



UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

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A newsletter for commercial growers of fruit and vegetable crops

"We are what we repeatedly do. Excellence, then, is not an act, but a habit." Aristotle

Address any questions or comments regarding this newsletter to the individual authors listed after each article or to its editor, Rick Weinzierl, 217-244-2126, weinzierl@illinois.edu. The *Illinois Fruit and Vegetable News* is available on the web at: <http://ipm.illinois.edu/ifvn/>. 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 educators and specialists in fruit and vegetable production and pest management

Upcoming Programs

- **Is Entrepreneurial Farming for You? July 26, 2012**, 5:30 – 9:00 p.m. at the University of Illinois Extension Office in Springfield. A workshop to provide assistance to aspiring farmers with new business ideas. For more information and to register, see <https://webs.extension.uiuc.edu/registration/?RegistrationID=6818> or contact Deborah Cavanaugh-Grant at cvnghgrn@illinois.edu or call 217-782-4617.
- **Landing a Farm: Opportunity, Stewardship, Legacy, July 26, 2012**. To begin to address farmland issues in Central IL, The Land Connection is hosting this workshop featuring Kathy Ruhf, a nationally recognized leader in farm entry, succession and tenure at Land for Good. The workshop will be held in Bloomington from 3:00pm to 8:00pm. For more information <https://co.clickandpledge.com/sp/d2/default.aspx?wid=56275>.
- **Good Agricultural Practices Webinar Series, August 6-27, 2012**. University of Illinois Extension will be hosting a Good Agricultural Practices (GAPs) webinar series on Mondays (August 6, 13, 20, and 27) from 6:00 p.m. to 8:00 p.m. For more information, see <http://web.extension.illinois.edu/gkw> or contact University of Illinois Extension, Kankakee County, at 815-933-8337.
- **Central Illinois Sustainable Farming Network Twilight Tour, August 7, 2012**. Learn about Community Supported Agriculture (CSA) - harvest, storage, handling, pricing, and marketing at Samara Farm in Shelbyville from 5:30-8 p.m. For more information, see <https://webs.extension.uiuc.edu/registration/?RegistrationID=6646> or contact Deborah Cavanaugh-Grant at cvnghgrn@illinois.edu, 217-782-4617.
- **Illinois Organic Growers Association 2012 Field Days**. The Illinois Organic Growers Association has scheduled six field days in August and September. See the details at <http://illinoisorganicgrowers.org/2012/07/03/2012-ioga-field-day-schedule/>.

Research Specialist Position at St. Charles Open for Applications

The University of Illinois is seeking applicants for a Research Specialist position at the St. Charles Horticulture Research Center. This is the position that Bill Shoemaker held for many years prior to his retirement at the end of June. The full position announcement and a link to the application process are available online at <https://jobs.illinois.edu/default.cfm?page=job&jobID=20885>. The deadline for applications is August 17, 2012.

This is a 12-month, permanent position (at least as permanent as positions can be in this day and age ... it is not grant-funded or term-limited). It is categorized as an academic professional position (not tenure-track, but also not civil-service). This is a great opportunity for someone interested in contributing to fruit and vegetable research and outreach and the expansion of local food systems. A Master's degree is required ... other details are described in the online listing.

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

Regional Updates ... from western Illinois ...

Isolated areas of Western Illinois received various amounts of rain on Friday, July 13 ... some areas received as much as 2 inches. Overall, however, the area is still in severe drought conditions.

Squash bugs and squash vine borers are the main insects producers are dealing with right now see the July 5 issue of this newsletter (<http://ipm.illinois.edu/ifvn/contents.php?id=8>) for background information and control recommendations. Japanese beetle damage has come to an end.

Garlic harvest is completed, and overall, producers were happy with production. Bulbs were heavy with 5-7 cloves and demand for the crop is good. Many commented on how "easy" a crop it was to grow.

The extreme heat and dry conditions have taken a toll on blackberries. What was once thought to be a very good crop has literally wilted on the vine.

