UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

Vol. 15, No. 6, May 29, 2009
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://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.

In this issue ...

Upcoming Programs

- **2009 Illinois Summer Horticulture Day, June 11, Royal Oak Farm near Harvard, Illinois**, beginning at 8:30 a.m. For more information and/or reservations call Don Naylor, Executive Secretary of the Illinois State Horticultural Society at 309/530-7678 or by email at ilsthortsoc@yahoo.com. To register in advance, mail a check for $25 per person to: I.S.H.S., 15962 Old Orchard Rd, Bloomington, IL 61705. Advance reservation deadline is the June 9. On-site registration is $30.
- **2009 Sustainable Agriculture Tours that involve fruits and vegetables:**
  - **June 19, Growing Strawberries, Naturally.** Jed's Farm, Thompsonville
  - **August 13, Creative Community Co-op Farming.** Basu Natural Farms, Pembroke
  - **September 22, Fresh Fruits and Vegetables.** River Front Berry Farm, Martinton (http://www.riverfrontberryfarm.com)

  A fee of $20 per person will be charged for each tour, which includes lunch. Registration at least one week in advance is required. For more information on these and other tours, see https://webs.extension.uiuc.edu/registration/default.cfm?RegistrationID=2845. To register by phone, contact Donna Cray at 217-241-4644. For more information, contact Deborah Cavanaugh-Grant (217-968-5512; cvnghgrn@illinois.edu).

Regional Updates

From the Dixon Springs Agricultural Center … As May ends, much of southern Illinois still remains wet, although many crops have been planted during brief periods of dry field conditions. Tomato and pepper plantings are responding

positively to the warmer temperatures experienced this week. Warmer temperatures are also seeing plasticulture strawberries winding down and some anthracnose has been reported. Blueberry harvest appears to be on track, with the first ripe berries at in our planting at DSAC this week. The blackberry crop looks good in general with only light winter injury on a couple of varieties here. We have received new cultivars from Dr. Clark to add to our blackberry evaluation trials.

Jeff Kindhart and Bronwyn Aly (618-695-2444 & 618/638-7799; jkindhar@illinois.edu, baly@illinois.edu)

In northern Illinois, late May has seen many cloudy days with highs in the 60s to mid 80s and lows in the upper 30s to low 60s. During the same period, the region received 3-5 inches of rainfall, with higher amounts further to the south.

Apples and pears are in the petal fall to 1-inch diameter fruit, and thinning is going on in many orchards. There was a lot of dieback on shoots and trunks of peaches, and blossoms were killed by cold winter temperatures that occurred in January this year. Sweet cherry blossoms were also killed by cold winter temperatures, but shoots survived. Sour cherry fruits are sizing well. June bearing strawberries are in full bloom, and summer bearing raspberries are blooming. Blackberries were also damaged by cold winter temperatures, even the 'Illini Hardy' cultivar that is recommended for northern Illinois. There have been reports of peach leaf curl disease on peach leaves.

Most growers have planted onions, cabbage, sweet corn, green beans, and other vegetables. Earlier planted spinach and lettuce are being harvested in some farms. Asparagus and rhubarb harvesting is almost complete on many farms. Summer squash, cucumbers, and muskmelons have been direct seeded, and some transplanting of tomatoes and peppers was accomplished towards the end of last week. Ground is ready for planting of vegetables, and in some fields plastic mulch and drip tapes are already in place. Vine crop transplants are still in greenhouses and will be planted as soon as the ground warms up. Pumpkin planting will commence towards the end of this week. In the Kankakee area most of the warm season vegetables have been planted.

