

The Vegetable and Small Fruit Gazette

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Horticulture Department
The Pennsylvania State University

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Tip for the Month-- “That we begin the new year with hope, without regret for the last”

Comments from the Editor

Bill Lamont, Department of Horticulture

My apologies for The Vegetable and Small Fruit Gazette being a little late coming off the press this month. I could blame it on too much mashed purple potatoes, turkey and pumpkin pie consumed at Thanksgiving coupled with a warm woodstove and topped off with deer hunting being the first week in December. Anyway we will get back on schedule next month. With the new year comes the opportunity to attend many local, regional and national meetings so please check the Upcoming Meeting list to see what meetings are being held in your area. I want to thank Andy Muza's for finishing the year off in style with his excellent article “**Buckeye Rot of Tomato**” and I look forward to receiving Tim Elkner's article for the January issue. I want to thank colleagues from other departments who contributed articles to this issue and I want to encourage others to join us in upcoming issues. 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. *As we close out 2003, all of us here at the newsroom of the Vegetable and Small Fruit Gazette want to wish each and everyone of you a very Merry Christmas and a Happy, Healthy and Prosperous New Year. See you next year.*

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Schedule for Agent Articles

Bill Lamont, Department of Horticulture

January	Tim Elkner
February	Tom Butzler
March	Steve Bogash
April	Scott Guiser
May	George Perry
June	Lee Young
July	Eric Oesterling
August	Jeff Mizer
September	Emelie Swackhamer
October	Cheryl Bjornson
November	John Esslinger
December	Andy Muza

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Public Health Security and Bioterrorism Preparedness and Response Act of 2002

Bill Lamont, Department of Horticulture

To further ensure the safety of our food supply, the Food and Drug Administration has adopted regulations that will help to protect the public from a threatened or actual terrorists attack on the U.S. food supply. This regulation will affect many of the groups that Cooperative Extension works with in Pennsylvania.

The regulation requires domestic and foreign facilities that manufacture/process, pack, or hold food for human or animal consumption in the United States to register with the FDA. Many ordinary farm activities

belong to those categories. Farm warehouses and cold storages hold food, and the practices of sorting, grading, wrapping or boxing harvested food for the sole purpose of transporting this food off the farm are deemed by the FDA to be a form of “packing or holding”. All affected facilities/growers must register by December 12, 2003. A complete list of the type of facilities that are required to register is located on the web site. This includes feed mills that mix and sell livestock feed. There is no cost to register.

Dr. Luke Laborde, Assistant Professor in Food Science has developed a comprehensive web site to assist the food and feed industry to understand the regulation, who is affected and who is exempt, access the required registration forms, and instructions on how to complete the process electronically, by fax, or by land mail.

The web site can be accessed at: http://foodsafety.cas.psu.edu/bioterror/fda_registration.htm
Electronic registration website for FDA www.fda.gov/furls

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Buckeye Rot of Tomato

Andy Muza, Extension Educator, Erie County

The continuous wet weather throughout the 2003 growing season provided ideal conditions for many pathogens that cause vegetable diseases. In Erie County, I examined a tomato field with classic symptoms of a disease called buckeye rot. Buckeye rot was first described and named by Sherbakoff in 1917 in Florida. The literature indicates that the disease is more common in the southern portion of the United States.

Different species of fungi of the genus *Phytophthora* have been designated as causing buckeye rot. Two of the most commonly reported pathogens include both *Phytophthora parasitica* and *Phytophthora capsici*. These pathogens are soil inhabitants and have a wide host range including tomatoes, peppers, eggplants, and cucurbits.

Environmental conditions that favor development of the disease include excessive soil moisture and warm weather. The first symptoms of buckeye rot are more likely to occur in low lying areas of fields with drainage problems. Fruit (green or ripe) in contact with wet soil containing inoculum can become infected. Symptoms begin as small brown lesions at the area of infection. The lesion expands forming a series of alternate dark brown and wider, light brown zones. The surface of the lesion remains smooth but margins are not distinct. (Photographs of tomatoes with symptoms are in the references, Compendium of Tomato Diseases and Identifying Diseases of Vegetables, listed below). Inoculum is spread throughout the field by the movement of surface water and by rain splash.

