



# 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, [weinzierl@illinois.edu](mailto:weinzierl@illinois.edu). The *Illinois Fruit and Vegetable News* is available on the web at: <http://www.ipm.illinois.edu/ifvn/index.html>. To receive email notification of new postings of this newsletter, call or write Rick Weinzierl at the number or email address above.

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#### *Upcoming Programs*

- **[Central Illinois Sustainable Farming Network](#)** field days and workshops include **Growing Small Fruit and Developing Value-Added Products, April 16, 2011**, 1:30-3:30 pm (registration starting at 1:00 pm), Teresa's Aronia Acres, 1566 CR 400 N, Congerville, and Teresa's Fruits and Herbs, Eureka, Illinois, and **Equipment for Small Farmers, May 21, 2011**, 1:00-3:30 pm (registration starting at 12:30 pm), [Spence Farm](#), 2959 N 2100 E, Fairbury, Illinois. For more information, see the University of Illinois Extension Small Farms website at <http://web.extension.illinois.edu/smallfarm/events.cfm>.
- **SW Illinois Orchard Twilight Meeting, April 14, 2011**. Backwoods Berry Farm (Dale & Becky Conrady), 27244 Hettick Scottville Road, Hettick, IL. Program begins at 6:00 p.m. and will include discussions led by UI Extension on early season insect and disease management in fruit crops. From Carlinville, take IL-108 west to IL-111. Turn right onto IL-111 and follow for 4.3 miles. Turn left onto CR-9. Take the first left to stay on CR-9 and go another 4.5 miles to 27244 Hettick Scottville Road. For additional details or questions, contact Elizabeth Wahle at [wahle@illinois.edu](mailto:wahle@illinois.edu) or 618-692-9434, ext. 21.
- **Grape Growers Workshop, May 14, 2011**. Lazy L Grape Ranch, near Mechanicsburg, IL. Brad Taylor, SIU, and Elizabeth Wahle, UI Extension, will demonstrate and discuss major practices, including shoot thinning and positioning and cluster thinning and leaf removal, vineyard floor management, and petiole sampling. Program begins at 10:00 a.m., with registration at 9:30 a.m. On I-72 east of Springfield, take Exit 114 into Mechanicsburg. Turn left (east) onto W. Main Street, then right onto S. Church Street, which turns into Roby Road. Continue south past Darnell Road and turn left (east) onto Moomey Road. The vineyard is on the right (south) and visible from the road. Registration is \$20.00 for individual IGGVA members or \$30.00 per vineyard or non-IGGVA member. Registration is at the door and includes lunch. For further details, contact Elizabeth Wahle at [wahle@illinois.edu](mailto:wahle@illinois.edu) or 618-692-9434, ext. 21.
- **SW Illinois Orchard Twilight Meeting, May 19, 2011**. Broom Orchard, located 2.3 miles south of Carlinville/IL-108 on the Alton Road/Shipman Road. Program begins at 6:00 p.m. For more information contact Elizabeth Wahle at 618-692-9434, ext. 21 or [wahle@uiuc.edu](mailto:wahle@uiuc.edu).

## ***Regional Updates***

**In northern Illinois**, day temps in the 30s to low 50s and night temperatures in the 20s were common between March 25 and 31, but April 1 through 8 saw when day temperatures reach the 70s more than once. The area received about 1 inch of rainfall between March 25 and April 8. Tillage operations are underway on many farms in the region.

Tree fruits such as apples and pears are still at bud swell, but warm weather expected April 8-10 may enhance shoot growth. Grapes are still dormant, but strawberries have resumed growth in some areas, with new leaves emerging from crowns. Pruning and training of non-bearing fruit trees is still going on in many orchards. Fertilizer and herbicide application is almost done in many orchards, and most delayed dormant oil sprays will go on soon. Lime sulfur can be applied on small fruits and tree fruits at this time, but growers need to follow label directions, particularly when plants are at green tip.

Planting has begun for cabbage and other cool season vegetables such as potatoes, beets, and onions. Growers are starting warm season vegetable seedlings in greenhouses for transplanting into fields in about three to four weeks.

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## ***Notes from Chris Doll***

It's not a late spring anymore. Record highs on April 3 were followed by a relatively warm week and warmer temperatures into this weekend have pushed the phenology charts ahead of "normal." As of the 10th, peach bloom is literally past, and some petal fall is occurring from early blooming apple trees, with full bloom on others. Sweet cherry full bloom was a couple of days ago, and European plums are beginning to bloom. Ren Sirles of Alto Pass related in a phone call on the 8th that Delicious apples were in full bloom, so that means only a couple of days difference between there and the 100 miles north to the Back 40. He also reported that three codling moths were caught in six traps on that date. The trap counts in the Back-40 today were zero codling moth and 3 oriental fruit moths.

