UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer, and Environmental Sciences

# *Illinois Fruit and Vegetable News*

Vol. 17, No. 7, June 20, 2011
*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*

- **Good Agricultural Practices for Food Safety, 9:00 am to 3:00 p.m., June 22, 2011,** at University of Illinois Extension, Enterprise Center, 2205 Enterprise Drive, Suite 501, Westchester, IL (Cook County). This Good Agricultural Practices (GAPs) Workshop focuses on four primary components of production and processing: soil, water, personal hygiene, and equipment. In addition, the workshop covers record keeping, traceability of produce, and elements of a food safety plan. It will be useful to specialty (fruit and vegetable) growers in writing a food safety plan and for Farmers' Market vendors in understanding their food safety responsibilities. Cost is $30 per person and includes a GAPs notebook and lunch. Register online.
- **"Is Entrepreneurial Farming for You?" Workshops** will be held in University of Illinois Extension offices from 5:30 p.m. to 9:00 p.m. on **June 30, July 7, and July 14** at the following locations: Sangamon County Extension Office on **June 30** (2501 North 8th Street, Illinois State Fairgrounds, Bldg #30, Springfield), McLean County Extension Office on **July 7** (402 North Hershey Road, Bloomington) and the Peoria County Extension Office on **July 14** (4810 North Sheridan, Peoria). Registration for each workshop is $30 and includes a light supper. Payment can be processed online at http://central.illinoisfarmbeginnings.org or by contacting The Land Connection at 217-688-2570.
- **University of Illinois Dixon Springs Agricultural Center Field Day, August 4, 2011,** at the Dixon Springs Ag Center near Simpson, IL. Details will be provided in upcoming issues of this newsletter. This field day includes tours research and demonstration plots devoted to agronomic crops, bioenergy crops, fruits, vegetables, livestock, and forestry/natural resources management.

## *Regional Updates*

**In northern Illinois,** warmer weather prevailed in early to mid June (highs in the upper 60s to mid 90s), and most of the region received 3 to 4 inches of rain over the last 2 weeks. Soil moisture is adequate to high, and there was some water still standing on some fields last week. The soil temperature is in the upper 60s to low 70s.

Blackberries are in full bloom, as are grapes, and harvest of June-bearing strawberries started last week for most operations in the region. Apple and peach fruits are about 1 inch in diameter, and fruit thinning is continuing, although some apple varieties have a light crop this year. Tart cherries are sizing, and it's time to scout for and prevent bird damage and cherry leaf spot. Now is the time to scout for apple scab lesions on leaves; codling moth and plum curculio monitoring is continuing as well.

Harvest of leafy greens is underway, and asparagus harvest has ended. Successive plantings of sweet corn continue, with earlier plantings now about 20 inches tall. Transplanting of tomatoes, peppers, eggplant, muskmelon, watermelon, and other warm season vegetables is mostly complete, while planting of pumpkins and winter squash continues. Cucumber beetles, diamondback moth, cabbage looper, and imported cabbage worm are pests to scout for now and control as needed. Additionally, flea beetles on eggplants and leafy greens require control in many plantings, as do Colorado potato beetles on potatoes.

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

## *Notes from Chris Doll*

Calendar summer begins on June 21, and we will see what it brings for the fruit growers of the area. This corner of Illinois has had 4.9 inches of rain during the past eight days, and yet Alto Pass in southern Illinois was in need of rain for vegetable crops. The season is a little later than the last two, but all fruits are sizing nicely, and some early varieties of peaches and apples are showing extra size and some coloring.

Black raspberry harvest is finished and red raspberry harvest is near its peak here. Cooler temperatures and ample moisture have made for a good crop. Fruit set on grape is excellent, and so is vine growth. The abnormalities of the spring resulted in poor fruit set in many cherries, both tart and sweet, and plums, both domestic and European, in lots of variable sized (smaller) fruits on apples and peaches, and over-thinned Gala apples.

