UNIVERSITY OF ILLINOIS EXTENSION

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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

In southern and southwestern Illinois, temperatures continue to be mild overall, and rain continues to fall regularly. Pruning continues on apples, peaches, and grapes throughout the region. Raspberries and blackberries have already broken bud, as have several other ornamental flowers and shrubs. Not everyone in the southern region is able to get into his or her fields yet – many are still flooded or saturated from the heavy rains that fell in January. Horseradish digging is proceeding, and I have seen other field preparations in drier areas going on as well.

On behalf of University of Illinois Extension, I would like to express our sympathies to the family and friends of Ray Grammar, who passed away earlier this month. His friendship, knowledge, and support of the industry will be sorely missed. Please see Chris Doll's notes about Ray later in this newsletter.

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

In northern Illinois, high fluctuations in day and night temperatures have occurred in January and February, with day temperatures in the upper 50s to low 20s, and night temperatures in the low 40s to below zero. Overall, winter temperatures have been mild this year, with few days of temperatures below zero, even in the northwest counties bordering Wisconsin.

The area recorded 3-4 inches of rainfall and 4-26 inches of snow in January. February rainfall has totaled about 2 inches, with 2-3 inches of snow as well. Small fruit and tree fruit pruning is ongoing.

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

Notes from Chris Doll

Officially, spring is around three weeks away, but there are signs that it is much closer. Robins are back, and green tip is visible on some blackberries and red raspberries. No changes in the peach crop potential have occurred since last month except that a couple of warm days have reduced cold hardiness. As a weather nut, I watch the historic lows and for the St. Louis area, and they run in the low single digits for end of February. So, if an Alberta Clipper rolls in, growers can check pages of 54-55 of the Spray Guide to see the critical temperatures.

Soils are wet but have firmed so that movement in orchards is feasible. Saturated soils make it easy to pull out rooted tip plants of thornless blackberry and black raspberries while pruning, so that is a plus. Lots of orchard pruning has been done, but peach growers might like to wait a little longer from crop determination and canker management. In apples, there should be time to prune fire blighted blocks before growth begins.

Fertilizers and herbicides can be applied at this time of the year if not already down. For peaches, the freeze damage should be assessed before making even the 50 percent rate application. Brush removal is needed before either treatment can be made, but brush needs to be out of the way for the upcoming sprays anyway.

Five Illini were among the 300+ fruit growers at the International Dwarf Fruit Tree Association (IDFTA) meeting in Wenatchee, Washington, early this month. Retiring president Ken Hall helped organize a great program that included three days of orchard tours. Major changes in orchard profiles have occurred in the last 20 years, as many of the old "Red" orchards have been removed and lots of dwarfed trees have been planted with plenty of wire and post supports. The epitome of this was the Auvil Vantage Orchard consisting of 1042 acres of trees on 1500 acres. The large blocks of apples were Granny Smith, Gala, and Fuji, with smaller plantings of Early Fuji, Pink Lady, and Honeycrisp. Everything in recent years was on Mark rootstock. Tree numbers range from 1150 to 2450 an acre, with quite a few at 1815 an acre. All are on V-trellises, with wire heights of 12 to 14 feet. These tree densities are being trained to the slender spindle system and for a crop like Gala at 1815 trees/A, they literally count the flower buds while pruning and then hand thin the flower clusters to shoot for 69 apples per tree which will give them a yield of 74 bins in the 5th leaf. Everything is trickle or micro-sprinkler irrigated with a computerized system, and evaporative cooling is also in place. Part of the production success in this orchard is the miles of poplar windbreaks to prevent wind damage to trees and fruits. The windbreak trees receive irrigation water almost like the apple and cherry trees. This orchard was toured on Super Bowl Sunday, and the orchard was more appealing than the game to most participants.