Ample rain to trigger apple scab spore release and the potential for fireblight means that "protection" sprays are in order. Following that will be the timing of Apogee sprays for fire blight control and petal fall thinning sprays in this latitude and north. For peach growers it means that good timing and coverage during the shuck split time will be needed for brown rot and bacterial spot. Apogee use is discussed on pages 20-21 in the [2011 Midwest Tree Fruit Tree Spray Guide](#), and chemical thinning is discussed on pages 53-54 of the same publication.

It's late for the majority of the Illinois peach growers to practice blossom removal, but it might pay to do what you can because the increase in fruit size from early thinning is a good payoff. Most likely, a late freeze from here on would not make much difference on total damage. I see where the Penn State budgets say that peach thinning requires about 30 hours per acre, or \$405. Their researchers and others are doing a lot of work with mechanical thinners that might save much of that time, so it makes for interesting reading.

The fast movement through bloom and fruit set should hastens the need to complete some other tasks such as pruning peaches (it's not too late), ground cleanup, and herbicide applications. Also, it's time to make the second application of nitrogen to peaches unless a dire forecast is made for a loss of crop.

It is now time in this area to perform ringing or scoring on apples to induce flower bud formation. Some literature articles mentioned that these procedures can improve return bloom, but I put more faith into good thinning for that. The dwarfing roots stocks for apples do a pretty good job of responding to the physical abuse done by a knife or other tool.

*Chris Doll*

## ***Specialty Crops and Local Foods Issues***

### ***MarketMaker and MarketReady ... Wholesale Opportunities Spur Pricing Questions***

Commercial retailers are increasingly expanding efforts to source local produce and value-added specialty products. While expanding market opportunity is a beneficial development, doing business in the wholesale market can be quite different than direct marketing transactions that account for the majority of sales for many growers. Factors such as pricing, packaging, invoicing, insurance, quality assurance and more play a role in the relationship with the commercial buyer. Information about these factors will be highlighted throughout the season but in this issue PRICING will be the focus.

How to determine the appropriate differential between wholesale and retail prices is a frequent question for operations exploring wholesale opportunities. In the grocery business prices are set according to targeted profit margins. Margins are variable depending on the item and are determined according to shelf life, spoilage, theft, unsold inventory, seasonality, availability, etc. Products with a higher likelihood of loss (perishable commodities) require a higher margin to account for potential losses. Recent **MarketMaker/MarketReady** research conducted by Dr. Tim Woods at University of Kentucky, documented typical grocery produce margins are ranging from 33-50% depending on the item. Knowing the target margins for the products to be marketed is helpful in determining individual wholesale and retail prices and can be obtained through conversations with a buyer or department manager.

As an example, if we know a produce manager includes a 40% margin on asparagus and the store's retail price to the consumer is \$2.89/lb., the wholesale price is obtained by first calculating the "Food Cost" by subtracting the margin from 1. In this example the cost of the asparagus is .6 or 60% ( $1 - .4$ ) and .4 or 40% represents target margin. By multiplying the retail price by the Food Cost ( $\$2.89 \times .6$ ), the wholesale price of \$1.73/lb is determined. Upon arriving at the wholesale price the grower must then determine if that is a profitable price for the operation. Having good information to track cost of production is very important. Factoring in expenses for packaging, labeling, additional storage space, delivery/transportation, and then estimating the anticipated increase in sales volume can be tricky so using a computer spreadsheet to analyze a variety of scenarios is helpful.

Looking at pricing from another angle, let's assume that a grower approaches a buyer with a wholesale price already in mind. Grower X produces a specialty salsa and has calculated that he can wholesale the product for \$3.79 per unit. During his conversation with the buyer he learns that a 35% margin is customary for products in that specialty category. With this information the target retail price can be determined by first calculating the store's Food Cost% by subtracting the margin from one ( $1 - .35$ ) which is .65. The target retail price is ( $\$3.79 / .65$ ) or \$5.83. Now grower X can examine other products in the section to determine if his salsa will be competitive at that price level. Price negotiation is part of the business but understanding these pricing strategies can be helpful to determine a starting point.

In conjunction with the **MarketMaker** project, a collaborative companion project called **MarketReady** has been developed to share important information about the expectations and requirements involved in commercial/wholesale marketing to restaurants, grocery stores, distributors and institutional buyers.