Management of buckeye rot requires a combination of cultural practices and fungicide applications. To minimize problems :

1. Rotate crops. However, avoid planting or rotating susceptible crops (e.g., tomatoes, eggplants, peppers or cucurbits) in infected fields for at least 3 years.
2. Improve drainage in fields.
3. Avoid planting in low lying, poorly drained areas of your fields.
4. Plant on raised beds to promote drainage and avoid standing water.
5. Stake tomatoes, if possible, to keep fruit off of the ground.

6. Apply recommended fungicides on a timely schedule. (Consult the most recent Commercial Vegetable Production Recommendations for Pennsylvania).

References:

Jones, J.B., Jones, J.P., Stall, R.E., and Zitter, T.A. 1991. Compendium of Tomato Diseases. The American Phytopathological Society. St. Paul, MN.

MacNab, A.A., Sherf, A.F., and Springer, J.K. 1983. Identifying Diseases of Vegetables. The Pennsylvania State University, University Park, PA.

Walker, J.C. 1952. Diseases of Vegetable Crops. McGraw-Hill Company, Inc., New York. 529 pp.

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Bug vs. Bug - Biological Control of Fungus Gnat Larvae

Cathy Thomas, Integrated Pest Management Program
Pennsylvania Department of Agriculture

Biological Control of Fungus Gnat Larvae

Fungus gnats, a common greenhouse pest, are known for infesting cuttings and other young plant materials, potted and long term crops such as greenhouse vegetables.

Monitor and treat for this pest when transplants for the spring crop are started. There are effective biological controls for treating the larval stage of this pest which include the insect-parasitic nematode, *Steinernema feltiae* (discussed in the January edition) and the predatory soil mite, *Hypoaspis miles*. *Hypoaspis miles* has already shown good potential as a control for fungus gnat larvae, however it has also been found to feed on other soil insects such as spring tans, thrips pupae and shore fly larvae. *Hypoaspis miles* can be introduced without any problem in combination with insect parasitic nematodes. Remember, the key for controlling fungus gnats is to eliminate wet spots and algae growth since they promote fungus gnat development.

Life Cycle

This predatory mite inhabits the top layer (1 – 1.5 inches) of the soil. *Hypoaspis miles* is a brown colored predatory mite, growing to 1 mm in length. Females lay their eggs in the soil. At 75°F *Hypoaspis miles* takes 10-13 days from egg to adult, passing through 3 immature stages. *Hypoaspis miles* prefers moist potting compost and can live for up to 7 weeks in the absence of food. Soil must be moist, but not wet. This predatory mite will not go into hibernation in cold temperatures. The minimum temperature for good activity is 60°F. *H. miles* can be observed in and on the soil and at the base of plant stems.

Application

Hypoaspis miles is delivered to the grower in sprinkler tubes with all stages of the predatory mites in a vermiculite/peat carrier. Always follow instructions that are supplied with the product. If instructions are not packed with the product, contact your supplier and request this information.

- Apply, routine preventive treatments to prevent crop damage.
- Treat as soon as possible after sowing seed or inserting cuttings.
- Contact your biocontrol supplier for rates of introduction.
- Press the openings of the sprinkler tube and sprinkle the material on compost or on the rockwool cube.

- The predatory mites start searching for their prey immediately after introduction.

Nematode products

For optimum performance consider these factors:

- Several pesticides have a negative effect on *Hypoaspis miles*. When controlling diseases and other pests consult your supplier for a list of side-effects of pesticides on beneficial organisms.

-

The predatory mites should be introduced as soon as possible after delivery.

Suppliers of Nematodes

- Many biological control suppliers sell *Hypoaspis miles*
- IPM Labs, Locke, NY – 315-497-2063, ipmlabs@baldcom.net
- International Technology, Bio Best Products, CO 303-661-9546
- Syngenta Bioline, Oxnard, CA 805-986-8265, Fax: 805-986-8267, info@syngentabioline.com

Useful websites

www.biobest.be
www.bugsandbees.com
www.koppert.com
www.nysaes.cornell.edu/ent/biocontrol/websites.html

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 or cet3@psu.edu

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Vegetable Crop Production Resources on the Internet

Mike Orzolek, Department of Horticulture

Listed below are just a few of the websites available on the internet that contain information related to Vegetable Crop Production. Also, many of these websites have additional websites you can link to for additional information on vegetable crops in general, production methods, crop budgets, plant disease information and photos and other pest management information.

