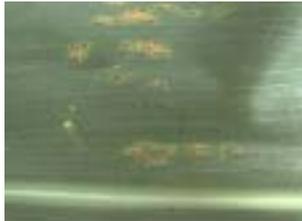


Illinois Fruit and Vegetable News

Vol. 11, No. 7, May 10, 2005

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 address above.

This issue's words of wisdom ... which usually means the jokes ... are at the end of newsletter. Check the last page.

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

Crop and Regional Reports

In the south and southwest ... Cold temperatures made for long nights recently for strawberry growers in the southern region. Temperatures dropped slightly below freezing on the mornings of May 2 and 3, requiring frost protection measures both mornings. Those who covered and/or ran overhead irrigation came through the freeze with little to no damage. Plasticulture strawberry harvest started last week, and matted row harvest should be starting soon.

Blueberries are at fruit set, and the crop looks to be good this year. Peaches are also at fruit set, and stink bug damage can already be found on the marble size peaches. Fruit set is highly variable, but for the most part there will be a full peach season. We finally got some good apple thinning weather starting on May 5 – temperatures were too cold prior to that. For those interested in additional thinning information, the thinning guidelines in the 2005 Commercial Tree Fruit Spray Guide have been adapted from the Apple Thinning Guide by P. G. Schwallier from Michigan State University. This is an excellent, easy-to-use thinning guide, and it is available from Great Lakes Publishing Company, P.O. Box 128, Sparta, Michigan 49345. Cost is \$10 plus \$1.50 for postage and handling for each book. For more information call (616) 887-9008. Also check the brief summary on thinning by Mosbah Kushad later in this issue. The apple crop in the southern region seems to be 100%.

Moving north, grape growers experienced increasing levels of freeze damage. The southern region does not appear to have suffered any significant damage, but the central and northern regions experienced damage in grapes, apples, peaches, and brambles. Growers in the Rockford area experienced 20-degree F temperatures two mornings in a row (May 2 and 3). There were several reports of freeze damage to asparagus, with spear tips twisted or broken off close to the ground.

If you plan to attend the Mississippi Valley Peach Orchard Tour on May 13 at Jackson's Orchard and Nursery, remember to register for lunch by Wednesday, May 11. Call Mary Ann Kelley at 270-365-7541, ext. 216, weekdays between 8 A.M. and 4:30 P.M. CST. I hope to see several of our Illinois growers at this event.

Elizabeth Wahle (618-692-9434; wahle@uiuc.edu)

In northern Illinois, during the April 27- May 9 period, day temperatures have been fluctuating between low 80s and upper 40s. Night temperatures in the low 20s to low 30s were reported during the first four days of May in counties bordering Wisconsin and stretching farther south into the central part of the state. These freezing temperatures occurred when most apples and other fruit trees were in full bloom, thus causing injury to blossoms. The freezing temperatures also damaged some grape buds, and some of the earlier-planted sweet corn that had emerged. I got reports from the northwestern part of the state in the Mt Carroll area where the lowest night temperatures were recorded that the freezing temperatures damaged strawberries, potatoes, beets, raspberries, asparagus spears, and even peas. The soil moisture level is very low, as only 0.05 – 1 inch of rainfall was recorded in the region during the same period after less than 1 inch during April.

Orchardists are going on with apple petal fall spray programs. Codling moth pheromone traps and mating disruption dispensers are already up in most orchards. There is some incidences of apple dieback, and slight hail damage on apple leaves in some orchards. Most vegetable growers have laid black plastic mulch, and tomatoes, cucumbers, peppers, and melons for transplanting are still inside greenhouses. Diamondback moth, and flea beetles have been reported in cabbage.

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

Upcoming Meetings and Programs

Here are dates of currently scheduled programs. Additional details for programs in the southern region will be posted as they become available at <http://web.extension.uiuc.edu/regions/hort/>. Contact: Elizabeth Wahle at wahle@uiuc.edu or 618-692-9434

May 13, 2005. Mississippi Valley Peach Orchard Tour (Kentucky's year to host, Illinois was last year)
Jackson's Orchard and Nursery, Bowling Green, Kentucky. Contact Elizabeth Wahle. New details available at <http://web.extension.uiuc.edu/regions/hort/>

May 21, 2005. Viticulture Workshop
9:00-11:30 a.m. Hill Prairie Vineyard and Winery, Oakford Illinois. RSVP to Elizabeth Wahle.

May 26, 2005. Twilight Meeting for Tree Fruit Growers
5:30-7:30 p.m. Kamp's Orchard, southeast of Brussels just off the Illinois River Road.

June 16, 2005. ISHS Summer Field Day
Edwards Apple Orchard, Poplar Grove, IL. See the more detailed announcement of this program below.

June 25, 2005. Viticulture Workshop
9:00-11:30 a.m. Hill Prairie Vineyard and Winery, Oakford Illinois. RSVP to Elizabeth Wahle.

August 4, 2005. Dixon Springs Agricultural Center Field Day
University of Illinois DSAC, Simpson, IL. Contact Bronwyn Aly at 619-695-2444 or baly@uiuc.edu.

