

# The Vegetable and Small Fruit Gazette

Vol. 7, No. 6- June 2003

Horticulture Department  
The Pennsylvania State University

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**Tip for the Month--** "Weed - a plant whose virtues have not yet been discovered"--Ralph Waldo Emerson

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## **Comments from the Editor**

Bill Lamont, Department of Horticulture

When is the sun going to shine for more than one day? Every time I think we are going to be able to do some fieldwork at the Horticulture Farm it rains just enough to stop us in our tracks. Thank heavens we have the High Tunnel Research and Education Facility or we would have nothing to show for our efforts thus far this season. Crops are continuing to grow in the high tunnels and we can continue to plant and harvest in the high tunnels even though it is raining outside. Growers really appreciate their high tunnels this year. I would like to thank Tom Butzler, the Clinton County Extension Agent for the excellent article on "**The Dangers of Summer**" that

he developed for this issue and I look forward to receiving an article from Eric Oesterling that will appear in the July issue. I want to encourage colleagues from other departments to contribute articles throughout the year. Check the calendar of events for several new educational offerings such as some excellent ones from Steve Moore, Sonnewald Natural Foods and Co-founder of Harmony Essentials. If you have an event that you would like to advertise, please send it to me. As always, the Vegetable and Small Fruit Gazette Team encourages your feedback so that we can better serve your needs and address your concerns.

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### **Schedule for Agent Articles**

Bill Lamont, Department of Horticulture

July	Eric Oesterling
August	Tom Ford
September	Cheryl Bjornson
October	Mary Conklin
November	John Esslinger
December	Andy Muza

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### **The Dangers of Summer**

Tom Butzler, County Extension Agent, Clinton County

I have always been a big fan of summer weather, but I never realized some of the potential hazards that came along with summer type conditions, excessive sun exposure and heat exhaustion. These are conditions many farmers and workers face during the summer months.

As with many youth, I felt infallible and two experiences when I was a young adult brought me back to reality. During the summer of 1989, I worked two jobs. One was a groundskeeper on a golf course, from 6:00 am - 2:00 pm, followed by a life guarding job from 4:00 pm - 10:00 pm. Many people, including me, thought a deep tan looked good. Sunscreen was used sparingly and I tried to soak up as much sun as possible during those two jobs. Too much sun over several days led to blisters forming on my

shoulders. No big deal I thought.

Until some folks told me about skin cancer. According to the Pennsylvania Department of Health, excessive sun exposure during the first 10 to 20 years of life greatly increases the risk of skin cancer. Blistering sunburns in youth result in an increased risk for developing melanoma.

Medical horror stories always spur me into action and I changed my ways. So be sun smart and wear loose-fitting long sleeved shirts and pants (when practical), use sunscreen with an SPF rating of 15 or higher (I slather it on these days), wear sunglasses with UV protection, wear a wide brimmed hat which protects the face, ears and back of the neck (baseball hats don't give you very good protection), and if possible, seek shade when the sun is most intense and damaging (10:00 am - 4:00 am). My wife tells me I look like a ghost during the summer but I hope to head off any future problems.

I thought I had wizened up a bit. I applied sunscreen anytime I was in the sun and usually wore a wide brimmed hat. However, my next life lesson dealt not with sun exposure but the handling of summer heat.

I was living in North Carolina at the time and needed some respite from working in the peanut fields. In order to relive some of my New Hampshire trail crew days, I decided to crank out a 40-mile hike (in June). I thought I took enough liquid, water and Gatorade, but just didn't think through the effect of excessive exercise on a hot and humid summer day. Fourteen miles into the hike I was becoming dizzy and nauseous. I drank all my water but couldn't stomach the Gatorade; staying hydrated was becoming a problem. At mile marker 16, I turned around and headed for the car. This was my first experience with heat exhaustion. On the way back to the car, every stream became a place for me to submerge my whole body into the cool waters.

According to researchers at Penn State University, heat exhaustion is caused by a loss of body fluids and salts from sweating, and decreased blood flow to the brain and other organs. Symptoms include cool, pale, clammy skin; dizziness; headache; cramps; nausea or vomiting; weakness; confusion; or even unconsciousness. To treat heat exhaustion, move the victim to a cool place, elevate his/her feet, and call for medical help immediately. If the victim is able to drink, give him/her plenty of cool fluids while waiting for help to arrive.

The best thing to do is avoid placing yourself in the position where you need medical help. Some suggestions are; seek shade when outside (or create shade such as placing an umbrella over you as you work), avoid staying in the direct sun for more than 15 minutes, unless wearing a hat, increase the amount of water you drink in the summer, minimize your consumption of alcohol (it dehydrates the body), avoid wearing thick clothing in the summer, and avoid physical exertions during the mid- day when it is likely to be the hottest. Basically, use common sense. For example, don't apply pesticides in the middle of the day as it requires you to wear personal protective equipment (extra clothing) and if a backpack sprayer, a great deal of physical exertion.