Atlantic Provinces Vegetable Production - <http://www.nsac.ns.ca/lib/apascc/acv/production/99index.htm>

California Vegetable Research and Information - <http://vric.ucdavis.edu/veginfo/veginfor.htm>

Cornell Plant Pathology Vegetable Disease Fact Sheets - <http://vegetablemdonline.ppath.cornell.edu/>

Cornell Vegetable Management Recommendations - <http://www.nysaes.cornell.edu/recommends/>

Garlic Seed Foundation (grower resources, newsletter, meetings) - <http://www.garlicseedfoundation.info/>

Georgia Vegetable Information (history, production, disease photos) - <http://www.uga.edu/vegetable/home.html>

Massachusetts Vegetable Program - <http://www.umassvegetable.org/>

New England Vegetable Management Guide - http://www.umassvegetable.org/grower_services/NEV_mgt_guide.html

Ohio State Vegetable Network - <http://www.ag.ohio-state.edu/~vegnet/>

Ontario Agricultural Ministry Vegetable Fact Sheets - <http://www.gov.on.ca/OMAFRA/english/crops/hort/vegetable.html>

Oregon State Vegetable Production Guide - <http://oregonstate.edu/Dept/NWREC/vegindex.html>

Organic and Sustainable Vegetable Production – ATTRA - <http://attra.ncat.org/horticultural.html#Vegetables>

Penn State Small Fruit and Vegetable Alternatives (with budgets) - <http://agalternatives.aers.psu.edu/crops/Crops.html>

Potato Association of America - <http://www.ume.maine.edu/PAA/>

Searchable Database of 20,000 Extension Fact Sheets - <http://plantfacts.ohio-state.edu/>

Vegetable Crop Budgets - <http://www.imok.ufl.edu/LIV/groups/economic/budglnks.htm>

Scheduling of Vegetable Crop Production - <http://sites.uws.edu.au/vip/haight/Scheduling.html>

Manures for Organic Crop Production - <http://www.attra.org/attra-pub/manures.html>

1998 Fresno County CA Vegetable Production - <http://www.fresno.ca.gov/4010/crop98/veg.html>

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That's a Berry Good Question!!

Kathy Demchak, Department of Horticulture

Q. Chickweed seems to be particularly troublesome for some of our strawberry growers. What are the current recommendations for control? Is there anything new in this area? (Tim Elkner, PSU Cooperative Extension in Lancaster County)

A. First, a quick review of chickweed biology might help with plotting the best strategies for control. Chickweed is a winter annual, so it primarily germinates in the early fall, then flowers and produces seeds - a lot of them - the following spring and early summer, and dies with the arrival of hot weather. Germination is triggered whenever soil moisture is good, however, so chickweed can keep on germinating right through the spring, or just about any time if the weather is cool and soil moisture is high. This makes control especially problematic, as it is difficult to target a particular period of weed germination.

Cultural controls are the first line of defense. As always, keeping the planting healthy, and making sure to keep the planting watered as daughter plants fill in the row, will help the strawberry plants to out-compete the weeds. Cultivation should always be done shallowly, and probably will need to be repeated, as some new weed seeds will be brought to the surface. Handweeding, especially if there are small problem spots or you notice a few chickweed plants here and there, will keep a small problem from becoming a big one, but is impractical if your field is filled with chickweed. And, finally, I'm convinced that a good thorough job of mulching, with plenty of mulch between the rows in the spring, nestled up against the plants after it's pulled off, helps tremendously with all weeds. In our research plots, I always notice much more chickweed and sheperds purse, especially, in the bare spots. I really think it's worth a little extra time and mulch to fill in these areas.