September 8, 2005, Illinois Pumpkin Field Day
SIU Belleville Research and Education Laboratory, Belleville, Illinois. 10:00 a.m. -2:30 p.m.

Elizabeth Wahle (618-692-9434; wahle@uiuc.edu)

ISHS Horticulture Field Day

Edwards Apple Orchard is the host for the 2005 Summer Horticulture Field Day sponsored by the Illinois State Horticultural Society, the University of Illinois, and Southern Illinois University. The field day is set for Thursday, June 16, 2005.

Edwards Apple Orchard is located near Poplar Grove, Illinois, approximately twenty minutes northeast of Rockford and 80 miles northwest of Chicago.

This is one of the premier orchards in the country. More than 225,000 visitors travel to the orchard each autumn during the thirteen-week retail season. They come for a taste of the agricultural heritage that is Edwards Apple Orchard. The dairy barn that once housed Granddad Edwards' cows is now home to the farm market. The 'Apple Barn' includes a gift shop, bakery, fudge kitchen, coffee shop, cider mill, packing facility and cold storage. Additional buildings include a farm museum, farm animal barn and supply storage.

Currently, eleven varieties of apples are grown in the 45- acre orchard. Planting density ranges from 180 to 900 trees per acre. Pick-your-own apples has been a popular activity for more than thirty years. Pumpkins and raspberries are also available as pick-your-own crops. Other activities on the farm include pony rides and horse-drawn wagon rides, and on weekends, bluegrass bands perform on the bandwagon.

On-site registration for the ISHS Field Day begins at 8:00 a.m. with a welcome and introduction of guests that will start at 8:30 a.m. Field visits will begin immediately after. The cost to attend is \$20 advance, or \$25 at the door. Registration includes specialist presentations, field and operation tours, a research publication, refreshments and lunch. Advance reservations are appreciated and can be mailed to ISHS at 15962 Old Orchard Road, Bloomington, IL 61704, or emailed to ilsthortsoc@yahoo.com or telephoned to 309/828-8929.

For more information contact: Don H. Naylor, Executive Secretary, I.S.H.S., 15962 Old Orchard Road, Bloomington, IL 61704; telephone 309/828-8929 or email: fernwoode@yahoo.com .

Tentative Agenda

8:00 – 8:30 am	Registration
8:30 – 8:45 am	Welcome and Introduction
8:45 am – 12:00 pm	Field Tours (Wagon Tours)
Apple Orchard	Planting Closer, Training More, Pruning Less (Ken Hall) ...growing apples in 2005 The Hive, the Honey Bee, and Apple Pollination (Mark Hoard) ...are bumblebees an alternative? New honeybee strains? Matching Tops and Bottoms (Bradley Taylor) ...new rootstocks, matching scions and rootstocks Honeycrisp Management and Nutrition (Mosbah Kushad) ...emphasizing thinning and calcium/bitter pit management Codling Moth Confusion and Control (Rick Weinzierl) ...what's working, what's not Fire Blight Prediction and Control (Mohammad Babadoost) ...Management and Forecasting Summer Diseases
Brambles Site	Managing Raspberry Patches (Maurice Ogutu, Ken Hall)
Pumpkin Patch	Pumpkin Varieties and Pollination (Alan Walters, Bill Shoemaker) Managing Diseases, Insects, and Weeds in Pumpkins (Mohammad Babadoost, Rick Weinzierl, Elizabeth Wahle, and Bill Whiteside)
8:45 am – 12:00 pm	Concurrent Session - Front Porch Chat Share Your Ideas About On-Farm Retailing (Barb Hall)
8:45 am – 12:00 pm	Kids' Concurrent Session - Crafts and Games

12:00 – 2:00 pm

Barbeque Pork Chop Lunch and Lunch-Time Presentations

Presidential Address (Pat Curran)

Illinois State Hort Society – updates (Don Naylor)

Fruit/Vegetable Industries in Northern Illinois (Extension Specialists)

2:00 pm -

Touring Edwards' Sales and Production Facilities (on your own)

Rockford Hotels with special rates for Field Day attendees:

