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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, 217-333-6651, 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.

In this issue ...

Crop and Regional Reports (from Elizabeth Wahle and Maurice Ogutu)
Notes from Chris Doll (events in 2004 are 5-7 days earlier than 2003; hail damage and cedar apple rust; good results from Pyramite and Acramite, also Apogee; johnsongrass a concern; a good apricot crop in Edwardsville))
Degree-day Accumulations
Fruit Production and Pest Management (reminders on apple maggot and potato leafhopper; an in-depth look at Japanese beetle)
Vegetable Production and Pest Management (squash bug; quick reminders on "worms" in cabbage and corn earworm and European corn borer in sweet corn)
University of Illinois Extension Specialists in Fruit & Vegetable Production & Pest Management

Crop and Regional Reports

In the south and southwest, the weekend of June 19-20 provided a break from the heat and humidity experienced of the previous weeks. Until recently, temperatures have been running well into the 90's with high relative humidity, as experienced by all attending the ISHS Summer Field Day held at Eckert's County Store and Farm. The event was enjoyable and informative, and I extend my thanks to the Eckert family and their staff for all their time and effort that went into hosting the event.

Japanese beetles are here and are making their presence known. Numbers started increasing in traps around June 10, and adults are now quite noticeable congregating and feeding on their favored plants—most notably peach, apple, grape, cherry, brambles, pecan, and a number of ornamentals in the rose family. Early sweet corn harvest started in the region last week, and Illinois tomatoes will not be far behind.

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


Mosbah Kushad (left) and Mohammad Babadoost (right) talked about thinning and summer diseases in apples at Summer Horticulture Day at Eckert's, June 17.

In northern Illinois, the second and third weeks of June were characterized by many cloudy days with thunderstorms. Average highs have been in the 80s, with lows in the upper 50s to 60s. Soil moisture is adequate to high in most counties. Since the beginning of the year, over 14 inches of rainfall has been recorded in the area with the highest amounts recorded in late May and early June. St. Charles has received more than 4 inches of rainfall already in June.

Apple and peach fruits are about 2 inches in diameter, and tart cherries will be ready for picking next week. Orchardists are applying first and second cover sprays, and thinning is still ongoing for some. Codling moth monitoring is continuing, and Japanese beetles have already been observed on some grapes. Leaf removal is underway where needed in some grape varieties. Strawberry picking continues as well. Diamondback moth, cabbage looper, and imported cabbage worm have been observed on cabbage, and cucumber beetles are feeding on squash, pumpkins, cucumbers and muskmelons.

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

Notes from Chris Doll

The degree days keep accumulating, as my chart now says (on June 18) 1433 DD50 for the year, and 1128 since the codling moth biofix on April 21. Codling moth catches are still being reported in both Illinois and Missouri orchards, and there is no solid evidence that the first generation is completely emerged. The good news is that the entries and survival of larvae is very low in the orchards that I look at. In the Back-40, two worms entered and exited already. Lucky are the growers that can get control with Imidan and Guthion.

As I prepared for a talk for Summer Orchard Day yesterday, I looked at the 90 Percent Clean Apple Club data in 1954, or 50 years ago. The top 6 orchards averaged 0.27 percent codling moth damage, and the bottom 6 orchards averaged 2.7 percent codling moth damage, with most of the growers using DDT and Parathion.. The fireblight research at that time was done by Dr. Dwight Powell and both copper sprays and streptomycin were in the picture. In the 1904 ISHS Transactions, lots of discussion centered on insects and disease control, worries about the Child Labor Law, pertinent presentations on grapes and sweet potatoes, and one on "How to Train the Girls". Sometimes there are things to learn from history.

Most of my records are not tied to degree days, but just dates for such phenological happenings as bloom, first harvest, first sightings, etc. So for 2004, the first picking of red and black raspberries, Montmorency cherries, and blueberries all happened between 5 and 7 days earlier than last year. Japanese beetles emerged 7 days earlier, and are now beginning heavy feeding on brambles and grapes.

Orchard observations the past week were on some serious hail damage to both apples and peaches, and luckily it is not in every orchard. Subsequent hand thinning of peaches made the damage look less serious, but many of the apples at hail-damaged sites will end up in cider. Other apple problems are the continuation of fireblight infections, some powdery mildew, and limited amounts of scab in protected orchards. Cedar apple rust can be found in many orchards, but at low levels.. However, some home-owner trees in Missouri glow like the sun from 100 percent leaf infections. Some mite sprays have been made, and both Pyramite and Acramite have given excellent control where used.