There are a number of chemical controls available. Devrinol, Dacthal, and Sinbar all are effective against chickweed. But, only Sinbar has any 'kickback' activity, so the herbicides need to be applied before the weed seeds germinate. Applying them now, just before mulching, won't do a thing for the chickweed that's already there, though Devrinol and Sinbar in place will help with chickweed that might geminate next spring. Dacthal's activity is a little too short to be the most effective material for a weed like chickweed that can germinate over a long period of time.

So, what would the complete picture look like? First, during the establishment year, do whatever you can to establish a healthy planting. The recent Sinbar supplemental label, which allows Sinbar use during the establishment year, specifies 2-3 oz of Sinbar per acre in late summer or early fall (sometimes referred to as a "Labor Day application") for control of winter annual weeds. Chickweed control fits perfectly in this scenario, especially if you can keep it from becoming a problem right off the bat. Remember that Sinbar must be washed off of the foliage, however, if plants aren't dormant. Devrinol can be used for this "Labor Day application" instead if enough daughter plants have rooted, but could also be saved for an application right before mulching (my preference), applied with another 3-4 oz of Sinbar if you haven't used up your 8 oz of Sinbar for the year yet. Devrinol applied just before mulching, protected from photodegradation by the mulch, will stay around and be in place for effectiveness in the spring. Then, apply 4-6 inches of clean straw mulch. In harvest years, we get really good results from 4 oz of Sinbar at renovation for summer weed control, so I'd go with Devrinol at half of the yearly rate in early September rather than Sinbar (the Sinbar label actually doesn't specify this time period in harvest years, anyway) , saving the 'other' 4 oz of Sinbar for use later in the fall along with the remaining half of the yearly Devrinol rate prior to mulch application.

Got a question? Chances are that someone else has the same question, but isn't asking! Send your question to Kathy Demchak, at 102 Tyson Bldg., University Park, PA 16802, or via email to kdemchak@psu.edu. You will be credited with the question, or can remain anonymous, as you wish.

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Potato Musings

Bill Lamont, Department of Horticulture

Tentative Schedule for the Potato Sessions at the 2004 Mid-Atlantic Fruit and Vegetable Growers Convention, Hershey, PA

Bill Lamont, Department of Horticulture

Wednesday, January 28, 2004 AM and PM

Session E

Potatoes

Wednesday, January, 2004, AM

Topics and Speakers

Presiding: Bob Leiby, Lehigh County Cooperative Extension

9:00 AM **Update on Keystone Potato Products** - Roger Springer, PA Co-operative Potato Growers, 3107 N. Front St., Harrisburg, PA

9:30 – ***Ralstonia solanacearum* Race 3 (Biovar 2) Outbreaks in Geraniums, the Causal Agent of Brown Rot of Potatoes**- Dr. Seong-Hwan Kim, Plant Pathologist Supervisor, Plant Disease Diagnostic Lab, Pennsylvania Department of Agriculture, 2301 N Cameron St., Harrisburg, PA.

10:00-10:15 Industry Show and Tell

10:15 **Proper Design and Differences Between Box and Bulk Storages**- Mike Mager, Technical Consultant, Arctic Refrigeration Company of Batavia, Inc., 26 Cedar Street, Batavia, NY

11:00 **Potato Insect Management-An Update**- Dr.Gerry Ghidui, Extension Entomologist, Rutgers University.

11:30 **Update on Fungicides Available for Control of Potato Diseases**- Dr. Thomas Zitter, Extension Plant Pathologist, Department of Plant Pathology, 334 Plant Science, Cornell University, Ithaca, NY 14853

12:00-1:30 PM Lunch and Visit with Exhibitors

Session B

Potatoes

Wednesday, January 28, 2004, PM

Topics and Speakers

Presiding: George Perry. Schuylkill County Cooperative Extension

1:30 PM **Results of 2003 Potato Seedpiece Treatment Study**- Dr. Melvin Henninger, Extension Vegetable Specialist, Department of Plant Science, Foran Hall, 59 Dudley Rd., Rutgers University, New Brunswick, NJ 08901

2:00 - **Breeding Potatoes for Disease Resistance**-.Dr. Barbara Christ, Professor, Department of Plant Pathology, 405 Buckhout Laboratory, Penn State University, University Park, PA 16802.

