The Vegetable and Small Fruit Gazette

Vol. 7, No. 11- November 2003

Horticulture Department
The Pennsylvania State University

In this Issue:

Tip for the Month-- "Education is not the filling of a pail, but the lighting of a fire" - William Butler Yeats

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Comments from the Editor

Bill Lamont, Department of Horticulture

I can't believe that we are moving toward "Thanksgiving"!! Boy does time fly! Before we know it winter meetings will be upon us and if it snows as much as it rained this summer or the Farmer's Almanac and the wooly bear caterpillars predictions are correct, we will need our 4X4 vehicles to get around to the meetings. Maybe we should be glad to see this year end with all the rain that we have had and the difficult time that many growers experienced trying to grow crops this year. Well each year is different and we look forward to better growing conditions next year. We have several local educational meetings coming up in November so be sure to check the Upcoming Meeting list to see what meetings are being held in your region. We have our Ornamentals and Vegetable and Small Fruit Roundtables this month on November 12 and 13 (check article below) where we review last year and plan for 2004. I want to thank John Esslinger's excellent article on **"A New Tomato Disease in the Northeast"** in this issue and look forward to Andy Muza's article for the December 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.

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Schedule for Agent Articles

Bill Lamont, Department of Horticulture

December	Andy Muza

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Roundtable for Ornamentals and Vegetable and Small Fruit Crops for 2004

Bill Lamont, Department of Horticulture

The annual roundtable for Ornamentals will be held on November 12th starting at 12:30 PM in 504 ASI Building. **There will not be a joint dinner together since Dr. Lamont, who was going to host the dinner at his house will be coming back from Mexico late that evening**. Dr. Lamont will make it up to you with a get together in the future. The Vegetable and Small Fruit Roundtable will be held on November 13th in Rm 116 Tyson Building starting at 9AM with coffee, juice and donuts. Lunch will be provided. The roundtables are a chance to review the past year and plan for the next year. If you have agenda items for the Ornamentals Roundtable contact Dr. Jim Sellmer at jcs32@psu.eduand for the Vegetable and Small Fruit Roundtable contact Dr. Bill Lamont at wlamont@psu.edu.

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Thoughts on My Field Research in 2003

Mike Orzolek, Department of Horticulture

Since the year is drawing to a close, I'm sitting in my office reflecting on the field research I initiated and/or completed in 2003. I conducted field research in three distinct areas; variety trials, fertility and plasticulture. Ironically, May, June, July and August were very cool and wet, delaying the opportunity to lay plastic film in the field for 3 to 4 weeks. In some respects, 2003 was a disaster for conducting field research.

Bill Lamont and I had planned to conduct a rather large tomato irrigation study, but constant rain eliminated that possibility in 2003. I was able to lay plastic mulch on raised beds with drip irrigation for most crops by June 26, a month late. After establishing onion, tomato, cantaloupe, watermelons, cabbage and Galia melons in the field, the cool temperatures of July with many cloudy days did not produce rapid growth of the crops; even on plastic mulch.

As in previous years, peppers grown on black mulch never did establish and develop normally and uniformly in the research plots. The poor pepper growth wasn't strictly related to cloudy, cool wet conditions, but appeared to be due to chemical carryover from the herbicide application. Application of Dual Magnum and Command 3ME was made prior to making beds and planting the "Paladin" transplants. After 6 weeks, there was not one single weed growing in the field between the rows of plastic mulch and all pepper plants were still 8" to 10" tall with very little growth since transplanting in the field. When pepper plant growth finally kicked in, most of the field was covered with weeds, wall to wall. I managed to make three harvests, but yields were half of normal marketable fruit yield and very late. I was able to plant 0.6 acres of sweet Spanish onions on raised beds with plastic mulch and two rows of drip tape at the end of April. Unfortunately, with the excessive wet weather, as the onions matured, it was very difficult if not impossible to completely dry the neck of the onion bulb – resulting in some poor quality, minimal storage onions. In cooperation with Dr. Fumi Takeda, USDA Lab at Kearneysville, WVA, I established cabbage from transplants, "Bronco", in late July to evaluate a new material for controlling slugs. I was able to find slugs and slug damage on many other crops at the Horticulture Research Farm at Rock Springs, but have not found a single slug in my cabbage study – even with all the wet weather.

I conducted several variety trials at the Horticulture Farm in conjunction with several Cooperative Extension Agents around the state. The pumpkin variety trial seeds were planted in the greenhouse in mid-June on a Thursday (approximately 1000 seeds) and on Monday, I noticed that all the pumpkin seed embryos were eaten by an army of chipmunks (at least 10) between Thursday and Monday. We had to seed the pumpkin varieties again in the greenhouse for transplants in the field.

I will say however that producing vegetables in High Tunnels in 2003 was spectacular. There was no delay in making raised beds due to wet weather, plants developed and gre at an accelerated rate, and we could plant and harvest all crops on scheduled dates. We have had a very good year for growing vegetables in high tunnels in 2003; in fact, we have been able to market the high quality hot peppers, lettuce and garlic that were harvested this year from the high tunnels.