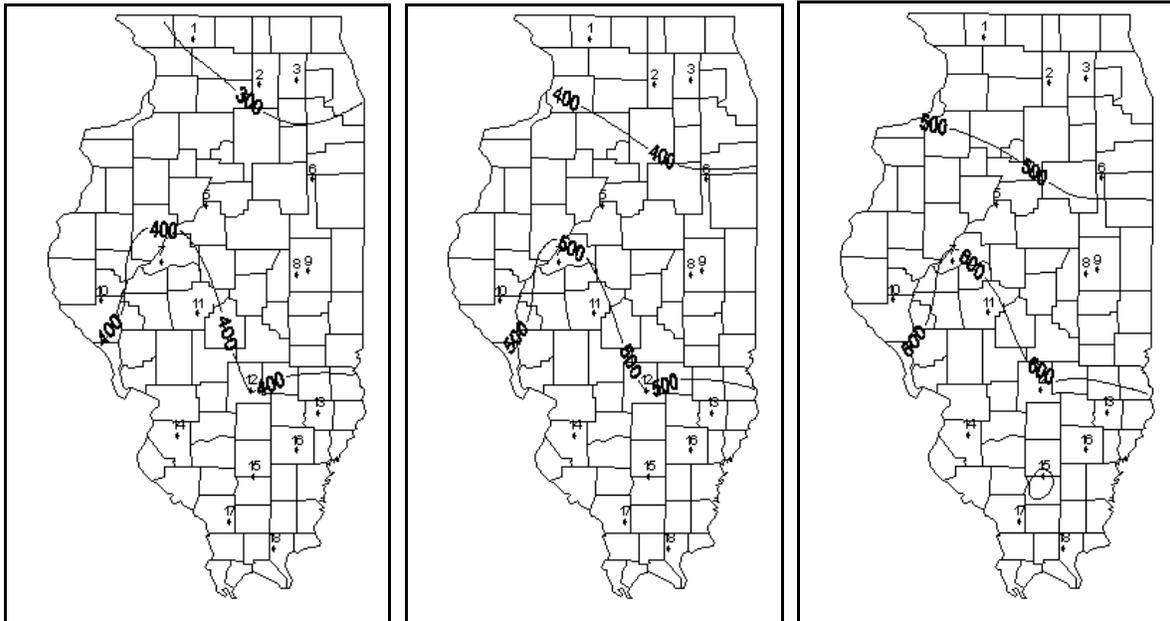
- Best Western Clock Tower Resort & Conference Center; 7801 E. State Street 815-398-6000 or 800-528-1234
- Cliffbreakers Comfort Suites; 700 W. Riverside Blvd; 815-282-3033
- Days Inn & Suites; 4313 Bell School Rd, Loves Park; 815-282-9300 or 800-329-7466

Other Rockford Region Hotels

- Baymont Inn; 662 North Lyford Road; 815-229-8200 or 877-229-6668
- Exel Inn; 220 S. Lyford Rd, 815-332-4915
- Hampton Inn; 615 Clark Drive; 815-229-0404 or 800-426-7866
- Holiday Inn; 7550 E. State St.; 815-398-2200 or 800-383-7829
- Quality Suites; 7401 Walton St. 815-227-1300 or 800-228-5151
- Ramada Plaza Hotel; 200 S. Bell School Rd.; 815-226-2100

For assistance with room reservations please call Diane Lyon at the Rockford Area Convention & Visitors Bureau at 815.489.1661/800.521.0849. For information about things to do in the Rockford Region, log on to www.gorockford.com.

Degree-Day Accumulations



Degree-day accumulations, base 50 F, from January 1 though May 9 (left) and projected through May 16 (center) and May 23 (right), 2005.

Degree-day accumulations, base 50 F, January 1 through April May 9 (historic average and 2005), and projections through May 23, 2005.

Site No.	Station	County	DD, Base 50 Jan 1 - May 9 11-yr historic average	DD, Base 50 Jan 1 - May 9 2005	Projected DD, Base 50 Jan 1 - May 16 2005	Projected DD, Base 50 Jan 1 - May 23 2005
1	Freeport	Stephenson	231	293	362	433
2	Dekalb	Dekalb	258	289	364	441
3	St. Charles	Kane	226	279	344	410
4	Monmouth	Warren	282	missing	missing	missing
5	Peoria	Tazewell	337	371	457	543
6	Stelle	Ford	302	324	405	488
7	Kilbourne	Mason	392	430	522	612
8	Bondville	Champaign	334	335	423	512
9	Champaign	Champaign	340	369	457	547
10	Perry	Pike	379	378	467	557
11	Springfield	Sangamon	384	418	515	615
12	Brownstown	Fayette	450	397	498	600
13	Olney	Richland	436	422	521	620
14	Belleville	St. Clair	484	456	560	667
15	Rend Lake	Jefferson	527	483	594	706
16	Fairfield	Wayne	509	459	569	680
17	Carbondale	Jackson	511	489	591	695
18	Dixon Springs	Pope	564	447	556	666

Degree-day data are summarized from records provided by the Midwestern Climate Network, Illinois State Water Survey, Champaign, IL. For more information, consult the Midwestern Climate Center at <http://sisyphus.sws.uiuc.edu/index.html> and the Degree-Day Calculator at <http://www.sws.uiuc.edu/warm/pestdata/>.

Kelly Cook (217-333-4424; kcook8@uiuc.edu)

Notes from Chris Doll

Another unusual spring! What began as an early bloom on the tree fruits was turned into a slow growth period from April 22 through May 4. Some measured Gala apples grew only 1.5 millimeters in diameter during a five day period. Since it warmed up on the 5th, growth has been around two millimeters a day. Apples at the I-70 latitude are now in the 12-18 mm range, and the thinning window is closing rapidly. Peaches are well past the shuck-off period. Black raspberries are in full bloom, and the thorny blackberries are in early bloom. For those folks that believe in blackberry winter, I ask, "Did we have it, or will we have another one like last week?"