Just like the seasons, the Japanese beetles showed up again, this time on June 12 – a few days later than 2010. So far, the emerged population is light, so time will tell about the potential for their feeding damage. The 13-year cicada singing has diminished in the last few days, and so has their numbers. Enough cicadas emerged from under local shade and timber trees to have some flight in the Back-40, but not enough to treat chemically. There was enough flight and egg-laying on fruit trees that some shoot breakage has occurred. While thinning apples a few days ago, I noted a broken shoot with the egg-laying slits and fire blight infection in the terminal beyond the upper stitch. Luckily, the disease is at a low ebb this spring and it is not a running epidemic.

The data logger says that 1001 degree days have accumulated since the May 1 biofix here for codling moth. Most growers report erratic trap counts of codling moth this spring. The data logger has also accumulated 167 wet hours since the 1st cover date, or almost enough for the start of bitter rot and flyspeck.

Since the last newsletter, I attended a workshop on high tunnels by Jeff Kindhart at the U of I Dixon Springs Agricultural Center, with emphasis on tomato and strawberry culture. It is an amazing system of growing that has some appeal over traditional outdoor culture in pest and weather control measures, along with increased yields and earlier maturity. The vertical strawberry trial was a very interesting diversion away from the stoop-labor concept of most strawberry growing. Data from these studies will be available in reports at a later date.

*Chris Doll*

## *Specialty Crops and Local Foods Issues*

### *MarketMaker and Farmer's Markets – A Great Way to Connect*

Red, ripe tomatoes … juicy watermelons… crisp cucumbers ... Thoughts of fresh, locally grown produce are enticing to Midwesterners as we begin to enjoy summer temperatures. Local farmers markets are popping up all over the state to make those thoughts a reality. MarketMaker is the perfect tool to connect producers, farmers markets, and consumers.

As a producer looking to sell in your local farmers markets, go to http://www.marketmaker.uiuc.edu. Do a quick search by clicking "Find a" and selecting "Farmers Market" from the dropdown list. Without putting a zip code in, you will get results statewide. To narrow your search to local markets, click on "Search By" and select the county, city, or zip code area where you would most like to sell. The location of the markets will appear on the map and the names of the markets will appear on the side. Simply click on the market name for market details and contact information.

Consumers can also find local farmers markets in the same way. Farmers' market profiles contain the months the market is open, the days and hours of operation, a list of products sold, and even special events that may happen within the market.

As a market manager looking for vendors, MarketMaker can easily help locate producers within your area. Once again, the "Business Search" tool allows market managers to not only find producers, but also select the specific products needed for the market. By doing a search for farmers and a general product category (i.e. vegetables, fruits, and herbs), a list of producers is at your fingertips. With phone and/or email addresses available on the producer's profile, it is simple to make contact with possible new vendors.

Another great way of making the producer/farmers market connection is through MarketMaker's Buy & Sell Forum. We encourage managers to post ads free of charge under the "Services and Equipment" listing. Be sure to include days, times, and location along with contact information.

For more information, email marketmaker@extension.uiuc.edu or call 309-792-2577.

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### *MarketMaker/MarketReady*

**Are We Competitors or Cooperators?** The answer is Yes! For specialty crop producers, as with any business, the 4 "P's" of marketing are key to success. That is, having a great PRODUCT in the right PLACE with adequate PROMOTION at the right PRICE. Paying close attention to each of these marketing factors is critical to developing a business to its highest potential. Building strong relationships with customers, whether commercial or consumer, is of well known importance, and strategies to improve the brand recognition or reputation associated with a specific operation is a vital part of differentiating products from those of the competition. While other operations offering similar types of produce, services and experiences are certainly competitors, developments in local food demand and agritourism offerings can also make the abundance of competition a benefit to the farm businesses involved.

While contrary to traditional business strategies where capturing market share from the competition is the name of the game, the growth in local food demand tends to outpace production in most areas. As a result, efforts to attract "new" local food buyers and other customers to your farm or roadside stand are probably more realistic strategies than going after customers of the competition. Thinking about this from the standpoint of the downtown farmers market, consider what a successful market generally looks like. While there are always exceptions, the more successful farmers markets will be full of activity AND vendors. Although there are a number of vendors in competition for the customers in circulation, the presence of some critical mass to select from will always attract more customers than if there are only a couple vendors on the lot. In order to attract your share of the customers it is important to have a plan to make your display standout, but the presence of competition at these markets will almost always draw more potential customers than what any individual could attract on their own.

