

Illinois Fruit and Vegetable News

Vol. 10, No. 9, June 4, 2004

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, weinzierl@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)

Upcoming Programs, Opportunities (Summer Orchard / Summer Horticulture Day, IDFTA Summer Tour)

Notes from Chris Doll (phenology update, wet weather, calcium sprays, tree training, and herbicide re-applications)

Degree-day Accumulations

Fruit Production and Pest Management (brief notes on insects, nutritional deficiencies, orange rust of brambles) **Vegetable**

Production and Pest Management (squash vine borer)

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

Crop and Regional Reports

In the south and southwest, rain has been falling consistently throughout the region for the past 2 weeks, with upwards of 10 inches close to St. Louis. Localized hail and other storm damage has been reported throughout the region, and ponding in low spots is widespread. Several rains exceeded 1 inch and prompted re-applications of pesticide for many growers.

Strawberry season ran fast for many growers, and many are already into renovation or plastic removal. Reports came in last week that early sweet corn is at the tasseling stage. Remember to begin corn earworm sprays when ears begin to silk and if pheromone traps indicate that moths are flying. Stop sprays when more than 90% of the silks are brown. Corn earworm started showing up in traps on 4/20 at the SIU-Belleville Research Center.

You can still pre-register for the Illinois State Horticultural Society's Summer Horticulture Day being held Thursday, June 17, at Eckert's Country Store & Farms, Belleville, IL. The morning segment includes field tours with specialists discussing peaches, apples, brambles, and pumpkins, and the afternoon session will showcase the Eckert facility and will focus on warehouse operations, marketing, entertainment, and their pick-your-own and retail food service. The program, registration form, and directions to Eckert's are available at <http://web.extension.uiuc.edu/regions/hort>. For additional information, contact Don Naylor at 309-828-8929 or www.fernwoode@yahoo.com.

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

Upcoming Programs, Opportunities

Illinois Summer Horticulture Day, June 17

Eckert's Country Store and Farms will be the site of the Illinois State Horticultural Society Summer Horticulture Day, on Thursday, June 17, 2004.

Eckert's, family owned and operated since 1837 by seven generations, is the largest pick-your-own operation in the United States. The first fruit trees were planted on the Belleville Turkey Hill farm in 1890. The first roadside stand was started in 1910. Eckert's has farms located in Belleville, Grafton, and Millstadt, Illinois. Originally a fruit orchard, the operation has grown into family entertainment centers that feature special children's activities, annual events, festivals, the Country Store and Restaurant. The home place in Belleville features the Country Store, a Garden Center, a Country Restaurant, an old fashioned Custard Shop, and fruit orchards.

TENTATIVE AGENDA

- 8:00 A. M. REGISTRATION
8:30 A. M. WELCOME AND INTRODUCTION OF GUESTS
8:45 A. M. FIELD TOURS
 Apples, peaches, brambles, and cucurbits, with brief presentations on insect and disease management, thinning, weed management, pumpkin cultivars, and plastic mulching by Mohammad Babadoost, Mosbah Kushad, Maurice Ogutu, Bill Shoemaker, Elizabeth Wahle, Alan Walters, and Rick Weinzierl
12:15 P. M. LUNCH & PRESENTATIONS
 Pat Curran, ISHS President
 Don Naylor, ISHS Updates
 Chris Doll: Illinois Apple Industry (Looking Back, Moving Forward)
 Mosbah Kushad: Updates on Cider HACCP
2:00 P. M. OPERATION TOURS
 WAREHOUSE – Chris Eckert
 MARKETING – Angela Gordon
 PICK YOUR OWN & ENTERTAINMENT – Jill Tantillo
 RETAIL FOOD SERVICE
 Country Store – Judy Eckert
 Country Restaurant – Jill Tantillo
 Garden Center- Angie Eckert

Directions: Eckert's Belleville farm is located at 951 S. Green Mount Road, Belleville, Illinois, 62220-4813, (618/233-0513) southeast of downtown. It is north of IL State Route 15 or south of I-64 (exit #16) on Green Mount Road. Directions also are available at <http://eckerts.com/directions.htm>.