Kyle Cecil (309-342-5108; cecil@illinois.edu)

Notes from Chris Doll

As I'm writing this on July 18, the temperatures are heading for 100 for the 12th time this year. It is not much different from what many growers are experiencing, and as in past years, I commiserate with peach pickers working in the orchards (and also with the growers trying to make do during the heat and shortage of rain). The lack of rain makes the whole business more tenuous and worrisome. Availability of water for irrigation can be a great plus.

Drought years usually make the lasting impressions on people. I can remember 1934 for its heat, but not its effect on the crops. 1954 was memorable because of record setting high temperatures, and a long drought accompanied by searing winds that knocked out agronomic crops. More recently, it was 1988 and 2006, which were more localized. On July 11, 1988, I wrote about it being so dry that many pastures and fence rows were potential fire hazards as well as the cover crops in the orchard. Peter Hirst of Purdue wrote this week that drought can help some apple growers by reducing vegetative growth (less pruning needed). I agree. I have seen very few apple trees die from lack of moisture on stress sites, so that is rare. Peach trees show such stress by dropping leaves first. But the shortage of water combined with the heat to reduce fruit size and quality. Young trees planted this spring might need a drink, especially if not under good culture free from competitive grass, weeds, and mature trees.

The season continues to be early for fruit maturity. My first Bounty peach and Gala apple (the original with 15.2 % SS and tough skin) picking were 18 days ahead of any previous year. Peach growers report a 16- to 20-day advancement for many varieties until this week, when the maturity rate has slowed down. I can see the same thing. As it stands locally, there are not too many peach varieties left, but the fall apple season is very near, if my Gala and some others I've seen are any indication. Lots of sunburned apples are visible, but the internal burning is not bad because of very

little red color development. Fully loaded dwarfed trees with lots of exposed fruits are showing more injury than mature semi-dwarfed trees.

A question locally is whether Retain will slow growth down enough to get the crop into a more normal harvest season. Another is how effective it will be on non-irrigated trees if the current heat wave continues much longer. The 30-day pre-harvest time for a variety like Gala has passed, and Jonathans and the rest are not far behind.

Another seasonal job that poses a question is that of collecting leaves for analysis from the stressed trees. Since July 15-August 15 is the normal suggested time period, some leeway might be had on this.

And this year, the need for Roundup weed killers under the trees is less than normal because of the drought, except for weeds like climbing milkweed, Johnsongrass, and a few others. If needed, care to keep the herbicide from contacting tree foliage to prevent its translocation into the roots.

Chris Doll

Fruit Production and Pest Management

Pre-harvest Fruit Drop Treatments for Apples



Apple growers who have a decent crop this year will probably be wise to consider applying a stop-drop treatment to keep fruits from dropping before they are harvested. As apple fruits reach maturity, many will drop before harvest, with some varieties dropping more than others, and in some years fruit drop is more severe than in others. For example Cortland, Empire, Mutsu and Idared hang very well, while McIntosh and Spartan, in a certain year, may drop all their fruit before harvest unless treated with a stop-drop. Many physiologists agree that the main reason for fruit drop is fruit and tree stress. Trees that have been exposed to water stress, like we are seeing this year or in years when there is too much water, are likely to drop their fruits rather quickly. Other factors that contribute to tree stress include magnesium, boron, and/or calcium deficiencies, too much leaf nitrate nitrogen, heavy crop, sick trees from diseases or insects, very high daytime and nighttime temperatures, and mechanical injury.

The mechanism of fruit drop is not very well defined, although the abscission layer at the base of the fruit petiole is a ring of only a few cells wide. It is distinguishable by a small bulge at the bottom of the petiole. Some researchers suggest that fruit drop is caused by a decline in the plant hormone auxin and a rise in two other hormones, ethylene and abscisic acid in the abscission zone. Ethylene and abscisic acid stimulate two enzymes (polygalacturonase and

cellulose) in the cells of the abscission zone. Polygalacturonase breaks down the pectin in the walls of the cells. While the other enzyme is called cellulase, which as the name suggests breaks down the cellulose microfibrils. Pectin is the glue that keeps the cells cemented together. Once the pectin and cellulase disintegrate, the cells fall apart and the fruits drop. Fruit drop can be slowed down considerably by keeping the level of auxin in the cells high and the level of ethylene low.

