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, 217-333-6651, weinzier@uiuc.edu. The ***Illinois Fruit and Vegetable News*** is available on the web at: http://www.ipm.uiuc.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.

In this issue ...

Upcoming Programs (Illinois Pumpkin Field Day **CANCELLED**; Local Food Systems; Consider Farming Organically)
Regional Updates (from Jeff Kindhart and Maurice Ogutu)
Degree-day Accumulations (This is the final presentation of degree-day totals for 2007, and they're way above average in the southern portion of the state)
Notes from Chris Doll (weather and weather records, black rot of apples, water and nitrogen for strawberries)
Fruit Production and Pest Management (codling moth phenology, black rot of apples, nitrogen for strawberries, multicolored Asian lady beetle)
Vegetable Production and Pest Management (corn earworm and corn borer management)
University of Illinois Extension Specialists in Fruit & Vegetable Production & Pest Management

Upcoming Programs

- **CANCELLED! Illinois Pumpkin Field Day at the University of Illinois St. Charles Horticulture Research Center, September 11, 2007.** Heavy rains over an extended period resulted in serious flooding at the St Charles Horticulture Research Center on Aug 24. The flooding lasted for several days and severely damaged many of the featured plots for the field day. After assessing the damage, UI Research Specialist Bill Shoemaker, in consultation with colleagues, made the decision to cancel this year's event. This cancellation will have no bearing on the location of next year's event, which will be held in Urbana as planned. Any inquiries may be directed to Bill at 630/584-7254 or wshoemak@inil.com.
- **Exploring Local Food Systems:** The Lumpkin Family Foundation (Mattoon), along with the Delta Institute and the Wallace Center at Winrock, invites farmers from Champaign, Christian, Clark, Coles, Cumberland, Douglas, Edgar, Effingham, Fayette, Macon, Montgomerey, Moultrie, Piatt, Shelby, Sangamon and Vermilion counties to a evening devoted to exploring local food system development. Local markets exist around these counties, and relatively large markets such as St. Louis , Indianapolis, and Chicago are not far away. This program seeks to learn about growers' experiences in production and marketing for more localized markets. We would like to hear from you. Please join us for dinner and discussion the week of October 15th. Times and locations will be announced later in September. If you are interested in attending or would like more information, please call Mari Coyne at 847-830-8948 or email her at farmforager@yahoo.com.
- **Consider Farming Organically: Tools for Success. November 15, 2007, 1:30 p.m. to 4:30 p.m., in the McDonough County 4-H Auditorium** at the University of Illinois Extension Office, 3022 West Jackson, Macomb, Illinois. Speakers include Joel Gruver, Soil Science and Sustainable Ag faculty, Western Illinois University; Loretta Ortiz-Ribbing, University of Illinois Extension Specialist, Crop Systems; and Darlene Knipe, University of Illinois Extension Specialist, Marketing and Business Development. Registration fee: $5.00. Immediately following this workshop, participants are invited to attend the final Tri-State Organic Video Conference televised live from Purdue University from 5:00 to 7:30 p.m. This interactive video conference will discuss organic certification. Registration for the evening portion of this program is an additional $10.00 and includes a box meal and CD of the conference. This video conference will be held across the street at the Macomb Extension Center at 480 Deer Road in Macomb. Pre-registration is required for both parts of this program by Monday, November 12th. Please call the University of Illinois Extension Office in McDonough County at (309) 837-3939 for more information and to register for both of these programs. Continuing Education Units for Certified Crop Advisors will be available.

Regional Updates

At the Dixon Springs Ag Center, tobacco harvest is underway. We look forward to determining the results of the fertility research that is occurring with this project. About 75% of the harvest has been completed, and it appears that like most other "specialty" crops, tobacco requires a fair amount of labor. This was my first experience growing this crop. We had very few problems, with lack of water probably the greatest challenge. We hope to continue research with this crop at DSAC in future years.

