



# UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

## *Illinois Fruit and Vegetable News*

Vol. 13, No. 7, June 7, 2007

*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](mailto: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.

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**University of Illinois Extension Specialists in Fruit & Vegetable Production & Pest Management**

### *Upcoming Programs*

- **Summer Horticulture Day, June 4, registration begins at 8:00 a.m.** The tour begins at Flamm Orchard on old Route 51 at Cobden, Illinois. Participants will visit Flamm Orchard (peaches, apples, strawberry, pepper and eggplant). The tour will proceed to Rosemont Farms packing house across from Flamm Orchard and will include lunch and presentations. The last stop of the tour will be Von Jakob Vineyard and Winery. For more information on hotels and general information, contact Don Naylor, ISHS Executive Secretary at 309-828-8929 or email: [ilsthortsoc@yahoo.com](mailto:ilsthortsoc@yahoo.com). For more details on the program and presentations, contact Mohammad Babadoost, 217/333-1523.
- **Sustainable Ag Tour, Triple S Farms near Stewardson, also on June 14.** Triple S is a 200-acre diversified organic operation that produces dozens of varieties of organic vegetables, chickens, turkeys, hogs and cattle, organic dent corn, sweet corn, popcorn, soybeans and hard red wheat. Registration (\$20 per person) at least one week in advance is required. Visit the Illinois Small Farms website ([http://web.extension.uiuc.edu/smallfarm/ag\\_tours.cfm](http://web.extension.uiuc.edu/smallfarm/ag_tours.cfm)) to register and for more details about each of the tours including a map and agenda or contact Deborah Cavanaugh-Grant (217-968-5512; [cvnghgrn@uiuc.edu](mailto:cvnghgrn@uiuc.edu)).

### *Regional Updates*

**In southern and southwestern Illinois**, strawberry harvest is coming to an end, and growers need to be thinking about and preparing for renovation following the final harvest. Traditionally 2,4-D amine is broadcast immediately after the final harvest, followed by mowing seven to eight days later. This allows enough time for broadleaf weeds to absorb a sufficient amount of herbicide prior to mowing in order to kill the entire plant. Mow the leaves as close to the ground as possible without damaging the crowns. Narrow down row widths to 12 to 18 inches wide with a rotary tiller or cultivator. Apply 25 to 40 pounds per acre of actual nitrogen – use the higher rate on sandy soils or weak plants. Apply a residual herbicide such as Sinbar as the last step of renovation.

Its time to start thinking out ordering this year's strawberry plants if you are a plasticulture grower. I talked to McNitt's Gardens & Greenhouse recently and they are still taking orders for this year. If all goes as planned, they will be growing out tips of 'Camarosa', 'Chandler', and 'Sweet Charlie' this year. Pricing should be confirmed within the next week, as soon as the exchange rate from

Canada, where the tips are sourced, is set. McNitt's Gardens and Greenhouse is located just south of Murphysboro on IL-127 and orders can be placed at 618-687-3563. If no one is available, leave a message, and McNitt's will return your call.

As mentioned, strawberry harvest is ending and summer-bearing raspberries are coming on. My 'Jewel' black raspberries are in the red phase, so it won't be long before raspberries are on the market. Remember that black and purple raspberries and erect blackberries should be pinched back three to four inches after the primocanes have reached the desired height in the summer, resulting in the development of lateral shoots. The pinching process usually coincides with the harvest of each type of bramble.

Blueberry harvest has started as well. Some areas are better off than others in terms of freeze damage, but the 'Spartan' blueberries I picked this week had good size and sugar content. In the process of enjoying my bounty, I spied my first Japanese beetle of the season; let the battle begin.

I hope to see everyone at the Summer Horticulture Field Day on Thursday, June 14, in southern Illinois. Parking and registration begins at Flamm Orchard on old Route 51 on the northern edge of Cobden, Illinois. Participants will visit Flamm Orchard (peaches, apples, strawberry, pepper and eggplant), then the tour will proceed to Rosemont Farms packing house across from Flamm Orchard and will include lunch and presentations. Last stop of the tour will be Von Jakob Vineyard and Winery. The pre-registration fee is \$20 per person, the cost is \$25 on site. Advance reservations are appreciated. Please pre-register by June 11. Children are free. For more information on hotels and general information, contact Don Naylor, ISHS Executive Secretary at 309/828-8929 or by email at [ilsthortsoc@yahoo.com](mailto:ilsthortsoc@yahoo.com). For questions on the program and presentations, contact Mohammad Babadoost, 217/333-1523.