Similar opportunities also exist for on-farm markets and other agritourism attractions to benefit from a concentration of competition in a given local area or region. The growth in the wine industry in southern Illinois is a good example of beneficial competition. When the first few wineries were developed south of Carbondale, they did relatively well, but the customer draw came from a relatively local region, perhaps 150 miles. Customers could make a day trip from St. Louis, western Kentucky or southeast Missouri. After a decade or two of development, the number of wineries in the region has grown to 20 or more, and one might wonder how so many could exist given the increase in competition. While competition is greater, the fact that the region can promote the increased critical mass of attraction has also increased the opportunity for these wineries to collectively draw more customers from a wider area. Currently it is not uncommon to see license plates from 10 or more states in the winery parking lots on any given weekend. In addition to business at the wineries, local orchards and other farm-based local foods operations have also captured economic benefit.

Although concentrations of very similar competitors such as wineries are not common in other locations, most counties or maybe neighboring counties in Illinois and surrounding states do have some opportunity to create more mutual benefits through cooperative marketing and sharing customers than operating as true competitors. Perhaps a couple wineries, a couple orchards, area pumpkin patches, vegetable markets, etc. could become the critical mass of attraction. An inventory of agritourism and specialty crop production assets in your area is the first step to identifying these potential opportunities. MarketMaker, http://www.marketmaker.uiuc.edu/, is a helpful tool with the ability to search for specialty crop producers, agritourism attractions and farmers markets within the state, county or multi-county area identified in Illinois and any of the 18 additional network states. The site works equally as well for consumers to find suppliers and other attractions as it does for producers to locate potential cooperators interested in improving their local farmers market or increasing traffic between local farm markets and agritourism operations.

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### *Are You Familiar with E-Verify?*

E-Verify is a free internet-based employee alien verification program operated by the Department of Homeland Security and the Social Security Administration. The program compares information from an employee's I-9 Form (Employment Eligibility Verification form) to information in the U.S. government databases. If the information that the employee provides matches that in E-verify, then the employee is eligible to work, but if not, then the employer may allow the employee to work for up to eight working days until he/she corrects the records with the appropriate federal agencies. Employers are subject to fines if they continue to employ an ineligible worker beyond those eight days.

E-Verify was created in 1997 as a pilot program to prevent illegal immigrants from getting jobs in the US. Since then, Arizona has passed a law requiring all their employers to use E-Verify to check the eligibility status of their employees. The law was challenged, but the challenge was turned down by the US Supreme Court.

An effort is being made to revive the E-Verify program; on June 9 Texas Congressman Lamar Smith introduced the Legal Workforce Act that would require employers in the U.S. to verify the immigration status of all new hires by running their information through E-Verify. This week, the House Subcommittee on Immigration and Policy Enforcement will hold a hearing on the bill. Farmers across the nation, especially in California, have rallied against this requirement, arguing that it would abolish their workforce. They also maintained that "the current system for hiring legal immigrant workers is too costly and difficult to use, and that, even with the nation's unemployment rate still high, few Americans would be willing to take low-paying, physically taxing jobs laboring in a field."

In an address to reporters earlier last week, Congressman Smith indicated that those concerns are why the bill includes an exemption for employers in agriculture. He mentioned that the bill gives employers in agriculture three years to implement checking their employees' status in E-Verify. Also, farm operators and other agricultural employers would not have to verify the legal status of previously hired seasonal workers. Advocates for farm workers' rights argued that the bill will do more harm than good. In a joint statement by United Farm Workers and Farmworker Justice they argued that if the bill is passed "undocumented farm workers would feel tied to their employers, and would be reluctant to challenge illegal or unfair conduct for fear of losing their job and the ability to work." They also argue that the bill "would encourage employers to evade the law by using farm labor contractors to hire workers and thus claim that they don't employ any farm workers."