The Midwesterners were amazed at several plantings up and down the slopes of up to 14 percent or more and with no erosion in the herbicide strip or in the tractor tracks. This was epitomized in the Gore Orchard near Manson, where some rows were 700-800 feet long on slopes of abut 10 percent and no erosion effects were visible due to arid climate. This grower had plantings on B9 and M9 from 1' x 10' on a vertical 4-wire trellis in a slender spindle system as well as more conventional systems on M9. Tree growth was manipulated partially with Apogee sprays, and then the terminal above the top wire was girdled with wire to control top growth. Tree vigor was also reduced by delayed pruning up through thinning time and again at post harvest.

A few program notes from IDFTA:

- Club varieties, like Pink Lady, Ambrosia, Jazz, and Pacific Rose need early production to pay out. Promotion of these new varieties will increase sales but usually at the expense of other varieties.
- The area has only 5-30 percent of the needed snow-pack for 2005 water supply.
- Sixty percent of the Washington apples are under mating disruption programs for codling moth control. The larger the contiguous areas treated, the more successful the control.
- Economic data for Washington included minimum labor costs of $7.16 an hour, and rising, as well as pesticides at 1.5 percent a year. Growers are trying to compete by using harvest assist equipment to hold picking costs to $16 a bin.
- The current figures from China indicate that it produces 46 percent of the world's apples, and that their labor costs per acre are about $500 compared with $2050 for Washington.
- Sleeping eye and bench-grafted trees are being used in high density plantings because of the lower price per tree, but

Alison Demaree of Cornell University said that feathered trees on a wire trellis system favored the Internal Rate of Return and earlier recovery of the investment in New York studies.

IN MEMORIAM: Ray Grammar, founder and owner of Grammar's Orchard near Carbondale, died on February 19. Ray was 89 years old, and one of the most active 89 year-old growers in Illinois, having made new plantings in 2004. He began the orchard in 1946 after serving in the U.S. Army in World War II. He was an astute grower of both apples and peaches, and his orchards were always maintained in prime condition. He was one of the first growers to build refrigerated storage, and he built enough capacity to hold his crop while doing his own marketing. Ray was the first grower to use soap as a deer repellent in orchards and was always on the alert for new developments in both production and marketing methods. He is survived by Claudine, his wife of 64 years, son Gary and his wife Olga, 2 grandchildren and 2 great grandchildren. Memorials can be made to the Elm Street Baptist church in Murphysboro.

Chris Doll

Vegetable Production and Pest Management

Furadan and Admire as soil-applied systemic insecticides for cucurbits

Bacterial wilt of cucumber transmitted by cucumber beetles

Vegetable growers who raise cucurbit crops are aware that controlling striped and spotted cucumber beetles, especially on seedlings, can be essential for success. This is particularly true for cucumbers and muskmelons, because these crops are most susceptible to bacterial wilt, a disease that is carried by cucumber beetles. Insecticides used to control cucumber beetles and limit the transmission of bacterial wilt include products labeled for foliar application and systemic insecticides labeled for soil application at planting or transplanting for uptake into foliage. The now-traditional product for use as a soil-applied systemic is Furadan 4-F. Its use on cucurbits is covered by a 24-c label in Illinois and several other states ... a copy of the Illinois label is on-line at:

http://cropsolutions.fmc.com/Content/APG/Labels/Furadan%204F_24c_IL_cucurbit_05-18-2004.pdf

The 24-c label calls for application of 2.4 fluid ounces per 1,000 linear feet of row, either directly in the seed furrow or as a 7-inch band over the row. The label also specifies a minimum row spacing of 40 inches.

In addition to Furadan 4F, Admire 2E also is registered for soil application to control cucumber beetles. The label calls for application of 16 to 24 fl oz of formulated product per acre in a 2-inch band below the seed, as in in-furrow spray at or below the seed level, as a surface band incorporated 1 to 1 ½ inches deep, or as a post-seeding drench, transplant drench, or hill drench. Side-dress and irrigation applications also are covered on the Admire label. The label includes a conversion chart to determine the amount to apply on a row-length basis. For example, to apply the 24-fluid ounce rate where row spacing is 60 inches, the amount of Admire 2E to apply per 1,000 feet of row is 2.8 fluid ounces.