*Elizabeth Wahle (618-692-9434; [wahle@uiuc.edu](mailto:wahle@uiuc.edu))*

**From the Dixon Springs Agricultural Center:** Although the apple crop seems to be a bust, there are several fruit and vegetable projects at the DSAC and the surrounding area in southern Illinois farms. Our replicated pepper cultivar trial is located at Flamm's Orchard and a replicated tomato trial is located at Trover Farms. Research with high tunnel tomato production this year involves comparing yield and fruit quality from two tomato cultivars at 12", 18", and 24" spacing. Harvest is currently underway for the high tunnel project at the Bill Bass farm.

The area tomato crop appears to be good at this point with good fruit set and plant size. Some growers who have been conducting tissue tests are reporting they are finding low potassium levels and are taking steps to correct this problem. Low potassium is indicated as being highly related to tomato yellow shoulder disorder (blotchy ripening). Growers who have had problems with this in the past are encouraged to have tissue samples analyzed for nutrient content. In some cases, even growers who have applied large amounts of pre-plant potassium are seeing low tissue test levels.

The pepper crop also appears good for many growers. Conditions have been favorable for good fruit set across most of the region, and growers need to remain diligent in their fertigation practices to ensure the plants have sufficient nutrients to size the crop they have set.

Some blueberries are ripening, but with the exception of a few later cultivars the crop at the DSAC is less than commercial. It will be interesting to see if there will be increased bird pressure this year. A new matted-row strawberry cultivar trial has been established, and plants are growing well. This project is being conducted in cooperation with Brad Taylor and Alan Walters at SIU. The cultivars are being evaluated at both DSAC and SIU. We look forward to being able to share yield and fruit characteristics from these trials next year. The blackberry crop shows promise ... a blackberry variety trial featuring predominately advanced breeding selections from Dr. John Clark was established last year at the DSAC.

*Jeff Kindhart (618-695-2444; [jkindhar@uiuc.edu](mailto:jkindhar@uiuc.edu))*

**In northern Illinois,** temperatures over the last 2 weeks have been average to above average, and rainfall over the last week to 10 days has brought soil moisture levels up. Some portions of the region have received up to 3 inches of rain since the last few days of May. Light frost during the middle of May affected leaves of fruit trees in counties in the northwest corner of the state, but in general apple and peach fruits are marble-sized or considerably larger now. The apple crop this year will be lighter than last year's crop in most orchards. Cover spray programs are underway, and codling moth hatch is ongoing (see details in the fruit section below). I have received reports of peach leaf curl on peach leaves and plum curculio damage on apple fruits. Due to frequent rainfall in the region during the June 4-8 period, orchardists need to be diligent in their apple scab spray programs. Most growers have planted sweet corn, and early fields are over 6 inches tall. Some cool season vegetables such as lettuce and spinach that were planted earlier will be ready for harvest next week. Transplanting of tomatoes, peppers, cucumbers, muskmelons, and watermelons is ongoing, as is pumpkin and squash planting. I have received reports of cucumber beetles feeding on transplanted cucurbits, and flea beetles feeding on newly planted eggplant leaves.

*Maurice Ogutu (708-352-0109; [ogutu@uiuc.edu](mailto:ogutu@uiuc.edu))*

***The University of Illinois Plant Clinic: Diagnosing Plant Problems***



The main laboratory in the University of Illinois Plant Clinic.

The Plant Clinic at the University of Illinois has been in business since 1975. This is a seasonal laboratory, offering unbiased diagnostic help for plant problems from May 1 through September 15<sup>th</sup> each year. The Clinic specializes in identification of disease pathogens, nematodes, insects and insect injury, weeds, and help with herbicide injury problems (although chemical residue testing is not available). Any plant problem submitted to the Plant Clinic will be assessed additionally for possible cultural and environmental problems, limited only by the amount and quality of information provided.

The majority of samples that are submitted to the clinic are from field crops and landscape plants, but we can also help fruit and vegetable producers and welcome you to use our service. Growers are best served when specific tests are needed. We can offer quick turn-around time with serological tests for:

- Watermelon fruit blotch
- Tomato bacterial wilt and canker
- Cucumber mosaic virus
- Impatiens necrotic spot virus
- Potato virus Y
- *Ralstonia solanacearum* (on potatoes and ornamentals)
- Tobacco mosaic virus
- Tomato spotted wilt virus
- *Xanthomonas campestris* pv *pelargonii*

The lab can also culture tissues to test for fungal and bacterial pathogens. Some pathogens grow more quickly than others, so these tests may take anywhere from 24 hours (moisture chamber of fungal pathogens) to 10 days (*Verticillium* isolations). In addition, our lab offers nematode assays on tissue, roots, or soil. Root knot nematode and foliar nematodes can be identified in 24 hours. Soil assays for nematodes usually have a 3-day turn around, depending on the number of samples submitted.

Insect identification is usually a fairly quick process in the lab. However, specialists who help with insect ID are not housed at the clinic, so turn-around time may depend on their availability. Normal turn around time for insect ID is 24 hours.