It is estimated that the bill will cost the Department of Homeland Security about $765 million on staff, technology, and training if the program were to go national. Also according to a report by Bloomberg, small businesses would have to spend nearly $2.6 billion per year in compliance costs to use E-Verify.
On the other side, many argue that illegal immigrants are costing the US taxpayers billions of dollars each year. In a study released by the Federation for American Immigration Reform, it is estimated that the cost of employing illegal immigrants in the United States is about $113 billion a year. It is obvious that the issue of illegal immigrants and the need for labor is very complicated, especially for farmers in the US who have to compete with cheaper products from overseas.

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### *Farmers' Market Task Force*

SB 1852 passed both houses of the General Assembly and is likely to be signed soon by the Governor. Lt. Governor Sheila Simon's office is responsible for appointing five farmers to the Farmers' Market Task Force. If you are a farmer or know of any farmers who would like to serve on this task force, please contact Pat Stieren, coordinator of the Illinois Farmers Market Network, at 217-522-4274; pstieren@gmail.com by July 22. The bill states, "… five farmers who sell their farm products at farmers' markets appointed by the Lieutenant Governor or his or her designee. Task force members' terms shall be for a period of 2 years, with ongoing appointments made according to the provisions of this Section." For more details about the bill and the task force, see http://www.ilga.gov/legislation/97/SB/PDF/09700SB1852enr.pdf.

### *Survey to Asses Value-Added Processing in Central Illinois*

FamilyFarmed.org, in collaboration with local stakeholders, is requesting your response to a survey about value-added processing. The survey will help in assessing stakeholder interest, types of services needed, and the preferred business model to better determine the feasibility of a value-added processing facility in Central Illinois. Your response is requested by June 30, 2011. The survey should take only 10 minutes to complete. To complete the survey please visit http://www.familyfarmed.org/buildingforgrowth. For more information, contact FamilyFarmed.org at info@familyfarmed.org or 708-763-9920.

*Jim Slama (708-763-9920; jimslama@familyfarmed.org)*

## *Fruit Production and Pest Management*

### *Japanese Beetle Control and Pre-harvest Intervals for Fruit Insecticides*

Reports of emergence of Japanese beetle adults began last week in southern Illinois, and I saw my first adult of the season at the University of Illinois research orchard at Urbana on Friday, June 17. Within the next 2 weeks, Japanese beetle adults will be active all the way to the Wisconsin border. In general, the only effective approach to reducing Japanese beetle damage to susceptible crops is to apply an insecticide that kills the beetles present at the time of application and perhaps a short period afterwards. The only alternative to insecticides is to use row covers to exclude beetles from plants (practical only in limited situations); traps widely sold for Japanese beetle control are not effective at reducing numbers in fruit plantings unless a prohibitively large number of traps are used.

Although we count on residues of insecticides providing extended control of many fruit pests (codling moth, Oriental fruit moth, apple maggot, leafhoppers, scales, mites, etc.), extended control of Japanese beetles is rarely observed. Unlike the small insects that hatch from eggs on treated surfaces and are exposed to a relatively high dose of insecticide in comparison to their body weight, Japanese beetles are larger, encounter a lower dose in comparison with their body weight, and are much harder to kill. As a result, growers often need to treat once with an effective insecticide, scout for reinfestation beginning a couple of days later, and retreat as new beetles infest the crop. Several insecticides are relatively effective at killing Japanese beetles present at the time of application. For peaches, blueberries, and brambles, one important challenge is to choose an insecticide and time applications in compliance with the required pre-harvest interval (PHI = required interval between application and harvest) for each insecticide-crop combination.

PHIs for selected insecticides are listed for several fruit crops in the table below. For a more extensive list, see pages 45-46 in the ***2011 Midwest Tree Fruit Spray Guide*** and pages 46-47 in the ***2011 Midwest Small Fruit Spray Guide***.

