again as temperatures rise again in a few days. As of April 8 in central Illinois, buds of most apple varieties were at green tip or close to it, while peach buds were swollen a bit more advanced, depending on cultivar. A few Asian pears are at the bud burst stage. As temperatures increase soon, bloom should be approaching here. As Chris Doll noted above, bloom is well underway in the south and southwest.

Because of last year's freeze in the upper half of the state, with good weather, healthy apple trees should have a "snow bloom" and heavy fruit set this spring. Therefore, crop load must be managed very carefully in order to avoid triggering an alternate bearing pattern, especially in cultivars that are highly prone to alternate bearing such as Fuji and Honeycrisp. Alternate bearing is not limited to apples but has been observed in pears, plums, and apricots as well.

Plan on being aggressive with thinning (because of the potential of heavy fruit set) but exercise caution, because thinning is not an exact science. There are many factors that can make some thinning chemicals work more effectively and others less effective. Tree physiology, crop load, application timing, and environmental conditions are major factors affecting the action of most chemical thinners. The physiological factors in the tree that affect thinning response include variety, tree age, tree health, crop load, weather, and severity of pruning. A weak and a very old tree are relatively easier to thin than a healthy and young tree. Similarly, a heavily cropped tree is relatively easier to thin than a lightly cropped tree. However, you should know that even though the chemical may have knocked a large number of fruit off a tree, you may still have much more fruit left due to poor coverage. Monitor the number of the fruits that are

left on the tree, not the number on the ground. Another factor that contributes greatly to the effectiveness of a thinner is the variety. For example, Golden Delicious fruits are harder to thin than Gala fruits. The type of tree is also important; for example 'Spur' varieties are harder to thin than non-spur varieties. Some studies also suggest that pruning may have an influence on the effectiveness of thinning. Application timing is also important. Some thinners work best when applied at bloom time.

Bloom to petal fall thinning is a highly desirable practice in years of heavy bloom and on varieties that are hard to thin, such as Golden Delicious, Fuji, and Honeycrisp. Bloom to petal fall thinning is done by applying naphthylacetamide (NAD) from bloom to 4 to 8 days after full bloom. NAD is much more effective when applied at bloom than after fruit set. Petal fall thinning using NAD is not a good idea on Gala or Delicious because of the risk of pygmy fruits. NAD is applied at 35-50 ppm in at least 150 gallons of water per acre. Another thinner is NAA (naphthalene acetic acid). An amide form of NAA has also been tested as bloom thinner. It was more effective under variable climatic conditions than NAA ("regular" form, not amide), but resulted in smaller fruit size when it was applied late. An additional chemical used for bloom to petal fall thinning is Accel, but it is only mildly effective. The rate for Accel should not exceed 30 grams of active ingredient (53.4 fluid ounces of product) per acre in 150 to 200 gallons of water. Accel has been shown to increase fruit size of some apple varieties such as Gala, McIntosh, Paula Red, and Golden Delicious if applied when the fruit diameter is less than 10 mm.

For thinning fruitlets, NAA and Sevin are widely used to thin apples, followed by Maxcel. Sevin is a consistent mild thinner for apples and it has a wider window of activity than NAA. There is also very little risk of over thinning with Sevin. The best time to apply Sevin is 2 to 4 weeks after full bloom or when fruit diameter is between 8 and 12 mm.

NAA works best when fruit diameter is between 8 and 9 mm than on larger size fruits. It has also been used as bloom thinner. If fruit size is larger than 12 mm, then consider a mixture of full rate of Sevin and a half rate of NAA or Accel. Do not apply NAA when fruit size is larger than 15 mm and never combine NAA with Accel or NAD so you don't get pygmy fruits, especially on spur varieties like Spur Delicious or Gala. This may be the year to experiment with combination of chemical thinners. Combinations of Sevin and NAA and Maxcel and Sevin should provide more aggressive thinning than either of the chemicals alone (follow the labels for rates and instructions).

When all fails, consider using ethrel if fruit size is larger than 20 mm, but you can over thin with ethrel, especially on easier to thin varieties. I have seen a report which suggests that ethrel is less effective when fruit size is small (8mm), but its effectiveness increases as fruit size increases. Again, make sure to read the label carefully. Chemical thinning of apples is discussed in detail on pages 54-55 of the ***2013 Midwest Tree Fruit Spray Guide***.