The only frost injury I have seen is frost ring on pear and some black-eyed strawberry flowers. Locally, it is dry on the surface, as the Edwardsville rainfall has totaled only 2.1 inches in the last 45 days. Last week was so dry that the data logger had a straight line at zero for wetness for 112 hours. Crops and trees planted now will probably need some supplemental

water to get them growing right. Strawberries are in the post-bloom period and need water for sizing. And if they have looked a little weak, it might be because of cold soils, which read 51 degrees at the four-inch depth late last week.

Pest-wise, it has been a fairly calm spring in orchards under my observations. Only a few rosy apple aphids have been seen, red mites are tough to find and codling moths have been scarce during the cold nights. However, enough moths were caught to establish a biofix of April 20 or 22 in southern Illinois and Missouri, but locally the biofix has just been set for May 5 or 7, depending on location. Apple scab lesions are scarce, but powdery mildew has been seen. Blossom blight was seen in Missouri 10 days ago, and now is quite prevalent in a couple of trees in the Back 40. (I left the Strep out of the late petal fall spray!). Peaches have a few plant bug marks, but otherwise look OK.

Some of the early-planted trees are making good growth, both apple and peach, and trees are approaching the "spreading" mode for improved crotch angle development. A peach grower was looking at last years planting and lamented that he did not take time to "toothpick" them, and I had to agree that the training was weak. Both toothpicks and clothes pins can be used unless the trunk diameter is too great to hold the clothespin. This practice will follow the season north for growers not living in our great climate here. Scoring or ringing of apples can be done now, but this practice has not been widely used here.

Two items from the Back 40. First, several one and two year old peach trees have pushed out several shoots at the base or midway up the trunk. I would like to hear if anyone else has seen this problem this year. And second, does anyone have a suggestion for a deterrent of a mother skunk that wants to make a home near the back door?

Chris Doll (EDWDOLLX2@aol.com)

Vegetable Production and Pest Management

Reflex Herbicide Receives Section 18 Emergency Exemption

Reflex (fomesafen) has received a Section 18 label allowing its use on snap beans in Crawford, Gallatin, Henderson, Lawrence, Lee, Mason, Mercer, Tazewell, Warren, White and Whiteside counties in Illinois. Reflex has had a Section 18 label in Illinois for a number of years, and many processing snap bean growers and company fieldmen are familiar with its use. I will briefly review this label for others who have not used the herbicide.

The Section 18 label targets three problem weeds, puncturevine, pigweeds, and morningglories. These weeds are also on the newly registered Raptor (+ Basagran) label. I would be interested if anyone has compared the two herbicide treatments against puncturevine. Please e-mail me with your experiences.

The recommended rate for Reflex is 0.5 to 1 pint/acre, depending on the weed and its size. Two applications may be necessary under adverse conditions. Do not exceed 1.25 pints/acre/year. The label recommends a nonionic surfactant or crop oil concentrate be added to the finished spray. The crop oil concentrate can improve weed control but also increases the potential for crop injury.

There are several notable restrictions on the use of Reflex. The snap beans need to be at the first to third trifoliolate stage and not closer than 30 days to harvest. Reflex (or fomesafen containing products) may not be applied to the same land more than once in every two years. Reflex can also leach into ground water and is harmful to aquatic organisms, which may limit its use in some counties such as Mason.

John Masiunas (masiunas@uiuc.edu)

Callisto Herbicide Now Registered for Sweet Corn

On April 4, 2005, the EPA approved registration of Syngenta Crop Protection's Callisto (mesotrione) herbicide for use in sweet corn. Callisto can be applied either preemergent or postemergent for broadleaf weed control. Callisto can reduce our reliance on atrazine for broadleaf weed control especially in areas sensitive to water pollution or containing atrazine-resistant weeds. Similar to atrazine, a preemergent herbicide such as Dual Magnum, Frontier, or Outlook, needs to be applied for grass control.

Postemergent applications of Callisto at 3 fluid ounces/acre will control up to 5-inch tall, amaranth, cocklebur, galinsoga, horsenettle, jimsonweed, lambsquarter, nightshade, pigweed, giant ragweed, smartweed, and waterhemp. Based on our research trials, I recommend that Callisto be applied with atrazine and a non-ionic surfactant.

Postemergence control of dandelion, morningglory, prickly sida, pokeweed, and common ragweed can be improved by applying Callisto with atrazine (at 0.25 lb a.i./ acre). Interestingly, the Callisto + atrazine combination also controls Canada thistle. Adding UAN or AMS to postemergence applications of Callisto is not recommended because the nitrogen-based adjuvant increases the potential for sweet corn injury.

Preemergent applications of Callisto at 5 to 6 fluid ounces/ acre with atrazine as a tank mix will control many of the same weeds as the postemergence application. But this control requires a higher rate of Callisto.

Callisto can injure a few sweet corn cultivars. The injury is more severe when the sweet corn is stressed, an incorrect adjuvant, or higher than labeled rate of Callisto is used. Callisto injury appears as bleaching of the whorl. Sweet corn normally recovers from the injury without a yield reduction. Dr. Jerald "Snook" Pataky at the University of Illinois has lead a research team that has identified some susceptible sweet corn hybrids. His results can be found at: <http://sweetcorn.uiuc.edu/report-index.html> .