NAA, or naphthaleneacetic acid, is a synthetic auxin that has been in use as stop-drop for more than 60 years. NAA does not reverse the abscission process but slows down the activities of the two enzymes and hence fruit drop. NAA, like many other auxins, is not readily soluble in water but it is readily soluble in alcohol. You do not need to waste your good alcohol on getting NAA into the fruit ... if you use soluble formulations, they have added inert chemicals that dissolve NAA.

The general rule for NAA is to apply it at the first sign of fruit drop or one to two weeks before harvest, but not less than four or five days so it has sufficient time to get into the cells of the abscission zone. NAA should be added at about 15 to 20 ppm (3.6 to 4.8 ounces per 100 gallons for NAA-200 or 6 to 8 ounces for WP) concentration and should be applied as dilute spray. NAA will not get into the fruit very readily unless it is mixed in sufficient water to get it there. A minimum of 160 gallons per acre should be used. The effect of NAA should be noticeable within 3 to 4 days and should last for up to two weeks. Repeat applications have given some help. Nonionic spreaders-stickers will improve uptake of NAA. Ironically, fruits treated with NAA do not keep well in storage, so market fruits that have been treated with NAA soon after harvest.

ReTain: This relatively new stop-drop treatment for apples is rather expensive, but in years like this it is likely to pay for itself, especially when used on fresh-market fruits. The active ingredient in this material is aminoethoxyvinyl glycine (AVG). In the late 1970's I did my Master's thesis research at Washington State University on the effectiveness of this chemical as an inhibitor of ethylene synthesis and leaf abscission. The chemical was first extracted from soybean root nodules infected with *Rhizobium japonicum*. I found that ReTain is one of the most powerful inhibitors of ethylene synthesis. By inhibiting ethylene, ReTain is in effect blocking the enzymes that break down the cell wall, and so fruits treated with ReTain are likely to stay attached to the tree longer. Because ReTain inhibits ethylene, there are several precautions that need to be understood in order to get its maximum benefits.

- The recommended rate is about 50 grams a.i. per acre. Some varieties like Gala, Golden Delicious and Honeycrisp, may need less than the recommended rate. Experiment with different rates.
- It works best when the temperature is in the mid 70's F rather than in the 90's F.
- Apply ReTain as dilute spray (160 gallons/acre) and make sure the leaves and fruits receive full coverage but not to the point of run-off.
- Never combine NAA with ReTain. It works best if applied alone or with compatible chemicals. Read the label carefully.
- Apply at least 28 days before harvest but not earlier than 35 days.
- Retain will reduce fruit color, so it's best to use it on fruit that develop early color
- Check for fruit maturity using a combination of starch, total soluble solids, and firmness.
- Adding silicone-based surfactants like Sylgard 309 will increase the effectiveness of ReTain. Check the label for permitted surfactants.
- Because of cost, use ReTain on varieties that will give you the maximum return on investment or on trees that are subject to severe drop.