Apogee has been impressive as a growth control material in a couple of orchards. Three applications totaling 30 to 32 ounces

per acre have given nearly 100 percent growth control to the extent that only a walk-by pruning would be needed if the season ended today. One of the orchards had the potential for a serious fireblight outbreak, and that did not happen.

Other orchard problems are herbicide washout and johnsongrass control. A graphic example of herbicide failure was seen in a peach orchard treated with 4.0 pounds a.i. per acre. Grasses were taking off. In nearby apple orchards that had a Karmex and Sinbar combination used, control remained good. But johnsongrass is growing in more orchards than before, and some special efforts will be needed to slow it down. Glyphosate is on the recommended list, but unless the full rate is used and coverage is good, control is week. The best contact grass killers are not labeled for bearing trees, and so growers are left to seek control with Poast or glyphosate.

The excellent raspberry crop is mostly harvested, and the blackberry crop potential is very good. The strawberry harvest period had all kinds of weather problems, mostly water and heat, and not many growers are bragging.

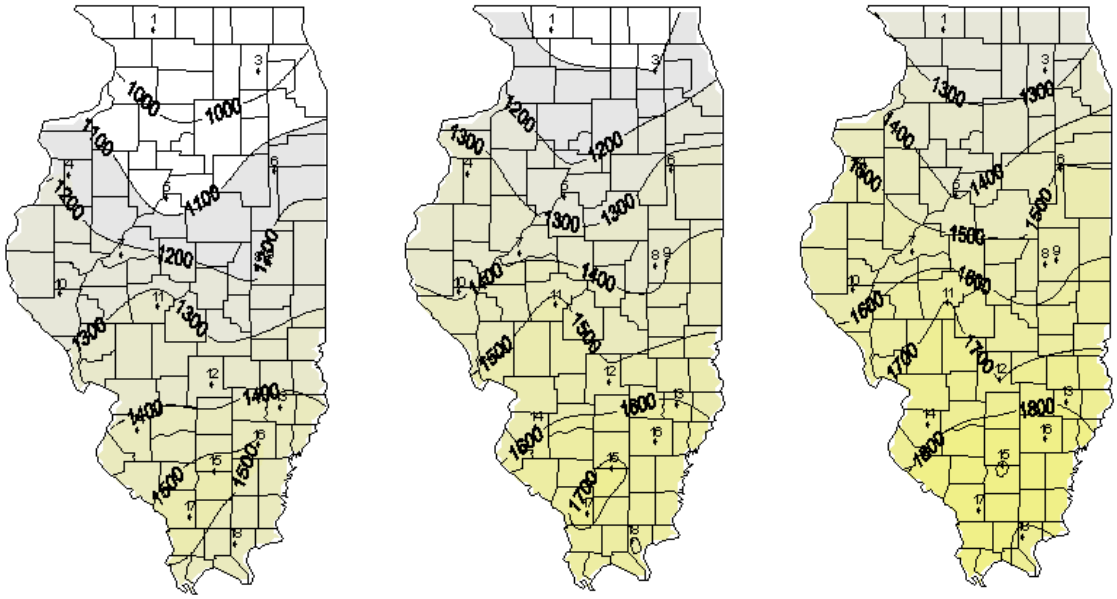
2004 will go down as an unusual year as it relates to apricots. There are few trees in this area because of the failure to survive frost and freeze damage. I facetiously say that we can expect one full crop every 10 years, and this it that year for my 4th crop in 40 years. I waited many years for the full crop of sweet cherries, and then let brown rot pick the crop. Also from the Back 40 ... the first apple was picked today, and harvest of early peaches has started in the area. In the advice mode, don't forget training of young trees and the control of weeds in all plantings as the busy harvest season begins.

Illinois and Midwest fruit growers who attended the Illinois State Horticulture Society's Summer Horticulture Day at Eckert's at Belleville had the privilege of seeing a fine orchard and market, with many of the details for success given by Eckert family members. The attendance was not as large as expected, and some of you missed an excellent opportunity.

Chris Doll
Edwardsville, Illinois

Degree-Day Accumulations and Projections

To view an up-to-date contour map of accumulated degree-days in Illinois, go to http://www.sws.uiuc.edu/warm/pestdata/choosemap.asp?plc=#, and select a base temperature of 50˚F. To reach the degree-day calculator, go to: http://www.ipm.uiuc.edu/degreedays or http://www.sws.uiuc.edu/warm/agdata.asp.