John Pike ([jpik@illinois.edu](mailto:jpik@illinois.edu))

## ***Fruit Production and Pest Management***

### ***Fire blight of apple in Illinois and its management***

Fire blight, caused by the bacterium *Erwinia amylovora*, is the most destructive disease of apples and pears in Illinois. It occurs every year and causes shoot blight, canker blight, and rootstock blight on apples and pears. The blossom blight symptom of fire blight is not common in Illinois. In contrast, shoot blight develops widely during June and July. In 2008, fire blight occurred widely in Illinois. In 2009, severity of fire blight was the highest in the past 10 years, especially in western Illinois. In 2010, the incidence and severity of fire blight was relatively low in the state.

Streptomycin is an effective antibiotic for control of fire blight of apples and pears. This bactericide is applied during bloom and after serious hail damage. Resistance to streptomycin in *E. amylovora* has recently been reported from several states (e.g., California, New York, Michigan). A survey was conducted in 2010 to determine whether or not

streptomycin-resistance in the fire blight bacterium exists in Illinois. Infected shoots were collected from 23 orchards throughout the state and at least five isolates of *E. amylovora* were collected from each orchard. The isolates were tested against 0, 25, 50, and 100 ppm of streptomycin in culture plates. None of the isolates produced colonies at 50 or 100 ppm of streptomycin, indicating that there was no streptomycin-resistance in the *E. amylovora* that we collected in Illinois in 2010. The highest recommended rate of streptomycin for control of fire blight of apples and pears is 100 ppm (8 oz per 100 gal). The collected isolates of *E. amylovora* were also tested against copper hydroxide (Kocide-3000) in the laboratory, and we found no resistance this copper compound.



Obviously, the above-mentioned findings are from a single-season survey. We will continue similar studies in 2011 and likely in 2012. However, the results of 2010 showed that failure in management of fire blight in apple orchards in Illinois is likely related to other practices (e.g., timely use of chemicals) rather than existence of streptomycin- or copper-resistance in the causal pathogen. Moreover, we have succeeded in effective management of fire blight in severely affected orchards by timely applications of copper (at silver-tip bud development) and streptomycin during bloom.

Copper should be applied to the entire orchard, including non-susceptible cultivars, at the silver-tip stage of flower bud growth, when temperatures are above 45°. Several copper compounds (Bordeaux mixture, copper hydroxide, copper oxychloride, copper sulfate) can be used at the silver-tip stage. Copper should not be applied after ¼-inch green leaf stage or when drying conditions are slow, as severe injury can occur. Fixed coppers such as Kocide and C-O-C-S can be tank mixed with early season oil sprays. However, do not combine copper sulfate alone with dormant oil. For more information on pathogen biology and disease epidemiology, check <http://veg-fruit.cropsci.uiuc.edu/new/apples18.asp>, and for additional information on dormant sprays for control of fire blight of apples and pears, consult the *2011 Midwest Tree Fruit Spray Guide* (<http://www.extension.iastate.edu/publications/pm1282.pdf>).

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## ***Thinning Peaches***

Thinning is one of the season's most important tasks for peach growers. As in other fruits, thinning in peaches is essential because it affects fruit size, fruit ripening, return bloom, and fruit set and yield the following year. To date there are no effective chemical thinners and the chemicals that have been identified to have some effect are often inconsistent. Some of the chemicals that have been tested to thin peaches include gibberellic acid (GA) application 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 had 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 thinning is often done at bloom either by knotted ropes dangling from a beam hanging above the canopy and mounted to a tractor, combs, and PVC pipes. Some have experimented with water jets or shaking but that 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 will occur, resulting in imbalance between fruit and shoot and often a lower return bloom the following year. It has been suggested that thinning should start earlier the year following a partial or complete crop loss.

A relatively recent study from South Carolina (Joroge and Reighard, 2007) compared thinning of Contender peach at full bloom and every 10 days thereafter until 40 days after full bloom (FB, 10, 20, 30 and 40 days). The crop load was adjusted at each of the five thinning dates to 4, 6, and about 10 inches between the flower buds or the fruitlets. The experiment was done for two years and in both years hand thinning at full bloom and 10 days later resulted in fewer fruits and lower yield than thinning at 20 days or later after full bloom. The study also showed that, in both years, fruit diameter was smaller when thinning was delayed while it increased when the distance between the flowers and the fruits were increased.

Because peaches tend to bloom during a time of spring frost risk, it is suggested that thinning should start somewhere 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 follow with a hand thinning two to three weeks after full bloom..

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## ***Prebloom and Petal Fall Insecticides for Apples and Peaches***

For those in central and northern Illinois where bloom in peaches and apples did not already rush by in the heat of the last few days, a couple of comments about prebloom insecticides and miticides (applied between green tip and pink), then some comments about petal fall insecticides ...