Feel free to call and discuss the tests you need, the timing for results, and the costs. The Plant Clinic telephone number is 217-333-0519. The clinic web site provides information on how to submit a sample, sample fees, sample forms, clinic services, and links to other sites. Visit <http://plantclinic.cropsci.uiuc.edu/> for helpful information. Diagnostic responses and information on how to manage the problem will be returned to clients by US mail and electronically. Most standard testing is \$12.50 per sample. Specialty tests require more time and equipment, thus a higher expense. Payment must accompany the sample.

The lab is located on the University of Illinois campus, west of the historic round barns. The mailing address is: Plant Clinic, 1401 W. St. Mary's Rd., Urbana, IL 61802. The telephone number is 217-333-0519. Hours are Monday through Friday, 8am-noon and 1pm-4:30pm.

The University of Illinois Plant Clinic is a member of the North Central Region (<http://www.ncpdn.org/DesktopDefault.aspx>) of the National Plant Diagnostic Network (NPDN) and is the only Illinois lab recognized as an official NPDN lab. Plant clinic personnel have been upgrading diagnostic techniques and now help monitor for Ramorum blight (aka sudden oak death), Asian soybean rust, legume viruses, Emerald ash borer, giant hogweed, and other plant pathogens and pests that might be exotic invasive concerns in Illinois. Clinic data is recorded on a national database to help monitor pathogen and pest threats.

Nancy Pataky, Plant Clinic Director (217-333-0519; [npataky@uiuc.edu](mailto:npataky@uiuc.edu))

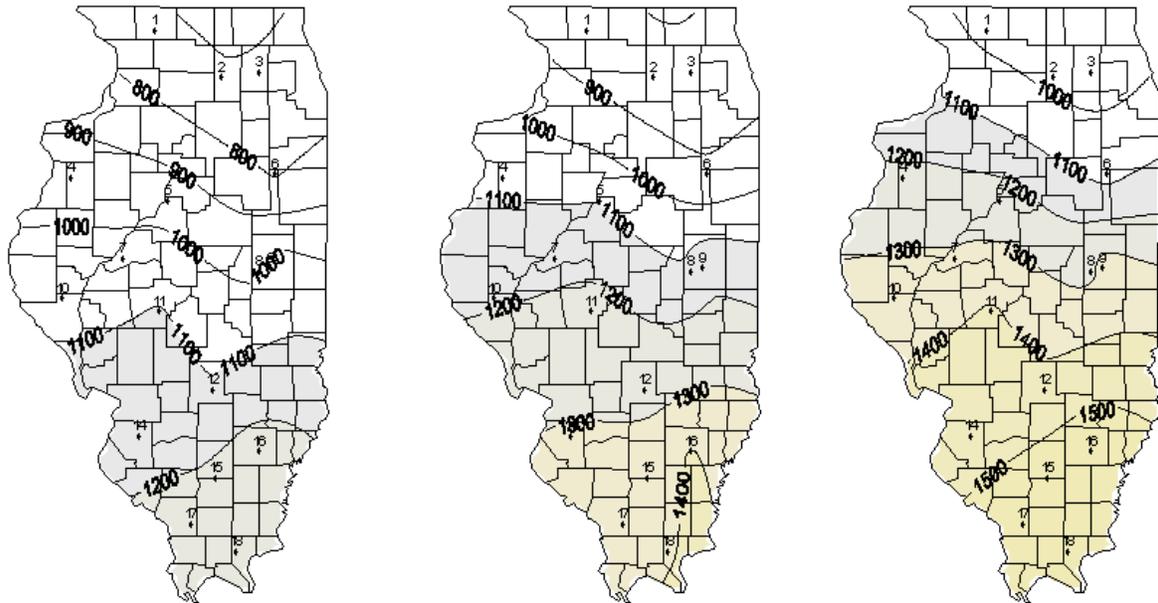
### ***Degree-day Accumulations***

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](mailto:rwscott1@uiuc.edu)).

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

<b>Station</b>	<b>County</b>	<b>Base 50F DD Jan 1 – June 6, Historic Average</b>	<b>Base 50F DD Jan 1 – June 6, 2007</b>	<b>Base 50F DD Jan 1 – June 13 (Projected)</b>	<b>Base 50F DD Jan 1 – June 20 (Projected)</b>
1. Freeport	Stephenson	634	716	830	973
2. Dekalb	Dekalb	692	710	839	976
3. St. Charles	Kane	627	712	819	953
4. Monmouth	Warren	758	955	1079	1228
5. Peoria	Peoria	802	971	1098	1252
6. Stelle	Ford	745	792	918	1072
7. Kilbourne	Mason	915	1029	1158	1312
8. Bondville	Champaign	844	976	1106	1262
9. Champaign	Champaign	843	1057	1191	1350
10. Perry	Pike	869	1060	1189	1342
11. Springfield	Sangamon	907	1107	1246	1412
12. Brownstown	Fayette	993	1104	1248	1416
14. Belleville	St. Claire	1063	1171	1309	1466
15. Rend Lake	Jefferson	1119	1216	1368	1544
16. Fairfield	Wayne	1068	1251	1404	1579
17. Carbondale	Jackson	1091	1232	1376	1540
18. Dixon Springs	Pope	1144	1249	1397	1564



Degree-day accumulations, base 50 F, January 1 – June 6, 2007 (left), and projected through June 13 (center) and June 20 (right).

