

Illinois Fruit and Vegetable News

Vol. 10, No. 8, May 19, 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 Maurice Ogutu)

Upcoming Programs, Opportunities (Summer Orchard / Summer Horticulture Day, IDFTA Summer Tour, new list-serve for greenhouse tomato growers)

Notes from Chris Doll (an early season, cedar apple rust, peach thinning, climbing milkweed, and the IL-MO peach tour)

Degree-day Accumulations

Fruit Production and Pest Management (codling moth (briefly), low seed count in several apple varieties, Promalin for lateral branching of new trees)

Vegetable Production and Pest Management (cucumber beetles, bean leaf beetle, and Colorado potato beetle)

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

Crop and Regional Reports

In northern Illinois, day temperatures have ranged from the upper 50s to low 80s, with night temperatures in the upper 30s to mid 60s between May 4 and 17. It has been a rainy period, with rainfall totaling over 2 inches in many counties in the north and less than 2 inches in counties bordering central part of the state.

Apples and pears are at petal fall, while peaches are in shuck split. New shoot growth in grapes is at about 3 inches in general. Growers are making petal fall and shuck split sprays in apples and peaches, respectively, and bud break to bloom sprays in grapes.

Most growers have planted sweet corn, peppers, green beans, and tomatoes, but most vine crop transplants are still in greenhouses. Ground is ready for further plantings, and in some fields, plastic mulch and drip tapes are in place, so vegetable plantings will continue this week and next week as weather allows. In the Kankakee area, cabbage, broccoli, onions, potatoes, and sweet corn are doing great. From McHenry County, I received a report about Colorado potato beetle feeding on emerging potato leaves.

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

Upcoming Programs, Opportunities

Illinois Summer Horticulture Day, June 17

The Illinois State Horticulture Society Summer Orchard Day (now more broadly the Illinois Summer Horticulture Day) will be held at Eckert's Country Store and Farms in Belleville on June 17. More details will follow in subsequent issues of this newsletter.

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.

New "List Serve" for Greenhouse Tomato Production

Rick Snyder of Mississippi State University has announced the establishment of a new email group that will allow subscribers to send questions, answers, comments, and suggestions to other growers, greenhouse vendors, County Agents, Specialists, Researchers, etc. from all over the U.S., as well as some other countries. It was just begun, so may take some time to build up a membership. It is free, and participation is totally voluntary. To subscribe, send "subscribe" email as described below to become a member of the list ... it is also possible to unsubscribe at any time. It is hoped that this forum will help facilitate communication among commercial growers of greenhouse vegetables, and those who work in support of this industry.

To subscribe: Send an email to:

majordomo@lists.msstate.edu

with the following in the message box:

subscribe greenhouse-tomatoes

You will get a confirmation email telling you that you are subscribed. Once subscribed, to communicate with the whole group, just address an email message to greenhouse-tomatoes@lists.msstate.edu, and everybody on the list will receive it. But, you must subscribe first to participate.

Notes from Chris Doll

It continues to be an early season. Ample moisture and warm temperatures have pushed growth and development of both fruit plants and weeds. As of today, the DD50 for the year is 678, and 364 DD50 have passed since the biofix for codling moth. Strawberry harvest from plasticulture fields began 10 to 14 days ago, and from matted row fields in the Centralia area on the 13th. Size and quality are pretty good except for the areas that received 2 to 4 inches of rain last week.

It is the time of the year that the Back 40 begins to make it all worthwhile as the strawberries ripen. They will be followed by the red and black raspberries, both of which have great potential yield this year. The black raspberry growth has reached the tipping time for new canes, and thornless blackberry canes need some tying.

Spray programs in area orchards appear to be successful so far, at least until we see more on the codling moth situation. I have inspected a couple of non-sprayed orchards, and early scab infections were about the only problem. None has been seen in sprayed blocks. A 100 percent cedar apple rust infection was seen in the Show Me state this week where the control spray was late. Powdery mildew is fairly easy to find and will be difficult to control from here on out. Fire blight is around, but none in the trauma stage yet. Strep sprays based on either the Maryblyte program or mental programs allowed for a little blossom blight to show. Trees in Apogee treated blocks have only the light blossom blight infections in contrast to some

shoot blight moving in non-Apogee blocks.

Only a few European red mites have been seen, and other early-season insect pests are scarce. Some dogwood borers were found in dwarfed apple trees. The trap lines that I see have been catching codling moth, with numbers from very low to very high (like an average of 45 per week), tufted apple bud moth at moderate numbers, Oriental fruit moth with the first generation past, and a few lesser peach tree borers.