On-site registration is \$25.00; advance registration is \$20.00. An advance registration form is provided at the end of this issue. For more information, contact: Don H. Naylor, Executive Secretary at 15962 Old Orchard Road, Bloomington, IL 61704, telephone 309/828-8929 or email: fernwoode@yahoo.com.

International Dwarf Fruit Tree Association Summer Tour, June 20-22

From Issue No. 7 ...

The International Dwarf Fruit Tree Association announces its summer tour for 2004 will be headquartered in La Crosse, Wisconsin. The annual summer tour will be held June 21-22, with a preparatory discussion on Sunday evening, June 20. The emphasis for the 2004 tour is 'Honeycrisp', an explosively crisp apple that has attracted a huge customer following in an extremely short period of time. Details on the IDFTA 'Honeycrisp' tour in Wisconsin and Minnesota are available at: www.idfta.org. See [Issue 7](#) of this newsletter for a summary.

Notes from Chris Doll

Phenology: Through June 1, my DD50 for the year are 1005 and since codling moth biofix on April 25 the DD50 are 690. Every fruit crop in the Back-40 is ahead of last year in development or maturity. Strawberry harvest is nearly complete, and cherries, raspberries and blueberries are ripe enough to eat while doing the last hand thinning of apples and peaches. The comparable dates for these events were June 5-9, 2003.

Conditions: WET describes the soil condition for most of the area, and this includes the Chicago area where I dodged the thunderstorms over the Memorial Day weekend. My May rainfall totaled 10.6 inches, with 9.3 inches falling during the last 17 days. The spray schedules have been disrupted by the rains and wind and fear of more wash-off during peak codling moth hatch and disease control time. Conditions have prevented my seeing any codling moth eggs or entries, but I did find a couple of oriental fruit moth larvae in apples last week. Other insect pests have been at low ebb in this area.

However, most of the diseases of apples and peaches have been apparent. More fireblighted apple shoots have been cut from the Back-40 this year than the past 12 years put together. Every incidence of shoot blight has been found on trees that had an infected flower cluster. Powdery mildew is prevalent on apples, especially Ginger Gold and Jonagold, and rusty spot is now showing on peaches. Apple scab infections were major in an orchard with previous problems. The data logger here has recorded 104 wet hours since the first cover apple spray as I look forward to sooty blotch and flyspeck.

The weather was rough on strawberry growers during harvest. I have had reports of best season ever and worst season ever. The rains the past two weeks have been mighty tough on quality, and now some plantings are showing root rot problems.

On the positive side, hail damage has not been as widespread as on the weather reports, but is a negative for those that were hit. Peach growers have time to thin out some of the hail damage, but the apple damage on chemically thinned trees doesn't leave much choice except to continue on. Other than the hail damage, the peach crop remains at full, as do all the other fruits except apples. For the latter estimate, I will wait for the crops estimate at the Summer Orchard Day on June 17.

Seasonal Notes:

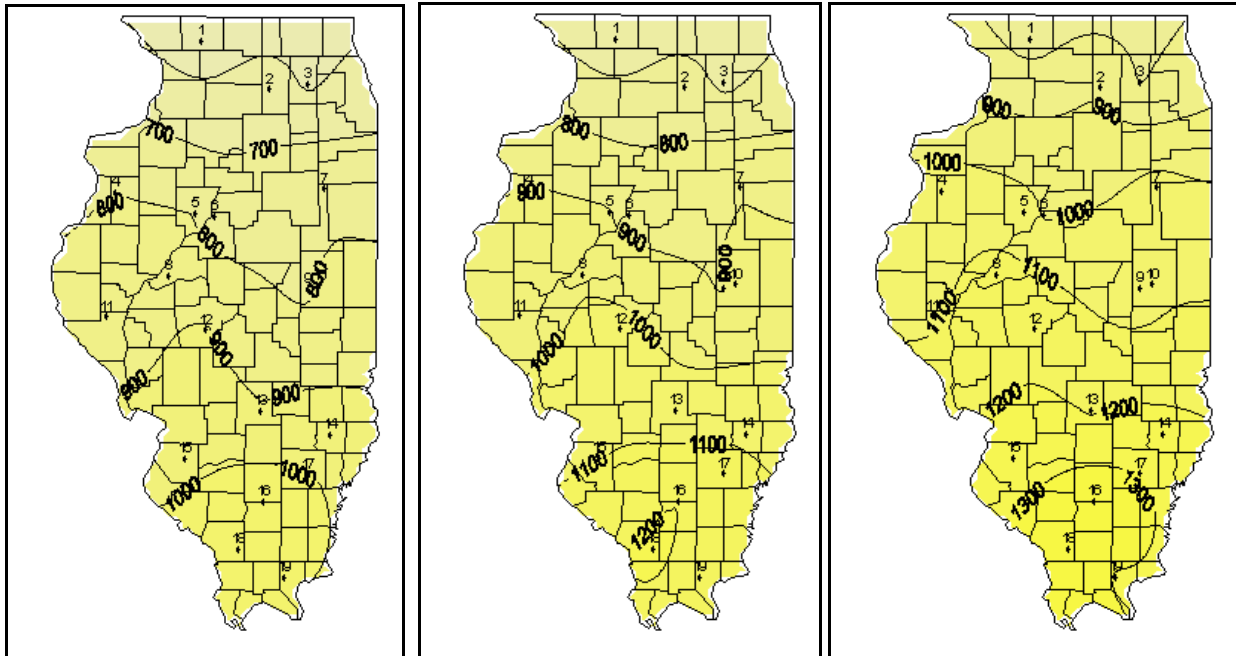
- The saturated soils in many orchard areas can have a detrimental effect on calcium levels in apple trees. It is time to include calcium in cover sprays if not already started.
- Young peach trees should have the sprouts removed from the trunk to help direct growth into the upper branches. This can be coupled with pinching or removing shoots in the center of the trees to stop vigorous and upright growth competition with the scaffold branches. Young apple and peach trees might benefit from the use of clothes pins or toothpicks to develop better crotch angles of the scaffolds.
- Some "washout" of herbicides has already been noted since recent rains. Re-application of sterilants or more contact herbicides may be needed.
- For a full day of social and educational activities, a great day is planned by The Eckert family at their Belleville farm on June 17 as they host the Illinois Summer Orchard Day.

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 1 (left) and projected through June 8 (center) and June 15 (right).

No.	Station	County	Base 50 Degree-Days January 1- June 1
1	Freeport	Stephenson	537
2	Dekalb	Dekalb	657
3	St. Charles	Kane	584
4	Monmouth	Warren	800
5	Wildlife Prairie Park	Peoria	796
6	Peoria	Tazewell	740
7	Stelle	Ford	786
8	Kilbourne	Mason	875
9	Bondville	Champaign	778
10	Champaign	Champaign	813
11	Perry	Pike	825
12	Springfield	Sangamon	906
13	Brownstown	Fayette	905
14	Olney	Richland	954
15	Belleville	St. Clair	967
16	Rend Lake	Jefferson	1060
17	Fairfield	Wayne	1006
18	Carbondale	Jackson	1092
19	Dixon Springs	Pope	1000

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

Fruit Production and Pest Management

Fruit Insects ... a few quick notes

- **Codling moth** flights in at least a couple of southern Illinois orchards increased markedly in the last few days of May and the first few days of June. This is not part of second generation flight but is instead the “second peak” of first generation flight that we’ve observed as the norm in recent years. Remember that larvae will hatch from eggs around 10 to 14 days (240 DD) after mating and egg-laying (and assume that’s going on when traps are catching males). In most orchards in the south, 2 or even 3 cover sprays have already targeted codling moth, but where spikes in trap counts are observed, 1 or 2 more sprays are needed to finish the job of first generation control. Where resistance to organophosphates and other compounds is suspected (based on control failures in 2002 or 2003), Assail or Calypso is recommended. In the absence of resistance problems, choose from the list of insecticides provided in the 2004 Illinois Commercial Tree Fruit Spray Guide.
- **All the rain** means lots of wash-off concerns for protecting fruit against codling moth and oriental fruit moth. Where rains are less than an inch, not a lot of wash-off occurs for most insecticides, but the 2- to 4-inchers generally signal a need to re-treat as soon as possible.
- **European red mite** is not favored by recent wet and cool weather, but remember to scout for this pest in apples, peaches, and grapes as June and July become more summer-ish. From 2 or 3 weeks after petal fall and until mid to late July, use a threshold of 5 mites per leaf, and choose from Apollo, Savey, Acramite, Pyramite, and Zeal according to crop. Agri-Mek is effective as a petal-fall miticide but it is not recommended later after leaves have hardened off. All the products listed above are registered for use on apples, but neither Agri-Mek or Zeal is registered for use on peaches. For grapes, use Acramite or Pyramite if mite problems develop in mid or late summer.
- **Potato leafhopper** is present in lots of fruits and vegetables now ... remember to scout young apple trees and spray if needed. Potato leafhopper feeding stunts new growth and slows the pace that young trees reach productivity.
- **Stink bugs** have been numerous in field corn in some areas ... they’re also key pests of apples, peaches, and brambles. Be watchful for these insects as you scout fruit crops.