Other happenings: We have begun producing our plug plants for fall strawberry plasticulture projects. For us and for many other growers, the tips arrived about 1 to 2 weeks later than we were hoping, This may represent a problem or a blessing, with the difference being determined largely by what kind of growing conditions we experience in October. If we have relatively warm sunny days in October, I do not think growers will experience any problems from setting later in September. However, if conditions are mainly cool and overcast, we may have difficulty obtaining enough branch crown prior to winter. Time will tell which of these two is the case.

Jeff Kindhart (618-695-2444 jkindhar@uiuc.edu)

In northern Illinois, too much rain is the key story for late August. Some areas in the region received more than 6 inches of rain in one week as August ended. Monthly rainfall for August ranged from 9 to 14 inches in general, with even greater totals at individual locations in the state's northern-most counties. Strong winds and heavy rains downed trees and led to power outages August 23-25, and flooding along creeks and rivers and low areas of fields was widespread. Some vegetable fields had standing water for more than three days, leading to a lot of plant death, fruit rots, and serious phytophthora outbreaks.

Most pick-your-own orchards are now open, and harvest of early apples such as Red Free and Paula Red has been completed. Harvest of Gala, Honeycrisp, Jonamac, Ozark Gold, McIntosh, and similar varieties started this week. Fall-bearing raspberry picking is ongoing, and grape harvest is underway as well. Multicolored Asian lady beetle is a problem in grapes and other small fruit and tree fruit crops.

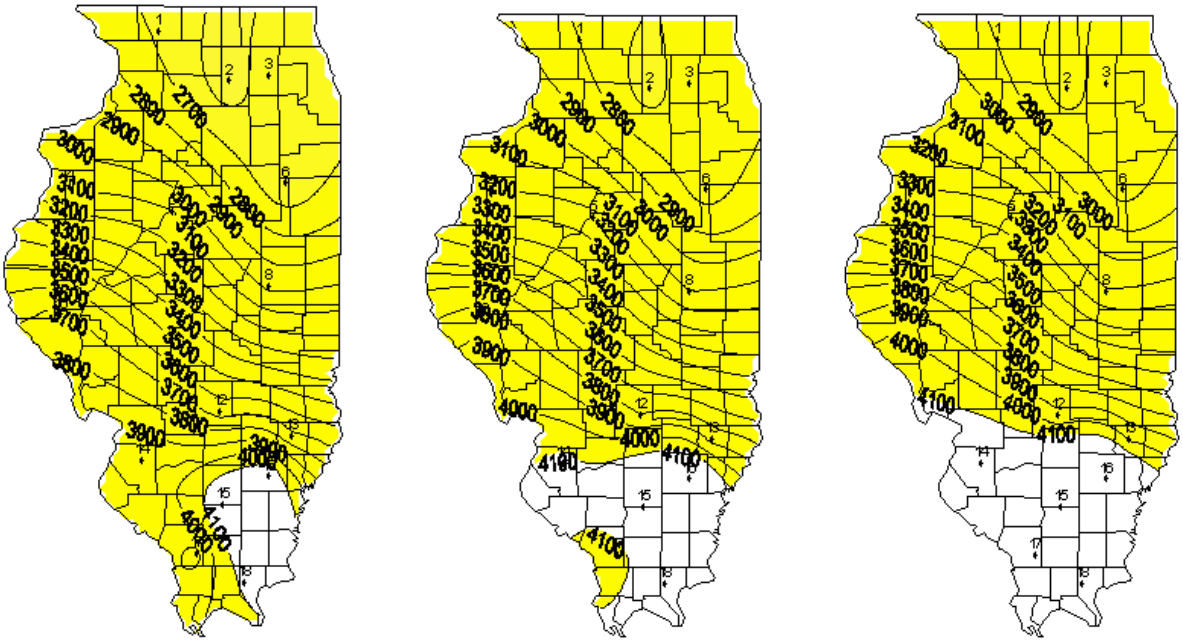
Harvesting of sweet corn, tomatoes, peppers, muskmelons, watermelons, squash and other vegetables continues. Rust infections are common in sweet corn, and both European corn borer and corn earworm moth counts have been high at various locations. Growers are encouraged to follow regular spray schedule for control of these insects in peppers, tomatoes, sweet corn, and snap beans. Powdery mildew infections on pumpkins and other vine crops are common, and early blight and septoria leaf spot have been observed on tomatoes. Mosaic virus symptoms are widespread on new growth in pumpkins and squash. Pumpkins are sizing well, and in some fields more than 90 percent of the fruits are orange by now. A flush of new fruit set sizing well in farms where pumpkin vines are still healthy. There is a lot of fruit rot in pumpkins and winter squash, particularly in fields that were flooded.