DD accumulations, base 50 F, for January 1 through June 19 (left) and projected through June 26 (center) and July 3 (right).

No.	Station	County	Base 50 Degree-Days January 1- June 19
1	Freeport	Stephenson	914
2	Dekalb	Dekalb	missing
3	St. Charles	Kane	948
4	Monmouth	Warren	1204
5	Peoria	Tazewell	1055
6	Stelle	Ford	1175
7	Kilbourne	Mason	1217
8	Bondville	Champaign	1173
9	Champaign	Champaign	1234
10	Perry	Pike	1225
11	Springfield	Sangamon	1348
12	Brownstown	Fayette	1331
13	Olney	Richland	1431
14	Belleville	St. Clair	1414
15	Rend Lake	Jefferson	1528
16	Fairfield	Wayne	1509
17	Carbondale	Jackson	1548
18	Dixon Springs	Pope	1417

Kelly Cook (217-333-6652; kcook8@uiuc.edu) and Rick Weinzierl (217-333-6651; weinzier@uiuc.edu)

Fruit Production and Pest Management

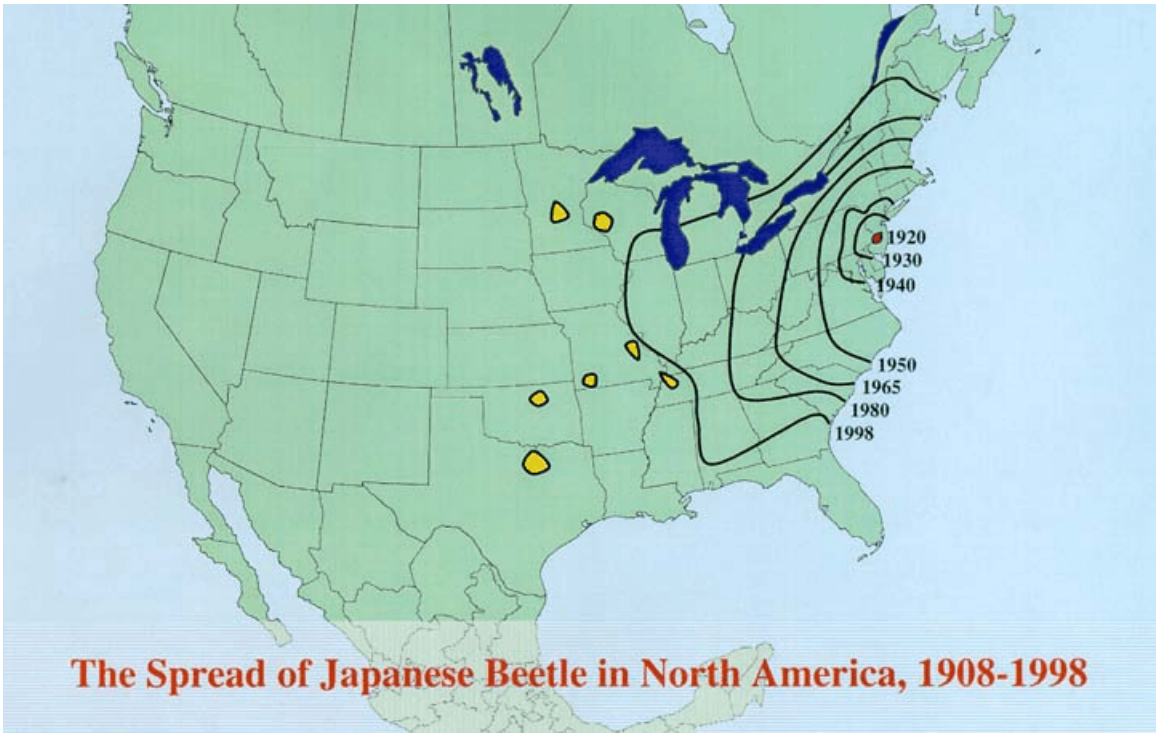
Fruit Insects

Quick reminders

- Apple maggot control should be underway in the northern half of the state.
- Potato leafhopper is common in nonbearing apple orchards not under a regular spray program ... control it now to prevent it from reducing tree growth.
- Rains of over 2 inches generally mean that you need to reapply insecticides used in cover sprays to protect fruits ... this is a generalization that does not hold true for all products and all rain events, but it's important not to leave fruit unprotected from codling moth, oriental fruit moth, and apple maggot where traps indicate the need for sprays.
- Scout for mites in apples and peaches ... guidelines and thresholds are listed in the Midwest Tree Fruit Pest management Handbook.