Pre-harvest intervals (days) for selected insecticides used for Japanese beetle control in fruit crops. NR = not registered. * = generally not recommended (malathion is not labeled for use in commercial apple production; most pyrethroids are not recommended for use on apples at this time because they tend to trigger outbreaks of European red mite).

| Insecticide | Apples | Peaches | Blueberries | Brambles | Grapes |
|---|---|---|---|---|---|
| Asana | * | 14 | 14 | 7 | NR |
| Assail | 7 | 7 | 1 | 1 | 7 |
| Baythroid/Renounce | 7 | 7 | NR | NR | 3 |
| Brigade/Capture | NR | NR | NR | 3 | 30 |
| Danitol | 14 | NR | 3 | NR | 21 |
| Imidan | 7 | 14 | 3 | NR | 7/14 |
| Malathion | * | 7 | 1 | 1 | 3 |
| Mustang Max | * | 14 | 1 | 1 | 1 |
| Pounce (permethrin) | * | 14 | NR | NR | NR |
| Sevin | 3 | 3 | 7 | 7 | 7 |
| Warrior (lambda-cyhalothrin) | * | 14 | NR | NR | NR |
| *OMRI-APPROVED PRODUCTS* | | | | | |
| EcoTec | 0 | 0 | 0 | 0 | 0 |
| Pyganic | 0 | 0 | 0 | 0 | 0 |
| Neem | 0 | 0 | 0 | 0 | 0 |
| Surround | 0 | 0 | 0 | 0 | 0 |

In peaches, Sevin is often a good choice for Japanese beetle control because of its 3-day PHI. Likewise, Assail and Mustang Max (and Malathion, though it is less effective) have 1-day PHIs in blueberries and brambles. Danitol and Imidan may be used up to 3 days before harvest in blueberries, and Brigade may be used up to 3 days before harvest in brambles.

For organic producers, choices of insecticides are limited. EcoTec, neem products such as Neemix, pyrethrins such as Pyganic, and the kaolin clay product marketed as Surround are the most widely used. All can be applied up to and including the day of harvest, but many available products are simply not very effective. In observations on apples in 2010 at the University of Illinois orchard at Urbana, I had the greatest success with a tank mix of 10 fl oz per acre of Pyganic 5.0 EC plus 16 fl oz per acre of EcoTec (a mixture of rosemary oil, peppermint oil, and other botanical ingredients). If Pyganic or another natural pyrethrin is used, apply a rate in the upper range of rates listed on the label, and apply it in the evening so that breakdown in sunlight is delayed.

The Japanese beetle is an "introduced" pest in North America. It was brought to the United States accidentally in the early 1900s with plant materials from Japan. It has since spread across much of the eastern United States to the Mississippi River, and local populations are established in Texas, Oklahoma, Missouri, and Minnesota.

Japanese beetle larvae – grubs – feed on the roots of a wide range of grasses and can be serious pests of turf. In most of Illinois, the common grub that has damaged lawns and golf courses for many years has been the annual white grub or masked chafer, *Cyclocephala* spp., but Japanese beetle grubs are becoming more common as pests of turf in Illinois. Adult Japanese beetles feed on the fruits and foliage of over 275 different plant species. Among the host plants that they prefer the most are roses, grapes, American linden, cherry, plum, peach, apple, flowering crab apples, Norway maple, and Japanese maple. In small fruit production in Illinois, adult Japanese beetles feed on the foliage of grapes and the foliage and fruits of blueberries and brambles. They also aggregate in mass to feed on fruits of peaches.

Adult Japanese beetles are about 3/8-inch long, with metallic green bodies and coppery-brown front wings ("wing covers"). Five tufts of white hairs (white spots) are visible along each side of the abdomen, and a sixth pair of white tufts are visible at the tip of the abdomen. Larvae are typical C-shaped grubs, with three pairs of legs on the thorax and no legs or prolegs on the abdomen. Newly hatched larvae are about 1/16 inch long; mature larvae are about 1 1/4 inch long. Larvae of the Japanese beetle can be distinguished from larvae of other grub species by the V-shaped pattern of spines (the raster) at the tip of the abdomen.