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

Recognizing Nutritional Deficiency Symptoms in Fruit Trees

Spring and summer seasons bring in a heavy demand for nutrients by newly developing leaves, flowers, fruits and roots. Nutrients such as nitrogen, phosphorous, potassium, zinc, magnesium, and sulfur, as well as others, are needed to form amino acids, proteins, and structural components of the cell. One of the most difficult problems is to identify nutrient deficiencies before they become visible. Most fruit trees show visible symptoms for a particular nutrient long after damage to their internal structure. The most effective strategy that can be adopted is to test each block routinely. Ideally, nutrient tests should start immediately after the trees have been established and continue on an annual basis. Minimally, however, each block should be tested at least every three years. Based on information generated from these tests, a base-line level can be established for when to make corrective treatment. Deficiencies of most nutrients happen over a period of time, and that is why a single test is not very informative. The following are visual descriptions of some of the nutrient symptoms on fruit trees. These descriptions are meant to help you get a general idea about deficiencies of each element, but they are in no way an accurate assessment of the nutrient status of a particular block; that can only be established through tests. It is best not to use fertilizers that have multiple nutrients to correct multiple deficiencies, instead apply each element separately as needed. Nutrients can be divided into two groups macro and micro nutrients. Macro nutrients are nutrients that are needed in larger amounts such as nitrogen, phosphorus and potassium. Micro nutrients are need in much smaller amounts. However, all are equally important for the function of the tree.

Nitrogen deficiency. Except in peaches, nitrogen deficiency is not a serious problem in mature trees in Illinois. However, young trees deficient in nitrogen will have thin and short shoot growth with small and light green leaves. In severe cases, old trees will drop a large percentage of their leaves in late summer and early fall and any leaves that remain will turn red, especially in the vein area. Trees with nitrogen deficiency can be identified from a distance by looking for a light-colored canopy that is different from other blocks of a similar cultivar. However, be aware that some cultivars will have a lighter leaf color than others. For example, ‘Golden Delicious’ leaves tend to be lighter in color than ‘Red Delicious’ leaves. Peach trees show nitrogen symptoms quicker than apple trees, and that is why we recommend at least one pound of actual N per tree divided into two applications; one in the fall and one in early spring. Peach trees remove about 68 pounds of nitrogen per acre per year. Apple trees remove about a half of that amount. Calcium nitrate is a better source of nitrogen for fruit trees because it combines two important elements; calcium and nitrogen. Avoid using nitrogen on bearing trees after the fourth

cover because it affects fruit color. Fruits exposed to high nitrogen after the fourth cover will be greener in color and have low sugar content.

Potassium deficiency. Potassium deficiency is characterized by brown discoloration of the leaf margins and tips and short and thin shoot growth. Potassium deficiency is not a serious problem in Illinois although it will likely occur in light or poorly drained soils. It can also occur in old orchards. Mature apple trees can take up to about 86 pounds of potassium per acre, while peach trees can take up to about 60 pounds per acre.

Phosphorus deficiency. Phosphorus deficiency is rare in Illinois. Trees deficient in phosphorus have grey-looking leaves and stems. The leaves are usually smaller in size and the buds may die in severe cases. Phosphorus has limited influence on fruit quality, although a few believe that it enhances fruit finish, but there is no scientific evidence that I am aware of to support it. Apple and peach trees remove about 10 pounds of phosphorus per acre per year.