### *Notes from Chris Doll*

Some great spring weather lately, temperature-wise. The precipitation part of the equation depends on where the thundershowers landed. During the last 10 days, eight grass-wetting showers have fallen on the Back-40, and they totaled 0.15 inches. Some farms have fared much better, and others have about the same. But weeds, grass and trees continue to grow.

The season is moving on, with the first black and red raspberries being picked. The freeze injury in April appears to have caused about a 25 percent reduction in yield. Blackberries are still blooming, a result of late shoot development. On both crops, the new growth has kicked in, giving shoot growth that needs tipping and/or training. Without a peach crop, the trees have become vegetative and growth is lush. Apples appear to be about normal, and the fireblight infections have abated somewhat. The trap line for codling moth, oriental fruit moth, and tufted apple bud moth has been fairly quiet with low numbers. As of June 6, the degree days here stand at 871 for codling moth since an April 29 biofix.

Strawberry harvest is complete in the area, and it is time for renovation of the matted row systems. Nothing much has changed in the renovation suggestions that I know about. The critical aspects for success are to get it done early and to use the irrigation water to improve effectiveness of the herbicides and for improved recovery of the plants.

It is time to make scaffold or limb selection on young apple and peach trees, and to work at developing good crotch angles at the same time. Clothespins are the best for crotch angles if the leader does not have too great a diameter. For apple growers with full crops, it is time to begin adding NAA or Ethrel in cover sprays to stimulate return bloom. Most of the trees in this area should not need this treatment.

The Illinois State Horticulture Society's annual Summer Orchard Day on June 14 is only a week away. It should be a good time to see old friends and to make new ones. I hope to see many readers there.

I put out the Japanese beetle trap yesterday, and now on a warm, windy day, a dozen have already arrived.

CONDOLENCES: Condolences to the family of Dan McGuire who died at his home in Cobden on May 17 at the age of 75. He is survived by his wife Irene, sons Brad and Dana and their wives and children, and many friends. Dan was a second-generation apple and peach grower until he left the farm in 1985 and went west to work in the fruit industry in Arizona and California. During his orcharding years, Dan was an active member of fruit organizations and served as President of both the Illinois State Horticulture Society and the Illinois Fruit Council. He was elected to the Horticulture Society Hall of Fame in 1996.

*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 hatch of first generation larvae	~220 DD <sub>50</sub> after biofix
50 percent of first generation moths emerged	~240 DD <sub>50</sub> after biofix
50 percent of first generation eggs hatched	~500 DD <sub>50</sub> after biofix
99 percent of first generation eggs hatched	~920 DD <sub>50</sub> after biofix
First moths of second generation emerge	~900 DD <sub>50</sub> after biofix
First hatch of second generation larvae	~1100 DD <sub>50</sub> after biofix
50 percent of second generation moths emerged	~1340 DD <sub>50</sub> after biofix

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

Updates 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.

Orchard Location	Weather Station	CM Biofix Date	DD <sub>50</sub> June 6, 2007	DD <sub>50</sub> projected June 13, 2007	DD <sub>50</sub> Projected June 20, 2007	Comments (based on DD accumulations and predictions and the model cited above for codling moth development):
Murphysboro	Carbondale	18 April	904	1052	1218	<u>Currently:</u> Nearly all first-generation eggs have hatched, and second-generation moth flight is just beginning. <u>By June 20,</u> ~ 30 percent of second-generation moths will have emerged, and second-generation hatch will be at about 4 percent.
Belleville	Belleville	23 April	844	985	1145	<u>Currently:</u> 97 percent of first-generation eggs have hatched, and second-generation moth flight will begin in 1-2 days. <u>By June 20,</u> ~ 20 percent of second-generation moths will have emerged, and second-generation hatch will be at about 2 percent.
Edwardsville	Belleville	29 April	753	894	1054	<u>Currently:</u> 92 percent of first-generation eggs have hatched, and second-generation moth flight will begin in 4-5 days. <u>By June 20,</u> ~ 10 percent of second-generation moths will have emerged, and second-generation hatch will begin by around June 21-22.
Brussels	Brownstown	27 April	733	881	1052	Almost the same as Edwardsville.
Urbana	Champaign	30 April	702	840	1003	<u>Currently:</u> First-generation flight is just ending, and 87 percent of first-generation eggs have hatched. Second-generation moth flight is predicted to begin about June 14. <u>By June 20,</u> ~ 5 percent of second-generation moths will have emerged, and second-generation hatch is predicted to begin around June 25.
Speer	Peoria	07 May	561	693	849	<u>Currently:</u> First-generation flight is 94% complete, and 66 percent of first-generation eggs have hatched. <u>By June 20,</u> first-generation egg hatch will be 97 percent complete, and second-generation flight will be about to begin.
Harvard	Freeport	10 May	419	538	685	<u>Currently:</u> First-generation flight is 80% complete, and 35 percent of first-generation eggs have hatched. <u>By June 20,</u> first-generation flight will be 99% complete, first-generation egg hatch will be 85 percent complete.

