



# 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](mailto:weinzierl@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.

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

### *Upcoming Programs*

- **International Herb Association Annual Meeting. July 11-15, 2010.** Collinsville, IL. For complete program details and registration, go to the following link: <http://web.extension.illinois.edu/edwardsvillecenter/downloads/23779.pdf>. For additional details or questions, contact Chuck Voigt at [cevoigt@illinois.edu](mailto:cevoigt@illinois.edu) or (217) 333-1969.
- **North American Fruit Explorers. August 19-21, 2010.** Best Western Motel/Conference Center, Lafayette, IN. To view the program and registration form, check: <http://web.extension.illinois.edu/edwardsvillecenter/foodcrophort3031.html>. For additional details or questions: contact Ed Fackler at [cefackler@gmail.com](mailto:cefackler@gmail.com) or 812-366-3181.
- **2010 Sustainable Agriculture Tours**
  - **July 26, Illinois Berries**, J & J Berry Farm, Jersey County
  - **August 13, Romance Tour – Flowers and Wine**, Bright Flower Nursery and Famous Fossil Vineyard & Winery, Jo Daviess County and Stephenson County
  - **September 15, Agritourism – Farm Fresh Fun**, Country Corner, Henry County.

A fee of \$20 per person will be charged for each tour, which includes lunch. This year two adults pay \$30 when registered together and children under the age of 10 attend free. Registration at least one week in advance is required. Visit [http://web.extension.illinois.edu/smallfarm/ag\\_tours.cfm](http://web.extension.illinois.edu/smallfarm/ag_tours.cfm) to register and for more details about each of the tours including a map and agenda. To register by phone, contact Donna Cray at 217-241-4644. For more information, contact Deborah Cavanaugh-Grant (217-968-5512; [cvnghgrn@illinois.edu](mailto:cvnghgrn@illinois.edu)).

- **2011 Illinois Specialty Crops Conference. January 5-7, 2011.** Springfield, IL. We are in the planning stage for this program ... **mark your calendars, and if you have any suggestions for the program, please contact Rick Weinzierl at [weinzierl@illinois.edu](mailto:weinzierl@illinois.edu) or 217-244-2126.**

## ***Regional Updates***

**In the northern region**, high temps for mid to late June have been in the low 80s to 90s, with low 60s to 70s – warmer than average. The region received record amounts of rainfall from the beginning of the month. The Chicago area and counties toward the Wisconsin border received about 6 inches, with more in some areas. Counties towards the central parts of the state received over 8 inches, and some fields are still flooded. Nearer the Mississippi River, 7-10 inches of rain were recorded, and many fields were flooded. Needless to say, soil moisture is very high, and getting into fields with equipment is not possible in many areas in the region.

Apple, pear, and peach fruits are sizing well, and many fruits are more than 3 inches in diameter. Fruit thinning is still going on in many orchards. Tart cherry picking is underway. Grape berries are sizing well, and bunch thinning will commence very soon. Harvesting of June-bearing strawberries is still going on in some farms. Codling moth, apple maggot, and plum curculio monitoring continues, and Japanese beetle emergence has begun (and will continue for a few weeks). The hot, humid weather in the region is very conducive for secondary apple scab, and growers need to continue to manage this disease where primary infections provide inoculum.

Planting of vine crops is almost done on most farms, but the several rainy days that occurred after the middle of June slowed down field activities. I received reports of bacterial spot and speck on tomatoes and peppers. In the Kankakee area, harvesting of cabbage continues, as does harvest of cool season vegetables such as spinach and mustard greens.

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

**At the St. Charles Horticulture Research Center**, June has been a wet month. We will probably end the month with 7.5 inches of rainfall, according to my NWS manual rain gauge. None of them were particularly big rains, but there were lots of them. It's also been relatively warm, with many days in the upper 80's, and a few 90's. In the end, it has had a critical impact on our ability to get work done. It has meant heavy disease pressure in the vineyards and orchards, which have needed more attention than normal. So we have had precious few opportunities to get field work done. As a result, we are having to make tough decisions about what we get done this year. It certainly won't be what we planned.