Peach thinning has begun with whatever method growers can devise. An old tree shaker came out of the weeds to be used again down south. Most of the work done in other orchards is with short pipes, hoses or wiffle bats to reduce the fruit load and competition. Detail thinning can and will be done later. I repeat some research done in Georgia in which peaches thinned 30 days after petal fall sized out at 2.51 inches whereas those thinned at 50 days after petal fall sized out at 2.37 inches. Another study showed that thinning after 56 days after petal fall resulted in a 5 percent decrease in fruit size per week of delay. These delays could be influenced by re-entry constraints of 4 days for captan and 14 days for Guthion sprays.

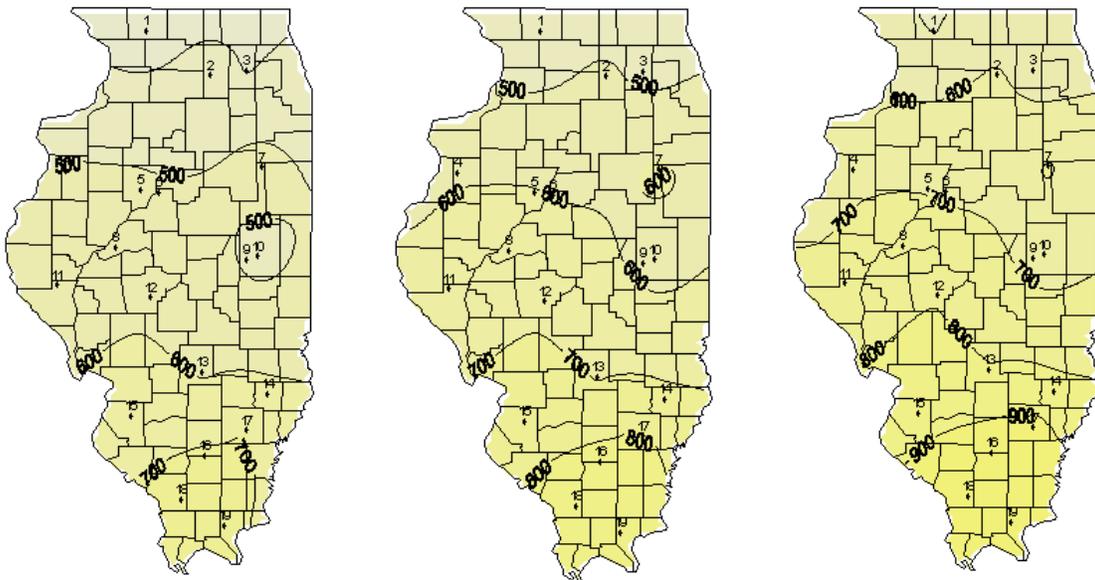
Apple thinning time has passed in this area, with some of the usual variable results of overthinning, underthinning, and about right thinning. I feel for northern growers that have the additional effect of frost and freeze injury to confound the task.

Climbing milkweed is back again in most orchards, and control recommendations are no different from in past years. A survey on "Apple-Crop" a couple of years ago resulted in only one grower indicating control with judiciously repeated sprays of 2,4-D and glyphosate. That becomes more difficult as the season goes on because of tree growth and the expense. Gramoxone and Rely are good knockdowns, but again the repeat applications are expensive. All I can say is to follow the rates and precautions given in the Spray Guide.

A well-planned peach orchard tour in southern Illinois was well attended by Illinois and Missouri growers, but the weather-person did not cooperate for the field tours. The Grammer, Rendleman, and Flamm orchards total about 400 acres of apples and 500 acres of peaches, and there was a lot to see. As the rains came, a lot of social interaction and idea exchange happened, and some delicious barbecue and strawberry shortcake topped off the day. My thanks to the growers and Extension Service.

Chris Doll
Edwardsville, Illinois

Degree-Day Accumulations and Projections



Left to right: Degree-day accumulations, base 50 F, through **May 12 (actual)**, **May 19 (projected)**, and **May 26 (projected)**.