Tomatoes can develop a physiological disorder called sunscald. This is caused by high temperatures with a lot of sunshine, damaging tomato fruit as it is developing. If these summer conditions can injure your vegetable crops, imagine what it is doing to your skin and health. Take proper precautions and have a healthy growing season.

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## **Bill Lamont, Promoted to Full Professor and Granted Tenure**

Bill Lamont, Department of Horticulture

Dr. William James Lamont Jr. has been promoted to the rank of Full Professor and granted tenure at The Pennsylvania State University effective July 1, 2003. Dr. Lamont began his career as an Extension Specialist and applied researcher in the Department of Horticultural Sciences at North Carolina State University after completing his MS and PhD degrees in the Department of Vegetable Crops at Cornell University. It was while in North Carolina that he developed his passion and enthusiasm for researching and teaching about the production of vegetable crops using plastics or plasticulture system that has been the hallmark of his career. Leaving North Carolina State University, Dr. Lamont spent a year in Rome, Georgia as part of a group of entrepreneurs attempting to develop a plastic manufacturing facility that would incorporate applied agricultural research and extension type outreach into its corporate structure. It was a good idea but one that couldn't get the necessary funding to get off the ground so he then moved on to Kansas State University and the Department of Horticulture, Forestry and Recreation Resources where he spent nine years honing his resident educational skills (classroom teaching) culminating in being awarded the Conoco Presidential Award for Outstanding Undergraduate Teaching. He continued to conduct research on the use of plastic mulches, drip irrigation and row covers on a wide variety of vegetable crops in the Great Plains of the United States. In 1997 he accepted his current position in the Department of Horticulture, at The Pennsylvania State University as an Associate Professor with a split appointment in extension and research and returned home to Pennsylvania where he was born and raised. Since reporting on board, he and colleague Dr. Mike Orzolek have co-founded the Center for Plasticulture and developed the High Tunnel Research and Education Facility, the largest facility of its kind in the United States dedicated to research and education on the use of this rapidly growing season extension technology. Dr. Lamont has written extensively on the subject of plasticulture for a wide variety of publications from scientific refereed papers, to proceedings of state and regional commodity meetings, and in a wide variety of trade magazines. He has been an invited speaker at many commodity meetings around the country and at international conferences on plasticulture. He is a twice Past-President of the American Society of Plasticulture and is currently serving as Vice-President of the Extension Division of the American Society for Horticultural Science, an organization for which he has organized several educational seminars on the subject of plasticulture which were held at various locations around the country.

Dr. Lamont shares this promotion and tenure with those that helped make it possible, the colleagues that have taught and mentored him, believed in him, and with whom he has had the pleasure to collaborate on numerous projects; with the excellent group of county extension agents that he has had the privilege to work with during his career thus far and from whom he has learned much; the industry who supported his projects and were there when he needed equipment or funding to move his program on to the next level; and the growers he has met at meetings and worked with over the years and from whom he has and continues to learn. Last but not least his family, wife Phyllis, sons Billy and Kevin. This is for all of you.

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## **High Tunnel Production Manual Available**

Bill Lamont, Department of Horticulture

Our new High Tunnel Production Manual has been recently published and is available for purchase.

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Appendix C:	Useful Information, Resources, and Organizations and High Tunnel Satellite Locations	

If interested in ordering the manual please follow the directions below.

2003 High Tunnel Production Manual \$25.00each.

Please make check payable to: The Pennsylvania State University

Mail check to:

Dr. Bill Lamont  
Department of Horticulture  
206 Tyson Building  
The Pennsylvania State University  
University Park, PA 16802

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## **Excellent Report on Weed Control on Plasticulture Onions**

Lee Young, County Extension Director, Washington County

Lee has developed an excellent report on weed control options on the Simply Sweet Onions planted on plastic mulch and drip irrigation. There are some excellent photos of the effectiveness of different herbicide treatments. To get access to this report contact Lee Young via e-mail at: [ljs32@psu.edu](mailto:ljs32@psu.edu). Note from the editor: I would have included the address where the report is located but when I went to look for it in my e-mail today, Sunday, June 1, 2003 I couldn't find it. My sincere apologies to Lee.