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

Notes from Chris Doll

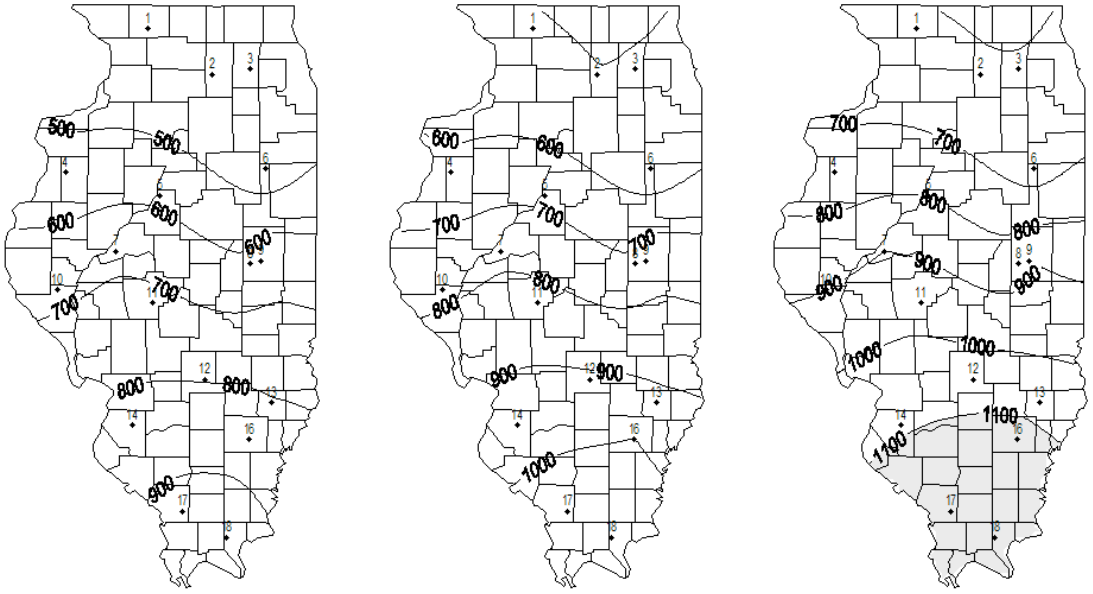
As noted above in the list of contents for this issue, Chris Doll had back surgery last week. He faces several weeks of recuperation that involves wearing a rigid brace, so he's not getting out to check orchards, and he does not get to spend much time sitting at his computer to keep up with emails or web-based info. I'm sure Chris would enjoy hearing from the many newsletter readers who know him … his mailing address is Chris Doll, 4681 Drda Lane, Edwardsville, IL 62025. *(R. Weinzierl)*

Degree-day Accumulations

Degree-day accumulations presented 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 Estes) 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).

Degree-day accumulations, base 50 degrees F, starting January 1, 2009.

Station	County	Base 50F DD Jan 1 – May 28, Historic Average	Base 50F DD Jan 1–May 28, 2009	Base 50F DD Jan 1–Jun 4, 2009 (Projected)	Base 50F DD Jan 1–Jun 11, 2009 (Projected)
1. Freeport	Stephenson	511	423	508	613
2. Dekalb	Dekalb	560	411	502	612
3. St. Charles	Kane	509	429	508	605
4. Monmouth	Warren	621	523	618	733
5. Peoria	Peoria	663	583	679	798
6. Stelle	Ford	610	441	537	654
7. Kilbourne	Mason	770	678	779	900
8. Bondville	Champaign	701	607	708	830
9. Champaign	Champaign	698	676	779	904
10. Perry	Pike	730	676	777	898
11. Springfield	Sangamon	753	723	834	965
12. Brownstown	Fayette	837	795	913	1049
13. Olney	Richland	830	806	921	1057
14. Belleville	St. Claire	902	834	954	1087
15. Rend Lake	Jefferson	952	Missing	Missing	Missing
16. Fairfield	Wayne	904	875	1001	1147
17. Carbondale	Jackson	933	930	1053	1191
18. Dixon Springs	Pope	981	924	1051	1193



Degree-day accumulations, base 50 F, January 1-May 28, 2009 (left), and projected through June 4 (center) and June 11 (right).