Maurice Ogutu (708-352-0109; ogutu@uiuc.edu)

Degree-day Accumulations

Degree-day accumulations listed below for weather stations in the Illinois State Water Survey WARM data base have been summarized using the Degree-Day Calculator on the University of Illinois IPM site (http://www.ipm.uiuc.edu/degreedays/index.html). The list below includes only degree-day accumulations and projections based on a 50-degree F developmental threshold and a January 1 starting date, but other options that use different thresholds and specific biofix dates are available on the Degree-Day Calculator. The Degree-Day Calculator is available as a result of a joint effort of current and former extension entomologists (primarily Kelly Cook) and Bob Scott of the Illinois State Water Survey. If you have questions about how to use the site, contact me or Bob Scott (rwscott1@uiuc.edu).

Rick Weinzierl (217-333-6651; weinzier@uiuc.edu)



Degree-days, base 50 F, January 1 through September 5, 2007 (left), and projected through September 12 (center) and September 19 (right).

Degree-day accumulations, base 50 degrees F, starting January 1.

Station	County	Base 50F DD Jan 1 – Sep 5, Historic Average	Base 50F DD Jan 1 – Sep 5, 2007	Base 50F DD Jan 1 – Sep 12 (Projected)	Base 50F DD Jan 1 – Sep 19 (Projected)
1. Freeport	Stephenson	2515	2683	2799	2896
2. Dekalb	Dekalb	2529	2532	2642	2736
3. St. Charles	Kane	2439	2673	2784	2876
4. Monmouth	Warren	2717	3067	3191	3295
5. Peoria	Peoria	2844	3108	3239	3351
6. Stelle	Ford	2674	2620	2749	2860
7. Kilbourne	Mason	2954	Missing	Missing	Missing
8. Bondville	Champaign	2830	2974	3100	3209
9. Champaign	Champaign	2938	Missing	Missing	Missing
10. Perry	Pike	2889	3738	3869	3980
11. Springfield	Sangamon	3101	Missing	Missing	Missing
12. Brownstown	Fayette	3215	3652	3800	3927
14. Belleville	St. Claire	3275	3987	4129	4251
15. Rend Lake	Jefferson	3399	4241	4394	4526
16. Fairfield	Wayne	3340	4208	4360	4492
17. Carbondale	Jackson	3282	3867	4009	4130
18. Dixon Springs	Pope	3363	4119	4270	4400

Notes from Chris Doll

The weather is the main topic in the area (after the short fruit crop has been discussed). For much of SW Illinois, it continues to be dry, with 0.9 inches of rain in my gauge during the last 66 days. And during the past 42 days, only 4 days saw maximum temperatures below 90 degree. There were five days higher than 100 degrees. Apparently, we did not set a record high for average monthly temperatures, as both 1933 and 1936 were higher. None of these figures make for a nice fruit harvest. Many of the short crop of Jonathan dropped to the ground and the rest have now been picked. I saw some Goldens on M9 last week that were about ready to be picked. Sunburn was prevalent on many fruits, including the Fuji that made it through. The small apple syndrome looks like it is associated with a low seed count.

Dr. Janna Beckerman of Purdue University wrote about black rot infections on apples in their last newsletter (see a reprint of that article below). Apparently my sighting of this disease in the Back-40 and elsewhere were not uncommon this year. It might relate

back to the Easter freeze and some less intensive spray programs in many orchards. My number one variety for infection was Honeycrisp, which Dr. Beckerman rates as susceptible. My first experience with this disease was in Iowa about 50 years ago after I began using a rotary mower to chop apple prunings instead of brush removal. I learned that the disease was living over on the dead wood and causing infection problems. A non-green method of control was instigated – increased spraying instead of brush pick up.