For both Furadan and Admire, the key is to put the right amount of insecticide around each seed or transplant to provide adequate insecticide uptake into small plants, because it is seedlings and small plants that can be protected by soil-applied

systemic insecticides. Only the insecticide placed near the seeds is taken up by seedlings, so a considerable amount is wasted in the distance between seeds within a row, especially where seed spacings may be as great as 3 to 5 feet. Work is ongoing to refine how much Admire is needed per seed or transplant and how that amount might be best applied ... especially with the idea that treating the long span between cucurbit seeds or transplants is not beneficial. That said, for now, only the label-directed rates based on product per row length are recommended.

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

Notes on corn earworm control in sweet corn, and concerns about pyrethroid resistance

Left: Corn earworm larva; Right: Wire cone trap ("Hartstack" trap) for corn earworm moths

Last year at about this time I posted a lengthy pre-season article on corn earworm and European corn borer monitoring and control – see Volume 10, issue number 2, from February 24, 2004 (http://www.ipm.uiuc.edu/ifvn/volume10/frveg1002.html). I'll not repeat all that text again now, but one portion of the topic – pyrethroid resistance – is worthy of some extra attention as the 2005 season approaches.

During the last few years, entomologists in Wisconsin and Minnesota who conducted small-plot trials to evaluate the effectiveness of new and existing insecticides for control of corn earworm and European corn borer have recorded less effective control by one or more pyrethroids in comparison with prior years' trials. Bill Hutchison of the University of Minnesota presented a summary of these observations about a year ago at the North Central Branch Meeting of the Entomological Society of America. In 2004 (as in 2003), entomologists in Midwestern states collected corn earworm larvae from corn ears in September and sent the living larvae to Roger Leonard, an insecticide toxicologist at Louisiana State University, so that he could conduct bioassays to detect resistance in the populations represented by these samples. I'll not present all the details of his work here, but his key finding is that populations from various locations in the Midwest show pyrethroid resistance levels similar to those found in corn earworms in the southern cotton-producing areas ... realize that the same species is known there as the cotton bollworm, and that populations there are under intense selection for pyrethroid resistance because of sprays applied to cotton. Also realize that for most of the Midwest, infestations of corn earworm result from immigration of earworm moths from the south on storm fronts in the summer ... so whatever shifts toward resistance occur in the south are carried here by each season's migrants. Consequently, while pyrethroids applied to sweet corn in Illinois have little or no impact on resistance in the next year's population here (because in general Illinois infestations all die off at the end of the season and are replaced by moths from the south the next year), we can be the recipients of a resistant population as a result of perennial selection on cotton.

Now that I've come close to shouting "Fire" in a crowded building, it's worth keeping this in perspective ... we have not yet seen any widespread control failures in the field, and pyrethroids may continue to work very well in earworm control this year and into the future. Laboratory evidence of some level of resistance in field-collected samples of larvae does not mean that the resistance level is great enough to allow survival in the field. That said, it would be wise for sweet corn growers in Illinois and throughout the Midwest to (1) monitor earworm flights with pheromone traps and keep daily records of the number of moths captured; (2) keep very accurate records of insecticide application dates, rates, and weather; and (3) understand that if a pyrethroid fails to give control because of resistance, other pyrethroids are very likely to fail as well. Ambush, Pounce, Warrior, Capture, Baythroid, Mustang-Max, Decis, Proaxis, and Discipline are all pyrethroids. Insecticides with alternative modes of action and some effectiveness against corn earworm include SpinTor and Sevin. Entrust is an organically-certified formulation of the same active ingredient that's in SpinTor.

Issue 11:3 (to be published by mid-March) will include a listing of suppliers of pheromone traps and lures for corn earworm and other common vegetable and fruit insect pests.