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## **2003 Statewide Variety Trials**

Mike Orzolek, Department of Horticulture

This year I am evaluating a system of testing varieties with various County Agents across the Commonwealth. There will be several major vegetable variety trials in 2003 including; pumpkin, fresh market tomato, seedless watermelon, specialty melons and onions. The pumpkin variety trial will be located in Lackawanna (John Esslinger), Lancaster (Tim Elkner/Steve Bogash), Centre (Tom Butzler), Lehigh (Emelie Swankhamer) and Westmoreland (Eric Oesterling and Lee Young) counties. There are 33 items in this trial with at least 30% of the experimental and named varieties powdery mildew tolerant (PMT). All of the pumpkin trial locations will transplant the varieties on bare ground in the next month. The tomato variety trials will be conducted in Montgomery/ Chester (Cheryl Bjornson and Mary Concklin) and Lackawanna counties. There are 16 items in this trial ranging from beefsteak to cherry. This trial should be transplanted within the next 2 weeks, assuming that the sun will stay out for more than 2 consecutive days. The seedless watermelon trial is located in Lancaster County (Southeast Research and Extension Center, Landisville, PA) and under the guidance of Tim Elkner. There are 20 items in the seedless watermelon trial with fruit size ranging from 4 to 20 pounds in weight and with both red and yellow flesh color. A specialty melon trial is being conducted by Steve Bogash in Franklin County. This trial contains 24 items ranging from honeydew, crenshaw, galia type and canary type fruit. Many of these specialty melons will have fruit with reasonably high soluble solids (14.0 - 18.0%). I have a sweet Spanish onion trial at the Horticulture Research Farm, Rock Springs, PA. This trial consists of the following varieties; Condor, Cascade, Eagle, EMSP 944, T-433, Candy-greenhouse grown tray plants, Candy-field grown bare root transplants, Candy-sets and a red variety. The onion variety trial was planted on May 1, 2003. This has been the only crop planted on the vegetable farm to date because of wet, cool weather. Results from the 2003 Variety Trials will be published in future issues of the Vegetable and Small Fruit Gazette published by the Department of Horticulture.

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## Heads UP on Agent Vegetable and Small Fruit In-service in July

Bill Lamont, Department of Horticulture

Just a heads-up that the Vegetable and Small Fruit In-service will be held on July 29 and 30th at the Horticulture Research Farm, Rock Springs, PA. There will be a dinner the evening of July 29th for team building, esprit de corp etc. The in-service will cover on-going vegetable and small fruit research both in the field and high tunnels located at the Horticulture Farm. This is the program that we discussed at our November roundtable last year. Just wanted to make sure you had time to put it on your calendars. We will be providing more particulars in July issue of the gazette.

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## Some Early Season Above-Ground Pests

Shelby Fleischer, Department of Entomology

*Corn flea beetle.* The corn flea beetle is 2 mm long, has an oval-shaped black body tinged with bronze or bluish-green, and yellow markings on its legs. Adults overwinter in dead vegetation and litter at the base of plants. They are active on weeds in the spring, then move to corn and feed during May and June. Infestations are more severe during a mild winter followed by a cool spring. Adult beetles leave small circular feeding holes and spots or long stripes along the leaves. Because the beetles develop on weeds, keeping fields free of weeds helps in their control. Delayed planting may also reduce populations. The economic importance of this insect is that it transmits the bacterium that causes Stewart's wilt (also known as bacterial wilt).

Resistant varieties are effective in preventing disease. This pest is typically more of a problem in earlier plantings - we recommend planting resistant cultivars for the early plantings. Seed commercially treated with imidacloprid is also effective in both controlling the beetle populations, typically until the 4 to 5 leaf stage, and in controlling disease. Soil-applied insecticides can be used, but are less effective during cooler temperatures; foliar materials may be necessary during this period. Treatments can also be based on scouting after plant emergence. Begin checking plants at the spike stage, especially during sunny calm days when the beetles are more likely to be active. Examine 10 plants at each of 10 sites and determine the number of plants infested. Record the percent plants infested. If varieties susceptible to Stewart's wilt are grown, apply foliar treatments when 6% or more of the plants are infested with beetles, and repeat if beetle activity remains high.

*Asparagus beetles.* There are two species of asparagus beetles: (1) asparagus beetle, and (2) spotted asparagus beetle. The life cycles are essentially identical, except that the spotted asparagus beetle feeds on or in the berries, and thus does not cause economic damage. The adult asparagus beetle is about 0.25 long, with a blue-black

underside and a reddish-brown prothorax (the area immediately behind the head). The wings have a blue-black base color, are bordered with reddish-brown, and have four creamy-yellow circular to rectangular spots. Larvae are about 1/16" long, with dark gray bodies and black heads. Eggs are slate black in color, elongate oval in shape, and attached by one end to the stems of the host. The spotted asparagus beetle has a blue-black underside and a reddish back with 12 small black spots. Larvae are orange.