While staying in the office on a hot day last week, I saw a copy of "Climate of Illinois", Bulletin 531 of the University of Illinois Agricultural Experiment Station, published in 1949. One of the early statements in this publication was that "many people, in Illinois as elsewhere, are convinced that the climate has changed within the last thirty to fifty years." In looking for evidence that precipitation of 0.5 inch in August 2007 might have been a record low, I saw that St. Louis recorded 0.45 in 1844, 0.07 in 1873, 0.31 in 1881, 0.28 in 1930, and 0.85 in the hot year of 1936. However, 1.45 inches were recorded for July and August of that year, so my 0.9 might be a record. For the opposite side (for the wet northern IL growers), 20.45 inches fell in St. Louis in August of 1946.

Strawberries continue to need water to stay alive. As mentioned last month, this crop might need some 30-40 pounds of nitrogen per acre to make a decent crop next spring (see Mosbah Kushad's article below). And historically, a nice fall rain or a good irrigation following an extended dry period leads to a high germination rate of fall weeds, both grasses and broadleaves. Since prevention is usually easier that post-emergence control, now is the time for pre-emergence herbicides.

Chris Doll

Fruit Production and Pest Management

Codling Moth Phenology

Developmental events for the codling moth based on degree-day accumulations are presented below. Remember that **"biofix" refers to the date of the first sustained capture of first-generation moths in traps**.

Codling moth development:

First moths of third generation emerge	~1920 DD_{50} after biofix
99 percent of second generation eggs hatched	~2100 DD_{50} after biofix
Beginning of third generation egg hatch	~2160 DD_{50} after biofix
*First moths of fourth generation emerge	~2900-3000 DD_{50} after biofix
*Beginning of fourth generation egg hatch	~3200 DD_{50} after biofix

(Table based on ***Orchard Pest Management*** by Beers et al., published by Good Fruit Grower, Yakima, WA.)

* Extrapolated from the model presented by Beers et al.

*Degree-day updates and codling moth comments from south to north, for select locations in Illinois***:**

See previous issues of this newsletter for the names of specific orchards where biofix dates were observed and reported. All degree-day accumulations and predictions are based on nearest weather station data; temperatures recorded within your orchard provide more accurate data; use the numbers from the table below as approximations only.

For codling moth:

Orchard Location	Weather Station	CM Biofix Date	DD_{50} Sep 5, 2007	DD_{50} projected Sep 12, 2007	DD_{50} projected Sep 19, 2007
Murphysboro	Carbondale	18 April	3540	3679	3797
Belleville	Belleville	23 April	3660	3799	3918
Edwardsville	Belleville	29 April	3569	3709	3827
Brussels	Brownstown	27 April	3281	3426	3550
Urbana	Champaign	30 April	missing	missing	missing
Speer	Peoria	07 May	2698	2827	2935
Harvard	Freeport	10 May	2387	2500	2593

Degree-day totals since biofix remain way above the historical averages for the same time periods in southern Illinois, where it is very possible that a fourth generation egg hatch is underway. Some larvae from the third generation likely entered diapause (dormancy) in late August instead of pupating and emerging as moths, but continued flights recorded for at least some southern locations in the last several days suggest that late season damage from fourth generation larvae is a threat where any of the short crop remains on trees in this hot and very dry part of the state.

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Black Rot of Apples (***by Janna Beckman, Purdue University***, reprinted from ***Facts for Fancy Fruit***, August 31, 2007.)

Black rot of apples. Photos by Janna Beckerman.