*Adult Japanese beetle (University of Minnesota)*

Mature larvae of the Japanese beetle pupate in the soil in late spring, and adults emerge from June through August. Females emit a sex pheromone to attract males, and mating occurs in the turf or other grasses where the female emerges; additional matings occur later on the plants on which adults feed. Adults find a suitable host plant, begin feeding, and both sexes emit an aggregation pheromone to attract other beetles to the same plant. Females feed, lay eggs in grassy areas, and return to host plants to mate and feed again, completing several cycles of this behavior. Each female lays 40 to 60 eggs. Because adult beetles can live for several weeks and emergence from pupae spans a period of several weeks as well, Japanese beetle adults may be present from June through September or October in at least some areas. Larvae hatch from eggs in July, August, and September, and they feed on the roots of grasses until cold temperatures trigger their movement downward in the soil to depths of 4 to 8 inches; they survive prolonged exposure to temperatures of 25 degrees F at that depth with little or no mortality. In the spring, partially grown larvae move upwards in the soil and resume feeding on roots. They pupate in May and June.

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

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

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

In the last couple of weeks reports from around the state indicate that potato leafhoppers have arrived. These small insects migrate into Illinois from southern states on late spring and early summer weather systems. 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). In addition, the switch from organophosphates such as Imidan and

Guthion to alternatives such as Altacor, Rimon, and Delegate for codling moth control in apples allows potato leafhopper infestations to develop in fruit-bearing blocks, because these insecticides do not control potato leafhoppers. 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, neonictinoids such as Assail, Calypso, and Provado, pyrethroids such as Danitol (and others), and carbamates such as Lannate and Sevin. Again, Altacor, Delegate, and Rimon do not control potato leafhopper.

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

## *Vegetable Production and Pest Management*

### *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 ***2011 Midwest Vegetable Production Guide***.

**"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), Coragen, Entrust, Proclaim, Radiant, and Voliam Xpress (which contains a combination of the active ingredients found in Coragen and Warrior). *Bacillus thuringiensis* products and Entrust are approved for use in certified organic production. See the ***2011 Midwest Vegetable Production Guide*** for additional information.

**Corn Earworm:** Last week Rick Foster reported in Purdue's Vegetable Crops Hotline that corn earworm moth flight was underway in Indiana and that European corn borer moth flight was up a bit from recent years as well. Traps at a few locations in Illinois have captured low to moderate numbers of corn earworm moths, and growers should be prepared to protect early sweet corn and early tomatoes from infestation.

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 sweet corn 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 ½ 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 below) or a nylon version of the same general design marketed by Scentry and several regional distributors. 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. **Early in the season when the vast acreages of field con are not yet silking, egg-laying is concentrated on early silking sweet corn and on early tomatoes, so even a light flight at this time should trigger control efforts in these crops.**

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).

Regarding insecticide choices … 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 Coragen,

Belt and Radiant. Voliam Xpress contains a combination of the active ingredients found in Coragen and Warrior. Organic growers may use the OMRI-approved formulation of spinosad sold under the trade name Entrust.

Tomato growers may want to remember that the corn earworm is also known as the tomato fruitworm. For listings of insecticides labeled for control of this insect on tomatoes, see the ***2011 Midwest Vegetable Production Guide***.

Tomato fruitworm = corn earworm on tomato (photo by James Theuri).

### *Tomato spotted wilt virus*

Tomato spotted wilt virus has been reported from a few locations in Indiana and Illinois in recent weeks. This is a disease caused by a pathogen transmitted by an insect … the vectors of tomato spotted wilt virus include several species of thrips. Controlling thrips (along with other cultural control practices) is often recommended to avoid outbreaks of tomato spotted wilt, but accomplishing sufficient thrips control for disease management is not an easy task. For more on tomato spotted wilt management, see a summary by Tom Kuhar and Sam Alexander of Virginia Tech.


Tomato spotted wilt disease symptoms on fruit (photo by Paul Mariman).

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## *Less seriously …*

*Aging gracefully … or not …*

It's a bad sign when you realize you often make pretty much the same sounds as your coffee maker.

It's also a bad sign when half the items in your grocery cart claim in big letters that they're "for fast relief of" one thing or another.

## *University of Illinois Extension Specialists in Fruit Production and Pest Management*

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