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

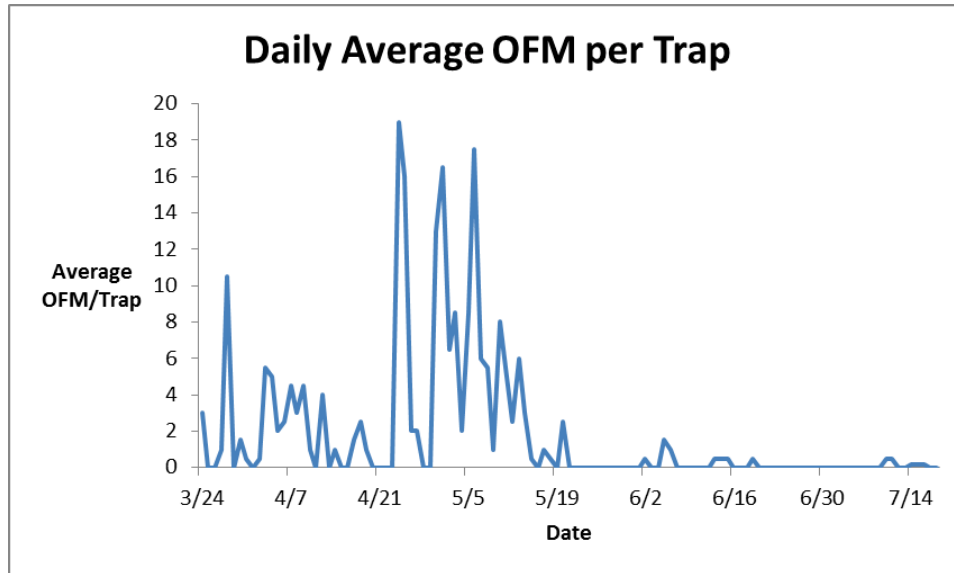
Notes on Oriental Fruit Moth and Codling Moth

Oriental fruit moth: Based on degree-day accumulations, fourth generation flight should be underway in southern Illinois; third generation flight has ended in central Illinois (with very little flight activity at our research orchard). *A repeat reminder from earlier this month ... southern Illinois growers should continue to protect fruit from infestation by this insect as peach harvest continues. Preharvest intervals for insecticides that might be used to control oriental fruit moth on peaches include Altacor = 10 days; Assail = 7 days; Baythroid = 7 days; Belt = 7 days, Delegate = 14 days; Entrust = 14 days; Imidan = 14 days; Mustang Max = 14 days; Pounce = 14 days; Rimon = 14 days; Voliam Xpress = 14 days; Warrior = 14 days.*

Oriental Fruit Moth

Location	Biofix Date	Degree-days (base 45 F) from biofix through July 18	Degree-days (base 45 F) estimated through August 1	Degree-days (base 45 F) estimated through August 15
Carbondale	March 18	3070	3297	3516
Belleville	March 18	2992	3218	3435
Urbana	March 24	2671	2886	3095

Second and third generation oriental fruit moth flights have been nearly negligible at our research orchard at Urbana. The graph below summarizes daily counts of OFM males on pheromone traps equipped with cameras that allow us to determine the time of day that each moth is captured ... not much information from the second and third generations.



Codling moth: Degree-day accumulations based on a 50-degree F developmental threshold are summarized below, along with estimates of the status of this insect at locations ranging from southern to northern Illinois.