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Spacings for Vegetable Crops Grown in Plasticulture

Bill Lamont, Department of Horticulture

I thought as we begin to wrap up the 2003 growing season and begin to think about what mix of crops and how much to plant in 2004 that I would put in a table on plant spacing for those that use plastic mulch and drip irrigation to grow some of their crops.

Table 1. Plant Spacing for Plasticulture

	In-Row Spacing (inches)	Between-Row on Plastic (inches)
Beds (Inches)		

Crop	Single Row	Double Row	
Common on Plastic			
Cucumber (slicers)	12-18	9-18	12-14
Cucumber (pickles)	12-18	9-18	12-14
Eggplant	18-24	18-30	14-16
Honeydew	18-24	--	--
Lettuce (leaf)	--	6-9	9-12 (3 rows)
Muskmelon	18-24	--	--
Okra	12-18	18	14-16
Pepper	12	9-12	12-14
Pumpkin	24-48	--	--
Squash			
Summer	12-16	16-24	14-16
Winter	18-48	--	--
Tomato	18-24	--	--
Watermelon	24-48	--	--
Less Common on Plastic			
Broccoli	--	8-12	12-16
Cabbage	--	9-12	12-16
Cauliflower	18	18-24	14-18
Chinese cabbage	12	9-12	12-14
Collard	9-12	12-18	12-18

Sweet corn	6	6-12	12-18
Greens	--	6-12	9-12 (3 rows)
Onion	--	4-6	4-10 (3-6 rows)

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A New Tomato Disease in the Northeast

John Esslinger, Extension Educator, Lackawanna County
In consultation with Dr. Alan MacNab, Extension Specialist, Plant Pathology

The heavy and extended rains of the 2003 growing season introduced tomato growers in the Northeast to a new disease. Bull's-eye (Cristulariella) leaf spot is a foliar fungus disease that appeared in mid-August. It is believed that the fungus came from nearby forest areas. It occurs over a wide host range and is commonly observed as causing a leaf spot on tree species such as boxelder, maple and black walnut. Leaf spots were obsaerved on trees bordering tomato fields.

Bull's-eye leaf spot appears as a small lesion measuring 1/8" to 1/4 " in diameter. The lesion is made up of concentric rings similar to those of early blight but there are fewer rings and they are wider – like a target. The lesion is tan with the outer ring darker brown. The disease developes by adding new rings to the lesion until it completely covers the leaflet.The disease is favored by cool wet weather in midsummer. Bull's-eye leafspot does not appear very often since, usually, it is hampered by fluctuations in weather especially periods of low humidity. However, in 2003, the cool wet conditions persisted allowing the disease to defoliate tomato plants in hard hit fields.

Bull's-eye leafspot was found in every tomato field inspected in Lackawanna, Luzerne and Wyoming Counties. The disease was even present on tomatoes grown in a high tunnel. While bull's-eye leaf spot was of little consequence in most fields, some fields were completely defoliated. This fungus does not directly impact fruit but indirectly. One grower experienced yield loss in excess of 50% in addition to quality losses. The fruit was small and ripened prematurely.

Recommended controls include applications of copper or Nova. It is important to note that even though occurance of bull's-eye leafspot has been rare, it can cause ecomomic damage when conditions are favorable. It pays to scout fields and be able to identify pests and control them when appropriate. Tomato grower Harry Hopkins stated "Early detection is very, very important".

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High Tech Pest Alerts on the Web

Kristie Auman-Bauer, Public Relations & Outreach Coordinator, PA IPM Program
College of Agricultural Sciences

Now growers across the state can get accurate and timely information and predictions about pest activity and how it may affect their crops with just a click of their mouse. Information on crops such as corn, soybeans, alfalfa and small grains is now on the Web at

http://www.ento.psu.edu/extension/field_crops/field_crop_home.htm. This is also available through the 'Pest Problem Solver' at http://paipm.cas.psu.edu.
Information available includes insect prediction maps for corn and alfalfa, a calendar of insect activities, a new weed emergence prediction tool, a calendar of scouting activities, economic thresholds, degree-day requirements, scouting procedures, management tactics, pest sheets and links to other information. Also available from the site is information on genetically modified organisms issues, training modules from Penn State and Cornell universities and links to additional information. To view the full article, go to http://paipm.cas.psu.edu/NewsReleases/NRpalerts.html

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Bug vs. Bug - Greenhouse Sanitation Procedures are Necessary for a Successful IPM Program

Cathy Thomas, Integrated Pest Management Program
Pennsylvania Department of Agriculture

To prepare for next year's spring greenhouse vegetable crop (or any other crop) the end of season cleanup is critical to prevent carry over of pests and diseases to the next crop cycle. Pest exclusion and greenhouse sanitation are cornerstones in establishing a successful integrated pest management program.