Sweet corn also can be injured if a soil applied insecticide is used. Applying an organophosphate or carbamate insecticide within 7 days before or after a Callisto application can result in sweet corn injury. Weeds must be actively growing when applying Callisto postemergent. We recommend that you conduct a small trial with Callisto before treating extensive sweet corn acreage

Matthew DeCeault and John Masiunas (masiunas@uiuc.edu)

Crucifer Leps ... the Worms of Cabbage and Related Brassica Family Plants

Maurice Ogutu noted reports of diamondback moth larvae in cabbage, so it's a good time to think ahead about all the worms that feed on cabbage and related crops. So, here's a 2005 revision of my usual sermon on worm control in cole crops and crucifer greens.

Technically speaking, "worms" is not a very accurate term, but many of us use it to refer to the collection of larvae of the Lepidoptera (butterflies and moths) that attack the foliage and heads of cole crops (cabbage, broccoli, Brussels sprouts, and cauliflower) and crucifer greens (mustard greens, turnip greens, collards, kale, and others). In most instances, the three culprits are the imported cabbage worm, the diamondback moth, and the cabbage looper.



Larvae of imported cabbageworm (left) and cabbage looper (right)



Larva and adult (left and center) of diamondback moth, and damage to cabbage (right)

The imported cabbage worm overwinters as a pupa within a chrysalis in crop debris, and adults – the common white cabbage butterflies – begin flying in early spring. They have been on the wing for 2 to 3 weeks or more now in much of the state. They lay bullet-shaped, ridged yellow eggs (individually, not in masses) on foliage. Larvae are velvet-green, and just over 1 inch long when fully grown; they tend to feed from the edges of the leaf, and large veins are left intact. The chrysalis that

encloses the pupa is grayish green to bright green and suspended by threads from the underside of outer leaves. It usually takes 4 to 5 weeks for larvae to mature from the egg to the adult stage.

The diamondback moth is the smallest of these three species. It winters in Illinois as a moth, though the percentage that survive the winter is low in normal to severe winters. Eggs, larvae, and pupae may be introduced on transplants shipped in from southern regions, and northward migration of moths during the season also can extend its range. Flat, yellowish eggs are laid singly or in small groups, often near leaf veins or on stems, but they usually go unnoticed. Larvae initially mine between leaf surfaces, then they feed externally, often consuming all but the upper or lower epidermis, leaving a "window pane" effect. Fully grown, they are about 3/8 inch long. They pupate within a light silken cocoon on a leaf, and a small moth (1/2-inch wing span) emerges a week or so later. Each generation takes 3 to 4 weeks for growth and development, and there can be as many as 6 generations per year in Illinois.

The cabbage looper is the largest and most destructive of the three common Lepids that attack cole crops here. This insect does not overwinter (at least not in significant numbers) in most of the Midwest; instead it migrates into the region on weather fronts, usually from June through September. Moths lay dome-shaped, ridged white eggs singly or in small masses on the underside of leaves. Larvae have only 3 pairs of abdominal prolegs (rear fleshy legs without joints) instead of the "normal" 5 pairs of many common Lepidopteran larvae. They grow to a length of 1 1/4 inch or more, and their feeding on leaves and heads can be very heavy. In addition, their frass (insect poop) is a less-than-sought-after contaminant. Each season, 2 to 3 generations of cabbage loopers develop in most of Illinois.

The simplest thresholds (and therefore the ones most often used by growers who scout their own fields) for these insects lump all species together, at least for determining the need for control. Growers should examine 10 plants per site in each of 10 sites in a field (more samples = more dependable conclusions), record each plant as infested (by any of the species) or uninfested, and use the following thresholds:

**Thresholds for imported cabbage worm, diamondback moth, and cabbage looper:
treat if infestations of any/all of the 3 species are found on more than the percentage of plants listed below.**

Crop and Stage	Percent Infested Plants
Broccoli and cauliflower	
Seedbed	10
Transplant to first flower or first curd	50
First flower or curd to harvest	10
Cabbage	
Seedbed	10
Transplant to cupping	30
Cupping to early head	20
Mature head	10
Collards, Kale, Mustard Greens, and Turnip Greens	
Whenever leaves to be harvested are present	5

Early in the season, whenever flea beetle or aphid control or thrips control is NOT needed, use Bt (*Bacillus thuringiensis*) applications to control these Lepidopteran larvae on crucifers. Bt products include Agree, Biobit, Cutlass, Dipel, Javelin, Ketch, MVP, XenTari, and others. These Bt preparations must be eaten to be effective, and they are toxic only to larvae of butterflies and moths. They work well against imported cabbage worm and diamondback moth larvae and are effective enough against young cabbage looper larvae to keep most infestations below economic thresholds at least until heads are forming or present. Relying as much as possible on Bt products early in the season avoids killing natural enemies that help to keep these pests (especially diamondback moth) under control; it also reduces selection for resistance, especially in the diamondback moth, to pyrethroids and a few other insecticides that are valuable for use as cleanup sprays near harvest. Several insecticides are labeled for use against these pests in cole crops (cabbage, broccoli, etc.), but the list of included versus excluded crops gets pretty complex for leafy greens. Check the 2005 *Illinois Agricultural Pest management Handbook* or the [2005 Midwest Vegetable Production Guide](#) and product labels for specific listings. Where populations of diamondback moth show resistance to pyrethroids (or even to Bt), products with different modes of action include Proclaim,

Avaunt, and SpinTor / Entrust ... Entrust is the OMRI-listed formulation of spinosad that can be used in organic production systems.