These kinds of conditions favor work in the vineyards and orchards. That's good on the one hand, because they've certainly needed it. Growth rates have been phenomenal. Fruit set was a little impacted by frost, but not enough to mean we could get away from thinning. We have a peach crop this year, so we had 20 trees to thin, which we did by hand. Apples mostly set well, except a few that set too many last year. Sprays have been critical on scab-susceptible varieties. The orchard we planted last year for evaluation of reduced pesticide management needed some rehabilitation. We had the heaviest pressure from rodents I have ever seen, some creating large mounds across in the orchard. The apples were young and had some damage from feeding on trunks. We may not be able to afford to replace plants, but with rootstocks shooting new trunks, we'll try to field graft replacement scions, which should allow quicker recovery anyway.

Frequent rains have also led to quicker breakdown of herbicides. We will need to make a serious effort to get on top of the weeds in vineyards, which recently overwhelmed our pre-emergence application of early April. We'll use a burn-down herbicide tank-mixed with another pre-emergence material to get some relief.

Vegetable plantings this year are down, partly due to reduced funding from sponsors but also because we just could not get into the field. We only have one pumpkin plot in, and it is getting late. We should be able to get one more in this week, but that may not be enough. As the next site slated for the Illinois Pumpkin Growers Field Day, we may have a difficult time putting the program together this year. Stay tuned.

This week our forecast is for dry and sunny, with moderate temps, even low 70's. What a relief. We have a good summer crew in place. Let's hope the week gives us an opportunity to start catching up.

*Bill Shoemaker (630-584-7254, [wshoemak@illinois.edu](mailto:wshoemak@illinois.edu))*

## ***Notes from Chris Doll***

The season in southwestern Illinois continues to be early based on the ripening of blackberries, peaches, apples, and sweet corn. Summer arrived with a continuation of temperatures in the 90's which did not slow any maturity schedule. Locally, the past 10 days were dry until an inch fell on the 27th. Luckily, the subsoil moisture at a depth of five feet remains near saturation, so the trees and fruit are continuing to size. Brambles and other shallow rooted plants were needing the water where irrigation is lacking.

The degree-day total since codling moth biofix is now at 1254. Orchards visited last week had light trap counts and only a few stings from this pest. Watching for the second generation of moths and egg laying is now on the agenda. Growers of Honeycrisp apples and ripening stone fruits need to watch and treat for Japanese beetles. The problem with this pest on ripening fruit is getting control while considering the pre-harvest interval of effective materials (see the table below). The San Jose scale situations seem to have quieted down due to time and maybe control efforts, but red mites in an apple block and wooly apple aphids in several blocks were numerous enough to require treatment. The mating disruption treatments for Oriental fruit moths in local peach orchards have worked so far.

Total wetting hours total for sooty blotch and flyspeck of apples have now exceeded the minimum number to trigger control efforts, and future sprays will need to consider control for the diseases. Some early-season powdery mildew infections have abated, and apple scab and fire blight have also declined as a problem. Bacterial spot is a problem on peach leaves but not on the fruit in orchards using the small rates of copper fungicides. In the Back-40, that was insufficient to give control on susceptible nectarines.

The National Peach Council 2020 crop estimates based on percent of the 2009 crop are:

IL	110%
GA	122
MI	122
MO	125
SC	104
NJ	100
CA	105

Bedstraw is a weed introduced to me by old friend Jim Retzer many years ago, and in the past week it has been reported as a problem in a pick-your-own bramble and gooseberry planting and a peach orchard where the workers wearing shorts were complaining. Bedstraw (*Galium aparine*) is an annual that reproduces by seed. It is weak-stemmed and can extend 2 to 5 feet over bushes and for tripping workers. The stems are square, slender, branched and covered with short bristly hooks which cling to clothing and hair. I don't wish it on any grower.

And thinking about orchard weed control, July 1 has been the traditional cut-off date for sprays of glyphosate in apple orchards because of the potential for downward translocation of the chemical to the roots from basal sprouts or low hanging shoots. Gramoxone or Rely can be used for chemical mowing of most weeds under the trees.

*Chris Doll*

## ***Fruit Production and Pest Management***

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

Japanese beetles have been active for more than 2 weeks in southern Illinois, and emergence is now well underway 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 44-45 in the [2010 Midwest Tree Fruit Spray Guide](#) and pages 46-47 in the [2010 Midwest Small Fruit and Grape 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).