Peach thinning is one of the most important tasks for peach growers. As is true for many other fruits, peach thinning is essential because it affects fruit size, return bloom, and fruit ripening, and it affects fruit set and yield the following year as well. To date there are no effective chemical thinners for peaches and those that have been tested are often inconsistent. Some of the chemicals that have been tested to thin peaches include GA (gibberellic acid) applied between 0 and 47 days after full bloom, which inhibited fruit initiation during the treatment season but also reduced bud initiation the following year and that made it too risky in areas prone to spring frost. Other treatments that have been tested included surfactants, ammonium thiosulfate, ethrel, and a few others, but none of them provided satisfactory results Growers are left with two options, either mechanical or hand thinning. Mechanical thing is often done at bloom, either by knotted robs dangling from a beam hanging above the canopy and mounted to a tractor, combs, PVC pipes. Some have experimented with water jets or shaking but these approaches resulted in removal of larger fruits instead of smaller fruits.

Hand thinning remains the most widely used practice for thinning peaches; it is often done somewhere between 30 to 50 days after full bloom. If fruit are thinned at 60 days or later, extreme competition between fruits may result in an imbalance between fruit and shoot development, which lowers return bloom the following year. It has been suggested that thinning should start earlier the year following a partial or complete crop loss.

Because peaches tend to bloom during a time of potential spring frost risk, it is suggested that thinning should start about two weeks after full bloom. At this stage, fruits have not reached a size where it causes a drain on the tree. In years of heavy bloom, it is possible to apply a combination of bloom and fruit thinning by dropping about 40 to 50% of the blossoms at full bloom then following it with hand thinning two to three weeks after full bloom.

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Apple Proliferation Phytoplasma (APP)

From USDA …

On April 2, 2013, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) was notified by the Canadian Food Inspection Agency (CFIA) that they have detected apple proliferation phytoplasma (APP) in an apple orchard near Kentville, Nova Scotia. The affected orchard has been placed under quarantine. This is the first APP detection in North America.

The affected trees are 'Pacific Gala' and were imported into Canada from the U.S. in 2008. It is important to note that no symptoms of APP have been observed in the source nurseries or reported in the U.S. at large, and the source of infestation is unknown at this time. APHIS has provided trace forward information to CFIA and is currently conducting testing at the source nurseries. At this time, CFIA has not imposed new restrictions on importation of apple trees from the U.S.

APP, or '*Ca.* P. mali', is considered to be a quarantine pest in both Canada and the U.S. It is present throughout Europe, where it is considered to be one of the most critical diseases of apple trees. APP is spread through propagation practices with infected material, including budding and grafting. Long-distance dispersal of APP occurs through the trade of infected rootstock, scionwood, or budwood. Specific insects, including certain psyllids, froghoppers and leafhoppers, also spread APP, but it is not transmitted through seed or fruit or pruning.

Symptoms of APP include:

- shoots around axillary buds, which create a broom-like appearance at the end of affected branches
- leaf rosetting
- enlarged leaf stipules
- reduced growth and smaller, less sweet fruit

For more information on APP, see http://www.eppo.int/QUARANTINE/bacteria/Apple_proliferation/PHYPMA_ds.pdf or contact Craig Southwick at Craig.Southwick@aphis.usda.gov or (970) 494-7578.

Vegetable Production and Pest Management

Quick link for the 2013 Midwest Vegetable Production Guide for Commercial Growers.

The ***2013 Midwest Vegetable Production Guide for Commercial Growers*** has a new format this year and an easy new link for internet access ... http://mwveguide.org/. Be sure to use this updated guide (not past years' issues) to find listings of labeled and effective pesticides and other production guidelines.

Local Foods Issues

Food Safety Modernization Act (FSMA). The comment process for this sweeping legislation is open until May 16, 2013. Many in the local food and sustainable agriculture community consider this as the most important issue facing the local food movement – a potential game changer. The National Sustainable Agriculture Coalition (NSAC) has been analyzing the rules and has created a great website to help farmers and supporters understand the proposed rules, the potential impacts and how to comment on the rules. See http://sustainableagriculture.net/fsma/speak-out-today/ for more information.

Roles of Inspectors and Certifiers for Organic Operations. The National Organic Program (NOP) has announced new instructions addressing "technical assistance." Certifying agents and inspectors must provide enough information to allow operations to meet the organic standards without providing advice or "consulting." However, many certifying agents and inspectors worry about being perceived as "consulting" if they provide this technical assistance to help their clients come into compliance. The NOP's new instructions outline what certifying and inspectors can and can't do to assist organic operations. See NOP 2614: Technical Assistance for more information.

Deborah Cavanaugh-Grant (217-782-4617; cvnghgrn@illinois.edu)

Less seriously …

On a t-shirt worn by a man obviously around 50 years of age … *"Cleverly Disguised to Look Like an Adult."* I know a lot of folks like that.

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