Also remember ... **onion thrips** often move into cabbage as surrounding small grain fields dry down. Thrips are difficult to control in cabbage after they move between wrapper leaves. The time to treat is often at cupping or as heads begin to form. Capture, Ammo, and Mustang are among the insecticides that are very effective against thrips in cabbage.

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

Colorado Potato Beetle



Left to right: Colorado potato beetle adult, eggs, and larva.

(Photos (L to R) from University of Kentucky, South Dakota State University, and Phil Nixon, University of Illinois.)

Colorado potato beetle adults tend to show up on potatoes as soon as plants emerge in the spring. Adults and larvae of this insect feed on a variety of vegetables and weeds in the family Solanaceae; common hosts include tomatoes, eggplants, peppers, and, of course, potatoes.

Adult Colorado potato beetles overwinter in the soil and become active in May; they move to solanaceous plants and begin to feed and lay eggs. As is often pointed out in winter programs where we talk about pre-season planning, potato beetles are weak fliers, so locating new fields as far as possible from last year's infestations reduces the number that reach a new planting. In addition to crop rotation, growers can use trenching, mulching, and trap crops (such as early plantings of potatoes only around field edges to concentrate egg-laying in one area for spraying) for Colorado potato beetle control. Once beetles have reached a planting, flaming is another alternative to using conventional insecticides for Colorado potato beetle control. For a general overview of Colorado potato beetle biology and management, check the University of Wisconsin fact sheet on Colorado potato beetle, written by Karen Delehaut, at <http://cecommerce.uwex.edu/pdfs/A3678.PDF>.

In most of Illinois, growers have NOT encountered severe problems with insecticide resistance in local populations of the Colorado potato beetle, but managing insecticide resistance in this insect is a key concern wherever it occurs. For the most part, individual growers control their own destiny on this issue. Using cultural controls (crop rotation, trenching, and mulching, and flaming), using insecticides only when populations reach threshold levels, and rotating among different classes of insecticides are the key steps that can slow the evolution of resistance.

Thresholds for Colorado potato beetle control are:

- Spring adults on young plants: 20 to 30 percent defoliation or, more conservatively, 2 adults per plant
- Summer larvae and adults, during bloom: 5 to 10 percent defoliation, 5 larvae per plant, or 3 to 5 adults per plant
- The [2005 Midwest Vegetable Production Guide](#) lists the following thresholds for defoliation at different stages of plant growth: preflowering – 20 to 30 percent; flowering – 5 to 10 percent; tuber formation – 30 percent

Insecticides labeled for Colorado potato beetle control include:

- Organochlorines: Endosulfan (Thiodan)
- Organophosphates: Thimet (soil-applied) and Imidan
- Carbamates: Sevin, Furadan, Vydate
- Pyrethroids: Baythroid, Asana, Ambush / Pounce
- Neonicotinoids: Admire (soil-applied) / Provado and Platinum (soil-applied) / Actara
- Avermectins: Agri-Mek

- Dusts and abrasives: Cryolite, Kryocide, Surround
- Microbials: Foil, M-Trak, Novodor
- Botanicals: Rotenone, Pyrethrins
- Others: SpinTor, Avaunt

See product labels and the [2005 Midwest Vegetable Production Guide](#) or Chapter 7 of the 2005 *Illinois Agricultural Pest Management Handbook* for rates and restrictions for insecticides registered for bean leaf beetle control. For resistance management, follow label directions about not using the same product or products from the same class repeatedly throughout the season. (And if the label doesn't direct against such an unwise practice, DON'T do it anyway.)

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

Black Cutworm Update

Unlike recent years, black cutworm moth activity has been very low this year. Few black cutworm moths have been caught in traps across the state. Some areas have seen a couple of days with consecutive moth catches, but to date, only three counties have reported a significant moth flight. Back in mid-April, nine moths were caught over a two day span in a trap on the Mason/Tazewell line. Just this week, Ron Hines reported significant moth flights in both Massac and St. Clair counties on April 26-27. Just as a reminder, a significant moth flight consists of 9 or more moths caught over a two-day span. Once this biofix is reached, we can use degree-days to determine when black cutworm larvae may be cutting corn plants in the area. For a list of potential cutting dates in these areas where significant flights have been detected, see the table below. A few words of caution: Although the number of moths captured has been very low, this does not entirely rule out the risk of black cutworm injury ... scout fields of seedling corn anyway, at least weekly.