Japanese Beetle

Japanese beetles have started to emerge in much of the state, so it must be time for my annual piece on this creature's life history and pest status, as well as updates and reminders on its control. 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.



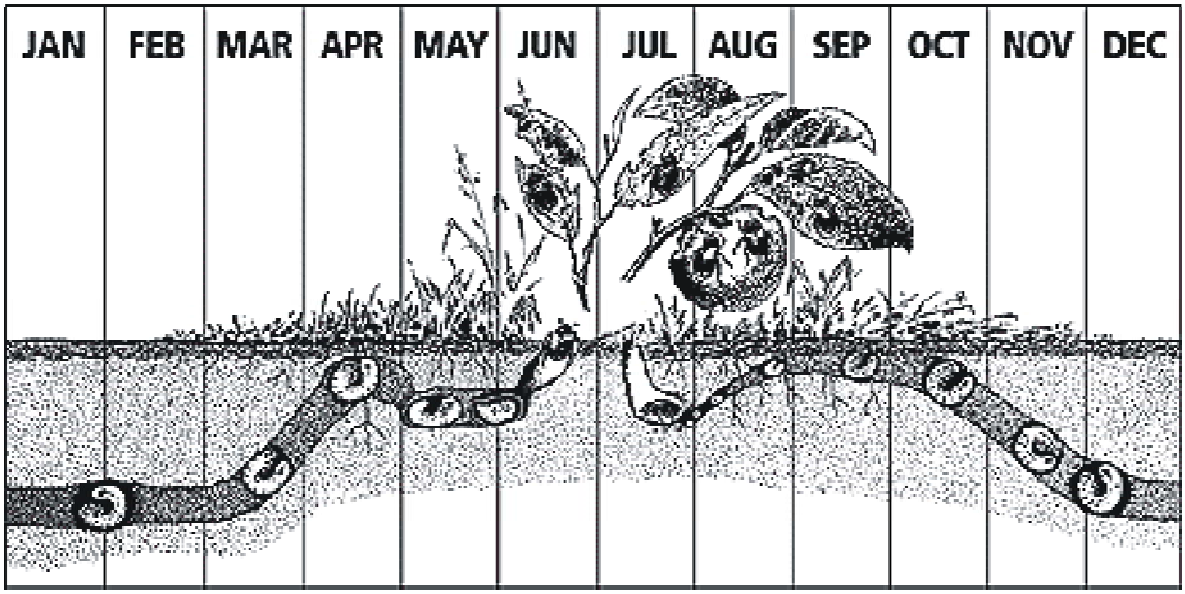
The spread of the Japanese beetle in North America. (Ohio State University, http://www.oardc.ohio-state.edu/biocontrol/images/jb_map.jpg)

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 has been the annual white grub or masked chafer, *Cyclocephala* spp. It remains unclear whether or not larvae of the Japanese beetle will become as damaging to turf here as populations build. 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.

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.extension.umn.edu/projects/yardandgarden/ygbriefs/images/entomology/colorslide/japanesebeetle-jdh.jpg)

Mature larvae of the Japanese beetle pupate in the soil in late spring, and adults emerge from June through August; adult emergence begins earlier in the southern portion of the region. 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; http://ohioline.osu.edu/hyg-fact/2000/2504.html)

Management: Biological control agents are available for reducing numbers of Japanese beetle larvae in soil. They include the "milky disease" bacteria *Bacillus lentimorbis* and *Bacillus popilliae* and the insect-parasitic nematodes *Steinernema carpocapsae* and *Heterorhabditis* spp. However, if the goal is to reduce adult damage to fruit or vegetable crops or ornamental plants, the great mobility of adult beetles limits or negates the value of larval control unless it is practiced on an area-wide basis. Most fruit and vegetable growers must focus on adult control to limit crop losses. Although traps that attract and kill great numbers of Japanese beetles are marketed widely, studies have shown repeatedly that these traps do not reduce beetle populations enough to protect nearby plants, and in some instances damage is greater on plants near traps than on those in areas where traps are not used at all. Exclusion (by use of plant covers) and the use of insecticides are the only effective options for protecting small fruit crops from Japanese beetle adults. Plant covers (with textures similar to floating row covers) can be practical for protecting small numbers of blueberry plants or a very few small peach or apple trees when fruit is ripening, but covers rarely are feasible for protecting grapes (because sprays for fungal diseases are needed at the same time as protection from Japanese beetles) or brambles (bees are still visiting and pollinating some flowers while ripening fruit is vulnerable to Japanese beetles).