No.	Station	County	Base 50 Degree-Days January 1- May 12	Base 50 Degree-Days January 1 - May 19*
1	Freeport	Stephenson	343	416
2	Dekalb	Dekalb	449	528
3	St. Charles	Kane	395	462
4	Monmouth	Warren	508	592
5	Wildlife Prairie Park	Peoria	520	604
6	Peoria	Tazewell	509	594
7	Stelle	Ford	531	615
8	Kilbourne	Mason	569	660
9	Bondville	Champaign	490	580
10	Champaign	Champaign	473	562
11	Perry	Pike	528	618
12	Springfield	Sangamon	589	689
13	Brownstown	Fayette	589	693
14	Olney	Richland	623	722
15	Belleville	St. Clair	650	758
16	Rend Lake	Jefferson	710	824
17	Fairfield	Wayne	700	813
18	Carbondale	Jackson	735	841
19	Dixon Springs	Pope	701	814

* At the time this newsletter went to press on May 19, the Illinois State Water Survey was experiencing some “glitches” with their data sets for recent days at one or more locations, so **the maps and table above present real totals through May 12 and estimates / projections for May 19 and May 26** (with no projections further into the future). The glitches are worked out later today or tomorrow, so 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> .

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

Fruit Production and Pest Management

Fruit Insects

Codling moth in apples

Just a quick note that the biofix for codling moth at the University of Illinois orchard near Urbana was May 8. Curt Christ of Christ Orchards near Elmwood (just west of Peoria) reported a biofix date of May 12. Remember that biofix dates reported in previous issues for more southern locations were April 20 for Carbondale and April 30 for Belleville. **A request for growers to the north** ... please send me a note telling me the biofix date for your location, and I'll use it in attempts to provide statewide summaries of codling moth development status as the season progresses.

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

Low Seed Count in Many Apple Varieties

Over the last few days I have been cutting apple fruitlets from Reds, Golden, Gala, Fuji, Honey Crisp, and Liberty to determine seed set. Almost all of the fruits that I cut had at least one empty seed cavity and some had as many as four empty seed cavities. Seeds are the major source of such hormones as auxins, gibberellins, and cytokinins. These hormones are necessary for the initiation of cell division and progression of cell enlargement. They are also important stimulants of color formation. Studies on strawberry showed that when the 'seeds' are removed while the fruit is still young, the fruit stopped growing and was misshaped. However, when strawberry fruits that have their seeds removed were coated with a lanoline paste containing auxin, the fruits grew normally and developed red color. This data clearly demonstrate the important role of the seed in fruit growth and development. The apple seed provides a healthy dose of these hormones which allow the fruit to grow normally. Fruits that are missing any number of their seeds are likely to be affected. The effect can be minimal if the fruit is missing one or two seeds, but fruits that are missing more than two seeds will likely be misshaped (lopsided), have poor color, and in severe cases may drop off the tree. In some crops fruits will develop normally even without seeds. Fruits that develop without seeds are called parthenocarpic. The pollination process stimulates the synthesis of these hormones and the growth of the fruit, even if the seed does not set. It has been reported that an extract from apple seeds stimulates parthenocarpy in tomato fruits. Other studies suggested that some fruits will develop parthenocarpic even when a pollen of a different species lands on the stigma. In apples, however, good seed set is required for optimum fruit growth. Fruit color and storage potential will likely be affected by low seed count. There is very little you can do to reverse the process. Your only option is to hand thin smaller and misshaped fruits or sort them out after harvest.

Promalin for Lateral Branching in New Trees

Use Promalin to enhance lateral branching and spur development in newly planted trees. Promalin at 0.5 to 1 pint per 5 gallons of water applied to young, non-bearing trees will stimulate branching. Promalin treatment can also stimulate a second whorl of branching on the central leader in two-year-old nonbearing trees. Apply Promalin directly to the area where branching is desired, but avoid drenching the tree so as not to inhibit flower bud formation for the next year. If you don't have Promalin, you can enhance lateral bud formation on young trees, especially whips, by bending them at the tip to a 90 degree angle. The tree must be straitened to a vertical position when the wood starts to harden in early to mid July.

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

Vegetable Production and Pest Management

Vegetable Insects

Spotted and Striped Cucumber Beetles

Spotted cucumber beetle, *Diabrotica undecimpunctata howardi* Barber, and striped cucumber beetle, *Acalymma vittata* (Fabricius) are common pests of all cucurbits throughout the Midwest. The May 14 issue of Purdue University's ***Vegetable Crops Hotline*** included an article by Frankie Lam, noting that striped cucumber beetles were moving into fields during the previous week, and that infestations had increased markedly in a few days. The same thing has been happening in southern Illinois in recent days, and growers in the central and northern portions of the state are going to see the same phenomenon as cucurbit crops emerge from seed or are transplanted. Here's a summary on cucumber beetle biology and management, taken from a soon-to-be published University of Illinois handbook on pest management for cucurbit crops.