County	Biofix Date	Projected Date of First Cutting
Mason/Tazewell	38453	May 14-15
Massac	38467	38494
St. Clair	38467	38494

For more information on black cutworm injury, scouting, and management, please see our black cutworm fact sheet (http://www.ipm.uiuc.edu/fieldcrops/insects/black_cutworm.pdf).

Kelly Cook (217-333-4424; kcook8@uiuc.edu)

Fruit Production and Pest Management

Apple Fruit Thinning

The cool weather during the first week of May kept blossoms on trees a little longer than usual, but the warm weather during the last week has pushed fruit development back on the fast track. In general, fruit set is very good to excellent in most parts of the state. Trees that have not had a good crop last year should have plenty of fruits and may be harder to thin than trees that had good crop last year and another good crop this year. Fruit thinning is not an exact science. What worked last year may not work at all this year and visa versa. The type and amount of chemicals that you need to select will depend on many factors, some under your control and others are not. These factors include cultivar to be thinned; age of the tree; crop load or how heavy the fruit set is; and weather conditions at time of thinning. I will address each of these points individually and give you a summary of how you can combine all these factors to help you make a decision.

As most veterans of thinning know, apple cultivars vary considerably in their response to thinning agents. Fuji and Golden Delicious are much harder to thin than Spur Red Delicious, so for Fuji and Golden Delicious you have to be much more aggressive in your thinning than Spur Delicious. Thinners knock more fruits off a tree when the tree is very young or very old. Thinners are more active when the tree has a heavy crop load than when the crop load is light. Thinners are more active when applied before or after an overcast period. Other factors that have some effect on the activity of chemical thinners are temperature and drying period (wind). I have listed four scenarios for you to consider in your thinning.

- Conservative mild thinning. Apply 2.5 to 10 ppm NAA at 9 to 10 mm fruit size. Another option is to apply a 1.0 pint of Sevin XLR at the same fruit size. This program can be applied on easy-to-thin cultivars or when the weather is cloudy.
- Moderate thinning. Apply 5 ppm NAA plus 1 pint of Regulaid. Or apply 1.5 pint Sevin XLR or 1.5 lb Sevin 50W plus 24 oz of Accel. at 8 to 9 mm fruit size.
- Aggressive thinning. Apply 1.0 lb Sevin 50W or 1 pint Sevin XLR, plus 1 pint of oil, plus 48 oz of Accel.
- Very aggressive thinning. Use 2 lb Sevin 50W or 2 pints Sevin XLR, plus 2 quarts of oil, plus 48 oz of Accel. Apply when fruit diameter is 10 to 15 mm. The aggressiveness of this program will be lessened as the fruit increases in size. This program will cause severe drop in easy-to-thin cultivars even as a drift.

All of the above thinning programs must be applied as dilute sprays in no less than 200 gallons per acre. Concentrated sprays are ineffective for thinning. Use tree-row volume when possible.

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Copper Compounds for Disease Control

Copper compounds are widely used to control diseases of vegetables and fruit crops. Most copper compounds used for control of plant diseases are Bordeaux mixture and fixed copper compounds. Bordeaux mixture, named after the Bordeaux region of France where it was developed and used against downy mildew of grape, is the product of reaction of copper sulfate and calcium hydroxide (hydrated lime). It was the first fungicide to be developed and still is the most widely used copper fungicide throughout the world. It controls many fungal (including oomycete) and bacterial leaf spots, blights, anthracnoses, downy mildews, and cankers. Bordeaux mixture, however, can cause burning of leaves or russetting of fruit such as apples when applied in cool, wet weather. The phytotoxicity of Bordeaux mixture is reduced by increasing the ratio of hydrated lime to copper sulfate. Copper is the only ingredient in the Bordeaux mixture that is toxic to pathogens and, sometimes, to plants, whereas the role of lime is primarily that of a “safener.” For dormant sprays, concentrated Bordeaux mixture is made by mixing 10 pounds of copper sulfate, 10 pounds hydrated lime, and 100 gallons of water; it has the formula 10:10:100. The most commonly used formula for Bordeaux mixture is 8:8:100. For spraying young, actively growing plants, the amounts of copper sulfate and hydrated lime are reduced, and the formulas used may be 2:2:100, 2:6:100, and so on. For plants known to be sensitive to Bordeaux mixture, a much greater concentration of hydrated lime may be used, as in the formula 8:24:100.

In “fixed” or “insoluble” copper compounds, the copper ion is less soluble than that in the Bordeaux mixture. These compounds are, therefore, less phytotoxic than Bordeaux mixture but are effective as fungicides. Fixed coppers are used for control of the same disease as Bordeaux mixture. Fixed coppers contain basic copper sulfate sold as Microcop, Cuprofix, and many other names; copper oxychlorides, sold as Oxycor or C-O-C-S; copper hydroxide, sold as Kocide (Kocide-101, Kocide-200), Champ and Nu-Cop; copper oxides sold as Nordox; copper ammonium carbonate, sold as Copper Count-N, Kop-R-Spray; or miscellaneous other copper sources.