Rick Weinzierl (217-244-2126; weinzier@uiuc.edu)

Fruit Production and Pest Management

Oriental fruit moth and codling moth updates

As noted previously, establishing biofix dates for **oriental fruit moth** was a little confusing in far southern Illinois, as traps near Murphysboro began catching moths in late March, then 2 to 3 weeks passed without further activity. I've listed two possible biofix dates for OFM phenology models for the far south as well as biofix and degree-day accumulations for Calhoun County and Urbana. Degree-day accumulations and projections, base 45 F, from nearest Illinois State Water Survey weather stations are:

Oriental fruit moth biofix dates and degree-day (base 45F) accumulations:

	Biofix Date	DD Base 45 F, through May 28	DD Base 45 F, projected through June 4	DD Base 45 F, projected through June 11
Murphysboro (Carbondale weather data)	***March 25*** *OR*	980	1137	1313
	April 17	830	987	1163
Hardin (Brownstown weather data)	April 15	789	942	1117
Urbana (Champaign weather data)	April 18	699	838	1002

Growers who use Isomate OFM Rosso pheromone dispensers to control oriental fruit moth by mating disruption and time applications so that dispensers are in place just before second generation flight need to have the dispensers applied before the accumulation of 950 DD (base 45 F) after the beginning of first generation flight … 950 degree-days after biofix roughly marks the beginning of second generation flight. For southern IL and Calhoun County growers who use this approach … it is time to finish applications if you have not already done so.

Regarding the timing of insecticides for second through fifth generation oriental fruit moth control, issue 5 of this newsletter contained some bullet statements that I copied from another source, and I failed to check them as thoroughly as I should have. Please use the corrected guidelines below …

To determine the need for and timing of insecticide applications for summer generations of oriental fruit moth, remember that if populations are heavy enough to warrant control, then effective spray residues must be present on fruit surfaces when eggs are hatching so that first stage larvae are killed before they enter the fruit. (For some insecticides, spray residues may be most effective if they are already on the fruit when the egg is laid; labels for these products specify timing applications accordingly.) The often-used threshold to reach a decision to spray is 5 moths per trap per week (some references recommend a threshold of 6-8 moths per trap per week). Catching this number of male moths is interpreted as evidence that female moths are also present, that mating and egg-laying is occurring, and that enough larvae will be produced to cause an economically significant amount of damage to fruit. Eggs hatch in approximately 175 degree-days, so whenever trap catches exceed 5 per trap per week, an effective residue needs to be on the fruit by 175 degree-days later. In the heat of summer, if daily highs and lows are 95 and 65, respectively, 175 degree-days (base 45) accumulate in 5 days. Insecticide applications should, for the most part, be assumed to last effectively for about 14 days, depending on wash-off by rainfall, so as the interval since the previous spray approaches 14 days, the need for reapplication today can be based on moth catches (and therefore presumed egg-laying) 5 to 10 days ago.

Biofix dates (dates of the beginning of sustained flights) for **codling moth** at a range of locations are listed in the following table, along with degree-day accumulations and projections since those biofix dates.

Codling moth biofix dates and degree-day (base 50F) accumulations:

	Biofix Date	DD Base 50 F, through May 28	DD Base 50 F, projected through June 4	DD Base 50 F, projected through June 11
Murphysboro (Carbondale weather data)	April 24	568	692	833
Centralia (Fairfield weather data)	April 28	469	597	746
Hardin (Brownstown weather data)	April 30	407	526	666
Urbana (Champaign weather data)	May 10	272	377	506
Rockford	May 19	143	236	351

Developmental events for the codling moth based on degree-day accumulations are presented below. Moth emergence from overwintered larvae (that pupated earlier this spring) is over 90 percent complete in the far south and only recently underway in far northern Illinois. As of May 29, over 50 percent of first generation eggs were estimated to have hatched in far southern Illinois, while egg hatch was yet to begin in the far north.