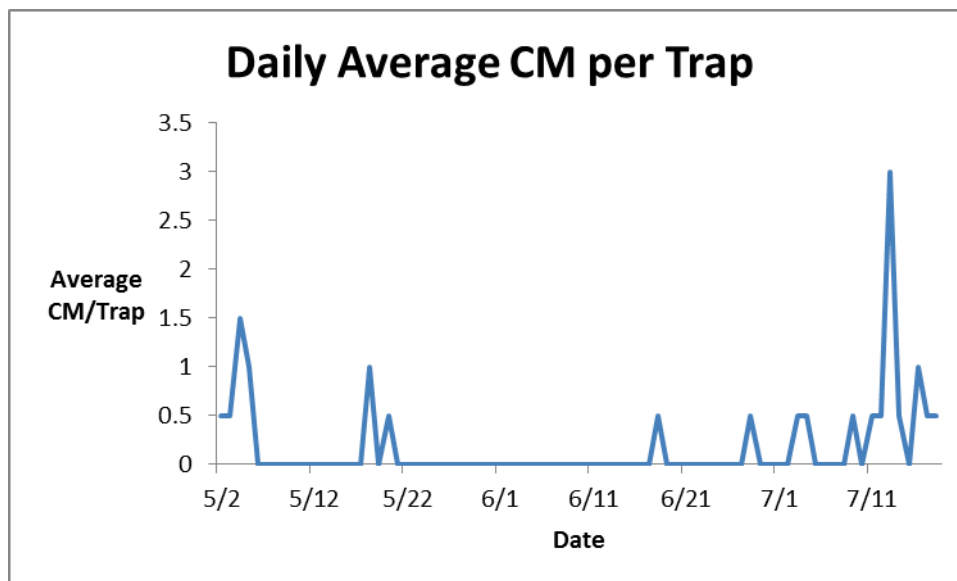
Codling Moth

Location	Biofix Date	Degree-days (base 50 F) from biofix through July 18	Degree-days (base 50 F) estimated through August 1	Degree-days (base 50 F) estimated through August 15
Carbondale	March 30	2303	2495	2679
Belleville	March 25	2296	2487	2669
Urbana	April 25	1902	2082	2256
Woodstock	May 10	1483	1638	1788

Some reference points for degree-days and codling moth development ...

- At 1,500 DD, second generation flight is 77 percent complete, and egg hatch is 36 percent complete.
- At 1,700 DD, second generation flight is ~90 percent complete, and egg hatch is ~70 percent complete.
- At 1,940 DD, third generation flight is just underway (2 percent complete), and second generation egg hatch will end in a few days.
- At 2,300 DD, third generation flight is ~30 percent complete, and third generation egg hatch is ~8 percent complete.

Here's what the codling moth flights have looked like on traps equipped with cameras at our research orchard at Urbana. Note that the counts are based on **daily averages**. Captures after June 21 represent second generation flight at Urbana.



Given the early harvests about to begin, growers should check pages 46-47 of the [2012 Midwest Tree Fruit Spray Guide](#) for the listing of preharvest intervals (PHIs ... the number of days that must elapse between final application and harvest. PHIs for a few common insecticides and miticides used at this time in apples include: Acramite = 7 days; Altacor = 5 days; Assail = 7 days; Belt = 14 days; Calypso = 30 days; Clutch/Belay = 7 days; Delegate = 7 days; Entrust = 7 days; Envior = 7 days; Fujimite/Portal = 14 days; Imidan = 7 days; Kanemite = 14 days; Kelthane = 7 days; Nexter = 25 days; Rimon = 14 days; Sevin = 3 days; Zeal = 14 days.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu) and Megan Brant

Vegetable Production and Pest Management

Section 18 Permits for Use of Fungicides Ranman and Revus on Basil Crops in Illinois

The USEPA has approved two specific exemptions under section 18 of FIFRA for the use of cyazofamid (Ranman 400SC) and mandipropamid (Revus 2.08SC) for control of basil downy mildew in Illinois in 2012. Ranman (EPA Reg. No. 71512-3), a fungicide from the FMC Corporation, is a protectant-systemic compound, effective against downy mildew of basil. Revus (EPA Reg. No. 100-1254), manufactured by Syngenta Crop Protection, LLC, is a protectant-systemic compound, effective for control of downy mildew of basil. The use of both Ranman and Revus has been approved for the period of 17 April 2012 – 15 October 2012.

In Illinois, the growing season for basil is from beginning of May through the middle of October (approximately 23 weeks). Downy mildew of basil, caused by the oomycete pathogen *Peronospora belbahrii*, is a new disease in Illinois (first detection was in 2009). This disease now occurs in Illinois every year. Downy mildew develops very rapidly and can cause 100% crops losses in a short period of time. Control of downy mildew of basil requires fungicide protection of plants from about beginning of June through September (approximately 17 weeks). The fungicides Ranman 400SC, Revus 2.08SC, and azoxystrobin (Quadris 2.08SC) are now available for control of basil downy mildew. Applications of these fungicides should be alternated at weekly intervals (up to 17 spray applications).