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### ***Oriental Fruit Moth Phenology***

Last week traps from far southern Illinois to Champaign began catching oriental fruit moth adults again after a lull of several days. Degree-day accumulations (base 45 F) since moths were first captured after the “Easter freeze” now (through June 6) range from 1046 at Champaign to 1130 at Belleville, and approximately 950 DD (base 45 F) are thought to be necessary per generation (first moth of one generation to first moth of the next), so the timing of new captures in OFM pheromone traps conforms to expectations. It appears that Oriental fruit moths that emerged from overwintered pupae before the freeze (from mid-March to the first of April in southern Illinois) were killed by the cold temperatures of early April, so that portion of the first generation did not mature to produce moths that would have started a second-generation flight much sooner in the southern portion of the state.

### ***Potato Leafhopper on Apples and other Fruits***

Newsletters from several states in the Midwest and Northeast all are carrying the same news ... potato leafhoppers have arrived in most areas. These small insects migrate into Illinois from southern states on late spring and early summer weather systems, and they’ve shown up throughout the state. They feed on a wide range of fruit, vegetable, field crop, and landscape plants by inserting their needle-like mouthparts (stylets) into leaves and shoots, then sucking out plant fluids. In the process, they inject a salivary toxin into the leaves or shoots, causing a variety of symptoms, all of which are sometimes referred to as hopper burn. In apples, potato leafhopper feeding causes cupping of new leaves and greatly reduced growth of new shoots. In most years, potato leafhopper damage is most common in young trees that are not yet bearing fruit, as growers are not spraying them regularly for other insect pests (and coincidentally killing potato leafhopper). Because lots of apple trees in portions of Illinois are not bearing fruit after the spring freeze, lots of trees are not being sprayed and are therefore susceptible to potato leafhopper injury. Sample for potato leafhoppers by examining the undersides of leaves. Look for light-green, narrow, small (< 1/8 inch long) insects that tend to move sideways (instead of forward or backward) when disturbed. Thresholds suggested for potato leafhopper control range from treating whenever adults and nymphs are found on young trees to 1 adult or nymph per leaf on older trees where vigorous new growth is less important. Unlike white apple leafhopper (which is resistant to several insecticides), potato leafhopper is susceptible to most of the broad-spectrum insecticides used in apples – OPs such as Imidan and Guthion, neonicotinoids such as Assail, Calypso, and Provado, pyrethroids such as Danitol (and others), and carbamates such as Lannate and Sevin. Rimon does not control potato leafhopper. For a bit more extensive discussion of potato leafhopper on apples, see the current issue of Cornell’s Scaffolds newsletter at <http://www.nysaes.cornell.edu/ent/scaffolds/>.



Left to right: cupping of apple leaves as a result of potato leafhopper feeding, potato leafhopper nymph, and adult.

### ***Dogwood Borer on Apples***

Traps in southern Illinois (and perhaps elsewhere in the state) are capturing dogwood borer adults (clearwing moths). Various references state that dogwood borer flights begin by around 700 to 850 degree-days (base 50 F) from a January 1 starting date, and all but far-northern counties have reached or exceeded these DD accumulations. Larvae that overwintered in trees continue to mature, pupate, and eventually emerge as adults through most of the summer, and a second generation can develop as well, at least in southern Illinois, so traps may continue to catch dogwood borer adults all summer long. Larvae feed in burrknots at graft unions, and when numerous they can girdle and kill young trees. Trunks sprays containing Lorsban 75WG or Lorsban 50W are again labeled for use in apples for dogwood borer control, with best timing at peak egg hatch – late June in central IL and earlier or later by a week or two in the southern and northern portions of the state. Apply borer sprays to the lower 4 feet of the trunk and lower branches, soaking the bark. Do not apply Lorsban to fruit or foliage at this time.



Dogwood borer adult (clearwing moth) and larva in burrknot. (Photos from the University of Kentucky and West Virginia University.)

### ***Japanese Beetle***

They're here. Both Chris Doll and Elizabeth Wahle noted the initial emergence of Japanese beetles in the Edwardsville area. I'll save a more lengthy update on these creatures for a later issue of this newsletter. If you can't wait, check out the summary from the June 24, 2005 issue at <http://ipm.uiuc.edu/ifvn/volume11/frveg1110.html#fruit>.