Codling moth development:

First egg hatch (for first generation larvae)	~220 DD_{50} after biofix
50 percent of first generation moths emerged	~240 DD_{50} after biofix
50 percent of first generation eggs hatched	~500 DD_{50} after biofix
90 percent of first generation moths emerged	~500 DD_{50} after biofix
90 percent of first generation eggs hatched	~730 DD_{50} after biofix
First moths of second generation emerge	~900 DD_{50} after biofix

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

Grape Erineum Mite

I have seen a couple of reports of grape phylloxera damage on grape foliage in far northern Illinois already this spring. I have not seen those infestations, and the diagnoses may well be correct, but significant foliar damage from phylloxera so early in the season not common. Growers and consultants should look closely to distinguish phylloxera galls from the gall-like masses of hairs that form as a result of grape erineum mite infestations.

Left to right: upper surface of leaf infested with grape erineum mite; lower surface of leaf infested by grape erineum mite; and lower surface of leaf infested by grape phylloxera. (Photos by Neil Carter, OMAFRA)

Neil Carter, entomologist with Ontario's OMAFRA, has a clear fact sheet on grape erineum mite on the web at http://www.omafra.gov.on.ca/english/crops/hort/news/hortmatt/2004/12hrt04a1.htm. His text includes the following:

> "Grape erineum mite is usually a very minor pest, especially in vineyards where sulphur is used to control powdery mildew. Sulphur is registered for control of erineum mite and although other acaricides (mite pesticides) and insecticides limit erineum mite to some extent, they do not provide

satisfactory control nor are they registered for this use. Check sulphur labels carefully, as there are some varieties where these products should not be used (including Concord and Foch).

At first glance, an infestation of erineum mite may appear to be phylloxera with blistering, bumpy, gall-like formations on the upper surface of the grape leaf. However, when you turn the leaf over, the white, hairy erinea (that's what the "galls" are called) clearly show this to be the result of the feeding by the tiny erineum mites. The minute, white, worm-like mites are visible if you tease apart the hairy growth with a pin and use a dissecting scope or 10-15 power hand lens. The damage is so distinctive that you don't really need to see the mites to recognize their effects on the leaves.

Usually, little economic damage results from erineum mite, but severe infestations, especially on young vines can produce serious stress by reducing photosynthesis and causing early drop of leaves."

Again, the text above is from Neil Carter's fact sheet on grape erineum mite.

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Vegetable Production and Pest Management

Corn Earworm Trapping

Last week I set up our corn earworm traps near Urbana, and although the late start to the 2009 season means that earworm control on silking corn is still a few weeks off for most growers, I have caught a few earworm moths already. So, here's my annual late spring rant about earworm biology and the use of pheromone traps to monitor flights and plan control programs …

Corn earworms overwinter in the pupal stage in the soil. Although this insect overwinters with at least some success in some areas of the state in some years, it also migrates in from the south on weather fronts every year. Moths are almost always active in the Collinsville area by late May and early June, but in much of the state the period of first activity (and the first need to control them) can vary from June through August. Although control may be necessary in one portion of the state at a particular time, it may be unnecessary in many other locations. Consequently, it really is essential to establish a monitoring program to determine spray needs. Unfortunately, scouting for foliar damage or larvae on the surface of plants is not an option. Corn earworm moths lay their eggs singly on silks, and larvae move down the silk channel immediately after they hatch from the eggs (and hatching can occur in as little as 2 _ days during hot weather). On corn, larvae do not feed on any exposed parts of the plant (leaves, husks, etc.), so the only practical way to kill them (short of having planted BT sweet corn, which does not provide 100 percent control) is with a contact insecticide applied to the silks. Larvae crawl across the residues on the silks, and the insecticide is taken up through the cuticle.