Insecticides labeled for use on blueberries, grapes, and brambles for Japanese beetle control are listed in the *2004 Midwest Small Fruit and Grape Spray Guide*. Danitol and Sevin are effective choices for use on grapes until harvest approaches; preharvest intervals are 21 days and 7 days for Danitol and Sevin, respectively. Closer to harvest, malathion is moderately effective and has a 3-day preharvest interval (PHI). Pyrethrins or pyrethrins plus rotenone provide moderately effective control and can be used in Certified Organic production. In blueberries, if control is needed it is usually during harvest or very shortly before harvest. Although Asana is effective and labeled for application to blueberries, its 14-day preharvest interval prevents its use when infestations usually occur. Sevin (7-day PHI), malathion (1-day PHI), and pyrethrins or pyrethrins plus rotenone (0- or 1-day PHI) are moderately effective. In brambles, Capture (3-day PHI), malathion (1-day PHI), and pyrethrins or pyrethrins plus rotenone (0- or 1-day PHI) provide adequate control. For all these insecticides, the key to adequate control is to scout small fruit plantings regularly (once or twice weekly) and treat when damaging numbers of beetles occur on foliage or fruit. Just as important is to scout again beginning a couple of days after treatment to detect

reinfestation – something that usually happens with Japanese beetles – and treat again if necessary.

Several insecticides are labeled for application to apples and peaches for Japanese beetle control. In general, the organophosphates (Imidan and Guthion), carbamates (primarily Sevin), and pyrethroids (several) used in cover sprays aimed at codling moth and other fruit-damaging pests are effective against Japanese beetles as well. See the *2004 Illinois Commercial Tree Fruit Spray Guide* and specific insecticide labels for rates and restrictions.

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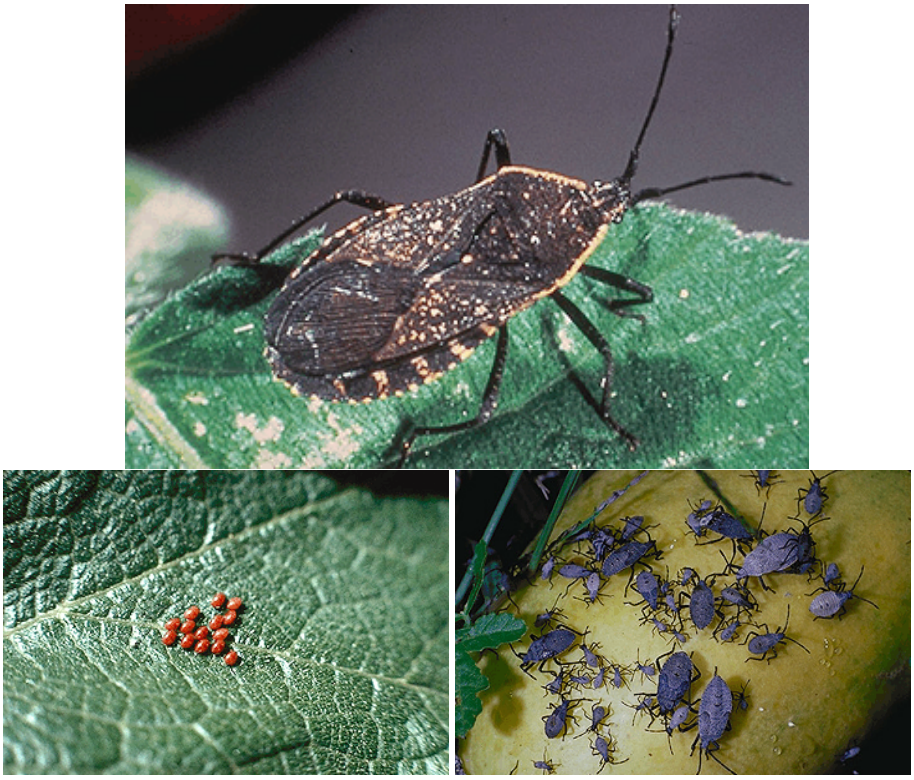
Vegetable Production and Pest Management

Vegetable Insects

Squash Bug



Squash bug adult (above), eggs (lower left), and nymphs (lower right.