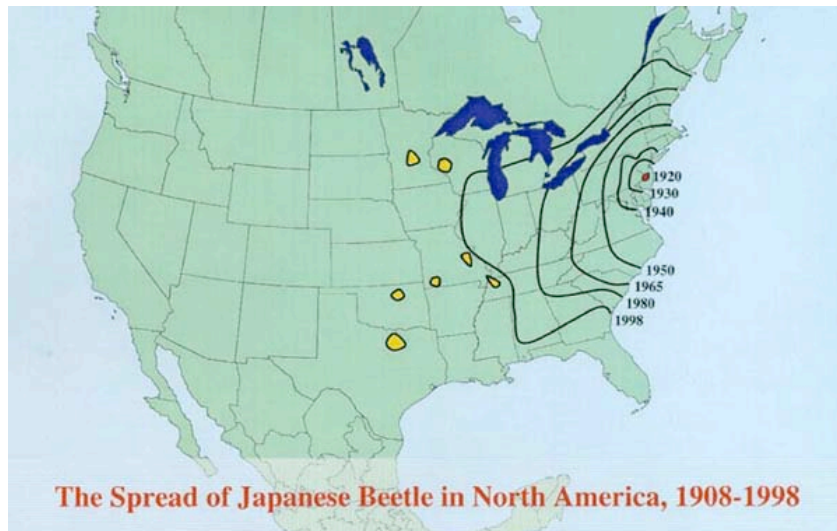
Insecticide	Apples	Peaches	Blueberries	Brambles	Grapes
Asana	*	14	14	7	NR
Assail	7	7	1	1	7
Baythroid/Renounce	7	7	NR	NR	3
Brigade/Capture	NR	NR	NR	3	30
Danitol	14	NR	3	NR	21
Imidan	7	14	3	NR	7/14
Malathion	*	7	1	1	3
Mustang Max	*	14	1	1	1
Pounce (permethrin)	*	14	NR	NR	NR
Sevin	3	3	7	7	7
Warrior (lambda-cyhalothrin)	*	14	NR	NR	NR
<i>OMRI-APPROVED PRODUCTS</i>					
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 this year at the University of Illinois orchard near Urbana, I have 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.

A bit on the history and life cycle of this insect ...

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. The map below illustrates its spread through 1998.



The spread of the Japanese beetle in North America. (Ohio State University, [http://www.oardc.ohio-state.edu/biocontrol/images/jb\\_map.jpg](http://www.oardc.ohio-state.edu/biocontrol/images/jb_map.jpg))

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.

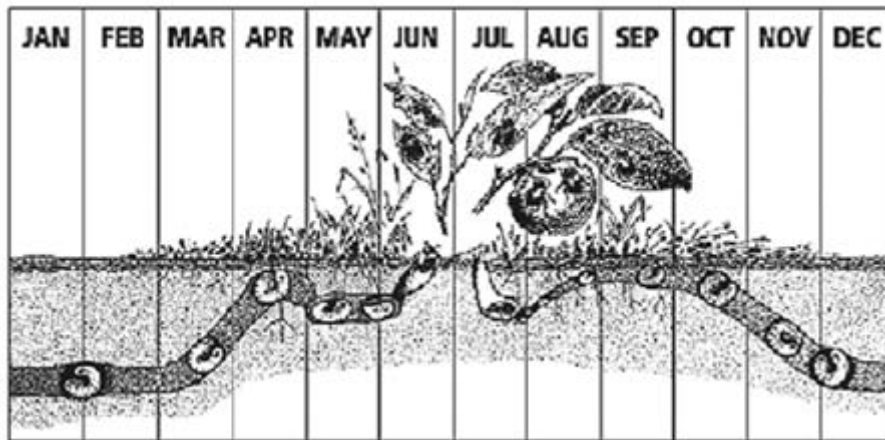


Adult Japanese beetle ([University of Minnesota](http://www.umn.edu))

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 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.