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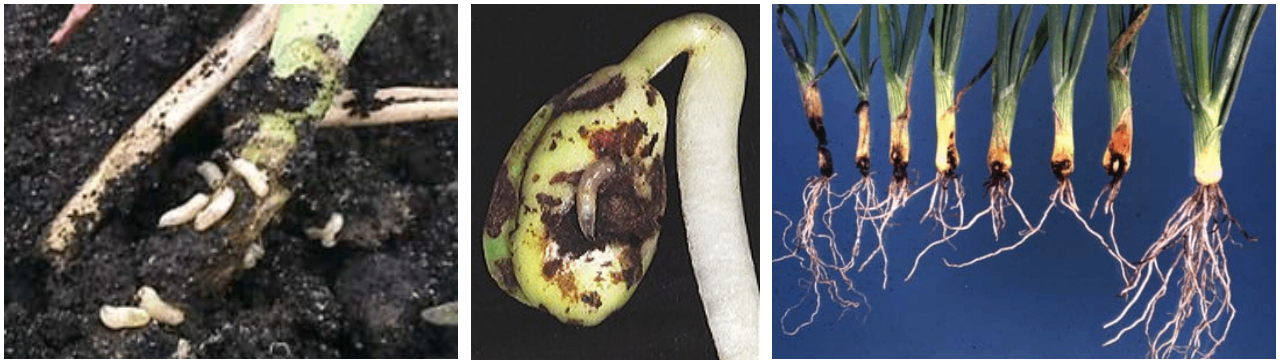
Seed and root maggots in early-season vegetable crops



Left to right: Cabbage maggot, seedcorn maggot, and onion maggot
(Photo credits: Michigan State Univ., BASF, and R. Straub, Cornell University, respectively)

A reminder on a set of perennial pests ... Seed and root maggots in the genus *Delia* (including cabbage maggot, seedcorn maggot, and onion maggot) are common pests of early-seeded vegetables, often causing the greatest damage in crops planted or transplanted in late March, April, and early May. They are most common and damaging in cool, wet soils in which germination and seedling growth are slow; they also are most numerous where green manures or animal manure has been incorporated in recent weeks (because flies choose to lay eggs in such fields). Signs of their damage are poor stands where seeds and seedlings are killed before emergence and damping off of seedlings that are killed by soil fungi after being injured by larvae of these species. The old standard cultural control recommendation is to plant in warm soils where germination will be rapid, but that recommendation doesn't always produce a cop for the earliest possible (and most profitable) market. Using transplants instead of direct seeding does, however, avoid damage to cucurbits (seeds are susceptible to seedcorn maggot), and insecticides applied as soil applications (often banded over the row), seed treatments, or transplant drenches can protect onions, sweet corn, peas, green beans, cucurbits, and cole crops. Lorsban is among the most effective insecticides for seed and root maggot control. Check the 2005 Illinois Agricultural Pest Management Handbook or consult the 2005 Midwest Vegetable Production Guide for seed treatment and soil insecticide recommendations for crops attacked by seed and root maggots (onions, sweet corn, peas, beans, cucurbits, cole crops, radishes, turnips, etc.).

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Fruit Production and Pest Management

Caring for newly arrived trees before planting

Some of you will be receiving new trees very soon, so I thought it would be a good idea to share with you a few points on how to care for these trees.

First and foremost, find out from the nursery the exact date the trees will be shipped and a tracking number if available. Call the shipping company to find out the exact date of delivery and give them your cell phone number, in case the truck driver can't find you when he/she arrives at your farm.