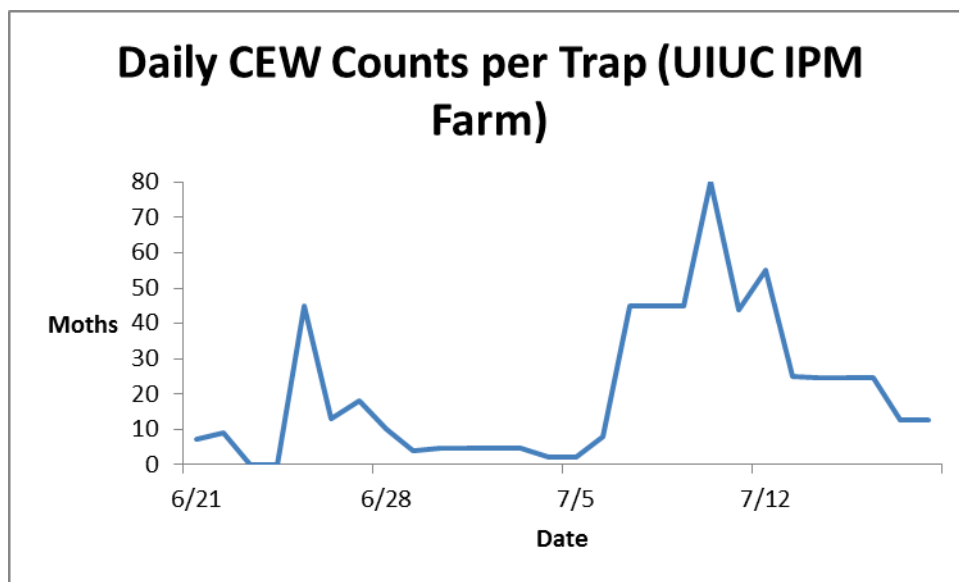
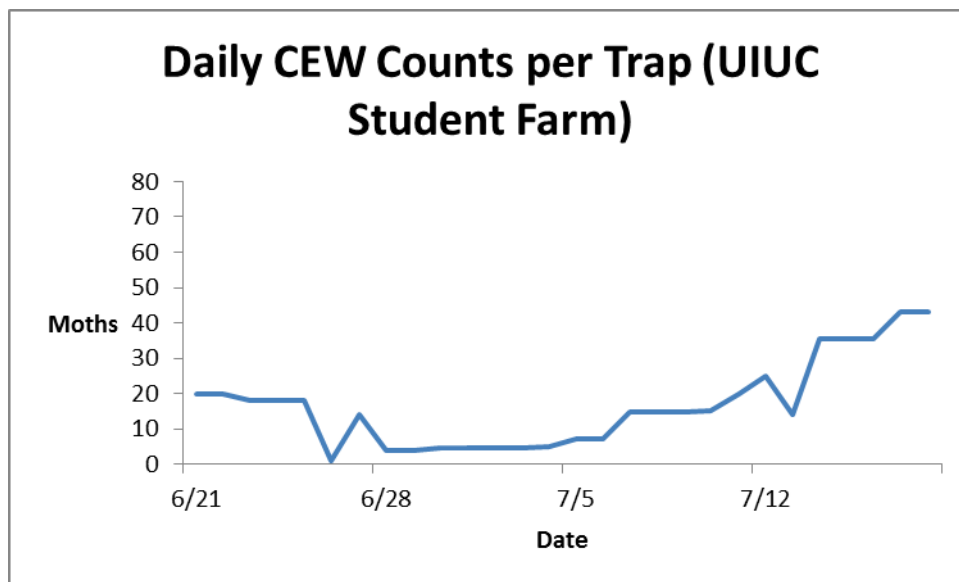
Ranman, with FRAC Code of 21, can be applied up to up to 6 times (maximum permitted amount of product per season per acres is 16.5 fl oz and the rate of product per application per acre is 2.75 fl oz). Revus, with FRAC Code of 40, can be applied up to 4 times (maximum permitted amount of product per season per acres is 32 fl oz and the rate of product per application per acre is 8.00 fl oz). Quadris, with the FRAC Code of 11, can be applied up to 6 times during a

growing season (maximum permitted amount of product per season per acre is 92.3 fl oz and the rate of product per application per acre is 15.4 fl oz). Quadris is already labeled for use on herbs. For label information of Revus, Ranman, and Quadris fungicides, refer to the following links: <http://www.cdms.net/LDat/ld8FU004.pdf>, <http://www.cdms.net/LDat/ld7M7006.pdf>, and <http://www.cdms.net/LDat/ld5QN004.pdf>.