*Japanese beetle life cycle. ([Ohio State University](#))*

### ***Reminders on Fruit Insect Management***

- European red mites in apples and peaches: Frequent rains in many areas have limited early summer outbreaks of European red mites, but scouting for this pest is still recommended. Many effective miticides are registered to control mites on apples ... see page 21 of the [2010 Midwest Tree Fruit Spray Guide](#). The list in the Spray Guide includes the mode of action (MOA) grouping for each product ... where you have used a miticide from one MOA grouping last year or earlier this year, choose a product from a different group. Thresholds for mites on apple leaves at this time are 5 per leaf. Summer oils applied at ½ percent by volume can help to keep numbers down, but such applications generally are not adequate for controlling infestations that exceed this threshold. (Remember also that oils should not be used during extremely hot weather or in conjunction with sprays that include Captan or other sulfur-containing fungicides). Miticides are needed less often in peaches, and choices are fewer, but Acramite (3-day PHI), Nexter (7-day PHI), and Envidor (7-day PHI) are labeled and effective as summer miticides.
- Grape berry moth in grapes: Second generation grape berry moth larvae have begun to enter grapes in far southern Illinois. Note that the [2010 Midwest Small Fruit and Grape Spray Guide](#) lists several insecticides that are effective against this insect, including (but not limited to) Altacor, Brigade, Danitol, Imidan, and Baythroid/Renounce. Entrust is available for organic growers. Although midseason is not the time to embark on a mating disruption program for grape berry moth control, mating disruption is very effective against grape berry moth if immigration of mated females from nearby wild grapes in woods is not too great. Conventional and organic growers alike might want to consider this approach in the future.

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

#### ***Updates and Reminders on Vegetable Insects***

- Corn earworm counts have been higher than usual for late June in many areas. From Collinsville up to the Quincy area, counts in pheromone traps have exceed 100 per night on several nights in June. Flights in central Illinois have exceeded 30 per night on a few nights, and moth flight has been reported in the northern tier of Illinois counties. See previous issues of this newsletter and the [2010 Midwest Vegetable Production Guide](#) for listings of insecticides and recommendations on spray timing for effective control of this insect.

- **Illinois Pest Monitoring Network:** Although not all locations and pest insects are represented, data from pheromone traps for several insect pests of vegetables are available via the Illinois Pest Monitoring Network at <http://pmn.ipm.illinois.edu/insects.php>. Pest insects included in the monitoring project include corn earworm, European corn borer, fall armyworm, southwestern corn borer, and western bean cutworm.
- “Worms” in cole crops and crucifer greens: Rick Foster recently posted a brief article in Purdue University’s [Vegetable Crops Hotline](#) that included pictures of the caterpillar pests of cole crops and crucifer greens. Just a quick reminder to expand that article ... a range of different insecticides are effective against the “Leps” in cabbage, broccoli, mustard greens, kale, etc., and the selections include several pyrethroids (Baythroid, Brigade, Mustang Max, Pounce and other permethrin formulations, and Warrior). These products are among the most effective against cabbage looper, but overusing them or relying on them too much early in the season can lead to problems with diamondback moth control as the season progresses. Pyrethroid-resistant populations of diamondback have been reported from around the U.S., a repeated uses of pyrethroids is likely to “select” for a resistant population in Illinois fields. Using alternative insecticides that are effective against diamondback moth and imported cabbageworm – such as *Bacillus thuringiensis* formulations, Coragen, Entrust, Intrepid, Proclaim, and Radiant – is recommended for controlling these pests and giving some control of cabbage looper until crops reach their most vulnerable stages. Then when pyrethroids are used against cabbage looper and as “clean-up” sprays before harvest, they will be more likely to still work against diamondback moth. These alternatives also are less likely to kill natural enemies of the key caterpillar pests, so predators and parasites help to provide some control if pyrethroids and other broader-spectrum insecticides are not used. See the [2010 Midwest Vegetable Production Guide](#) for more details.

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### ***Less seriously ...***

Ken and his wife Edna went to the state fair every year, and every year Ken would say, "Edna, I'd like to ride in that helicopter."

Edna always replied, "I know Ken, but that helicopter ride is fifty bucks. And fifty bucks is fifty bucks."

One year Ken and Edna went to the fair, and Ken said,

"Edna, I'm 75 years old. If I don't ride that helicopter, I might never get another chance."

To this, Edna replied, "Ken, that helicopter ride is fifty bucks, and fifty bucks is fifty bucks."

The pilot overheard the couple and said, "Folks I'll make you a deal. I'll take the both of you for a ride. If you can stay quiet for the entire ride and don't say a word I won't charge you a penny! But if you say one word it's fifty dollars."

Ken and Edna agreed and up they went.

The pilot did all kinds of fancy maneuvers, but not a word was heard. He did his daredevil tricks over and over again, but still not a word.

When they landed, the pilot turned to Ken and said, "By golly, I did everything I could to get you to yell out, but you didn't. I'm impressed!"

Ken replied, "Well, to tell you the truth, I almost said something when Edna fell out, but you know, she always said, 'Fifty bucks is fifty bucks!' "

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