Identification. Spotted cucumber beetles are about ¼-inch long, with yellow-green forewings ("wing covers") marked with 12 black spots. Striped cucumber beetles are similar in size with two black stripes that run the length of each forewing (the inner stripes of the left and right wings are adjacent when the beetles are at rest, so they appear to have 3 stripes, not 4). Western corn rootworm beetles resemble striped cucumber beetles, but the underside of the abdomen of the striped cucumber beetle is black, whereas the underside of the abdomen of the western corn rootworm is yellow. Larvae are whitish, ½- to ¾-inch long, with dark brown heads and 3 pairs of short legs on the thorax.

Life Cycle. Adults of both species overwinter in wooded areas and in plant debris and become active as temperatures rise in spring, as early as April or May in southern Illinois. They feed on pollen and flower petals of many plant species until cucurbits are planted, then they feed on the foliage and later the fruit of pumpkins, squash, cucumbers, and melons. Adults lay eggs in the soil at the base of cucurbits and other plants (including corn for the spotted cucumber beetle, also known as the southern corn rootworm), and larvae feed for 2 to 3 weeks on roots. In southern Illinois, two generations of larvae may develop each season, producing midsummer and late summer broods of adults; only one generation develops in northern

Illinois in most seasons.



Left: Striped and spotted cucumber beetles. Right: Cucumber beetles and wilt-damaged vines.

Plant Injury. Adult cucumber beetles injure cucurbits by chewing holes in foliage and feeding directly on fruits. They spread squash mosaic virus within plantings, and they also transmit the bacterial pathogen that causes bacterial wilt of cucurbits, a serious disease in muskmelons, cantaloupe, cucumbers, processing pumpkins, and Hubbard and butternut squash. Bacterial wilt rarely affects jack-o-lantern type pumpkins or watermelons.

Management. The soil-applied systemic insecticides Furadan 4F (2.4 fl oz per acre) and Admire 2F (16 to 24 fl oz per acre) can be used at planting to kill beetles that feed on foliage of new seedlings. Begin scouting for adult beetles as soon as seedlings emerge or transplants are set. If transmission of bacterial wilt is a concern (in muskmelons, cantaloupe, cucumbers, processing pumpkins, and Hubbard and butternut squash), use foliar applications of insecticides to control cucumber beetles if populations exceed 0.1 to 1 per plant at the seedling stage or 1 per plant after flowering. On jack-o-lantern pumpkins, use foliar insecticides if populations exceed 5 per plant or if beetles (including the related western corn rootworm beetle) are feeding directly on fruits and causing excessive cosmetic damage, particularly in the fall. Several insecticides are effective for killing cucumber beetles, but when a crop blooms over an extended period as cucurbits do, protecting bees that are needed for pollination is also essential. The insecticides Adios and Sevin XLR Plus (NOT other formulations of Sevin / carbaryl) are least likely to cause excessive bee kill. Whatever the insecticide, making applications in the evening or very early morning when bees are not foraging reduces bee losses. Insecticides can reduce spread of beetle-transmitted squash mosaic virus but NOT the aphid-transmitted mosaic viruses. Check the [2004 Midwest Vegetable Production Guide](#) or Chapter 7 of the [2004 Illinois Agricultural Pest Management Handbook](#) for rates and restrictions for insecticides registered for cucumber beetle control. For organic growers, the insecticide rotenone may be used in certified organic production; be aware that like many conventional synthetic insecticides, it too is very toxic to foraging honey bees.

Bean Leaf Beetle

Another beetle that overwinters as an adult and moves into fields in the spring is the bean leaf beetle. Reports from consultants and entomologists who work in soybean pest management suggest that numbers may be fairly high in some areas, but observations vary around the state and even within single regions.

Bean leaf beetle adults are pale yellow to yellow-green to deep red; they may be marked by a few to several dark blotches, or they may have no spots except for a dark triangle just behind the head; that triangle is always present and is a key mark to look for when identifying this species. In contrast to the spotted cucumber beetle, none of the color variants of the bean leaf beetle bear 12 distinct spots. Distinguishing between bean leaf beetles and spotted cucumber beetle on cucurbits is important because bean leaf beetles do not transmit the bacterial wilt pathogen (though they will feed lightly on cucurbit foliage).