Late June and July bring the beginning of squash bug infestations in Illinois. The squash bug, *Anasa tristis* (De Geer) (Hemiptera: Coreidae), is a perennial and severe pest of pumpkins and squash; it rarely injures cucumbers and melons in the Midwestern United States.

Identification. The squash bug is a "true bug" in the order Hemiptera. Like all adult Hemipterans, adult squash bugs have two pairs of wings, with the front wings hardened at the base and membranous at the tips. Its mouthparts form a needle-like beak that arises from the tip of the head. Adults are brownish black, with yellowish to red-orange markings; they appear oval shaped when viewed from above, and somewhat flattened when viewed from the side. Females lay yellowish-white eggs in small clusters or masses on the upper and lower surfaces of leaves; the eggs quickly darken to a reddish brown color. Eggs hatch to produce grayish-white, wingless nymphs with black legs. The nymphs darken in color as they grow older, and wing pads (the beginnings of adult wings) begin to develop.

Life Cycle. The squash bug overwinters as an adult, and survival is greatest in plant debris, mulch, and field borders or woods. Adults become active in the spring, mate, and females begin feeding and laying eggs in June and July. Nymphs grow to the adult stage in 5 to 6 weeks, and new females mate and begin laying eggs immediately. Populations are greatest during hot, dry summers. Females that reach the adult stage after late July or early August do not mate or lay eggs but instead enter

an inactive stage and seek overwintering sites. Squash bugs may be present as nymphs or adults in pumpkins and squash from June through October.

Plant Injury. Squash bugs use piercing mouthparts to penetrate stems, leaves, and fruit and suck sap from plants. This direct damage may cause wilting or even kill plants if populations are great enough. Recent research has found that squash bugs transmit squash yellow vine disease; controlling squash bugs limits the spread of this disease within fields.

Management. Early in the season when adults move into fields and feed on young plants, watch for wilting of seedlings and apply an insecticide if wilting is observed. Scout for eggs of the squash bug on upper and lower surfaces of leaves. If densities exceed one egg mass per plant, use insecticides for control as nymphs begin to hatch. Insecticides labeled for use against squash bug are most effective against young nymphs, and for commercial growers who possess a Pesticide Applicator's License, the pyrethroid insecticide Capture is particularly effective against squash bug. Organic growers may choose to use floating row covers to exclude squash bugs from young plants, but when row covers have to come off to allow pollination, none of the insecticides approved for use in Certified Organic production systems are truly effective against squash bugs.

"Leps" (= "Worms") in cabbage and related crucifers, including greens ...

... were mentioned in Maurice Ogutu's crop report from northern Illinois, and they're present and active throughout the state. Check issue 6 of this newsletter from April 21 , 2004, for background information and control recommendations.

Corn earworm ...

... flights are picking up. Dan Fournie of Collinsville has been catching 50 to over 100 moths per trap per night for a few weeks, and Mike Roegge of Adams County had 55 moths in his trap on June 15 after setting it up the day before. European corn borer is also active now in much of the state, though I do not have a lot of details on flight intensity. Captures in light traps have been low except for a location or two in northwestern Illinois. Check issue 2 of this newsletter from February 24, 2004, for background information and control recommendations for corn earworm and European corn borer.

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This issue's words of wisdom ...

The mindset of college freshmen

Earlier this month, during freshman advising (when new students come to campus to pre-register for fall course), advisors received a copy of the Beloit College Mindset List – a listing of facts or factoids that characterize the new freshman class and point out just how young they are. They were born in 1985, by the way. Here are a few of the entries on that list, just in case you want to be reminded of how "less young" most of are ...

- Ricky Nelson, Richard Burton, Samantha Smith, Laura Ashley, Orson Welles, Karen Ann Quinlan, Benigno Aquino, and the U.S. Football League have always been dead.
- They are not familiar with the source of that "giant sucking sound."
- Iraq has always been a problem.
- Paul Newman has always made salad dressing.
- Pete Rose has always been a gambler.
- Bert and Ernie are old enough to be their parents.
- An automatic is a weapon, not a transmission.
- Russian leaders have always looked like leaders everywhere else.
- There has always been testing for AIDS.
- Gas has always been unleaded.
- They never heard Howard Cosell call a game on ABC.
- Garrison Keillor has always been live on public radio and Lawrence Welk has always been dead on public television.
- There has always been some association between fried eggs and your brain.
- Datsuns have never been made.
- Banana Republic has always been a store, not a puppet government in South America.
- Yuppies are almost as old as hippies.

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