1. Remove all plant debris including weeds. Remove weeds outside the greenhouse, especially those near doors and vents. If plants are infested, place them in a bag and destroy. Do not place infested plant material in dump piles near greenhouses.
2. Pressure wash the interior of the greenhouse with a disinfectant solution.
3. Increase greenhouse temperature (when crop has been removed) to over 77 degrees F for several weeks. This increases the metabolism of pests remaining in the greenhouse causing them to starve in the absence of a food source. High sunlight and temperature can pasteurize the greenhouse. Heat treatment is preferred over cold treatment since cold temperatures induce insects into hibernation rather than starvation.
4. Eliminate areas of standing water. Insects will perpetuate with a water source.
5. Remove areas of algae since it is a food source and breeding area for fungus gnats and shore flies.
6. Consider the installation of insect screens over vents to prevent entry of whiteflies, thrips and winged aphids.
7. The ground or growth media should be treated for pests and diseases through crop rotation and/or steaming. This will reduce carryover of pests such as thrips and spider mites which hide where they are sheltered until favorable environmental conditions resume. Steaming is effective in eliminating insects, diseases, weeds, and nematodes.

After crop removal and other greenhouse treatments, place yellow sticky cards in the empty greenhouse to monitor for any lingering winged pests. Check the cards weekly to determine if further action is required. Some growers find it helpful to monitor for pests by placing sticky cards in the greenhouse, 1 – 2 weeks before planting the next crop.

If you plan to use pesticides as a corrective measure to destroy pests from a previous crop follow these guidelines if you are using natural enemies or bumble bees for pollination in the next crop cycle. Always use the cleanup procedures listed above when using a chemical treatment. This will reduce the need for chemicals at the beginning of the next crop cycle when the plants are young and tender.

1. Use selective pesticides. These are compounds that are non-toxic or slightly toxic to natural enemies
2. Use pesticides with short residues. There are compounds that persist for a few days and those that persist for many months. Avoid using pesticides with long residuals especially if you plan to use natural enemies and bumble bees for pollination.
3. Avoid using traditional classes of insecticides such synthetic pyrethroids, carbamates, chlorinated hydrocarbons, and organophosphates. For example, Endosulfan (Thiodan?) requires a three month waiting period before using bumblebees.
4. Compounds that can be used with short residue periods include pyrethrins (Pyganic?, listed on Organic Materials Review Institute), insecticidal soap, horticultural oil, azadirachtin (insect growth regulator).

Always consult a biocontrol supplier for specific information on chemicals and their affects on natural enemies. These websites will also provide specific information on many compounds.

http://www.koppert.nl/e0110.shtml
http://www.biobest.be

Please contact me if there are specific issues that you would like to be addressed in this column.

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Potato Musings

Bill Lamont, Department of Horticulture

Release of New Potato Variety: Marcy

Barbara J. Christ, Department of Plant Pathology

Marcy is a new potato variety released by Cornell University. It was named after the highest mountain in New York. Marcy was tested in the Pennsylvania Germplasm Program as NY112 or as P7-19. General characteristics of this variety include outstanding yield and good chip color from short-term to mid-term storage. It also has very few external defects but is susceptible to bruising, internal heat necrosis and hollow heart. Because of the netted skin, it is not as attractive for fresh market uses although it's cooking characteristics are acceptable. It has resistance to common scab similar to Superior. The plant is large-sized and upright with white flowers. The tubers are round to oval with netted or flaky skin, shallow eyes and white flesh. The tubers are relatively large size.

In the Pennsylvania Germplasm Program, we have tested Marcy over 7 years for a total of 25 test sites including 5 counties, Centre Co., Erie Co., Lehigh Co., Lancaster Co., and Somerset Co. On average, Marcy yielded 422 cwt/A compared to yield of Atlantic at 353 cwt/A. Specific gravity is typically 8 points

less than Atlantic. Over 25 tests the specific gravity of Marcy averaged 1.077 while specific gravity of Atlantic averaged 1.085. The major weakness is that Marcy has late vine maturity. In the PA trials, the chip color remained light through short- and mid-term storage even after reconditioning. Marcy occasionally produced light colored chips even directly out of 45 F storage.

Our test results were published in the1995, 1997-2002 progress reports and the supplements of the Pennsylvania Regional Potato Germplasm Evaluation Program which is sponsored by the Pennsylvania Research Program, the check-off program of potato growers. If one of the counties listed above is similar to your production area, you can use the data for that county and compare you average yields of a check variety to those on the test trial at that location. This would give you a relative idea on how Marcy might compare at your own location.

Suggested management is to plant 9 inches within-row spacing and apply 150 pounds of nitrogen

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Upcoming Meetings

Bill Lamont, Department of Horticulture

Local

November 18, 2003. 2003 Western Pennsylvania Vegetable and Berry Growers Seminar, Days Inn, Butler, Pa. Contact: Eric Oesterling, (724)-837-1402.

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

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

November 20, 2003. Food Safety Workshop II – Managing Liability. Columbus Marriott North, Columbus, Ohio. Contact: Jennifer Hungerford (614)-246-8289 or maahs@ofbf.org

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 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

National

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