Bean leaf beetle adults

In green beans, the threshold for bean leaf beetle control on seedlings and young plants is 50 percent defoliation. As soon as pods begin to form, the threshold drops because the bean leaf beetle feeds on pods and leaves pits or feeding scars that render the crop unmarketable. When pods are present, the threshold for bean leaf beetle control is 1 beetle per foot of row.

Several insecticides, including Orthene, Capture, Sevin, Dimethoate, Warrior, and Mustang, are labeled for bean leaf beetle control in snap beans; all of these also control European corn borer during the bloom-to-harvest period when it can enter pods and contaminate the harvest. See product labels and the [2004 Midwest Vegetable Production Guide](#) or Chapter 7 of the [2004 Illinois Agricultural Pest Management Handbook](#) for rates and restrictions for insecticides registered for bean leaf beetle control.

Colorado Potato Beetle



Left to right: Colorado potato beetle adult, eggs, and larva.

(Photos (L to R) from University of Kentucky, South Dakota State University, and Phil Nixon, University of Illinois.)

Maurice Ogutu noted reports of Colorado potato beetle in the Kankakee area. Adults and larvae of this insect feeds on a variety vegetables and weeds in the family Solanaceae; common hosts include tomatoes, eggplants, peppers, and, of course, potatoes.

Adult Colorado potato beetles overwinter in the soil and become active in May; they move to solanaceous plants and begin to feed and lay eggs. As is often pointed out in winter programs where we talk about pre-season planning, potato beetles are weak fliers, so locating new fields as far as possible from last year's infestations reduces the number that reach a new planting. In addition to crop rotation, growers can use trenching, mulching, and trap crops (such as early plantings of potatoes only around field edges to concentrate egg-laying in one area for spraying) for Colorado potato beetle control. Once beetles have reached a planting, flaming is another alternative to using conventional insecticides for Colorado potato beetle control. For a general overview of Colorado potato beetle biology and management, check the University of Wisconsin fact sheet on Colorado potato beetle, written by Karen Delehaut, at <http://cecommerce.uwex.edu/pdfs/A3678.PDF>.

In most of Illinois, growers have NOT encountered severe problems with insecticide resistance in local populations of the Colorado potato beetle, but managing insecticide resistance in this insect is a key concern wherever it occurs. For the most part, individual growers control their own destiny on this issue. Using cultural controls (crop rotation, trenching, and mulching, and flaming), using insecticides only when populations reach threshold levels, and rotating among different classes of insecticides are the key steps that can slow the evolution of resistance.

Thresholds for Colorado potato beetle control are:

- Spring adults on young plants: 20 to 30 percent defoliation or, more conservatively, 2 adults per plant
- Summer larvae and adults, during bloom: 5 to 10 percent defoliation, 5 larvae per plant, or 3 to 5 adults per plant

Insecticides labeled for Colorado potato beetle control include:

- Organochlorines: Endosulfan (Thiodan) and Methoxychlor
- Organophosphates: Thimet (soil-applied) and Imidan
- Carbamates: Sevin, Furadan, Vydate
- Pyrethroids: Baythroid, Asana, Ambush / Pounce
- Neonicotinoids: Admire (soil-applied) / Provado and Platinum (soil-applied) / Actara
- Avermectins: Agri-Mek
- Dusts and abrasives: Cryolite, Kryocide, Surround
- Microbials: Foil, M-Trak, Novodor
- Botanicals: Rotenone, Pyrethrins
- Others: SpinTor

See product labels and the [2004 Midwest Vegetable Production Guide](#) or Chapter 7 of the [2004 Illinois Agricultural Pest Management Handbook](#) for rates and restrictions for insecticides registered for bean leaf beetle control.

For resistance management, follow label directions about not using the same product or products from the same class repeatedly throughout the season. (And if the label doesn't direct against such an unwise practice, DON'T do it anyway.)

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

This issue's words of wisdom ...

An Associate Dean of the College of Engineering gave the graduation address in Urbana on Sunday, May 16, and he started with the following summary of an old Peanuts cartoon exchange between Charlie and Lucy ...

Lucy and Charlie are on the deck of a cruise ship, and Lucy, in her always philosophical tone, says to Charlie, "Did you ever notice how some people face their deck chairs back, looking at where they've been; others face their deck chairs forward see where they're going, and others face their deck checks in toward the ship, looking at where they are?" The speaker, just like Lucy, was of course aiming for a deeper point, but the audience (and perhaps the graduates) appreciated Charlie's reply ...

"Wow, that's fascinating. I can't even get my deck chair unfolded."

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

Return Address:

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