I recently received a submission of apples infected with black rot at the calyx end. Black rot, caused by the fungus *Botryosphaeria obtusa*, is the same fungus that causes frogeye leaf spot, black rot fruit decay, lovely cankers, and occasionally causes a calyx-end rot that appears in early summer – like the sample I received that can be seen in the photos below. The fungus can colonize any wound that penetrates the epidermis, including insect injuries. As lesions develop, they begin as reddish spots that darken to purple and are bordered by a red ring. A key symptom that distinguishes black rot from bitter rot is that there is usually only one spot per fruit. Eventually, the infected area changes color, becoming brown as it increases in size, or it may turn black. As this rotted area enlarges, concentric bands of brown and black develop with a surprising uniformity of width. The flesh of the decayed area remains firm and

leathery. Eventually, the apple rots completely, dries, and shrivels into a mummy. Pycnidia, little erumpent pustules containing spores of the black rot fungus, appear on the surface of rotted tissue.

Lesions of calyx-end rot caused by *B. obtusa* are usually dark brown to black and may completely surround the calyx or they may be offset to one side of the calyx (See photos). In orchards where inoculum levels are high and fungicide protection is lacking, *B. obtusa* can infect as soon as the bud scales begin to loosen, although infection of the flower sepals and/or fruit calyxes is more common. Unfortunately, growers are unaware of infection because the fungus usually remains quiescent; Symptoms of fruit decay develop only after fruit begins to ripen. All of the registered scab fungicides suppress *B. obtusa*, but the SI fungicides (Nova, Bayleton, Rubigan) and/or low rates of mancozeb fungicides (1 lb/100 gal) are barely effective. Captan and Topsin M provide the best protection against black rot infection and are recommended at petal fall in orchards where black rot fruit decay has been a problem in previous years. Strobilurins also provide some level of protection; Dave Rosenberger et al. 2000 found that treatments that included a strobilurin (Flint, Sovran, or Pristine) in the scab program provided better control of frogeye leaf spot (the foliar infection of *Botryosphaeria obtusa*) than did sprays of Nova-Dithane or Rubigan-Thiram. Although fruit rots were not evaluated in this study, I don't think I'm going out on a limb to suggest anything controlling the foliar infection phase of this disease is probably controlling the fruit infecting stage as well.

Like many plant pathogens, by the time you find the problem it is too late for this year. However, sanitation in the form of mummy clean-up and cankered limb removal is something to consider during spring pruning. Apples that are mummified due to chemical thinning, or fire blighted twigs, serve as an easy site of colonization. Piles of prunings are another important reservoir of this disease. Prunings can be left if they are debarked during any sort of flail mowing.

Cultivar susceptibility is definitely an issue, as well. Studies done by Alan Biggs and Stephen Miller in West Virginia ranked 'Orin', 'Pristine', and 'Sunrise' as highly susceptible; 'Suncrisp', 'Ginger Gold', 'Senshu', 'Honeycrisp', 'PioneerMac', 'Fortune', NY 75414, 'Arlet', 'Golden Supreme', 'Shizuka', 'Cameo', 'Sansa', and 'Yataka' as moderately susceptible; and least susceptible were 'Creston', 'Golden Delicious', 'Enterprise', 'Gala Supreme', 'Braeburn', 'GoldRush', and 'Fuji'. Previous published rankings have included 'Red Delicious', 'Empire', and 'Cortland' among the most susceptible cultivars to the black rot pathogen. From the NE-183 trial, only 'GoldRush', 'Enterprise', and 'Gala Supreme' were more resistant than "standard varieties."

Last but not least, physiological stresses, especially drought stress, predispose trees to cankers caused by *Botryosphaeria*. This uptick in disease incidence may be just one more side effect of our spring freeze coupled with drought. As we head into fall, careful observation of trees for cankers as a source of inoculum should be high on every grower's list to mark for spring pruning and removal!