Hibernating adults emerge and feed about the time the spears are cut for market. Asparagus beetles chew the green shoots, causing the tips to scar and turn brown. The presence of the black eggs on the shoots also makes them unfit for market. The eggs hatch in about one week, and the larvae may then cause additional damage. If enough damage occurs, the next year's crop may be affected because of lower root reserves.

One cultural control for these beetles, if there is sufficient labor, is to harvest the spears regularly, and wash the eggs off the spears. Foliar materials are available, and post-harvest treatments are also effective in reducing the number of overwintering beetles.

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## **June Disease Reminders of Commercial Producers in PA in 2003**

Alan A. MacNab, Department of Plant Pathology

### **A. Introduction:**

The following diseases should be considered early in June. For some diseases, they will appear in June. For others, control measures must be taken now to minimize disease severity later in the season. Growers who have experienced significant losses from diseases should review diagnosis and control information. Diagnosis information is available in the PSU publication titled "Identifying Diseases of Vegetables." Control information is available in "Commercial Vegetable Production Recommendations."

### **B. Beans:**

Mosaic viruses: For commercial plantings, do not make successive plantings in adjacent areas; although few plants may be affected in early plantings, number of plants affected usually increases in successive plantings as more virus inoculum from previous plantings becomes available to aphid vectors. When possible, plant as far from clovers as possible; they are a source of viruses that can affect beans. Maximum density plantings may minimize losses.

### **C. Celery:**

Leaf blight: Maintain a regular fungicide program in plant beds. If blights get started in plant beds, control will be more difficult and expensive later in production fields.

### **D. Cucurbits:**

1. General: Due to the damp cool spring with extended periods of rainfall and drizzle,

Phytophthora blight could be important in more fields than usual. Growing plants on raised beds can help by minimizing flooding around plant stems. For preplant and early-season control, mefanoxam (Ridomil Gold and Ultra Flourish) can be applied preplant.

2. Cucumber: a. Bacterial wilt: Stop the vector (cucumber beetle) from feeding on plants. Several insecticides provide good control. Maximum density plantings may minimize losses. b. Mosaic: Grow only CMV-resistant varieties. There is also good resistance to other diseases. Scab and powdery mildew usually are next in importance.

3. Muskmelon:

a. Collapse: This late-season problem can be avoided by promoting early harvest. Polyethylene mulch is important in many areas of Pennsylvania.

b. Powdery mildew: When possible, gardeners should use powdery mildew resistant varieties such as Earlygold (early only); Eclipse, and Athena (roadside and shipping type); and Marygold (casaba type). When necessary, fungicides can be used later in the season. Several new fungicides, Cabrio, Flint and Quadris (strobilurins), and Nova are labelled for use. See the vegetable guide for details about minimizing the chance for development of fungus resistance to these highly effective materials.

c. Fusarium wilt: If long rotation is not possible, use resistant varieties such as Athena (res to races 0, 1 and 2); if only race 2 is present, Superstar (res to race 2), and Eclipse (res to race 2) are possible.

E. Peppers:

1. Bacterial leaf spot: Start with disease-free plants. Where diseases are expected, follow a regular preventive spray program. Start early and continue with fixed copper for several weeks until you are relatively certain young plants are not carrying the bacterial pathogen. The following new varieties have resistance to races 1, 2, and 3 of the pathogen: Aristotle, Boynton Bell, Commandant, Enterprise, X3R Camelot, and X3R Wizzard. For situations where all three races are not a threat, Admiral is resistant to races 1 and 2, and King Arthur is resistant to race 2. 2. Viruses: Where viruses have been a problem, plant only varieties resistant to TMV and, when possible, to other viruses. Maximum density plantings may minimize losses. Aphid controls followed to stop transmission of aphid-borne viruses (CMV and Etch) have not been very successful for virus control.

F. Sweet Corn:

1. Stewart's bacterial wilt: Disease is most likely following mild winters. The yellow variety, Incredible, is reported as resistant.

2. MDM Virus: Where this virus was a problem in past years, try varieties listed as resistant. A couple have been listed in the Commercial Vegetable Guide (Earlibelle, Merit). Maximum density planting may minimize losses. This disease usually is not important in early plantings.

G. Tomato:

1. Bacterial spot and speck: Where inoculum is suspected (old tomato fields, transplants with symptoms), spray with a tank mixture of fixed copper plus either maneb or mancozeb, or with ManKocide. Start as soon as plants are established and continue at 7 to 10 day intervals, especially during wet periods.