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

Fruit Diseases

Orange Rust of Brambles

Orange rust of brambles has been observed widely in Illinois this spring. Orange rust, caused by the fungus *Gymnoconia peckiana*, is the most common and serious of the several rust diseases attacking brambles. All varieties of black and purple raspberries and most varieties of erect blackberries and trailing blackberries are susceptible to orange rust. Orange rust does not infect red raspberries. Orange rust rarely kills plants but causes them to be stunted and weakened so that they produce little or no fruit.

Symptoms. Orange rust is easily identified shortly after new growth appears in the spring. Newly forming shoots are weak and spindly. Leaves on such canes are stunted and misshapen and pale green to yellowish. Within a few weeks, the lower surface of infected leaves are covered with blister-like pustules (sori) that are initially waxy but turn powdery and bright orange. These "rusty" leaves wither and drop by early summer.

Young, apparently healthy canes with normal leaves can be found toward the end of June. Unfortunately, diseased plants are systemically infected, and the fungus is present in the roots, canes, and leaves. Shoots of rust-infected plants are normally too weak to form rooted tips, which limits cane growth and spread. Infected canes will be bushy and spindly, and will bear little or no fruit in the following season.

Disease Cycle. In mid spring, masses of bright orange spores (aeciospores) are produced on infected leaves and dispersed by wind. These spores contact susceptible leaves and infect them. The rust fungus gradually spreads throughout the canes and runners until the entire plant is infected. In late summer and early fall, pustules turn black or dark brown because of the formation of another type of spore (teliospores). These teliospores either infect directly or produce sporidia (basidiospores) capable of infecting the buds on the cane tips and the buds or new shoots on crowns of healthy plants. The rust fungus overwinters in the infected host tissues. The orange aeciospores form from new pustules the following spring as the canes start to grow. With the formation of the aeciospores, the life cycle is complete. The possibility of overwintering teliospores producing basidiospores in the spring has not been clarified.

Control. The following practices could help to control orange rust of brambles.

1. Plant only certified, disease-free planting stock from a reputable nursery.
2. Before setting out new plants, remove and burn all wild brambles and any cultivated plants that are rust infected, including the roots. If rusted plants cannot be destroyed, do not plant susceptible brambles.
3. When the disease first appears in early spring, dig up and burn infected plants before the pustules break open and discharge spores.
4. Prune out and burn fruiting canes immediately after harvest. Improve air circulation by thinning out healthy canes in the rows and keeping the planting free of weeds.
5. Timely fungicide sprays for control of anthracnose and other foliar diseases does not eliminate rust but will reduce the number of new infections. Nova 40WP, Cabrio 20EG, or Pristine 38WG have been registered for use on brambles to

control rust diseases. Follow the raspberry spray schedule outlined in the “Illinois Commercial Small Fruit and Grape Spray Guide” (updated annually). (website: <http://www.hort.purdue.edu/hort/ext/sfg/>).

6. Some blackberry cultivars have been reported as resistant to orange rust. Plant resistant cultivars, if available. In a properly managed planting, including the control measures outlined above, the disease is usually not serious.

More information on orange rust of brambles, can be found in the “Midwest Small Fruit Pest Management Handbook” (website: <http://www.ag.ohio-state.edu/~ohioline/b861/index.html>) and “Compendium of Raspberry and Blackberry Diseases and Insects,” published by the American Phytopathological Society, St. Paul, Minnesota.



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

Vegetable Production and Pest Management

Vegetable Insects

Squash Vine Borer

The squash vine borer, *Melittia cucurbitae* (Harris) (Lepidoptera: Sesiidae), tunnels in the vines of pumpkins and summer and winter squash; it rarely is found in cucumbers or melons and cannot complete its development except in squash or pumpkins.

Identification. The squash vine borer adult is a black and reddish moth called a clearwing moth because large portions of its hind wings lack scales. These moths are $\frac{3}{4}$ - to 1-inch long, with a 1- to 1 $\frac{1}{2}$ -inch wing span. They are active during the daytime and superficially resemble wasps as they fly about. Larvae are yellowish-white with a brown head, 3 pairs of thoracic legs, and 5 pairs of fleshy abdominal prolegs that bear tiny hooks called crochets. Fully-grown larvae are about 1 inch long. Brownish pupae are slightly less than 1 inch long, and they are found in the soil inside a dark, silken cocoon.