Superior oil can be applied early in bud development (green tip) at 2 percent by volume (2 gallons oil per 98 gallons of water). As plant growth progresses, oil concentrations should be lowered to about ½ percent by volume at pink to avoid causing leaf or blossom burn. Emulsifiable oils remain as a coating on limbs and twigs when the water evaporates, and this film suffocates San Jose scale and eggs of European red mite and rosy apple aphid. Oil applied in this manner is very effective against all three of these pests, but adding Lorsban can increase effectiveness against rosy apple aphid and San Jose scale, and adding Esteem can increase effectiveness against San Jose scale. Additionally, adding Lorsban to the delayed dormant oil spray also leaves long-lasting residues on the bark that help to reduce infestations of woolly apple aphid moving from roots to shoots. For more information on insecticides for use from green tip through pink, see page 8 in the [2011 Midwest Tree Fruit Tree Spray Guide](#).

The most common targets of insecticides applied immediately after petal fall in apples and peaches are the plum curculio and stink bugs and plant bugs. Other potential targets of petal fall sprays include rosy apple aphid, redbanded leafroller, and spotted tentiform leafminer in apples and oriental fruit moth in peaches. For a list of insecticides labeled for use against these less common insects (at least for most Illinois growers) at petal fall, see pages 12 (apples) and 34 (peaches) of the [2011 Midwest Tree Fruit Tree Spray Guide](#). Targeting specific insecticides against these less frequent

pests (at this time) is NOT necessary in most orchards, so base the insecticide in petal fall sprays on the need to control plum curculio and plant bugs and stink bugs.



Left to right: Plum curculio adult, egg-laying scars on small apples; expanded scars later in the season. (Photos from Michigan State University; <http://www.ipm.msu.edu/fruitpests/plumcurculio.htm>.)



Left to right: Brown stink bug adult (N. Carolina State University); catfacing damage to peach caused by stink bug feeding (W. Virginia University); tarnished plant bug adult; tarnished plant bug injury to apples (both from Washington State University).

In apples, petal fall sprays effective against plum curculio include Imidan, Guthion, Avaunt, and several pyrethroids. This is the last season that Guthion may be used on apples, so growers should be using up the last of any supplies. Using pyrethroids at this time is discouraged because they kill predaceous mites and “release” populations of European red mite. Most growers will choose between Imidan and Avaunt for plum curculio in apples at petal fall, and both are very effective. Imidan is an organophosphate, so if buyers demand that no organophosphates be used, Avaunt is a good alternative for plum curculio control. Pyrethroids are the most effective choices for stink bug and plant bug control in peaches at petal fall; see the list of registered pyrethroids on page 34 of the Spray Guide. Oriental fruit moth populations in Calhoun County are resistant to pyrethroids, so growers need to use a different kind of insecticide for oriental fruit moth control in that area.

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## ***High-Tunnel Production Systems***

### ***Row Covers for Protection Against Low Temperatures***

As new growers begin using their high tunnels, many will be surprised by how little protection they offer by themselves against cold nighttime temperatures. Ambient temperatures outside the tunnel are often only 1 or 2 degrees colder than the low temperature observed inside the tunnel. However, because the high tunnel affords protection from wind, the use of spun-bound row covers is highly effective inside the tunnel. Growers often use a spun bound row cover to make a low tunnel inside of their high tunnel. The picture below is from southern Illinois following overnight lows of 16 degrees with strong north winds. The plants along the north end of the house were damaged (but later fruited) while those in the rest of the row were left unharmed. Growers typically will split the row cover in the middle of the house and drag both ways. In other words in a 96-foot house, 48 feet would be rolled back one direction and the other 48 feet the opposite direction. This is done for convenience and ease of covering and uncovering rows. If you are using row covers, make sure you monitor temperatures underneath the row covers and pull them back when temperatures get too

high. This technique is very effective and should be routinely used in periods of sub freezing weather ... which despite this weekend's warm weather may still threaten production again later this spring in at least the northern part of the state



*Jeff Kindhart (618-695-9434; kindhar@illinois.edu)*

### ***Less seriously ...***

Working people frequently ask retired people what they do to make their days interesting. Well, for example, the other day, Mary my wife and I went into town and visited a shop. When we came out, there was a cop writing out a parking ticket. We went up to him and I said, 'Come on, man, how about giving a senior citizen a break?' He ignored us and continued writing the ticket. I called him a name I shouldn't repeat. He glared at me and started writing another ticket for having worn-out tires. So Mary called him an even worse name I shouldn't repeat. He finished the second ticket and put it on the windshield with the first. Then he started writing more tickets. This went on for about 20 minutes. The more we abused him, the more tickets he wrote.

Just then our bus arrived, and we got on it and went home.

We try to have a little fun each day now that we're retired. It's important at our age.

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