2. Early blight: In new fields where disease-free transplants were used, fungicide sprays should not be needed until the end of June. However, if diseased transplants were planted, or if fields were planted to tomatoes last year, start a preventive spray program earlier. Cabrio, Flint and Quadris are relatively new fungicides that are excellent for control of tomato early blight and Septoria leaf spot. These materials should be alternated with standard protectant fungicides like mancozeb and chlorothalonil.

3. Late blight: Primary inoculum can be introduced with infected seed tubers, from cull piles, and in/on volunteer potato plants. Inoculum also could be introduced with tomato transplants. If inoculum is present, late blight will have the potential to develop whenever environment favors the disease (wet and cool conditions). As soon as any plant growth appears in the spring, make sure that potato growth is not allowed to develop in cull piles; continue inspections of cull piles throughout the season and prevent any growth of potato plants. The major control after plantings are established is to keep plants covered with protective fungicides whenever environment favors the disease. As of May 28, conditions throughout Pennsylvania have been wetter and cooler than usual for most of May. Although we do not know what weather to expect in June, the persistent wet conditions throughout May could result in early appearance of late blight. Although it is too early to say more, be aware of the potential for this disease, and stay alert to the regular blight forecast information provided from Penn State and PDA on the PENN-IPM toll-free hotline (1-800-Penn-IPM = 1-800-736-6476); these messages will begin before mid-June.

Information provided is intended for consideration by the user, but is not intended to be a recommendation. Production decisions should be based on consideration of many types of information (scientific, experiential, economic, legal, etc.) available to the user.

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## **Production Efficiency for Grape Tomato**

Bill Sciarappa, Agricultural Agent- Rutgers University

In 2001 grape tomato production increased almost 150% in volume and 133% in dollar sales. This tomato market segment is the fastest growing niche having a potentially high profit margin when retail prices range from \$2.00 - 3.00 per clamshell pint. The Santa Hybrid F1 is the primary variety used and seeds are available at some home gardener based companies like Thompson and Morgan. This vigorous and indeterminate growth tomato variety presents a problem in cultural approaches and in labor costs. Last season's study comparing five different cultural methods may help a vegetable grower decide if this crop is right for their particular farming operation.

Santa Hybrid F1 seeds were sown in the greenhouse on April 18, 2002, in 48-cell trays containing a peat-vermiculite media. The plants were maintained in the greenhouse until one week before transplanting when they were placed in a protected outside area for hardening off.

Plasticulture beds on 6' centers were prepared with drip irrigation placed down the center. The transplants were hand-planted in single rows spaced 30' apart between plants. The five cultural methods were:

1. 4' tomato cage
2. 4' trellis with wooden stakes and Florida basketweave system
3. 8' stakes with plants strung every 2'
4. 5' tomato cage constructed of rebar with a 30" diameter
5. Sprawl

Four replications of each cultural method were randomized throughout the test. Five harvest teams composed of two people each rotated through each culture and were timed as to harvest completion. There were four harvests timed in total - August 14, August 30, September 11 and September 19. There were several significant differences among these treatments. The tall 8' stake was significantly larger in total yield and shorter in amount of time required to harvest one pound of fruit, approximately 30 seconds. (See table 1.) The tall stake system also had the highest percent marketability. The 4' conventional cage, the trellis and the 5' hand-made columnar cage cultures were intermediate and similar in both total yield per plant and time to harvest. The sprawl method had the lowest yield, the longest time to harvest and the highest percentage of unmarketable fruit.

The grower will need to look at his labor situation to see if saving 5 to 15 seconds per pound of harvested grape tomato is important to the bottom-line. The low trellis and the sprawl method also had a disadvantage of tiring harvesters more quickly with more bending over compared to the two cage types and 6' stake (an 8' piece driven 2' into the ground).

The advantages of the 8' tall wooden stake in terms of total yield may be explained by having more vegetative growth, less crowding and shading, more sunlight intercept and more fruiting sites. The advantage in terms of quicker harvest times per pound of grape tomato may be explained by easier access to the harvester in the mid and upper reach ranges and less fruit in the lower, more time consuming harvest areas. The fruit sizes of all cultural methods were similar and similar in taste quality. The primary disadvantage of the tall stake is that it is difficult to pound the stake in easily without a small ladder or tall worker. Whatever the method chosen from these side-by-side studies, it is clear that the grower should avoid the "standard" sprawl method for grape tomato production.