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## ***Vegetable Production and Pest Management***

### ***Phytophthora Blight***



**Damping-off of a pumpkin plant, caused by *Phytophthora capsici***

Babadoost

On June 4, 2007, the first incidence of Phytophthora blight for the season was observed in a pumpkin field planted in April. Only a low area of the field was affected. The infection was on the crown section (above soil level), as is a common symptom of Phytophthora blight on cucurbits. Phytophthora blight, caused by *Phytophthora capsici*, is the most important disease of cucurbits (cucumber, gourd, muskmelon, pumpkin, squash, watermelon) in Illinois. It is also one of the destructive diseases of peppers in the state and around the world. Crop losses of up to 100%, due to Phytophthora blight have been experienced, and such losses were observed in 2006.



**Wilting of a pumpkin plant, caused by *Phytophthora capsici***

Babadoost



**Crown infection of a squash plant, caused by *Phytophthora capsici***

Babadoost

*Phytophthora capsici* can infect host plants at any stage of growth. It causes seedling damping-off, crown rot, leaf spots, stem lesions, foliar blight, and fruit rot. Fruit rot typically appears as a water-soaked lesion, expands, and becomes covered with fluffy white mold. Fruit rot can also develop after harvest. *P. capsici* is a soilborne pathogen that can survive in the field for more than three years. The pathogen survives between crop seasons as oospores or mycelium in infected tissue. An oospore is thick-walled sexual spore that has resistance to desiccation, cold temperatures, and other extreme environmental conditions. Oospores germinate and produce sporangia and zoospores (asexual spores). Zoospores are released in water and dispersed by irrigation or surface water. Zoospores are able to swim for several hours and infect plant tissues. Abundant sporangia are produced on infected tissues, particularly on affected fruit, and dispersed by water or through the air. Sporangia either germinate and infect host tissues, or several zoospores form inside of each sporangium are released in water. If the environmental conditions are conducive (moist and warm), the disease develops rapidly. The disease is usually associated with heavy rainfall, excessive-irrigation, or poorly drained soil. Frequent irrigation increases the incidence of the disease.

A combination of measures should be practiced to reduce damage caused by *P. capsici*. The most effective practice in controlling *P. capsici* is preventing the pathogen from being moved into a new field. The following practices can help to manage Phytophthora blight in cucurbit fields. 1) Select fields with no history of Phytophthora blight. 2) Select well-drained fields. 3) Avoid excessive irrigation. 4) Do not irrigate from a pond that contains water drained from an infested field. 5) Scout the field regularly for the Phytophthora symptoms, especially after major rainfall, and particularly in low areas. 6) When symptoms are localized in a small area of the field, disk the area. 7) Discard infected fruit, but not in the field.

Phytophthora blight of cucurbits in Illinois can be controlled by practicing the following chemical use: Treating seed with mefenoxam (Apron XL LS at the rate of 0.64 fl oz/100 lb seed) effectively protects seedlings of cucurbits until 5 weeks after sowing. If you are going to plant cucurbit seed in a field with history of Phytophthora blight, do not hesitate to treat your seed with mefenoxam. Weekly applications of dimethomorph (Forum at the rate of 6 fl oz/acre or Acrobat at the rate of 6.2 oz/acre) plus a copper compound (i.e., Cuprofix Dispers or Kocide-3000) alternated with cymoxanil + famoxadone (Tanos) plus a copper compound, or cyazofamid (Ranman 400SC) can effectively reduce development and spread of Phytophthora blight in cucurbit fields. Application of these fungicides must be started at the first sign of the disease and continued throughout the season, if conditions are conducive for development of the disease. For additional information on Phytophthora blight of cucurbits, refer to <http://veg-fruit.cropsci.uiuc.edu/new/Cucurbits.asp>.

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### ***Survey of Stewart's wilt on sweet corn in Illinois in 2007***

Each year since 1999 the University of Illinois sweet corn pathology program, in cooperation with the U of I Variety Testing Program, has assessed the incidence of plants infected with Stewart's wilt for sweet corn hybrids with different levels of resistance or susceptibility. Trials are planted at nine locations (Table 1) in the southern two-thirds of Illinois. Incidence (%) of infected plants is measured from three replicate plots of about 150 plants of each hybrid (about 450 plants per hybrid per location). The 2007 survey was completed June 4. The results illustrate the effects of winter temperature and host resistance on the occurrence of Stewart's wilt (Table 1).

Table 1. Survey of Stewart's wilt on sweet corn in Illinois in 2007.