2:30 **Monitoring Resistance in Colorado Potato Beetle Populations**- Dr. Galen Dively, Department of Entomology, 4112A Plant Science, University of Maryland, College Park, MD. 20742-4454

3:00-3:15 Industry Show and Tell

3:15 **Michigan State University Potato Breeding Program**-Dr. David Douches, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824-1325

4:00 **Synder's of Berlin/Pro-Fac-The Cooperative Experience**- Dan Sharretts

4:30 Adjourn

Potato IPM School for Chip and Tablestock Producers

Bill Lamont, Department of Horticulture

Spread the word to potato growers to mark on their calendars to attend the "**Potato IPM School for Chip and Tablestock Producers**" to be held on March 8 and 9, 2004 at the Quality Inn, Erie, PA, which is located just off I-90 at exit 27. This program is a joint effort by Cornell University, Penn State University and the Ohio State University. I would like to thank Dr. Alan Erb for providing leadership in getting this program off the ground. More information will be forthcoming in future issues of the gazette.

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Upcoming Meetings

Bill Lamont, Department of Horticulture

Local

January 10-17, 2004. Pennsylvania Farm Show at the Farm Show Complex in Harrisburg, PA.

Jan. 16 – Morrison Cove Vegetable Growers' Meeting – Martinsburg, PA

Jan. 19 – New Holland Vegetable Growers' Meeting – Yoders Restaurant, New Holland, PA

Jan. 20 – Tri-County Vegetable Growers' Meeting – Shippensburg, PA

Jan. 22 – Susquehanna Valley Vegetable Growers' Meeting – Mifflinburg, PA

Feb. 3 – Lackawanna County Vegetable Growers' Meeting – Clark Summit, PA

Feb. 18 – Kutztown Auction Vegetable Growers' Meeting – Fleetwood, PA

Feb. 18 & 25 – Bucks County Vegetable Study Circle Meetings – Doylestown, PA

Feb. 19 – Mid-Atlantic Pumpkin School – Lancaster, PA (Tentative)

Feb 24 – Schuylkill County Regional Vegetable Growers' Meeting – Pottsville, PA

Feb. 24 - Family Farm Meeting – Lebanon, PA

Mar. 3 – Regional Potato Meeting – Schnecksville, PA

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

Mar. 16 – Erie County Vegetable Growers' Meeting – Erie, PA

Mar. 17 – Central PA Vegetable Growers' Meeting – Pleasant Gap or Lock Haven, PA

Mar. 18 – Northern Central PA Vegetable Growers' Meeting – location to be announced

Mar. 18 & 24 - Montgomery County Vegetable Study Circle Meetings – Collegeville, PA

September 24-25, 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

Regional

December 16-18, 2003. New England Vegetable and Berry Conference, Center of New Hampshire-Holiday Inn, Manchester, NH. Contact: Ruth Hazzard, (413)-545-3696.

January 13-14, New Jersey Vegetable Growers Association Annual Meeting, Borgata Hotel Casino, Atlantic City, NJ. Contact: Mel Henninger (732)-932-9711 Ext.120

January 21-23, 2004. Ohio Fruit and Vegetable Growers Congress , Toledo SeaGate Convention Centre and Radisson Hotel, Toledo, OH. Contact: www.ohiovegetables.org

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

February 5-7, 2004. Pennsylvania Association for Sustainable Agriculture's 13th Annual Conference, Farming for the Future, Conference Center, Penn State University, University Park, PA. Contact: Brian Snyder (814)-349-9856.

February 10-12, 2004 Empire State Fruit and Vegetable Expo in Rochester, NY.
Contact Lindy Kubecka, (315)- 687-5734.

March 8-9, 2004. Potato IPM School for Chip and Tablestock Producers, Quality Inn, Erie, PA. Contact: Alan Erb, Phone: (716) 432-3180

National

December 9-11, 2003. 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 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.

International

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

August 28-31, 2004. 17th International Lettuce and Lettuce and Leafy Vegetable Conference, Quebec, Canada. Contact: Dr. Sylvie Jenni (450)-346-4494 ext. 213 or jennis@agr.gc.ca