**TABLE 1**

<b>Treatment</b>	<b>Total Pounds per Plant</b>	<b>Seconds to Harvest 1 Pound</b>
<b>Cage - Small</b>	<b>8.04</b>	<b>38</b>
<b>Trellis</b>	<b>7.82</b>	<b>45</b>
<b>Staked</b>	<b>12.10</b>	<b>34</b>

<b>Cage - Large</b>	<b>8.88</b>	<b>36</b>
<b>Sprawl</b>	<b>6.87</b>	<b>38</b>

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## **Bug vs. Bug - Biological Control and Identification of Aphids**

Cathy Thomas, Integrated Pest Management Program  
 Pennsylvania Department of Agriculture

Effective and timely control of aphid populations in greenhouse vegetable production is important due to their ability to develop into large populations quickly. The most common species found in Pennsylvania greenhouses include, green peach aphid (*Myzus persicae*), potato aphid (*Macrosiphum euphorbia*) and melon aphid (*Aphis gossypii*). The aphid that is usually found to infest vegetable crops, especially tomatoes (Solanaceae crops) is potato aphid. Green peach aphid and melon aphid infest ornamental crops and have a very large host range. Aphids have widespread resistance to many classes of traditional insecticides. Using natural enemies offers an effective and alternative method of control since aphids have widespread resistance to many classes of traditional insecticides.

In crop situations where a broad spectrum insecticide is not being used, aphids can be controlled by naturally occurring predators such as lacewings, ladybeetles, hover flies, and tiny parasitoids. Several biocontrols of aphids are sold commercially and can be used to augment a system of natural control.

### **Damage**

Aphids will feed on foliage and stems of plants. Plant damage can appear as curling and stunting of leaves. In addition to the ability to transmit viruses, aphids cause direct damage by feeding on plant sap to acquire the proteins and sugars needed for their reproduction. Aphids secrete excess sugars in the form of sticky 'honeydew'. Honeydew supports the growth of black sooty mold that affects plant photosynthesis, possibly reducing plant yields. Removing sooty mold from fruit increases handling time and can possibly render fruit unmarketable.

### **Life cycle**

In greenhouse production, aphids are very prolific. Instead of reproducing by eggs, female aphids (stem mother) give birth to live nymphs (3-10/day) that start to feed immediately. Within a week, this offspring will be ready to reproduce. Aphids can have

two forms: winged or wingless. As colonies enlarge, aphids develop wings to migrate to less populated areas in the crop.

The most outstanding characteristic for identifying aphids is by the two cornicles ("tail pipes") on the rear of their abdomen. Color is variable among species and is not accurate for identification. As aphids increase in size, they shed their exoskeletons (cast skins). These white cast skins, often mistaken for adult whiteflies, can be found on leaves or stuck in honeydew excretions.

### Description of Aphids

A hand lens (at least 16x ) is needed to identify these characters.

Potato aphid (*Macrosiphum euphorbia*) - Large aphid, adults are 2.5 to 3.5 mm long. The antennae are longer than the body and the cornicles are very long and cylindrical. Aphid color varies from green to pink forms.

Green peach aphid (*Myzus persicae*) - To differentiate from other species, look for a rectangular indentation on the head between the antennae. The adult aphid is light to dark green and cornicles are slightly darker than the rest of the body. Aphids may also appear pink or orange depending on the host.

Melon aphid (*Aphis gossypii*) - Antennae are shorter than the length of the body. Color can vary from green, blue-green to gray green. The cornicles of adult aphids are short and entirely black.

### Monitoring

Plant monitoring should begin at the seedling stage and continue through the duration of the crop cycle. Start plant inspection on lower leaves and continue up the plant to the growing tips. As aphids feed on growing tips, the leaves curl, sometimes looking like virus symptoms.

Yellow sticky cards are useful in detecting winged aphids. Hang sticky cards 4 - 6 inches from growing tips. IPM Labs ([www.ipmlabs.com](http://www.ipmlabs.com)) sells a chart with drawings of important insects found on sticky cards. Unfortunately, winged adults on sticky cards may indicate that there are crowded populations already established in the crop and they are migrating to less populated areas. The presence of ants in the greenhouse may indicate aphid development, since the ants feed on the excreted honeydew and thus protect the aphids. When introducing biological controls, place them in an area protected from ants and control ants with baits or traps.

### Biological Control

Several long-lasting and effective biological controls are commercially available for aphid control. Parasitoids for Aphid Control

**Caution:** Parasitoids for aphid control are very species specific. Identify the aphid species infesting your crop before ordering from your supplier.

*Aphidius colemani* - Used to control green peach aphid and melon aphids. This tiny wasp lays an egg in the aphid. The egg hatches into a larva that spins a cocoon, producing a new wasp. The wasp exits the aphid body, leaving behind a brown shell called an aphid mummy.

*Aphidius ervi* - Used to control potato aphids. This parasitoid has a similar appearance and life cycle as *Aphidius colemani*. This parasitic wasp is about twice the size of *A. colemani*.