Life Cycle. Squash vine borers overwinter as mature larvae or pupae within cocoons 1 $\frac{1}{2}$ to 3 inches below the soil surface. Moths emerge and begin to mate and lay eggs in June and July in much of the Midwest (earlier, beginning in May, in southern Illinois and similar latitudes). Moths lay eggs singly at the base of plants or on stems and petioles, beginning when plants start to bloom or “run”. Larvae feed within stems or petioles for 2 to 4 weeks, leaving brown, sawdust-like frass (droppings) at holes where they entered the stem. In southern Illinois these pupate and produce a second flight of moths in late summer; in the north, larvae or pupae of the first (and only) generation remain in the soil through the winter.

Plant Injury. Tunneling within vines destroys water- and food-conducting tissues, reducing plant vigor and yield and sometimes killing vines.

Management. Disking or plowing to destroy vines soon after harvest and bury or destroy overwintering cocoons reduces moth populations within a field in the spring. Staggering plantings over several dates also allows some plantings to escape heaviest periods of egg-laying. Early detection of moths and initial damage is essential for timing insecticide applications. For insecticides to be effective, they must be applied before larvae enter stems or petioles. Scout for moths (pheromone lures and traps are available for monitoring flight periods) and look for entrance holes and frass as soon as plants begin to bloom or vine. Apply insecticides beginning 5 to 7 days after moths are first detected and at weekly intervals for 3 to 5 weeks, or begin when injury is first noted and make a second application a week later. Capture, Sevin, Thiodan, Asana, Pounce, and Ambush are effective against squash vine borer; rotenone provides some control in organic production.



Squash vine borer adult (left) and larva (right)

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

This issue's words of wisdom ...

Summer ...

- Summer is the season that you look forward to all year, gripe about when it arrives, and are sorry when it's gone.
- Summer is the season when the air pollution is much warmer.
- Do what we can, summer will have its flies. (Emerson)
- Summer is the time of year when children slam the doors they left open all winter.
- Summer is the time when it's too hot to do the job that it was too cold to do last winter.

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

Extension Educators in Food Crop Horticulture		
Bill Shoemaker, St. Charles Res. Center	630/584-7254	wshoemak@inil.com
Maurice Ogutu, Countryside Ext Center	708-352-0109	ogutu@uiuc.edu
Elizabeth Wahle, Edwardsville Center	618-692-9434	wahle@uiuc.edu
Extension Educators		
Mark Hoard, Mt. Vernon Center	618-242-9310	hoard@uiuc.edu
Suzanne Bissonnette, Champaign Center	217-333-4901	sbisson@uiuc.edu
George Czapar, Springfield Center	217-782-6515	gfc@uiuc.edu
Dave Feltes, Quad Cities Center	309-792-2500	dfeltes@uiuc.edu
Russel Higgins, Matteson Center	708-720-7520	rahiggin@uiuc.edu
Campus-based Specialists		
Mohammad Babadoost, Plant Pathology	217-333-1523	babadoos@uiuc.edu
Raymond Cloyd, Greenhouse insects	217-244-7218	rcloyd@uiuc.edu
Kelly Cook, Entomology	217-333-6651	kcook8@uiuc.edu
Mosbah Kushad, Fruit & Veg Production	217-244-5691	kushad@uiuc.edu
John Masiunas, Weed Science	217-244-4469	masiunas@uiuc.edu
Chuck Voigt, Veg Production (& herbs)	217-333-1969	c-voigt@uiuc.edu
Rick Weinzierl, Entomology	217-333-6651	weinzier@uiuc.edu

.....
 Advance Registration Form
 ISHS Summer Field Day, June 17, 2004

Name of farm enterprise	
Address	
Telephone number	
Email address	
Names of people attending	

Mail this form with a payment of \$20 per adult (check payable to the Illinois State Horticultural Society) and mail to ISHS, 15962 Old Orchard Road, Bloomington, IL 61704. Deadline for advance registration is June 15.

Return Address:

Rick Weinzierl
Department of Crop Sciences
University of Illinois
1102 South Goodwin Ave.
Urbana, IL 61801