Mohammad Babadoost (217-333-1523, babadoos@uiuc.edu)

Corn Earworm Flights

Corn earworm moth captures in light traps have been relatively low in many areas – generally less than 10 moths per trap per night recently in Lee, Warren, Adams, Pike, Madison, and Fayette counties. At Urbana, however, counts have been somewhat higher ... see the graphs below. In general, growers throughout the state should consider corn earworm to be present and worthy of control in sweet corn and tomatoes.



Results of trapping at a few locations around the state are posted on the North Central IPM PIPE (Pest Information Platform for Extension and Education) website – <http://apps.csi.iastate.edu/pipe/?c=entry&a=view&id=68>. I've

received scattered reports of poor control where pyrethroids such as Warrior, Brigade, and Mustang Max have been used for earworm control. The cause for control failures may be related to high temperatures, but we also know that pyrethroid resistance has contributed to such failures for several years. Alternatives to pyrethroids for earworm control include Coragen and Radiant ... both are very effective. Another choice is Voliam Xpress, a pre-mix of the active ingredients found in Coragen and Warrior.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu) and Megan Brant

Squash vine borer and squash bug

I continue to receive reports of squash bug and squash vine borer infestations in the central and northern parts of the state, and squash bug adults, eggs, and nymphs are present in our plots at Urbana. The July 5 issue of this newsletter (<http://ipm.illinois.edu/ifvn/contents.php?id=8>) includes information on the life cycles of these insects and comments on their control.

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

Local Foods Issues

MarketMaker Newsletter

The July 2012 edition of the Food [MarketMaker Newsletter](#) is posted at <http://national.marketmaker.uiuc.edu/uploads/ab98b44a1a309dd5aef305628c42233e.pdf>. To view the document, you will need Adobe Reader. If you currently don't have this program on your computer, you can get the latest version by going to <http://get.adobe.com/reader>.

This month's issue includes

- * Business Spotlight: Gonsoulin Land & Cattle, LA
- * Welcome Wyoming MarketMaker
- * Farm Credit Sponsors 2012 National Food MarketMaker Innovation Awards
- * Connecting is Easy with MarketMaker
- * Gonsoulin Beef Featured in New Orleans Restaurant
- * MarketMaker Buy & Sell Forum ads

Email: marketmaker@illinois.edu; Web: <http://foodmarketmaker.com>

Survey Opportunity: Farmers' Use of the Internet and Farm Business Practices and Perspectives

Researchers at the University of Illinois have developed an online survey to better understand the needs of Illinois fruit and vegetable growers for information and training on the use of social media in marketing their produce. The results of this survey will help improve their understanding of how farmers use online tools and networking and how these activities affect your farm. Results will also us in designing future educational programs.

To fill out the survey, please click on the link below or copy and paste it into your Web browser:
<http://go.illinois.edu/farmersurvey>

As a small token of gratitude, you will be given the opportunity to enter your name at the end of the survey for the chance to win one of two \$50 prepaid Visa gift cards, which can be used anywhere Visa is accepted as a form of payment. Odds of winning will be about 1 in 250. Only one entry per household is permitted, and you can only take the survey once during the time period the survey is open. The survey will be open for about two weeks.

I know your time is incredibly valuable, especially at this time of year, so this survey is designed to take no more than 20 to 30 minutes to complete. No identifying information will be shared or connected with your responses in the

survey. If you have any questions about this study or problems taking the survey, please contact me at kabrams@illinois.edu, 217-244-3682.

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