*Aphelinus abdominalis* - Used to control larger aphid species such as potato aphid and glasshouse potato aphid. This wasp is about 3 mm long. The main advantage to using this parasitoid is that the female adult will parasitize for several weeks and it will also feed on the aphids.

### **Predators for aphid control**

Ladybeetles (*Hippodamia convergens*): - Ladybeetles are sold as adults in pints, quarts and gallons. A general predator, ladybeetles are effective for cleaning up hot spots. They also feed on scales, thrips, and other soft - bodied insects.

Lacewings (*Chrysoperla rufilabris*) - Lacewings are sold as eggs, larvae. The larvae are voracious predators known as "aphid lions". They will also feed on mealybugs, scales, spider mites and thrips.

Predatory Midge (*Aphidoletes aphidimyza*)- This midge is sold as the adult to be released in greenhouse. The adult midge lays eggs near aphid colonies and the orange larvae feeds on aphids.

A partial list of biocontrol suppliers

- Crop King, <http://www.cropking.com> phone: (330) 769-2002 fax: (330) 769-2616
- Green Spot, <http://www.greenmethods.com> (603) 942-8925, FAX (603) 942-8932
- Hydrogardens. <http://www.hydro-gardens.com> (888) 693-0578, FAX (800) 694-6362
- International Technology Services, <http://www.bugsandbees.com> Ph. (800) 375-1684, FAX (303) 661-9543
- IPM Laboratories, Inc. <http://www.ipmlabs.com> Ph. (315) 497-2063, FAX (315) 497-3129
- Koppert Biological Systems, <http://www.koppert.nl> (800) 928-8827

For a comprehensive listing of biocontrol suppliers and information visit this website: <http://www.anbp.org>. This is the site of the The Association of Natural Biocontrol Producers (ANBP), a professional association representing the biological pest management industry. ANBP membership includes producers, distributors, and in addition, users of natural enemies and researchers. Tips for using biocontrols effectively · Discontinue the use of residual pesticides, 4 - 6 weeks prior to introducing biocontrols - check residues with suppliers · Identify the aphid attacking the crop · Start introducing biocontrols when pest populations are low · Follow supplier recommendations for release rates Disperse biocontrols on the day of receipt

Cathy Thomas  
Integrated Pest Management Program  
Bureau of Plant Industry/ Rm. 100  
2301 N. Cameron Street  
Harrisburg PA 17110  
(717) 705-5857  
[c-cthomas@state.pa.us](mailto:c-cthomas@state.pa.us) or [cet3@psu.edu](mailto:cet3@psu.edu)

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### **Disease Symptoms in Strawberries, Spring 2003**

Kathy Demchak, Department of Horticulture and John Peplinski, Department of Plant Pathology

So far this season, growers have been asking about, or sending in, strawberry fruit with a variety of symptoms. In some cases the caps have been drying up, sometimes with a portion of the pedicel (stem attaching to the fruit) drying up as well. When this happens the fruit also shrivels and can become brown and dried, as water and nutrient flow into it is stopped. In other cases, there have been some brown soft areas on the green fruit, usually close to the cap end. The gray mold fungus (*Botrytis*) is by far the predominant pathogen being identified on strawberries at the Plant Disease Clinic. The symptoms in the field, however, were a bit puzzling to growers. With the frequent rainfall, the fuzz (grayish-brown mycelium and spores) we usually see was difficult to observe in the field. Some growers have also noticed small areas of the fruit with a brownish coloration on the surface of the fruit. This last symptom might be environmental damage of some sort. However, if the fruit is placed in a bag, gray mold often grows out of these areas, perhaps because there is plenty of gray mold inoculum around that is capable of attacking any damaged areas. Anthracnose is not being seen so far this year, presumably because the weather conditions just haven't been conducive for development of this disease.

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## **Emergency Exemption for Topsin M on Blueberries**

Kathy Demchak, Department of Horticulture

An emergency exemption for Topsin M use on blueberries was granted for 2003. The purpose of this request was to have a replacement for Benlate for control of mummy berry, botrytis blossom blight, anthracnose fruit rot, phomopsis twig blight and canker, and fusarium wilt. A maximum of 3 applications may be made at 7-10 day intervals at a rate of 1.0 lb of product per acre. The re-entry interval is 12 hours and the pre-harvest interval is 7 days. If Benlate is also used, the total poundage of Benlate and Topsin M used must not exceed 3 pounds. A chemical usage form, available from your local Extension office, should be filled out and mailed in to PDA documenting usage of Topsin M under this emergency exemption. The label can be accessed at Cornell's fruit pathology Web site at