Importance of Applying Nitrogen when Renovating Strawberry Plants

First, a look back to steps that should have led up to the need for late summer nitrogen needs …

Strawberry patches grown using the traditional matted row should be renovated soon after harvest for a variety of reasons, including minimizing insects and diseases, invigorating the plants, stimulating runner formation, and controlling weeds. There is a general agreement among horticulturists as to the best method for renovating strawberries. Generally, renovation starts soon after harvest by spraying the plants with 2, 4 D (amine forms like Formula 40 or Amine 4). If grasses are a problem some growers spray Poast soon after the 2, 4 D spray (2,4 D and Poast should not be tank mixed). Another common practice is to apply pre-emergence herbicide Sinbar (terbacil). Sinbar should not be applies to soils with low organic matter, some varieties are more sensitive to Sinbar than others, and Post should not be applied up to 6 weeks after Sinbar so that no leaf injury occurs. Within 3 to 5 days after the herbicide spray, plants are mowed. The rows are mowed to a desirable width of between 12 to 18 inches. Care must be taken during mowing to avoid injury to the crowns. The areas between the rows are tilled to limit the matted rows width. The plants should be kept moist by providing adequate irrigation both to activate the herbicides and to encourage plant growth.

That gets us to the present issue, nitrogen fertilization …

A very important practice is to supply plants with nitrogen, either in the form of granular or spray applications. The average recommended rate of nitrogen is as high as 50 lb/acre. However, lower rates should be considered depending on plant and soil tests. In a relatively recent study Bernadine Strik, Tim Righetti, and Gil Buller found that applying fertilizer after renovation increased remobilization of nitrogen to new growth the following spring. They reported that up to 30% of the nitrogen was mobilized into leaves and roots. They also found that plants benefited from fertilizer after renovation up to 2 years after application and that mobilization was higher from granular than spray applications. Some studies have shown that spring application of nitrogen may have a negative effect on fruit quality compared to application after renovation, but Strik et. al's study found no difference in fruit quality between spring and after-renovation nitrogen application. In conclusion, applying nitrogen after renovation is a good practice especially if it is split into two applications, one immediately after mowing and the other in early September. Also it is important to

keep the soil moist in order to maximize plant growth and nutrient uptake. If you have the means, keep the plants watered during this dry period. (Mosbah Kushad)

Mosbah Kushad (217-244-5691; kushad@uiuc.edu)

Multicolored Asian Lady Beetle

Maurice Ogutu noted that multicolored Asian lady beetles are numerous and infesting fruit nearing harvest in northern Illinois. The problem is similar elsewhere as well. These insects spend most of the season eating aphids (including soybean aphid), but as aphid colonies become scarce, they will feed on sugary fruits, especially those where cracking other injury has occurred. They are a particular problem in grapes because if they are crushed with the fruit to yield juice for wine-making, their odor taints the wine even after the beetles are filtered from the juice. It's always difficult to recommend insecticides for use against what is otherwise a beneficial insect (well, except for its other habit of infesting houses in large numbers to pass the winter), but where these beetles pose a problem as contaminants in fruit at harvest, their control is sometimes necessary. For grape growers, effective insecticides and their required preharvest intervals (PHIs) are Baythroid (3 days), malathion (3 days), and Sevin (7 days). Pyrethrins without PBO may be used by organic growers with no waiting period after application before harvest. In brambles, effective insecticides include Brigade, Capture, or Discipline (all contain bifenthrin) (3 days), malathion (1 day), Sevin (7 days), and Asana (7 days). As for grapes, pyrethrins without PBO may be used by organic growers with no waiting period after application before harvest. In apples, Sevin has a 3-day PHI and is the only effective insecticide with a PHI of less than 7 days. Baythroid and Imidan have 7-day PHIs in apples.

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Vegetable Production and Pest Management

Corn Earworm and Corn Borer Moth Flights:

The message is the same as it was in the last couple of issues of this newsletter … corn earworm moth counts remain high throughout the state, and European corn borer flights remain significant in the northern half of the state. Regular spray programs targeting these pests – at intervals as short as 3 days in sweet corn and 7 days in peppers, tomatoes, and snap beans – are essential at this time of year. See the ***Midwest Vegetable Production Guide*** and previous issues of this newsletter for listings of recommended insecticides and more details for specific crops.

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Less seriously …

"Cash, check or charge?" I asked, after folding items the woman wished to purchase.

As she fumbled for her wallet, I noticed a remote control for a television set in her purse.

"So, do you always carry your TV remote?" I asked.

"No," she replied, "but my husband refused to come shopping with me, and I figured this was the most evil thing I could do to him legally."

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