Quickly inspect the trees or at least the box for signs of damage as soon as it arrives, preferably before you sign the shipping slip. If the box is damaged on the outside, open it and make sure the film liner is not damaged. Reject the shipment if the box liner is damaged and the trees look dry. Open the box immediately, even if it is undamaged. Check the trees to make sure that the variety, rootstock, and caliber are correct. Each tree should have a label for the rootstock and each variety should be labeled as well. Trees of the same variety maybe bundled together, but there should at least one label listing the variety name. Also check to see if the graft union is at least one inch above the root system (apples). If you noticed that the trees have arrived dry, if the buds have started to grow, or if the trees are not labeled correctly, call the nursery immediately and explain the problem. Don't accept the trees; instead ask for replacements. If the trees look healthy, but they are shipped bareroots, then put moist sawdust or wet rags around the roots. The sawdust should feel moist not soggy. Fruit trees are very sensitive

to low oxygen, so don't put the roots directly in water for more than a few seconds. If the trees are shipped with sawdust, make sure it is moist. Reseal the boxes and place in a cold room. Do not trim any broken branches or roots on these trees before planting. Any damage to the trees will enhance bud break, so wait until the time of planting to make any cuts.

Trees should be stored in a cold environment to prevent the buds from germinating. The cooler should be set to about 50 to 55 F. A cold room is preferred, but a cellar or any non heated room will do for a short storage time. If you plan to store the trees in a fruit storage room, make sure it has been properly aerated to get rid of any residual ethylene. Ethylene is a hormone produced by most fruits. It also stimulates bud break at very low concentrations. Ethylene has no smell and it mixes very easily with air so the room should be aerated for at least a week before you store any trees in it. To speed up the process of aeration, you can use an exhaust fan to remove any residual ethylene. Make sure you bring in fresh air free of ethylene. Ethylene is autocatalytically produced in the plant. So any small amount left in the room can cause buds to start breaking dormancy. Smoking, propane powered forklifts, car exhaust, and some types of rubber will generate ethylene. Do not cover the tree tops with plastic bags, especially if you are going to store them in a cellar or non refrigerated rooms. High humidity and some ethylene will be generated by the trees stored in plastic bags, especially in late winter or early spring. So only the roots should be covered in plastic bags. Humidity is another important factor that can affect stored trees. Make sure to place a humidifier or at least an open pan of water in the room to increase the humidity. Lay the trees flat on the ground so their buds will not germinate quickly.

If you plan to store trees that you dug out of your nursery, it is best to store them in pots of soil or peat moss. Water will evaporate from the pots and some of it will be taken up by the trees so make sure to add water to the pots even in cold storage. Check your cooler temperature frequently and make sure the temperature in the room is set correctly. You will know the exact temperature only if you have a thermometer in the room.

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

Prebloom oil sprays for control of insects and mites in tree fruits and small fruits

A reminder, without any lengthy text to support the point ... application of a "superior oil" between green tip and bloom (by pink) is a pest management practice that should be completed in every apple orchard in Illinois (and in some peach orchards, blueberries, and grapes as well). Applying a superior oil (= horticultural oil) at the period roughly defined as between green tip and pink puts a fine coating of oil on the twigs of perennial fruit crops and suffocates San Jose scale, European red mite eggs, and rosy apple aphid eggs that have overwintered on the twigs of apples. San Jose scales and European red mites also overwinter on twigs and later feed on the twigs or foliage of peaches, blueberries, and grapes as well. Superior oils are refined to be safe to specific woody plants and formulated to be emulsifiable in water at concentrations of 1 to 2 percent by volume. Applications at green tip are most effective against San Jose scale, and applications nearer to pink are more effective against European red mite, but oil applications at any time in this period are very valuable ... they are low in cost and cause no adverse effects to beneficial species when applied at this time. Check the 2005 Midwest Tree Fruit Spray Guide and the 2005 Midwest Small Fruit and Grape Spray Guide for rates and recommendations for specific fruit crops.

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Resources for fruit and vegetable growers

As a follow-up to the listing of suppliers, information sources, etc. in the previous issue of this newsletter, Brian Sparks of the *American Fruit Grower* and Meister Press sent a note listing the following two web sites ...

- American Fruit Grower: http://www.americanfruitgrower.com
- American Vegetable Grower: http://americanvegetablegrower.com

These sites offer frequent updates on industry news and events.

This issue's words of wisdom ...

Ever wonder why life expectancies are greater for women than men? A picture is, indeed, worth a thousand words ...

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