<http://www.nysaes.cornell.edu/pp/extension/tfabp/pestnews/topsin18.pdf>

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## **Potato Musings**

Bill Lamont, Department of Horticulture

### **Potato Cull Piles**

Bill Lamont, Department of Horticulture

Given the weather conditions that we have been facing this year it is extremely important to remember that cull piles of potatoes can be a source of late blight inoculum. It is important not to increase ones' chances of having late blight by leaving potato in a cull pile grow. Cull potato tubers can be buried and this method is effective if they are buried deep enough so that the sprouts cannot reach the soil surface. Generally this requires at least two feet of soil on top of the tubers. Another technique is to completely cover the cull piles with black plastic or an opaque tarp. It is important that no light reaches the tubers, as this will allow the volunteers to survive and encourage sprouts to push through or around the covering. Keep those piles under control.

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## **Upcoming Meetings**

Bill Lamont, Department of Horticulture

## **Local**

June 5, 2003. On-Farm Vegetable Variety Improvement Through Seed Saving and Selection Workshop. Sonnewald Natural Foods, Spring Grove, PA. Contact: Michael Glos, 9398 W. Creek Rd., Berkshire, NY 13736. (607) 657-2860 or [michaelglos@nofany.org](mailto:michaelglos@nofany.org)

August 27, 2003. Seed Cleaning and Processing Techniques. Sonnewald Natural Foods, Spring Grove, PA. Contact: Michael Glos, 9398 W. Creek Rd., Berkshire, NY 13736. (607) 657-2860 or [michaelglos@nofany.org](mailto:michaelglos@nofany.org)

September 19-20, 2003. Passive Solar Greenhouse Workshop: Design, Construction and Year Round Production. Sonnewald Natural Foods, Spring Grove, PA. Contact: Steve Moore ((717)-225-2489 or [sandemoore@juno.com](mailto:sandemoore@juno.com)

March 5-6, 2004. Passive Solar Greenhouse Workshop: Design, Construction and Year Round Production. Sonnewald Natural Foods, Spring Grove, PA. Contact: Steve Moore ((717)-225-2489 or [sandemoore@juno.com](mailto:sandemoore@juno.com)

## **Regional**

June 20, 2003. Transitioning to Organic Vegetable Production in South Jersey. Muth Family Farm, Williamstown, NJ. Contact NOFA Office before June 16 to register at (609) 7376848.

July 9, 2003. An Organic Success Story Field Day. Sprial Path Farm, Loysville, PA. Call NOFA office before July 2 to register at (609) 737-6848

October 26-29, 2003. Compost Advanced Short Course. Cornell Waste Management Institute, Holiday Inn, Ithaca, NY Contact: (607) 255-1187 or [www.cfe.cornell.edu/wmi](http://www.cfe.cornell.edu/wmi).

January 27-29, 2004. Mid-Atlantic Fruit and Vegetable Conference, Hershey, PA. Contact: Bill Troxell (717)-694-3596 or e-mail: [wt.pvga@tricountyi.net](mailto:wt.pvga@tricountyi.net)

## **National**

August 10-14, 2003. Potato Association of America Annual Meeting, Red Lion Hotel, Spokane, Wash. Contact: (800) 325-4000. Information/Registration: [www.paa2003.wsu.edu](http://www.paa2003.wsu.edu).

August 16-19, 2003. 31st American Society for Platiculture Congress. The Crown Plaza, Grand Rapids, MI. Contact: Pat Heuser (814) 238-7045 or <http://www.plasticulture.org>

October 3-6, 2003. American Society for Horticultural Science Centennial Conference, Providence, RI. Contact: ASHS at <http://www.ashs.org/> where all registration info is online or call ASHS Headquarters at (703) 836-2024.

Great Lakes Fruit, Vegetable and Farm Market Expo, The Grand Center and Amway Grand Plaza Hotel, Grand Rapids, MI. Contact: Hilary Morolla (810) 234-4126.

December 8-12, 2003. National Potato Council Seed Seminar; Cruise, Los Angeles, Calif., to Baja, Mexico. Contact: Oregon Seed Potato Association, [www.oregonseedpotatoes.org](http://www.oregonseedpotatoes.org) or (503) 731-3300.

January 6-10, 2004: National Potato Council 55th Annual Meeting, Cancun, Mexico, Moon Palace Resort. Contact: (202) 682-0333, or [www.nationalpotatocouncil.org](http://www.nationalpotatocouncil.org).

### **International**

December 7-11, 2003. The XVIth World Congress on Plastics in Agriculture. Sheraton Hotel, Algiers. Contact: [sophom@wissal.dz](mailto:sophom@wissal.dz)