In Illinois, Bordeaux mixture is commonly used as a dormant spray to control fire blight of apples and pears and peach leaf curl. Fixed coppers are widely used to control bacterial diseases of stone fruit trees and vegetable crops.

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Biofix Dates and Spray Timing for Codling Moth

Pheromone traps in the far south, the area east of St. Louis, and near Champaign-Urbana have indicated biofix dates for codling moth as April 22, May 6, and May 9, respectively. Based on these dates, egg hatch and the timing for cover sprays for codling moth control at these locations can be estimated as follows:

Location	Codling Moth Biofix Date	DD Base 50, Biofix through May 9	Predicted Date for 240 DD (Beginning of Egg Hatch)
Carbondale	April 22	118	~May 17
Belleville - Edwardsville	May 6	67	~May 19
Champaign - Urbana	May 9	18	~May 25

Dates for egg hatch are based on historical average temperatures from May 9 forward, so if temps are higher than average over the next few days (as they are predicted to be), then egg hatch and the appropriate timing of cover sprays to prevent codling moth injury may be earlier than indicated in the table above. In general, organophosphate and pyrethroid insecticides applied for codling moth control (Guthion, Imidan, Danitol, Pounce, and Warrior) should be applied at 240 DD after biofix. Assail and Calypso (as well as Intrepid, though it may be less effective) are toxic to eggs laid on top of recent spray residues as well as larvae that hatch and move across spray residues, so they might be applied as early as 150 DD after biofix (first sustained capture of moths in pheromone traps).

Organophosphates (Imidan and Guthion) remain effective against codling moth in most central and northern Illinois locations. However, the O-Ps, carbamates, and pyrethroids have failed to control codling moth, apparently because of resistance, at locations in the south and elsewhere in recent years. Growers should follow label instructions regarding the number of applications of these insecticides allowed by law, and where the O-P compounds, the carbamates (Sevin and Lannate), and the pyrethroids are ineffective because of insecticide resistance, a shift to include alternative chemistries, primarily the neonicotinoids such as Assail and Calypso, is advised.

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Mating Disruption Trials for Oriental Fruit Moth and Lesser Peachtree / Peachtree Borers



Left: Mating disruption dispenser for oriental fruit moth. Right: Mating disruption dispenser for lesser peachtree borer and peachtree borer; note terrapin scale at arrow.

From May 4 through 6, field trials of mating disruption for control of oriental fruit moth and the peachtree borer complex were initiated in southwestern Illinois. Isomate OFM Rosso dispensers were applied at a rate of 200 per acre prior to the beginning of second generation oriental fruit moth flight in three orchards in St. Clair and Calhoun counties. This timing was chosen so that mating disruption would last through harvest of all varieties at these sites, and first generation larval control was provided by sprays used to control plum curculio, stink bugs, and plant bugs. Controlling stink bugs and plant bugs and using one or more trunk sprays to control lesser peachtree borer will still be necessary in these blocks, but the goal is overcome recent control problems that may be the result of resistance or simply the result of “escapes” that enter fruit after

heavy rains have washed off cover sprays and before another application can be made. One orchard in Calhoun County was treated with 200 Isomate-LPTB dispensers per acre to control lesser peachtree borer and “greater” peachtree borer. If successful, this application could replace the need for trunk sprays of Lorsban or other insecticides specifically for borer control. And by the way, lesser peachtree borer moth flight is underway, and the best time for trunk sprays to control this insect – if they have not already been applied – is during the next week or so in the southern half of Illinois. We’ll follow up on all these mating disruption applications by checking for successful “shut-down” of pheromone traps and subsequent fruit and trunk damage.

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Terrapin Scale in Peaches

In the picture of the Isomate-LPTB dispenser above, peach growers might recognize the presence of terrapin scale on the branch. I saw a few of these in southwestern orchards last week. For a little more information on these scales that later in the season produce honeydew that supports sooty mold growth on peach fruit, check the following Virginia Tech web site: <http://www.ento.vt.edu/Fruitfiles/SoftScale.html> . Crawlers are likely to be active around the first of June, and it's the crawlers that are most susceptible to insecticides. The insecticides Esteem and Diazinon would be most effective at that time ... see rates on page 27 of the [2005 Spray Guide](#).

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This issue's words of wisdom ...

New Rules For Employment

- **SICKNESS AND RELATED LEAVE:** We will no longer accept a doctor statement as proof of sickness. If you are able to go to the doctor, you are able to come to work.
- **SURGERY:** Operations are now banned. As long as you are an employee here, you need all your organs. You should not consider removing anything. We hired you intact. To have something removed constitutes a breach of employment.
- **BEREAVEMENT LEAVE:** This is no excuse for missing work. There is nothing you can do for dead friends, relatives or coworkers. Every effort should be made to have non-employees attend to the arrangements. In rare cases, where employee involvement is necessary, the funeral should be scheduled in the late afternoon. We will be glad to allow you to work through your lunch hour and subsequently leave one hour early, provided your share of the work is done enough.
- **YOUR OWN DEATH:** This will be accepted as an excuse. However, we require at least two weeks notice as it is your duty to train your own replacement.

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