Effective monitoring programs depend on the use of pheromone-baited traps that catch male corn earworm moths and indicate that adults of both genders are present and eggs are being laid. Previously we have recommended using either a wire Hartstack trap (pictured above) or a nylon version of the same general design marketed by Scentry and several regional distributors. We've long known that paper sticky traps are ineffective at monitoring corn earworm moths, and there's growing evidence that the Scentry nylon cone traps may not work well enough. Several years ago the Scentry traps were shown to catch fewer moths than the Hartstack traps in trials completed in the northeastern U.S., and results from monitoring work done in 2006 show that the nylon traps also may fail to detect light but still significant flights when the wire Hartstack traps do catch moths. Consequently, I now recommend that all sweet corn and seed corn producers use the wire Hartstack trap. (Data to support this recommendation came from a regional monitoring effort coordinated by Bill Hutchison of the University of Minnesota and conducted by several entomologists and horticulturists who participate in the Great Lakes Vegetable Workers Group.) Traps should be baited with Hercon "zealures," and the lures need to be replaced every 2 weeks. Earworm control is necessary when moth flight is ongoing and fresh silks are present. If traps are catching more than a few moths (3 to 5 per trap per night) when silking begins, sprays should be applied within 2 days after first silk -- insecticide residues must be on the silks to kill larvae immediately after they hatch from eggs and before they enter the silk channel.


Left: Corn earworm larva. Right: Hartstack trap.

Corn earworm moth (Kansas Department of Agriculture).

A Midwest supplier of the Hartstack trap for earworms is Bob Poppe, Route 1, Box 33, Lexington, IL, 61753 (309-723-3201). Lures are available from Great Lakes IPM (10220 Church Road NE, Vestaburg, MI 48891; 989-268-5693; 989-268-5911; 800-235-0285; FAX: 989-268-5311) and Gemplers (1-800-382-8473). The wire Hartstack trap is not cheap … think in the $200+ range for the trap plus shipping, and think higher numbers if the traps must be shipped a long way. But before you let the price tag make you baulk, consider …

- These traps will last for many years (I have a couple that are over 20 years old) … as long as you don't run over them with tractors or other vehicles.
- Along with a few dollars for lures every year and daily monitoring of moth counts, they provide you with guidance that can keep you from spending thousands of dollars unnecessarily or losing thousands of dollars worth of sweet corn sales. If you spray 10 acres of sweet corn even twice a week for 3 weeks before earworms are actually present and require control, that's 6 applications at (conservatively) $12.00 per acre for each application … multiplied by 10 acres, that's $720 (plus the loss of time not spent doing something more necessary). Multiply that by a 20-year life span for the trap, and the total exceeds $14,000. I think that pays for the trap and the lures. Viewed in a different way, if high trap counts lead you to spray more often in order to get the control you really need, you market more corn. For a fresh-market producer who sells sweet corn at $4.00 per dozen, a yield of 1,500 dozen per acre is worth $6,000. Preventing a 5 percent loss by spraying extra when needed saves $300 per acre in sales. Multiply that by 10 acres and 20 years, and the total reaches $60,000 … that, plus keeping your customers from complaining about wormy corn, certainly pays for the cost of a trap and a package of lures every year.
- I rest my case … buy a Hartstack trap and use it.

Regarding insecticide choices, when that time of the season finally arrives … Pyrethroid resistance in corn earworm has led to reduced levels of control in recent years. Varying levels of pyrethroid resistance in corn earworm populations

that arrive in Illinois from different locations and at different times of the season result in varying levels of control – sometimes the pyrethroids work very well, and sometimes they do not provide adequate control at all. Pyrethroids that are most effective against populations that are not resistant include Brigade (same a.i. as Capture, which is no longer produced for use as a foliar spray in sweet corn), Mustang Max, Warrior, and Baythroid. Alternative chemistries that are most effective include Belt and Radiant. **There is no Section 18 label or pending request for Coragen's use on sweet corn in Illinois in 2009.** Organic growers may use the OMRI-approved formulation of spinosad sold under the trade name Entrust.

More to come on rates and timing of insecticides for corn earworm control in issue 7.

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Less seriously

Just when you thought all the good ideas were already patented …

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