			Hybrid and incidence (%) of Stewart's Wilt											
Stewart's wilt reaction:			R	R-MR	R-MR	M	M	M	M	M	MS	MS-S	S	S
Rating:			1.2	1.7	2.2	4.5	4.7	5.3	5.8	6.4	7.2	8	8.8	9
2007	Avg Temp	Planting Date	Bonus	Ambrosia	XT 182A	Shimmer	Bodacious	XT 273A	Honey Select	Double Gem	Snow White	Coho	Jubilee	SS Jubilee
			Dwight	25	April 23	0	0	0	0	0	0	0	0	0
Monmouth	25	April 21	0	0	0	1	0.3	0.9	0.4	1	0.2	1.5	1	1.1
Goodfield	25.5	April 24	0	0	0.2	0.2	0	0	0.5	0	0	1.6	0.4	0.3
Urbana	28.7	April 22	0.6	0	0	1.2	0	1.2	0.2	1.5	0.4	<b>2.6</b>	<b>2.6</b>	<b>4.2</b>
Perry	29.4	April 22	1.6	0.5	0.6	<b>3</b>	0.7	<b>2.2</b>	1.1	1.7	<b>4.1</b>	<b>6.5</b>	<b>6</b>	<b>4.8</b>
New Berlin	29.9	April 21	<b>2.7</b>	<b>3.7</b>	1.7	<b>5</b>	<b>4.1</b>	<b>2.3</b>	<b>5.6</b>	<b>5.7</b>	<b>13.6</b>	<b>19.3</b>	<b>16</b>	<b>13.2</b>
St. Peter	32.1	April 20	0.6	<b>2.6</b>	0.2	<b>2.2</b>	<b>4.1</b>	1.7	<b>2.9</b>	1.9	1.1	<b>17.2</b>	<b>12</b>	<b>6.2</b>
Elkville	36	April 20	0	0	0	1	0.4	0.2	1	1.1	1	<b>4.2</b>	<b>6.8</b>	<b>5.9</b>
Belleville	36.8	April 20	0.4	0	0.2	1.2	<b>4.5</b>	1.3	<b>4.7</b>	1.9	<b>2.8</b>	<b>13.4</b>	<b>8.2</b>	<b>11.3</b>

Avg. Temp = average temperature (F) in Dec., Jan., and Feb.

Incidence of Stewart's wilt (%) = number of infected plants/ total number of plants

**Bold** = above 2%

Highlighted = above 5%

At the three northernmost locations, Dwight, Monmouth and Goodfield, incidence of Stewart's wilt was 1% or less for hybrids that have resistant (Bonus, Ambrosia, and XT 182A) or moderate reactions (Shimmer, Bodacious, XT 273A, Honey Select, and Double Gem), and 2% or less for moderately susceptible to susceptible hybrids (Snow White, Coho, Jubilee, and Supersweet Jubilee). At these locations, the average temperature for December, January and February was less than 26 F which probably resulted in relatively small overwintering populations of the corn flea beetle, the insect that vectors the Stewart's wilt bacterium, *Pantoea stewartii*.

At three central Illinois locations where the average winter temperature ranged from 28.7 to 29.9 F, Stewart's wilt incidence was below 2% for resistant hybrids except at New Berlin where 2.7% and 3.7% of Bonus and Ambrosia plants were infected, respectively. For hybrids with moderate Stewart's wilt reactions, incidence ranged from 0 to 5.7% and was above 2% in 7 of 15 comparisons. For hybrids with susceptible reactions, incidence ranged from 0.4 to 19.3% and was above 2% for 11 of 12 comparisons and above 5% for 6 of 12 comparisons..

At three southern Illinois locations where the average winter temperature was above freezing, incidence of Stewart's wilt infected plants was below 2% for resistant hybrids except for Ambrosia planted at St. Peter. For hybrids with moderate Stewart's wilt reactions, incidence ranged from 0.4 to 4.7% and was above 2% for 5 of 15 comparisons. For hybrids with susceptible reactions, incidence ranged from 1 to 17.2% and was above 2% for 10 of 12 comparisons and above 5% for 8 of 12 comparisons.

Previously, we've calculated that seed treatment insecticides (e.g., Poncho, Cruiser, Gaucho) are economical (the \$ value of control is greater than the cost of the seed treatment) if the incidence of Stewart's wilt in the absence of seed treatment control is above 1 to 2% on sweet corn hybrids grown for fresh market and above 5% on hybrids grown for processing. Using this guideline, Stewart's wilt control from seed treatment insecticides usually would not have been economically beneficial in 2007 for hybrids grown in the three northern locations or for the resistant hybrids grown in the central or southern Illinois locations. In central and southern Illinois, Stewart's wilt control from seed treatment insecticides would have been economically beneficial most of the time in 2007 on susceptible hybrids and more than half of the time on hybrids with moderate Stewart's wilt reactions. Reactions of sweet corn hybrids to Stewart's wilt and other prevalent diseases are available at the University of Illinois sweet corn pathology website ([www.sweetcorn.uiuc.edu](http://www.sweetcorn.uiuc.edu)).

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## ***Armyworms in Cover Crops and Potential Damage to Sweet Corn***

Dan Hinkle of Cissna Park sent in the photo below of armyworms, *Pseudaletia unipuncta*, in rye used as a cover crop for pumpkins. Toby Brown of Rossville (also east-central IL) reported similar observation in rye used a cover crop ahead of sweet corn planting. Earlier this spring Ron Hines of southern IL had reported high numbers of armyworm moths in traps at several locations, but no similar trapping program was in place in the central part of the state. Although armyworms are not known to damage pumpkins, sweet corn growers are warned to scout plantings near cereal cover crops or wheat, armyworm larvae may disperse from these grasses in phenomenal numbers and decimate nearby corn crops. Pyrethroids labeled for such insects as European corn borer and corn earworm (including Warrior, Capture, Mustang Max, permethrin, and others) are effective against armyworm larvae; the key is to detect the invasion and treat in a timely manner.



Armyworm larvae in rye cover crop. (Photo by Dan Hinkle)

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## ***Miscellaneous Notes on Vegetable Insects***

**Potato leafhopper:** As noted above for fruit crops, potato leafhopper is now present. Potatoes and snap beans are among the vegetable crops most vulnerable to potato leafhopper damage. Thresholds for potatoes are 2 adults per sweep or 1 adult per sweep plus 0.6 nymphs per leaf (15 on 25 leaves). For snap beans, treat seedlings if counts exceed 0.5 per sweep or 2 per foot of row; from the first true leaf stage through white bud,, treat if counts exceed 1 per sweep or 5 per foot of row. Insecticides labeled for potato leafhopper control in these crops are listed in the [2007 Midwest Vegetable Production Guide](#) and the [2007 Illinois Agricultural Pest Management Handbook](#).

**“Leps” in cabbage and other cole crops:** Just a reminder: For control of diamondback moth, imported cabbageworm, and early stages of cabbage looper before heading in cabbage and broccoli, avoid using pyrethroids if possible. The pyrethroids can be excellent clean-up sprays before harvest to get rid of potential contaminants and prevent damage to heads, but if they’re over-used throughout crop development and over the whole season, resistance can develop in diamondback moth populations. When this happens, keeping the crop clean in mid and late summer can become very difficult. Alternative to pyrethroids that are useful in resistance management and early season and early stage control of lepidopteran insects (caterpillars) in cabbage and broccoli include *Bacillus thuringiensis* products (Agree, Biobit, Dipel, Javelin, Lepinox, and Xentari), Proclaim, and SpinTor/Entrust.

**European corn borer and corn earworm** are insects whose times are about come. We’ve been catching a few corn borer moths in our light trap in Urbana, and the flight has been underway (although generally light) further south for several days. Minnesota’s *Fruit*

and *Vegetable IPM News* notes that corn borer flight is underway in southeastern Minnesota as well. Ron Hines (see [http://ipm.uiuc.edu/pubs/hines\\_report/comments.html](http://ipm.uiuc.edu/pubs/hines_report/comments.html)) has reported catching a few earworm moths in southern and southwestern IL (and we've caught a couple here). Now would be a great time to set up a pheromone trap for corn earworm moths ... strong southerly winds and weather systems like the one passing through Illinois today are great for bringing earworm moths from the south. For more details on pheromone trapping and on corn borer and earworm management in sweet corn, see the March 8, 2007 issue of this newsletter at <http://www.ipm.uiuc.edu/ifvn/volume13/frveg1301.html#veg>.

**Soybean aphids** have been reported in soybeans in Dekalb County (first noted on May 30) and in adjacent states. This is somewhat early, but not unique in comparison with recent years. See the comments by Kevin Steffey in the *Illinois Pest Management and Crop Development Bulletin* at <http://www.ipm.uiuc.edu/bulletin/article.php?id=754>.

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### ***Words of Wisdom ...***

- Never take life seriously. Nobody gets out alive anyway.
- Life is sexually transmitted.
- Health is merely the slowest possible rate at which one can die.
- Give a person a fish and you feed them for a day; teach a person to use the Internet and they won't bother you for weeks.
- Some people are like Slinkies... not really good for anything, but you still can't help but smile when you see one tumble down the stairs.
- Health nuts are going to feel stupid someday, lying in hospitals dying of nothing.
- Whenever I feel blue, I start breathing again.
- All of us could take a lesson from the weather. It pays no attention to criticism.
- In the 60's people took acid to make the world weird. Now the world is weird and people take Prozac to make it normal.
- You read about all these Terrorists most of them came here legally, but they hung around on these expired visas, some for as long as 10-15 years. Now, compare that to Blockbuster; you are two days late with a video and those people are all over you. Maybe we should put Blockbuster in charge of Immigration & Homeland Security.

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